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Taxation of Research and Development

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Abstract
Research and development plays an unquestionably role in terms of long-term growth. According to Eurostat, almost half of all enterprises in the EU-28 reported innovation activity (48.9%) during the period 2010-2012. Compared with the period 2008-2010, the share of innovative enterprises decreased by 3.9 percentage points. Among the EU Member States, the highest shares of innovative enterprises during the period 2010–2012 were observed in Germany (66.9 % of all enterprises), and the lowest share was recorded in Romania (20.7%).
Keywords: R&D, innovation, taxation, corporate tax

Introduction

The EU aims to encourage the use of public funds to the private sector for innovation and research activities, and to remove the obstacles that hinder the implementation and deployment of ideas. In 2020, EUR 80 billion is available in the Horizon 2020 program grant for these activity. The research, development and innovation processes play a major role in each region, and within that improve the competitiveness of companies. The Union is encouraging Member States to increase the GDP for 2020 to 3% of research and innovation. Documentation of the

R&D projects are key for the accounting and taxation, especially the activities of R&D classification, and taking into account the amount of the related costs and the composition of the tax and the tax base off with, this regulation varies according to countries.

EU funds are not accessible for all businesses. For these businesses the state support in the form of tax base and tax benefits can be an other option. For example, in Hungary, the domestic tax laws provide some opportunity for companies to bring their own field of activity performed in connection with exploration and development projects tax base reductions and, where applicable tax benefits can also participate. The three tax discounts are the following: corporate tax, local business taxes, indirect contribution to innovation.

Methodology and Purpose of the study

The main goal of the paper is to show how important is taxation of the research & development & innovation, for companies. What are the differences between countries in case of R&D expenditures and taxation systems.

The research has been conducted on the basis of the secondary data. The research and development data was available from the EUROSTAT database. The Gross domestic expenditure on R&D (GERD) provided is as a percentage of GDP. According to Eurostat (2017), research and experimental development (R&D) comprise creative work undertaken on a systematic basis, in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications.

We have chosen some countries to show the differences between R&D expenditures and taxation system.

The analytical trend is the most often used way of the trend calculation. The permanent tendency of the time series can be expressed by certain well-fitting function (Barrow 2006). In the course of fitting the function, similarly to the regression calculation, using the least square method we search for the trend best fitting to the values of the time series. So, the analytical trend is the specific function, where the differences of the square amounts between the values of the same dates in the time series and the function's own values is the least (Szucs, 2004).

$$\sum (y_i - \hat{y}_i)^2 \Rightarrow \min .$$

where:
y_i : the i^{th} power of the time series
$\hat{y}_i$: the value of the trend with the i^{th} date (i=1,…n)

The basic tendency can be expressed by a linear function if the development of the time series is steady and the rate of the time change is permanent.
The general form of the linear function:

$$\hat{\mathbf{y}} = a + bx$$

where:
$\hat{y}$: the value of the trend
x : the values of the time changes equidistant from each other
a and b: the unknown parameters of the function

According to Szucs (2004), the aim is to estimate the parameters that can be determined with the standard equations.

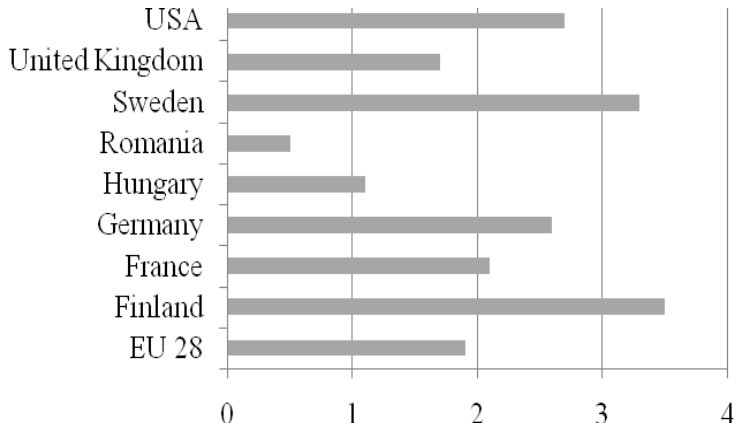
Literature review

No company can afford to rely entirely on their own ideas to advance their business anymore, and no company can restrict their innovations to a single path to market. According to Chesbourgh (2003), a new paradigm of open innovation, which can enable companies to create and profit from their ideas - and others' ideas - in today's distributed knowledge environment.

Pindado et al. (2015) opinion is that effective corporate governance allows the market to better assess a firm's R&D investments. In their research they used a single evaluation model using panel data of EU, US and Japanese companies. The findings of the research have been summarized in three main points: (1) as effectiveness of investor protection increases, the market valuation of R&D projects also increases; (2) more developed financial systems do a better job assessing R&D; (3) effective control mechanisms reinforce the positive effect of R&D on a firm's market value.

According to Vishnevskiy et al (2015), high-quality R&D is today the major driving force for economic success and progress. Rappaport (1986) argues that experts even disagree about the criteria of corporate success. The classical position accepted profit as decisive. Today, however, many consider the value of the company – the value of the owner's equity or the equity capital – and its growth to be the most important.

Fig. no. 1. R&D expenditure (expressed as a percentage of the GDP; average between 1994 and 2013)



Source: Own edition based on-Eurostat

The first figure shows the changes of R&D expenditure expressed as a percentage of the GDP in some countries between 1994 and 2013. A primary consideration in the selection of the countries involved in the study was to present the situation in Europe and compare it with US data. As the diagram shows, Finland (3.5%) and Sweden (3.3%) take the lead in terms of R&D spending. They devote the largest share of their GDP to research and development. In this respect, they surpass the United States of America, where the value under examination is 2.7%. This is much more than the average of the 28 EU Member States, which spent only 1.9% on R&D. Romania is on the last place with a ratio of 0.4%, thus it belongs to the last third of EU member states.

Investments in research and development (R&D) and innovation are central for economic growth. The global economy is not back on track. Concerns about weak future output growth and low productivity are now serious. In this light, uncovering new sources of productivity and future growth are the priority. According to Dutta et. al. (2016) more efforts are needed to return to pre-crisis R&D growth levels and to counteract an apparent R&D expenditure slowdown in 2014, which was

caused by both slower growth in emerging economies and tighter R&D budgets in high-income economies.

Table no. 1. Global innovation index 2015 and sub-indexes

	Global Innovation Index 2015 (out of 128)		Innovation Input Sub-Index		Innovation Output Sub-Index		Innovation Effenciency Ratio	
	Score 0-100 of value (hard data)	RANK	Score 0-100 of value (hard data)	RANK	Score 0-100 of value (hard data)	RANK	Score 0-100 of value (hard data)	RANK
Finland	59.9	5	51.3	10	68.5	4	0.7	32
France	54	18	45.5	19	62.6	15	0.7	44
Germany	57.9	10	54	8	61.9	18	0.9	9
Hungary	44.7	33	40.5	30	48.9	38	0.8	17
Romania	37.9	48	44.0	52	31.8	45	0.7	46
Sweden	63.6	2	58.7	2	68.5	5	0.9	10
United Kingdom	61.9	3	56.3	4	67.5	7	0.8	14
USA	61.4	4	54.1	7	68.7	3	0.8	25

Source: Own edition based on Dutta et.al. (2016)

Dutta et. al (2016) calculated different innovation indexes (Table no. 1). The Innovation Input Sub-Index score is calculated as the simple average of the scores in five pillars (Institutions, Human capital & research, Infrastructure, Market sophistication, Business sophistication), while the Innovation Output Sub-Index is calculated as the simple average of the scores in two pillars knowledge&technology outputs, creative outputs. Companies expect their innovation network to grow. Within that network, the role of customer-driven innovation, start-ups, and suppliers, as well as research institutes and academia, is especially expected to grow.

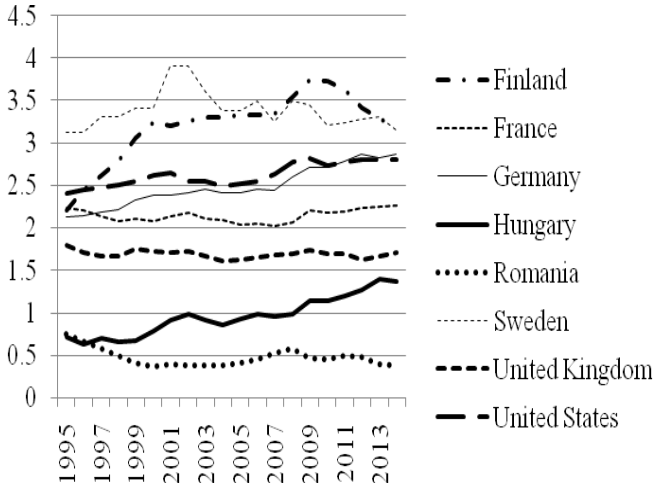
An evaluation of the data for the EU Member States also confirms that those countries with relatively high ratios of business enterprise expenditure on R&D relative to GDP — namely, Sweden (2.27 %), Austria (2.18 %), Germany (1.95 %), Finland (1.94 %) and

Denmark (1.87 %) — also reported relatively high overall R&D intensities (2.87 % or above) by Eurostat (2017). Apart from Germany, the other four of these Member States also featured at the top of the ranking of expenditure by the higher education sector, where the Netherlands and Estonia also had a relatively high ratio of R&D expenditure to GDP. Government R&D expenditure relative to GDP was highest in Germany, Luxembourg and the Czech Republic, while private non-profit sector R&D expenditure relative to GDP was very low in each of the Member States, peaking at 0.07 % in Cyprus.

Results of the study

While the first figure showed the R&D expenditure expressed as a percentage of the GDP and we just obtained a mean value, let us now see the individual values from 1995 to 2013. It is not necessary to construct the trend, as the diagram shows clearly that there are significant differences in some countries in the investigated years. The two frontrunners started from a very different point in 1995: the rate of R&D expenditure was 2.3% in Finland and 3.5% in Sweden, but this large difference disappeared by 2013 and reached 3.2% in both countries.

Fig. no. 2. R&D expenditure expressed as a percentage of the GDP (between 1995 and 2013)



Source: Eurostat

We have tried to fit a linear trend for R&D expenditure, expressed as a percentage of the GDP (shown in Figure no. 2.). The fitting of the linear trends are close in case of Hungary, Germany and USA.

The Hungarian linear trend equation is

$y = 0.0379x + 0.5638$

$R^2 = 0.9144$

The Hungarian average yearly R&D expenditure is 0.0379%.

The German linear trend equation is

$y = 0.0394x + 2.0754$

$R^2 = 0.9418$

The American linear trend equation is

$y = 0.0211x + 2.3998$

$R^2 = 0.785$

The increase is the greatest in Germany if we compare these 3 countries.

Taxation system of the analysed countries

Based upon Deloitte (2015) survey and national taxation law, we would like to introduce the place of research and development in the specific countries tax system.

Hungary

In Hungary, the corporate tax rate was 10% for taxable income up to HUF 500M, and 19% on income exceeding that limit, until 2017. From 2017, the corporate tax rate is linear 9%. The nature of incentives are as follows:

- *Super deduction:* A 200% super deduction is granted for qualifying expenditure if the related R&D activities, and are carried out within the scope of the taxpayer's own business activities or with respect to cooperative R&D activities performed based on an agreement with another party.

- *Patent box:* If intellectual property is created as a result of the R&D, 50% of the gross amount of the royalty received may be deducted from the corporate income tax at the taxpayer's election. A tax exemption, effective 1 January 2012, is available for capital gains derived from the transfer (sale or in-kind contribution) of qualifying intellectual property, which provided: (1) The company makes an election with the tax authorities within 60 days following the date of the

intellectual property acquisition; (2) The company holds the assets for at least one year before any subsequent sale.

Local business tax base reduction: The R&D costs can be deducted when computing the local business tax base. Corporations employing researchers with academic degrees or titles are relieved from paying social tax (27% on gross wages) and the training fund contribution (1.5% on gross wages). R&D-related expenses may be deducted from the corporate income tax base by any associated entity of the taxpayer.

In Hungary, eligible expenditure typically includes:

- Gross wage costs of new or existing R&D and/or marketing staff;
- Cost of new equipment;
- Cost of certain goods/materials/R&D services purchased from third parties.

Germany

The generally corporate tax rate is 15%, in addition to a 5.5% solidarity surcharge levied on corporate income tax (i.e., effective tax rate of approximately 15.8%). Municipal trade tax is imposed at rates usually between 7% and 17% (an average of 14%), with rates determined by the municipalities. The effective combined income rate averages is 30%.

The nature of incentives are: R&D incentives, mainly in the form of non-repayable cash grants, are awarded on a “per project” basis, usually for collaborative projects. There is no legal claim for R&D funding. Grant rates average at 50% of eligible project costs, although higher rates may be possible for SMEs. The selection criteria for eligible projects include: extent of innovation, extent of technical risk and extent of economic risk.

R&D loans are an alternative to R&D grants. R&D loans are not contingent on conducting R&D activities in a specific technology field and there are no application deadlines. R&D loans are provided under different governmental programs. R&D tax incentives are not yet offered, but the introduction of such incentives is on the political agenda.

Eligibility is not limited to particular industries. Companies in the following industries typically seek cash grants: biotech and life

sciences; information and communication technology; manufacturing, including automotive; energy and utilities.

United States of America

Federal corporate taxable income is subject to graduated tax rates, ranging from 15% to 35%. Most states also impose an income tax with rates ranging from 4.6% to 12%. The average combined federal/state corporate tax rate is 39.1%. The US offers a non-refundable research tax credit. Forty-five states offer a research tax credit that is similar to the federal tax credit, but at a lower credit rate. There are, however, a few states that offer refundable credits.

Nature of incentives are the taxpayers, who can elect to report an Alternative Simplified Credit or a Traditional Research Tax Credit, as follows:

- Traditional research tax credit (20%): The "traditional credit" is equal to 20% of the amount of the qualified research expenses (QREs) exceeding a "base amount";
- Alternative Simplified Credit (14%): The alternative simplified credit (ASC) is equal to 14% of the excess of the QREs over 50% of the average of the previous three years' QREs. The ASC base amount is therefore much easier to determine than under the traditional method and most taxpayers elect the ASC.

In the USA, all industries are eligible for the research credit and all the industries conducting qualified research have incentives. Qualifying costs include:

- wages for in-house labour, 65% of contract research;
- supplies used in the research process;
- overhead and capital expenditure are excluded.

Romania

The general corporate income tax is 16%. The legislative framework for the R&D tax incentive is in the Fiscal Code. Specific Norms providing guidance in the application of the law relating to research tax incentives have been jointly issued by the Ministry of Public Finance and the Ministry of Education Research and Innovation. A new order was issued in March 2015 modifying the specific Norms applicable to the incentive.

Natures of incentives are:

- Romania offers a 150% super deduction for eligible R&D expenditure. In light of the corporate income tax rate of 16%, the R&D tax incentive provides tax savings of 8% of the qualifying costs;

- Accelerated depreciation for equipment and devices used in R&D activity of up to 50% of the fiscal value of the asset may be deducted during the first year of use. The remaining fiscal value of the asset is depreciated over the remaining useful life.

Eligible types of R&D activities are:

- Applied research undertaken to acquire new knowledge for the development of new products, processes or services or for the significant improvement of existing products, processes or services.

- Technological development work, drawing on existing knowledge gained from research and/or practical experience, which is directed to obtain new materials, products, processes, systems and services, or to improve substantially those which already exist.

Expenses eligible for the R&D incentives are the following:

- Depreciation and rental expenses of new tangible and intangible fixed assets that are used by taxpayers in R&D activities (accelerated depreciation also may be applied for the equipment used for R&D activities);

- Salaries of personnel directly involved in R&D activities and related expenses;

- Maintenance and repair costs for tangible and intangible assets used for the R&D activities;

- Operating expenses, including expenses for contractor fees, costs of consumables, expenses for materials that are included in inventory, raw materials expenses, expenses for animals used in experiments, and similar products used in R&D activities;

- Overhead expenses that can be allocated directly or proportionally to the results of an R&D activity.

Conclusion

Academic researchers, product and technology developers and managers work together with previously inconceivable efficiency to explore and implement new product ideas in the centers of development. In recent centuries, the opportunities offered by innovation explored by R&D have mainly been exploited by large companies. Nowadays, the identification of such opportunities for

innovation offers the greatest chances of SMEs success. As a result of accelerating progress, flexibility and quick adaptation have become the key factors of corporate competitiveness.

We examined the R&D expenditure expressed as a percentage of the GDP in some countries between 1994 and 2013. A primary consideration in the selection of the countries involved in the study was to present the situation in Europe and to compare it with US data. Investments in research and development (R&D) and innovation are central for economic growth.

We tried to fit a linear trend for R&D expenditure expressed as a percentage of the GDP. The fitting of the linear trends are close in case of Hungary, Germany and USA. The increase is greatest in Germany if we compare these 3 countries and Romania. We analyzed these countries taxation system (corporate tax, nature of incentives, eligible industries and qualifying costs). Different countries have different R&D "support systems", but the aim to stimulate the R&D is the same for all countries.

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Iberian major Regions Interregional Trade across the Border

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Abstract[2]
Trade flows that one region establishes with other regions in the same country are very rarely analyzed in the economic literature. Even less frequently are the trade relations with other regions in a neighbor country. Based on previous estimates of interregional trade within the Iberian Peninsula, this paper analyses the trade patterns of the four major trading regions: *Madrid*, *Cataluña*, *Comunidad Valenciana* and *Lisboa e Vale do Tejo*. Similarities among them are identified. A sector analysis is performed showing high levels of concentration. Confirming the literature a strong border effect is identified.
Keywords: Inter regional, International trade, Portugal, Spain, Border effect

[1] The information and views set out in the publication are those of the author and do not reflect the official opinion of the European Commission
[2] A preliminary version of this paper was presented at the *52nd Annual Meeting of the North American Regional Science Association*

Introduction

Portugal and Spain are countries with many similarities. Being amongst the oldest nations in Europe, their history together is centuries old. Unfortunately, there have been centuries of distrust, wars and doors closed to good relations between neighbors. And yet they have always been two natural trade partners due to their similarities. Their history is partially common and with very similar paths across centuries. Their closeness is evident not only in history, but also in culture, geography, consumption patterns, gastronomy, etc.

Democratic systems have been established in both countries, almost simultaneously, only in the fourth quarter of the twentieth century. Only then they established development strategies based on European cooperation. These led to recognizing the potential advantages from a close cooperation between the Iberian nations.

The simultaneous integration of both countries in the European Union in 1986, and the following creation of a Common Market and a single currency, has created the conditions to enhance the economic relations between these countries, amongst which trade is one of the main aspects. International trade between Portugal and Spain was one of the most patent aspects of such increase in relations. An overview of this process is shown by *Caetano et al* (1999); *Lopez* (2003) and also in *Caetano et al* (2005). In a wider perspective, not only focusing in trade, *Pires* (2013) also describes the process for market integration after the EU accession.

Both countries participation in the Common Market removed formal barriers allowing for new realities in trade. Exchanges that were usually confined to national borders may now easily be established crossing them. A whole set of interregional trading relations inside the Iberian Peninsula is possible, and need to be fully understood in order to both nations to benefit from its full potential. Companies tend to explore their proximity markets first, and only at a later stage, to explore international markets. Many never take the endeavor of an internationalization process. The novelty from the absence of formal barriers at the border is that the proximity markets are not any more restricted to those in the home country, but also include the neighbor regions in the other country. Between two countries with such a long border, frequently a business partner on the other side is closer than a partner in the country's capital. To what extend are these potential trade flows affected by the existence of a border is defined as the border

effect. Several cases in the literature have demonstrated its existence, e.g. *Helble* (2007); *Ferreira, R. and Mourato, J.* (2011); *Gil-Pareja, Salvador et al* (2006), thus increasing the importance of understanding the specificities of interregional trade across the border.

However, this is a relatively recent subject, and one that suffers from significant problems of data availability. Though there are statistical data of external trade between Portugal and Spain, there is no interregional trade data between regions on different sides of the border. There are not even interregional trade values within one of the counties. This lack of official data has led to almost inexistent research on interregional trade across the border. An interesting overview of existing methods for border effects estimation can be found in *Magerman, Studnicka and Jan Van Hove* (2016).

For the Spanish regions the project C-Intereg started to present regular estimations of interregional trade flows amongst the Spanish NUT II regions including data since 1995. This is presented for example in *Llano et al* (2008) and *Llano* (2004). However, this does not include Portuguese regions, or from any other country than Spain. Therefore this data do not allow assessing the effects that the border has on trade. The only estimation of interregional trade flows covering both Portuguese and Spanish regions that we are aware of, has been presented in *Ferreira* (2005a) and *Ferreira* (2008). These estimations have been carried out for the period of 1990-2000 with an eleven sector classification. Unfortunately, no other estimation has yet been made with most recent data.

These dataset now permits to have an understanding of the cross-border specificities of interregional trade in Portugal and Spain. The present paper focus on the four main trading regions in terms of interregional flows inside the Iberian Peninsula: *Madrid*, *Cataluña*, *Comunidad Valenciana* and *Lisboa e Vale do Tejo*. We use as the main data source the database published in *Ferreira* (2005b). The time horizon is thus from 1990 to 2000. Our goal is to search for the aspects in which these regions present common characteristics in their trade patterns, as well as the points in which they distinguish one from another. By choosing the highest trading regions we also aim to understand if this characteristic of theirs implies similarities that distinguish them from the other. By increasing the knowledge on the interregional trade tendencies, we hope to contribute to make fully use of their potential.

This paper is structured as follows: in chapter 2 we present an overview of the methodology used to generate the dataset on which the present paper is based; in chapter 3 we discuss how the four main Iberian trading regions were selected; in chapter 4 we present a geographical analysis of these regions flows; in chapter 5 we present a sectoral analysis and, in chapter 6 we draw some final general conclusions.

Data Estimations

Though we consider that the database used is a solid set of data, we must keep in mind that these are estimations. To carry out further research using these data, the procedures underneath them should be understood. We intend to briefly present them here, only to clarify their strengths and weaknesses. We do not intend to explain them in detail because that is not the goal of this paper. For a further discussion on the estimation methods one should refer to the original document.

When estimating the data, the goal was to generate Origin-Region to Destiny-Region matrices for the interregional trade flows existing in the Iberian countries Portugal and Spain, as if there was no national border. This was done based on the only existing sets of data. On the one hand international trade data for both countries was used. There are official statistics for the trade relations of one region in one country with whole the other country. There is however no data region to region, across borders. On the other hand transport data within each of the countries was used. This allowed for the estimations of flows between regions of the same country.

For estimating trade flows between regions on different sides of the border international trade statistics were used. Having available the exports from each region to the other country, as well as its imports from the other country, the totals in column and row for our matrices were known. [3] In order to obtain trade flow estimation for every pair or regions a doubled constrained gravity model was applied, following the formulation of *Bjurklo* (1995). The friction factor used was the transportation costs, using real market values. The double constraints were the real values of each region exports to the other country and each region imports from the other country.

[3]This applies only to the sub-matrices exclusively reporting to this group of flows

For estimating trade flows between regions in the same country, freights data were used as a proxy variable for trade. One of the concerns with the usage of freight data as a proxy to trade has to do with how to value such data that are reported in volumes only. This issue is further discussed in the literature, e.g. *Helble* (2007). Not existing any interregional prices to value these transported quantities, the implicit prices in exports to neighbor countries were used. For example, to value the exports from *Cataluña* to other Spanish regions, the implicit prices in this region's exports to both France and Portugal were used. These were considered to be the closer values to interregional flows inside the country.

Finally, the sector classification is a hybrid one. Transport data was classified according to NST/R, while international trade data according to NC. Not all pieces of data were made available at a very high level of disaggregation. Therefore a hybrid classification of eleven sectors that could aggregate both different data sources was used.

Region Classification

From the estimated flows for all 20 Iberian NUT II regions, 15 from Spain and 5 from Portugal[4], we sought for those that could be classified as the main regions, according to their relevance in the Iberian interregional trade flows. For such purpose we have analyzed the weight of each region total trade (with other Iberian regions) over total trade among Iberian regions. The results of such analysis are presented in table no. 1. These data refer to the last estimated year of 1999[5].

We have computed total values for exports and imports[6] of each one of the 20 Iberian regions within the entire Iberian space, and weighted them over the total interregional trade flows in the Peninsula. Our first idea was to use this simple measure to determine the more significant regions. However, this would introduce a bias in our analysis. The fact is that from on first analysis to the whole trade flows, it was evident that the very large majority of interregional trade in this area is confined to national borders. This is to say that Portuguese regions trade almost exclusively with other Portuguese regions, while

[4] We consider only regions within the Iberian Peninsula. Portuguese and Spanish archipelagos and the Spanish Autonomous cities in North Africa are not addressed in the present paper.

[5]The dataset includes some data for 2000, but not for all sub-matrices.

[6]Throughout this paper we keep the concepts of exports and imports even though we are including trade with other regions from the same country

flows originated in Spanish regions are kept mainly inside Spain. A strong border effect between Portugal and Spain is clearly shown in *Ferreira and Mourato* (2011). Being so, and keeping in mind that Spain represents a much larger economy than Portugal (15 regions vs. 5 is an example of such difference), one must conclude that the Spanish regions would naturally be much more opened due to their larger domestic market, than Portuguese regions. This way, the simple weight of the regions on total trade flows within the peninsula, would bias our results overestimating the role of the Spanish regions.

In a similar way, one could not use the weight of each region on the trade flows with its co-national partners. In such case the Portuguese regions would be overvalued: with a smaller number of regions, the role played by each would increase because there would be a smaller number of regions over which to distribute the importance.

The solution adopted was a hybrid from this last option, that means firstly to compute the weight of each region trade flows over total interregional trade within national borders, and then to correct those weights dividing them by the role that each would have inside the country if trade would be equally distributed among such regions. If trade flows would be equally distributed among the 5 Portuguese regions, we would find each of them being responsible for 20% of trade. In a similar way, an equal distribution of trade would lead to every Spanish region being responsible for 1/15 (6.7%) of total interregional trade within Spain. To this ratio, real regional weight over inverse of national regions number, we have called the Corrected National Weight (henceforth *CNW*)

Based on this ratio, we are considering a particular region to be one of the main regions in the Iberian Peninsula regarding interregional trade, the higher its weight on trade evolving same nationality regions is when comparing to the number of existing regions in that lot. Regions with a Corrected National Weight greater than 1 have higher levels of trade than they would have with an equal distribution within its country's regions. The opposite applies for *CNW* values lower than one.

Table no. 1. Regions weight on interregional trade

10^3 €

Regions	Exports (X)	Imports (M)	X+M	Weight of region over total Peninsula flows	Weight of region over flows inside the same country	Cor. Nat. Weight
Madrid	107.059.34	47.233.268	154.292.612	16,05%	18,45%	2,77
Cataluña (ES)	56.743.063	61.111.211	117.854.275	12,26%	14,09%	2,11
Comun.Valenc. (ES)	47.998.847	51.362.841	99.361.688	10,34%	11,88%	1,78
LisboaVT (PT)	20.386.338	21.958.526	42.344.863	4,41%	33,88%	1,69
Norte (PT)	16.720.638	17.686.920	34.407.559	3,58%	27,53%	1,38
Centro (PT)	16.403.118	16.900.483	33.303.602	3,47%	26,65%	1,33
Castilla y Leon (ES)	23.910.263	42.330.437	66.240.700	6,89%	7,92%	1,19
Castilla la Mancha (ES)	35.150.371	28.192.138	63.342.508	6,59%	7,58%	1,14
Andalucía (ES)	14.259.711	45.740.773	60.000.484	6,24%	7,18%	1,08
Aragón (ES)	28.163.013	31.128.937	59.291.950	6,17%	7,09%	1,06
P. Vasco (ES)	25.306.171	29.305.219	54.611.390	5,68%	6,53%	0,98
Galicia (ES)	22.948.528	16.819.176	39.767.704	4,14%	4,76%	0,71
Murcia (ES)	15.029.636	16.074.238	31.103.873	3,24%	3,72%	0,56
Navarra (ES)	14.765.741	16.252.629	31.018.370	3,23%	3,71%	0,56
Alentejo (PT)	3.773.849	6.393.994	10.167.842	1,06%	8,14%	0,41

La Rioja (ES)	14.668.854	6.460.582	21.129.437	2,20%	2,53%	0,38
Cantabria (ES)	7.334.408	7.048.967	14.383.375	1,50%	1,72%	0,26
Asturias (ES)	4.159.860	8.987.182	13.147.042	1,37%	1,57%	0,24
Extrem. (ES)	3.729.021	6.881.983	10.611.004	1,10%	1,27%	0,19
Algarve (PT)	2.054.599	2.695.871	4.750.470	0,49%	3,80%	0,19
Total	59.338.542	65.635.794	124.974.337		100,00%	
Total	421.226.83	414.929.580	836.156.412		100,00%	
Total 2	480.565.37	480.565.374	961.130.749			

Source: author calculations based on *Ferreira* (2005b) dataset

To establish a dividing line we have considered the value of the Corrected National Weight of 1.5. A higher value would mean that this regions trade is at least 50% higher than it would be with a perfectly proportional distribution of trade. Therefore we have classified 4 of the total 20 regions has being the main regions in the Iberian countries regarding interregional trade within Iberia. These are three Spanish regions: *Madrid*; *Cataluña* and *Comunidad Valenciana*, and one Portuguese region: *Lisboa e Vale doTejo*[7] .

The analysis presented in the rest of this paper will thus focus on this set of regions.

Basic indicators and geographical distribution

We'll start by an analysis of these four regions basic trade indicators considering their exchanges with other regions in the Peninsula. Original values on the database were initially computed for the period up to 1999. To avoid bias readings emerging from short-term changes in any of the estimated flows, we have computed the majority of the following indicators based on the mean values of the flows for the last three years available: 1997-1999.

[7] According to the current NUT classification the region is named *Lisboa* and it covers a smaller area. In the time horizon of the dataset the region was still *Lisboa e Vale do Tejo*.

In table's no. 2 and 3 we present some basic indicators of trade for these regions trade flows. Namely the weight that trade with regions of the same country represent on each region trade flows, also the neighbor country. We present both the trade balance and the export/import ratio for every region when facing Portuguese regions, Spanish regions and the whole of the two countries.

Table no. 2. Regions' weight on interregional trade

	Weight of same country regions (%)	Weight of neighbour country regions (%)
Madrid	98,49	1,51
Cataluña	97,22	2,78
Comun. Valenciana	98,64	1,36
Lisboa VT	82,74	17,26

Source: author calculations based on *Ferreira* (2005b) dataset

Table no. 3. Basic interregional trade indicators

10^3 €

	With Spanish regions		With Portuguese regions		General	
	Trade Balance	Exports over Imports ratio (%)	Trade Balance	Exports over Imports ratio	Trade Balance	Exports over Imports ratio (%)
Madrid	78.600.881	305	893.227	220	79.494.107	303
Cataluña	-5.366.516	90	1.700.571	380	-3.665.945	93
Comun. Valenc.	-6.946.701	84	326.380	183	-6.620.321	85
Lisboa VT	-4.261.907	21	1.559.117	110	-2.702.790	87

Source: author calculations based on *Ferreira* (2005b) dataset

When observing these data, a very interesting conclusion emerges promptly. All regions present much stronger relations with regions from the same country, than with regions from the other Iberian economy. Though not visible from the present table, a similar conclusion can be drawn referring to the other 16 regions not analyzed in this paper. The reading deriving from this observation is a most important one: though both countries have jointly entered the European Union in 1986, tough a Common Market has been settled removing most of the existing barriers, the existing trade between Iberian regions is still mainly confined to the national borders of each country. Though physical and fiscal barriers have been moved, the border still represents a huge barrier for trade, probably mainly due to cultural and historical reasons. We thus confirm the results from *Ferreira, R. and Mourato, J.* (2011) that demonstrated a significant border effect diminishing trade between these countries.

From these four regions, *Lisboa* emerges clearly as the most opened one, in terms of percentage of trade with the neighbor economy. This fact however must not be misinterpreted. The large difference in the values for *Lisboa*, when compared with the three other regions here analyzed, are clearly explainable for this being the only Portuguese region here listed. Considering that there are a total of 5 regions in Portugal and 15 in Spain[8], the exchanges that *Lisboa* settles with 15 Spanish regions (neighbor country) must be significantly higher than the flows reported by each of the Spanish regions. Hence trade relations that *Lisboa* establishes with Spanish regions are relatively more important than flows with Portugal are for any of the Spanish regions

From the observation of the export/import ratios, we notice a similar behavior for the three regions *Cataluña* (CAT), *Comunidad Valenciana* (CV) and *Lisboa* (LVT). In fact, all these present a level of exports almost enough to cover the regional imports. Also these three regions present much better results when facing Portuguese regions than facing Spanish trading partners, reporting positive trade balances towards Portugal, while all three have negative balances with Spain. *Lisboa* emerges as a special case in this group of regions, clearly for being the only Portuguese region in the lot. Having Portugal a structural

[8]In the Iberian Peninsula, excluding archipelagos and Autonomous Cities on North Africa

trade deficit towards Spain[9], it is not surprising to observe that LVT presents a very low export/import ratio with Spanish regions. But while both CAT and CV have positive trade balances with regions from the other side of the border (Portuguese ones), and negative with their co-national ones, LVT presents the opposite perspective. It has a positive balance with the same nationality regions (Portuguese ones) while it has a very low performance with areas from the opposite side of the border, even lower than the entire country as a whole[10].

With this perspective we notice that, although *Madrid* (MAD) presents a different structure, it has some similarities with the LVT case. MAD is clearly a very special case within this group of 4 regions, as well as within the entire Peninsula. Not only it is the largest trading region (presenting the higher CNW in previous section), but also it reports the biggest trade balance values. Exports from *Madrid* to other region cover three times its imports. For both countries MAD has its imports largely covered by exports, differing from the performance of both CAT and CV. Clearly, *Madrid* has a centralizing role in the interregional trade flows in Spain. It is in this perspective that we argue for the similarity between LVT and MAD. The positive trade balance that *Lisboa* has inside Portugal (in spite of the very poor role it has with Spanish regions), when comparing with the performance of CAT and CV inside their national borders, underlines the also centralizing role that LVT has within the Portuguese regions.

Following we present the geographical distribution of the interregional flows of these four main regions. Tables 4 to 7 indicate values individualized per partner region.

[9]In 1999 the export/import ratio for the Portuguese trade with Spain was approximately 44%

[10] See previous note

Table no. 4. Trade Balance per partner region

1997-99 averages; 10^3€

	Trade Balance			
Trading regions	MAD	CAT	CV	LVT
Norte	**55.237**	**300.278**	**64.858**	**-479.579**
Centro	**16.649**	**127.329**	**-3.105**	**-159.962**
Lisboa V Tejo	**827.137**	**1.252.734**	**260.116**	
Alentejo	**-8.529**	**8.505**	**-1.397**	**1.827.276**
Algarve	**2.732**	**11.724**	**5.907**	**371.381**
Andalucía	**16.370.855**	**2.877.012**	**2.434.677**	**-329.854**
Aragon	**4.700.319**	**399.597**	**-188.090**	**-253.097**
Asturias	**2.154.406**	**288.802**	**114.249**	**-49.959**
Cantabria	**879.302**	**-28.522**	**-47.621**	**-38.866**
Castillala Mancha	**6.747.645**	**-570.137**	**-1.540.886**	**-139.554**
Castillay León	**13.745.053**	**669.859**	**343.246**	**-287.954**
Cataluña	**10.352.306**		**-722.121**	**-1.252.734**
ComunidadValenciana	**7.517.392**	**722.121**		**-260.116**
Extremadura	**1.791.168**	**320.894**	**167.190**	**-102.219**
Galicia	**4.650.556**	**-299.212**	**-311.603**	**-245.086**
La Rioja	**457.544**	**-564.607**	**-279.765**	**-41.999**
Madrid		**-10.352.306**	**-7.517.392**	**-827.137**
Murcia	**2.437.689**	**419.152**	**509.569**	**-49.192**
Navarra	**1.291.776**	**258.670**	**26.889**	**-129.850**
Pais Vasco	**5.504.868**	**492.160**	**64.957**	**-254.291**
Sub Total Portugal	**893.227**	**1.700.571**	**326.380**	**1.559.117**
Sub Total Spain	**78.600.881**	**-5.366.516**	**-6.946.701**	**-4.261.907**
Total	**79.494.107**	**-3.665.945**	**-6.620.321**	**-2.702.790**

Source: author calculations based on *Ferreira* (2005b) dataset

(A positive value means that the region in column sells more to the region in line than it imports from it. E.g. the first cell means that *Madrid* has a trade surplus of 55.237 in its relations with Norte)

Table no. 5. Exports/Import ratio per partner region

	Export / Import ratio			
Trading regions	**MAD**	**CAT**	**CV**	**LVT**
Norte	121	230	149	**92**
Centro	109	189	**97**	**97**
Lisboa V Tejo	449	732	275	
Alentejo	**80**	131	**90**	191
Algarve	154	295	280	139
Andalucía	908	275	245	**31**
Aragon	255	104	**95**	**20**
Asturias	670	195	168	**13**
Cantabria	280	**95**	**81**	**14**
Castillala	179	**78**	**66**	**17**
Castillay León	323	142	126	**26**
Cataluña	268		**94**	**14**
ComunidadVale	271	106		**36**
Extremadura	574	246	215	**34**
Galicia	292	**85**	**76**	**24**
La Rioja	170	**55**	**52**	**13**
Madrid		**37**	**37**	**22**
Murcia	367	125	113	**21**
Navarra	254	114	103	**14**
Pais Vasco	376	116	105	**14**
Sub Total	220	380	183	110
Sub Total Spain	305	**90**	**84**	**21**
Total	303	**93**	**85**	**87**

Source: author calculations based on *Ferreira* (2005b) dataset

For an easier reading the bold line separates Portuguese regions, above, from Spanish regions, bellow. X/M ratios minor than 100% are presented in bold.

From the analysis of these tables we notice a very interesting resemblance between the geographical trade position of flows for regions CAT and CV. In fact, with a few exceptions, the regions with which they have a positive trade balance (or a negative one) are the same for both.

Not only we must underline that resemblance between *Cataluña* and *Comunidad Valenciana*, also we find that these regions trade position present a common pattern for groups of contiguous regions in different parts of the Iberian countries. These can be observed when introducing those values on regional maps, as in Figures 1 and 2.

Figure no. 1. *Cataluña* trade position with different regions

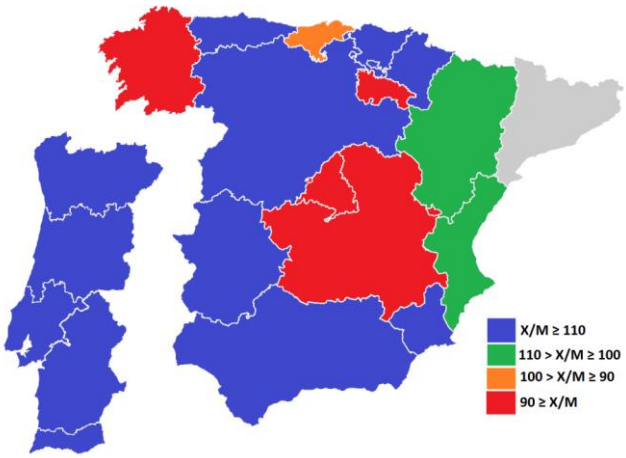
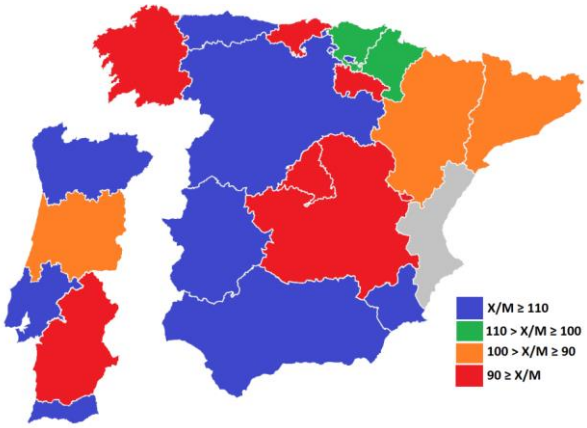


Figure no. 2. *Comunidad Valenciana* trade position with different regions



With the information available, both on tables 4 and 5 and on figures 1 and 2 we can clearly note the existence of areas towards which both CAT and CV have similar positions. Facing a very large macro-region composed by all the most distant regions from the French border (Murcia, Andalucía; Extremadura; Castilla y León and Asturias) these two regions present very significantly positive trade positions. The northeast part of the Peninsula (Aragón, CAT and CV themselves, Pais Vasco and Navarra) is where we find trade balances closer to an equilibrium. In this group, for CAT, though Navarra and Pais Vasco

belong to the classification of higher X/M ratios are the regions with a lower value (114 and 116) among that group. Finally, a central area in the peninsula, around *Madrid* and North from *Madrid* (*Madrid*, *Castillala Mancha*; *La Rioja* and *Cantabria*) is responsible for the trade deficits these two regions have. *Galicia* is an exception not fitting these patterns, though with the same behavior for both CAT and CV

When analysing the flows with Portuguese regions we do not find a so obvious similarity for CAT and CV. However, the very low role of the trade with these regions in the context of total interregional trade within the whole Peninsula (see tables 6 and 7 below) makes the X/M ratio an incomplete measure. Nevertheless, we must note that the only two cases of negative trade balances are the relations of CV with *Centro* and *Alentejo*, though with X/M of 97 and 90, not really contradicting the trend of positive trade with Portuguese regions.

For the capital regions *Madrid* and *Lisboa*, there is no need of a map to clearly view their positions. *Madrid* has a significantly positive trade balance with all regions, except for the *Alentejo* region in Portugal[11]. This trade surplus of *Madrid* is so high that its overall X/M ratio is 303. The lowest value within Spain is 170 with *La Rioja*, though with Portuguese regions we find 109 and 121 for *Centro* and *Norte*.

As for *Lisboa*, we find exactly the opposite. It presents a negative trade balance with all Spanish regions (with an X/M towards Spain of only 21) and half of the Portuguese ones, *Norte* and *Centro*. It only presents a positive trade balance with the two southern regions of *Alentejo* and *Algarve*.

Finally we must take a closer view at the geographical distribution of the trade flows of these four main regions. In order to do so, we present in tables 6 and 7 the weights of each trading region with each of these 4, both over the flows with the whole of the two countries, and over the flows of one country at a time.

[11] This exception is clearly due to the role of the petrochemicals sector in the Sines area

Table no. 6. Regions' weights on each main region total trade

	Weighs on total regional trade			
Trading regions	**MAD**	**CAT**	**CV**	**LVT**
Norte	0,38	0,73	0,40	31,02
Centro	0,25	0,40	0,23	30,31
LisboaVTejo	0,83	1,57	0,69	
Alentejo	0,05	0,06	0,03	15,40
Algarve	0,01	0,02	0,02	6,01
Andalucía	12,95	5,88	7,12	1,66
Aragon	6,82	17,61	8,44	1,00
Asturias	1,85	0,86	0,55	0,17
Cantabria	1,18	0,99	0,55	0,13
Castillala	15,08	4,48	9,17	0,52
Castillay leon	16,52	3,66	3,72	1,30
Cataluña	14,36		28,57	4,33
Comunidadvalen	10,35	22,18		1,46
Extremadura	1,62	0,73	0,56	0,54
Galicia	6,02	3,44	2,78	1,05
La rioja	1,12	1,87	1,10	0,14
Madrid		21,62	20,07	3,42
Murcia	2,70	3,57	10,45	0,20
Navarra	1,88	3,87	2,06	0,45
Paisvasco	6,03	6,47	3,50	0,89
Sub Total	1,51	2,78	1,36	82,74 *
Sub Total Spain	98,49	97,22	98,64	17,26
Total	100	100	100	100

Source: author calculations based on *Ferreira* (2005b) dataset

Table no. 7. Regions' weights on each main region trade in its own country

	Weights on same country flows			
Trading regions	**MAD**	**CAT**	**CV**	**LVT**
Norte	24,88	26,17	29,55	37,49
Centro	16,84	14,21	16,70	36,64
LisboaVTejo	54,58	56,61	50,28	
Alentejo	3,16	2,20	2,34	18,61
Algarve	0,54	0,82	1,12	7,26
Andalucía	13,15	6,05	7,22	9,59
Aragon	6,92	18,11	8,55	5,78
Asturias	1,87	0,88	0,56	0,99

	Weights on same country flows			
Trading regions	**MAD**	**CAT**	**CV**	**LVT**
Cantabria	1,20	1,02	0,56	0,78
Castillala mancha	15,31	4,60	9,29	3,00
Castillay leon	16,78	3,76	3,77	7,53
Cataluña	14,58		28,97	25,10
Comunidadvalencia	10,51	22,81		8,49
Extremadura	1,64	0,75	0,57	3,13
Galicia	6,12	3,54	2,82	6,08
La rioja	1,14	1,93	1,11	0,83
Madrid		22,24	20,34	19,81
Murcia	2,75	3,67	10,59	1,15
Navarra	1,91	3,98	2,09	2,61
Paisvasco	6,12	6,65	3,55	5,14
Total	100	100	100	100

Source: author calculations based on *Ferreira* (2005b) dataset

For an easier reading the bold line separates Portuguese regions, above, from Spanish regions, bellow.

Weights on total regional trade represent the weight that each partner region has on the reporting region total interregional flows within the whole of Portugal and Spain. For example, the Portuguese region *Norte* is the partner of *Madrid* in 0.38% of total flows that MAD settles with all the regions in both countries.

Weights on same country flows represent the weight that each partner region has on the reporting region interregional flows with the set of regions from the same country as the partner region. For example, the Portuguese region *Norte* is the partner of *Madrid* in 24.88% of the flows that MAD settles with Portuguese alone.

Two main ideas emerge from the observation of these figures. The first was already mentioned above, is the very low role of the crossing national border interregional trade flows. Indeed the border still represents a very strong barrier to trade, confirming the existence of a major border effect. The second is that these flows are highly concentrated on a very few number of regions. This can be further illustrated in figures no. 3 to no. 6.

What we can observe is that both CAT and CV have, again, a very similar geographical distribution of their trade flows, highly concentrated on the closer regions and Madrid. The Spanish capital presents a higher distribution of its flows, though with a high emphasis

on both *Castillas*, probably due to proximity issues, and the Mediterranean regions.

Figure no. 3. Regions weight on *Madrid* interregional trade

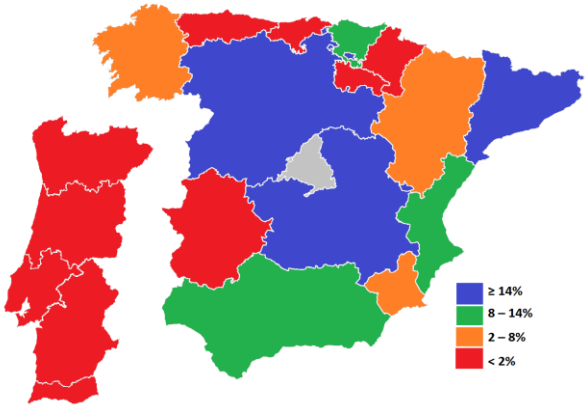
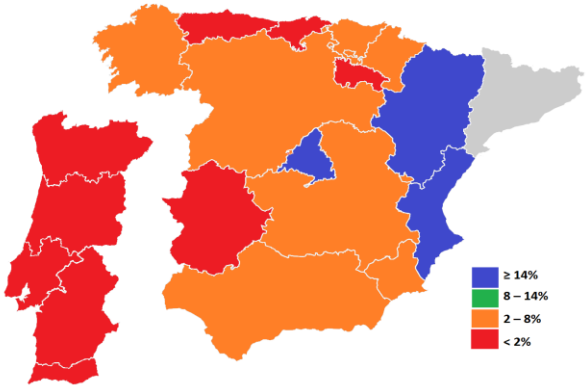
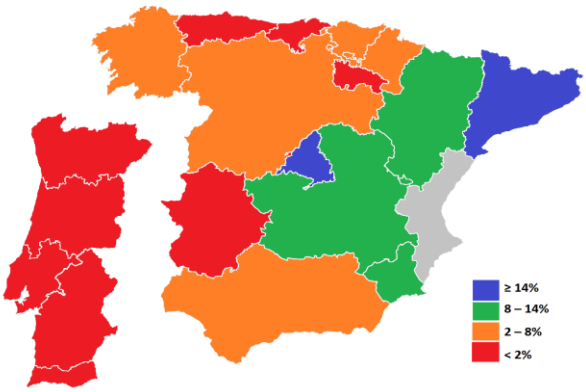


Figure no. 4. Regions weight on *Cataluña* interregional trade



For all these three regions (MAD, CAT, CV) there is a group of smaller regions which have very low weights on trade flows. These are mainly concentrated on the Northern part of the Peninsula, namely *Asturias*, *Cantabria* and *La Rioja*.

Figure no. 5. Regions weight on *Com. Valenciana* interregional trade



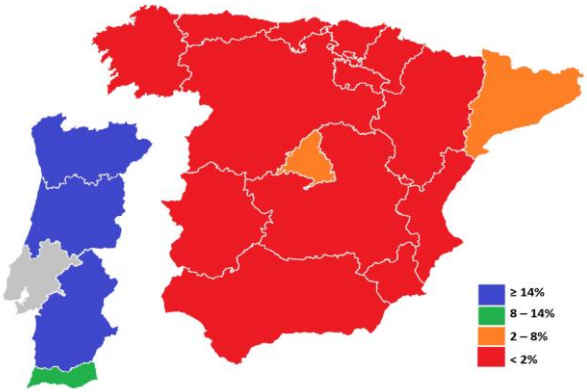


Figure no. 6. Regions weight on *Lisboa* interregional trade

The role of the border between the two countries is here interesting to observe. On the one hand there is no doubt that it still makes a very strong barrier for trade. It is very easy to observe that for each one of the three Spanish regions here analyzed, all Portuguese regions lay on the lower than 2% weight regions. The whole of Portugal itself would be classified as that except for *Cataluña* for which the entire country represents 2.78% of its trade flows within the Iberian countries. For *Lisboa e Vale do Tejo*, the trade flows are concentrated inside Portugal, with the exceptions of *Madrid* and *Cataluña*.

On the other hand we see that there are some particular cases of crossing border flows that already put aside some other in border flows, namely for CAT and LVT. For example, when referring to the Spanish

Cataluña trade flows, we observe that the Portuguese *Lisboa e Vale do Tejo* accounts for 1.57% of the trade flows, while three Spanish regions present much lower values of 0.86%, 0.99% and 0.73% for Asturias, Cantabria and Extremadura. Also for CAT, the Portuguese region *Norte*, is as much important as the Spanish Extremadura. Similar situation we find for the Spanish *Comunidad Valenciana*, for which the Portuguese LVT is, again, a higher trading partner than the Spanish *Asturias*, *Cantabria* and *Extremadura*.

All this leads us to the conclusion that the border still represents a strong barrier for trade. But the low levels of trade that the Portuguese regions have with the main Spanish regions are partly due to other factors, as distances and regional differences.

Sector Distribution

In order to have a better view of this hardly known reality, which is the interregional trade within the Iberian countries, we want to provide one analysis over the sector distribution of the interregional trade flows for each of the four regions we are studying.

In table no. 8 we present the sector weights on exports and imports that each region has facing the entire Peninsula.

The first conclusion emerging from this table is that there is indeed a high resemblance between these 4 regions, in what concerns their patterns of trade. However, we note that *Madrid*'s exports present clear differences. We find that there is a group of three sectors with a clear preponderance in exports for these regions: Textiles, Vehicles and Other. The main difference for *Madrid* is that this last sector assumes a very strong leading position.

In what concerns the Import distribution we encounter the same three sectors leading trade, even with greater roles in most cases. The sectors in which these regions most export are also those with greater imports, and with negative trade balances in most of these cases. Exception is for *Lisboa* and *Cataluña* in the sector of Vehicles; for CV in the Textiles and for *Madrid* in the Other.

Table no. 8. Sector weights on each region's X and M to/from Portugal and Spain (%)

	Exports				Imports			
	MAD	CAT	CV	LVT	MAD	CAT	CV	LVT
S1 - Animal and Vegetal Products	0,45	3,80	6,06	4,04	4,36	3,94	5,02	5,52
S2 - Agro-food products	2,22	8,53	6,71	10,94	11,17	5,03	8,43	11,72
S3 - Wood. cork, and derivate	0,10	0,38	1,69	0,95	0,81	0,69	1,64	1,98
S4- Textiles, clothes and leather	18,77	38,47	43,05	23,80	42,35	40,41	38,62	27,91
S5 - Mineral products and gas	0,59	0,58	1,75	9,18	1,79	0,56	1,34	3,39
S6 - Metals and metal products	0,75	3,49	3,30	2,62	4,75	3,22	3,42	4,60
S7 - Celluloses	0,45	0,52	0,55	0,75	0,31	0,42	0,26	1,48
S8 - Chemical Products	1,16	6,45	4,09	2,02	2,75	2,88	3,83	4,97
S9 - Glass and Ceramics	0,19	0,57	0,85	0,49	0,55	0,52	0,47	1,50
S10 - Vehicles and Machines	8,41	19,52	9,63	31,08	14,09	13,19	10,30	21,28
S11 - Other	66,90	17,69	22,31	14,14	17,07	29,14	26,68	15,66

Source: author calculations based on *Ferreira* (2005b) dataset

These values show similarities between the main trading regions in the Iberian countries, but also suggest the existence of high indexes of concentration of trade. To verify this level of concentration we have computed the *Herfindahl-Hirschmann* index of concentration, with the normalization used by the UNCTAD[12], for the average trade flows 1997-1999. Those results are present in table no. 9.

[12] United Nations 2003

Table no. 9. Regional Trade Concentration Indexes

	Export Concentration Index	Import Concentration Index
Madrid	0,57	0,28
Cataluña	0,26	0,31
ComunidadValenciana	0,29	0,28
Lisboa	0,20	0,16

Source: author calculations based on *Ferreira* (2005b) dataset

From these indexes we notice that *Lisboa e Vale do Tejo* is the region with the lowest levels of concentration, both in exports and imports. In what concerns the concentration of trade flows, once more we find strong resemblances in the results for both regions *Cataluña* and *Comunidad Valenciana*. In imports *Madrid* also presents a similar, not too high index.

The value of the *Madrid*'s export concentration must here be emphasized. Analyzing simultaneously the data in table 8, we can easily conclude that this high level of concentration is caused by the 66.9% weight of Sector 11 - Others on this region's exports. At the moment we cannot point out a plausible reason for this. The fact that we could not get a further detailed disaggregation of our base data is preventing a deeper analysis of the regional trade patters vis-à-vis other regions.

Finally, the concentration levels for the trade flows of *Lisboa* deserve a further analysis. On a research made by *Caetano et al* (2000)[13] on the *International Specialization of the Portuguese Regions* in the 1990s similar indexes were computed for LVT, but referring to external trade, not interregional trade, nor limited to the Iberian Peninsula. The levels of concentration obtained in that case were around 0.4 in exports, and 0.3 in imports[14]. This leads to the conclusion that there are clear differences in the patterns of trade of these regions (in the particular case only LVT) when we focus on international trade and when we focus on interregional trade within the Iberian countries[15]. In

[13]Caetano (2000), pp. 12-14

[14]Though it is not directly comparable with our case as Caetano's values were computed for the year 1998, while we are using averages for the period 1997-99.

[15] A similar conclusion has been reached in Ferreira (2005a) from the analysis of Intra-Industry Trade levels in international trade and in interregional trade.

this particular issue it is interesting to note that the concentration indexes are higher in international trade flows than in interregional ones. This could be quite expected due to the nature of these flows, being the international ones more difficult to establish, and more uncommon, therefore more concentrated in a smaller number of businesses.

Conclusions

This paper pointed out the main characteristics of the regions that we have classified as the main trading regions inside the Iberian Peninsula. These are *Madrid*, *Cataluña*, *Comunidad Valenciana* and *Lisboa e Vale do Tejo*. It should be kept in mind that the time frame analyzed is 1997-1999, last years for which there are any estimates for the interregional trade flows between regions of Portugal and Spain.

We have found that there are several resemblances between these four, on their patterns of trade inside the Peninsula, mainly between *Cataluña* and *Comunidad Valenciana*. In these common characteristics we encounter a spatially differentiated trade position towards groups of regions in separate areas of the Peninsula. While there are negative or null trade balances with the center and northeast of the Peninsula, they have very positive trade balances with the west side.

In this aspect *Madrid* and *Lisboa* are particular cases. The first being by far the largest trader and presenting positive trade balances with all regions in the Peninsula, with the curious exception of *Alentejo* (PT), which is one of the poorer regions. The second, though representing a central role inside Portuguese regions, has negative balances towards all regions in both countries, with the exceptions of *Alentejo* and *Algarve*.

There was also noticed that these regions have their interregional trade flows highly concentrated towards a group of main regions. Again *Cataluña* and *Comunidad Valenciana* present very similar patterns, mainly centered in the nearby regions and *Madrid*. *Lisboa* has its flows highly concentrated in the other Portuguese regions, while *Madrid* is the one which presents a higher concentration. In all cases, there are a few smaller regions with which trade relations are almost insignificant for these 4 main regions.

This paper has also shown that the role of the national border is quite significant. On the one side it still represents a de facto strong barrier to trade, with trade values with the entire other country being

almost insignificant for some regions (mainly the Spanish ones due to the different countries' dimensions). This is much consistent with the literature that shows significant levels of border trade for these two countries. On the other side, we also notice that there are several cases of regions that encounter a stronger trading partner in a specific region of the other country than some of its compatriots. This indicates that cross-border trade relations, not only have a full potential, but also are emerging.

On the sector distribution of the interregional trade flows, we have found very strong similarities between the patterns for these regions. They all present the same sectors on which they strongly concentrate both exports and imports, and with similar values for all. The sector of textiles, clothes and leather is dominant in the interregional trade of these four regions. Regional trade concentration indexes were computed, showing that *Madrid* is amongst these four regions, the one concentrating the most of its flows in one single sector (others in exports; textiles, clothes and leather in imports). *Lisboa* is the one region with the lowest concentration level, and, the one for which vehicles and machines appears in the leading role in exports.

But our strongest conclusion is that there is a very wide room for increasing interregional trade relations amongst Iberian regions, with benefits for both countries. The analysis has shown that trade relations with regions on the other side of the border are still incipient when compared with the flows between regions within the same country. Nevertheless some cross-border relations are getting established. Some regions, as for example *Cataluña* already find, on the other side of the border, regions with which to establish exchanges, greater than some closer regions on their own country. Other regions and businesses could explore this potential

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Evaluating the Impact of Business Intelligence Tools on Organizational Performance in Food and Groceries Retail

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Abstract
While retailers are spending a significant portion of its information technology (IT) budgets on BI and related technology in order to handle the ever increasing volumes of data, the actual benefits derived from these tools needs to be explored. The study focuses on the organized food and groceries retail, and explores benefits of business intelligence (BI) and hypothesis's a structural causal relationship among its intrinsic attributes, and impact on organizational performance. A focus group of selected senior marketing employees was used to develop and validate the research model. Based on findings from the literature survey and focus group, a survey instrument was developed to empirically validate the research model. Data collected from senior marketing executives and managers from six organized food and groceries retail was analyzed using exploratory factor

analysis, confirmatory factor analysis, and structural equation modeling. Five major categories of BI were identified: (1) access to data quality, (2) improved managerial effectiveness, (3) improved operational effectiveness, (4) improved customer orientation and (5) improved organizational efficiency. From the structural causal relationship analysis, a significant relationship was found between intrinsic attributes and benefits of BI and data quality. The structural equation model also suggests a significant relationship between BI and data quality on organizational performance.

Keywords: Business Intelligence (BI), Analytics, Data Warehouse, Organized Food and Groceries Retail, Organizational Performance.

Introduction

Today's retailers function in a highly dynamic and complex environment, demands agile solutions and for this reason are investing in information technology (IT), as a way to improve organizational performance and the quality of operations. As per the recent BCG analysis, the Indian retail Industry is expected to double to $1 trillion by 2020 from $600 billion as of 2015 and the retail market is expected to grow at an aggressive rate of 12% (Mohapatra, 2015). According to the report, this rapid growth is fuelled by income growth, urbanization, nuclearization and attitudinal shifts of customers. Indian customers are experiencing a change in trends from unorganized to organized retailing and changing business practices with FDI participation in Indian retailing. Currently, India's organized retail sector is addressing to the unique and diversified needs of customers by adopting modern technologies to support customers in shopping, and in the way they pay bills. Large retailers (e.g. Wal-Mart) use sophisticated inventory management technologies, including electronic data interchange with suppliers, to increase operational efficiency and improve services.

The appropriate success measure depended upon the perspective of those evaluating success or the nature of the problem being addressed (Melville et.al, 2004). The measurement of information systems (IS) success or effectiveness is critical to the understanding of the value and

efficacy of IS management actions and IS investments (Delone and Mclean, 2003). Retail business intelligence systems were once the domain of a few power users in merchandising groups who were willing to suffer through primitive user interfaces in order to gain a competitive edge in decision-making (Ross, 2005). Earlier, the impact studies of information systems on business operations in food retailing was discussed mainly for simple financial reporting, sales analysis, cost reduction purposes and to enhance customer service, but little research has been done on evaluated performance and efficiency impacts. Past studies have shown that it is difficult to pin down the link between IT and organizational performance (Palmer and Markus, 2000). While there is a belief that IT has strong effect on business success, empirical studies remain mixed (Barua and Lee, 1997).

Information Technology Tools in Retail

Retailers' performance is affected by all the participants at the retail at all the levels, including their suppliers and distributors. Retailers are realizing the benefits of modern technologies like point of sale (POS), bar coding and scanning, electronic data interchange (EDI), radio frequency identification (RFID), data warehousing (DW) and data mining (DM) used in retail operations for various purposes and has become vital to stay ahead in global competition. RFID has the potential to offer tighter management and control of the retail supply chain (SC), reductions in shrinkage, labor cost and improvement in customer service (Jones, et al., 2005). Data Mining is a power tool for retail SC management in reducing risk level of business, controlling inventory, predicting customer's behavior and improving customer relationship management (CRM) (Kusiak, 2006).

Retail organizations get direct benefit adopting POS by facilitating shorter checkout times and better customer service in store (Cassidy, 1994). Retailers' emphasis on providing higher inventory related customer levels with fewer inventories (Weber and Kantamneni, 2002). POS has the ability to offer improvements in retail store management and customer service by tracking the costs directly to specific products (Cassidy, 1994) and focusing timeliness and accuracy of information, which in turn will contribute to generate the purchase orders for the needed items on time, accurately and within the budget. Leveraging BI to enhance business operations has become a top priority

in business strategies to differentiate themselves (Joseph O. Chan, 2006).

Business Intelligence or BI is an umbrella term, introduced by Howard Drenser of the Gartner Group, in 1989, that describes set of concepts and systems to improve business decision making by using fact-based, computerized support systems (Nylund, 1999). Ghoshal and Kim (1986) referred BI as a management philosophy and tool that helps organizations to manage and refine business information for the purpose of making effective decisions. BI is not constrained to individual departments in organizations, but rather is viewed as essential at corporate level (Mcknight, 2004). Quick Response (QR) code on the product allows the customer to scan with their smart phone if they would like to know more about the product. Kulp, Lee and Ofek (2004) suggest that manufacturers are better able to plan production and deploy resources in a cost-effective manner than retailers. Their findings suggest a more balanced view that food retailers also benefit from an expanded use of decision sharing technologies. Presently retailers are relying on predictive analytics to make important decisions across every phase of their operations where they are largely driven by the availability of data at a large scale.

Effectiveness of BI in Retail Operations

Most of the IT investment in the past decade were made in order to manage day-to-day operations (Williams, 2004; Williams and Williams, 2007). But findings from scientific and professional researchers suggest that these organizations are still data-rich, but information-poor (Forslund, 2007; Gibson et al., 2004; Williams, 2004; Williams and Williams, 2007). This means that these organizations lack the kind of actionable information and analytical tools needed to improve profits and performance.

Innovative information systems are greatly contributing to improved operational efficiency for retailers, but BI plays a greater role in effectively managing the business to future success.

In today's competitive retail market, BI tools play a central role on organizational efficiency and the success lies in how well retailers manage their BI tools. Although much is known about the general effect of information technology on productivity, there is less understanding of the value of specific IT applications and the factors that contribute to organizational performance.

According to Khesraw Mansoory (2010), technology has been significant in retail industries as a way to achieve goals. The reason why technology is important is mainly because it can help the retail industry to improve in certain areas such as supply chain management, customer experience, inventory management and loss prevention. A heavy dependence on technology is being assimilated into all aspects of life, including how we choose to shop (Carlyle, 2012).

Information System refer to interaction between people, procedures and technology in the process of capturing, transmitting, storing, retrieving, manipulating and displaying data and information for a specific purpose.

Business Intelligence (BI) combines data gathering, data storage and knowledge management with analytical tools, to present complex and competitive information to planners and decision makers (Negash and Gray, 2008). The Data Warehouse Institute (TDWI) describes BI as a "special purpose" information system, the purpose being decision support: "BI programs usually combine an enterprise data warehouse and a BI platform or tool set to transform data into usable, actionable business information" (TDWI, 2008).

Organizational Performance is a multifaceted construct that defines measurement by a single number (Quinn and Cameron, 1983; Zammuto, 1984). Performance is a set of financial and nonfinancial indicators that gives information regarding the achievement of objectives and results (Lebans and Euske, 2006).

Literature Review

Earlier studies on financial services firms indicate that use of BI is identified by revenue-generating and revenue-retaining opportunities with customers, and the organization is able to provide a quick response with increase in revenues and decrease in costs. The end of 1990s witnessed innovators considering how to leverage IT for strategic management purposes, to manage customer profitability, improve operations performance, front-office business processes and to improve indirect business processes-such as budgeting and business planning (Williams and Williams, 2003).

Bernhard et.al (2012), building upon DeLone and McLean's information systems success model, develop a BI quality and performance model and identified the ultimate performance predictors as user satisfaction and the impact of BI tools on managerial decision

quality, both of which are determined by data quality. BI tools improve decision-making among other benefits, stock optimization, quality decision making, improved ability to anticipate earlier changes on the market by the retail managers (Olexova, 2014).

Singh (2012) data mining tools are capable of discovering patterns in data in few hours while an expert human quantitative analyst may find number of years to help make decision in complex supply chain management, customer relationship management to collect and analyze transaction records continuously. Shrivastava (2011) in times of global recession BI tools like data warehousing, data mining and OLAP provide quality actionable information to the retailers that helps them in increasing their revenues.

Şerbănescu (2011) implementation of BI solution helps the users with relevant information in due time by simplifying the search for complex decision making, allowing rapid reaction to changes with a competitive advantage. Jie Lin and Xu Xu (2009) data mining technology is used to find interesting patterns, which can be organized for global customer retention. Cheryl et.al (2008) in their hypothesized model found that IT capability 1) has an indirect tie to business performance through customer orientation and 2) interacts with intra-organizational trust in predicting customer orientation.

When stores adopt decision sharing technologies such as scan-based trading, computer assisted ordering and vendor managed inventory practices are showing improved performance. Zhen Zhu and Nakata (2007), in the study based on the literature that suggests that business performance is multidimensional (consisting of market and financial dimensions), and that customer orientation is facilitated by information systems (consisting of information technology, or IT, capability and information services), IT capability positively moderates the impact of customer orientation.

Lönnqvist and Pirttimäki (2006), based on literature review, identify and assess measurement approaches for two different purposes: determining the value of BI and managing the BI process within an organization. Based on few observations on the concept of value and justifying the value of BI, value is assessed from the viewpoint of a company using BI in the form of improved profit or of the user of the intelligence perceived usefulness.

According to Guy and Linda (2005), customer profitability can be increased and customer attrition decreased when BI technology

enables business management to identify when up-sell and cross-sell opportunities exist and interventions are needed. Frates and Sharp (2005) continually discovering new customers requires both attitudinal and behavioral changes in a company's BI function and in the way it obtains information from and about its customers. Expanding the use of BI and applying it more creatively enables companies to leverage a key asset, their customer base, to identify, explore and expand new markets at minimal cost. Gibson, Arnott and Jagielska (2004) states that in an uncertain and highly competitive business environment, the BI system provides significant business value by improving the effectiveness of managerial decision-making and suggest that there are significant intangible benefits provided by BI.

In a longitudinal study by Devaraj and Kohli (2003), comprising eight hospitals for a three-year period on various financial and nonfinancial measures of hospital performance and technology, provides evidence that technology usage was positively and significantly associated with measures of hospital revenue and quality, and this effect occurred after time lags. Thomas and Anne (1997), investigates linkages between information technology (IT) and firm performance and develops an integrative, resource-based theoretical framework in the retail industry and found that ITs alone have not produced sustainable performance advantages in the retail industry. The study establishes that some firms have gained advantages by using ITs to leverage intangible, complementary human and business resources such as flexible culture, strategic planning-IT integration and supplier relationships.

James et al. (1996) in the study indicate that information technology is a productive input for retailers. As 1990s came to a close, innovators were beginning to look at how to leverage Information Technology for the purposes such as strategic enterprise management, managing customer profitability, improving supply chain and/or operations performance, improving front-office business processes-such as sales force management and campaign management, improving indirect business processes, such as budgeting and business planning (Williams and Williams, 2003).

The purpose of this research is to evaluate the benefits of BI tools in functional areas in organized food and groceries. The study proposes to evaluate the impact of BI tools on organizational performance of organized food and groceries retail.

Theory Development

Research model and Hypothesis

Earlier empirical research on data warehousing (DW) or BI (Lee et al., 2004), on organizational performance in retailing firms, shows that data warehousing firms achieve better nonfinancial performance, than financial performance. Other studies explored user satisfaction with DW (Chen et al., 2000), factors affecting DW success (Wixom and Watson, 2001) and factors influencing the adoption of DW (Hwang et al., 2004). Given the complexity of the factors influencing organizational performance, no one factor can determine a firm's performance (Lee et al., 2004). According to Capon et al. (1990), no simple prescription involving just one factor is likely to be effective; the determinants of financial performance involve many different factors.

Some of the benefits of BI tools in organized food and groceries retail which have been discussed in the literature survey and considered for the study include: (1) access to data quality; (2) improved managerial effectiveness; (3) improved operational effectiveness; (4) improved customer orientation and (5) increased organizational performance. Currently, retailers are more concerned towards analysis for better customer services to retain the profitable customers and attract new customers.

BI and Data quality

The quality of the information is critical for strategic and tactical decision making that often tend to determine the performance of the firm. Therefore the ability to access quality information that is timely, accurate, complete and thorough about the entire enterprise from various organizational subsystems is often a key to a successful response in a competitive environment (Bradley et.al, 2006).

The main reasons for implementing BI tools in retail operations includes effective handling of information that is data storage, retrieval of information and transforming the information in order to manage the information in an effective way. IT capability, the technological component of information systems, is the ability of a collection of computers and related technologies in an organization to store, process, and communicate information (Bakos and Treacy, 1985). Storage, processing and communicating information are considered the key functions of an IT capability (Molloy and Schwenk, 1995).

According to Bakos and Treacy (1985), IT capability consisted of nine items to evaluate the three primary functions of an IT capability (storage, processing and communicating information) on three performance dimensions (speed, capacity and quality). The impact of IT is experienced at a number of different organizational levels and there are three levels for studying IT's impact: internal strategy (effect on the efficiency and effectiveness of organizational structures and processes so as to achieve goals and objectives); competitive strategy (effect on the ability to out maneuver competitors in the industry in which the organization do business); and business portfolio strategy (effect on which industries to compete in and how to position the organization in these industries).

Based on the above discussion, BI and Data quality can be described by: (1) Data storage (adequacy of data volume) (2) Data Relevance (3) Data Transparency (4) Reliability of data (5) BI supports processing of data in an effective way (retrieving and transforming in order to manage the information) that leads to organizational performance (6) BI provide better support for decision making, resulting in faster, better informed and more accurate decisions.

Respondents were asked to rate in terms of achieving the above-mentioned information-related objectives on a five point Likert type scale (1 = 'not achieved' at all; 5 = 'fully achieved').

From the above argument, we therefore predict as follows:

Hypothesis 1: Retailers implementing BI will have access to better data quality and better-quality decision making.

Managerial Effectiveness

Davenport (1994) made several observations that help to explain why human resources have such powerful performance impacts on IT systems. Machines need people to make them productive because any sustained competitive advantage derived from a strategic information system - such as Wal-Mart's cost advantage based on its difficult-to-imitate IT architecture - rests on the tacit knowledge and abilities of the information services group (Mata, Fuerst and Barney, 1995).

However, the essential element of BI is the understanding of what is happening within an organization and its business environment, as well as appropriate action-taking for achieving organizational goals. From this, one can derive the importance of the human factor within BI. There is no such thing as business intelligence without the people to

interpret the meaning and significance of information and to act on their knowledge gained (English, 2005). This is also consistent with the findings from Finnish research (Hannula, Pirttimäki, 2003) where around 75% of interviewees felt content and humane approaches are the key aspects of BI. They define BI as "the ability of an enterprise to act effectively through the exploitation of its human and information resources." Of course, here, technology is the component that adds to quality information with which business users can analyze business operations: what has happened, what is happening and what will happen in the future.

This includes 3 items that involves back office processes and staffing requirements to empower executives with fact-based decision-making. (1) BI helps in improving quality of work of employees that promotes organizational productivity; (2) BI tools helps retailers in employee retention that takes into account the various measures taken so that an individual stays in an organization for the maximum period of time; (3) BI helps in improving better promptness in services, operating hours, payment options, etc.

Respondents were asked to rate the managerial effectiveness with the BI tools on a five point Likert type scale (1 = "not effective"; 5 = "very effective")

From the above discussion we propose:

Hypothesis 2: Retailers implementing BI will have better ability towards managerial effectiveness.

Operational Effectiveness

Optimization of inventory, based on historical sales and other performance data such as trends in inventory levels, so as to plan accordingly to ensure right product available at right time have always been a retailer's most valuable resources. According to Davenport (1993), a business process is the specific ordering of work activities across time and space, with a beginning, an end, and clearly identified inputs and outputs. In other way, business processes are the activities residing in the black box of microeconomic production theory that transform a set of inputs into outputs. In retail context examples of operations or business processes include store management, vendor management, effective inventory handling to ensure right product available for customer that involve cooperation among all departments

and responsive to each other's needs to accomplish organizational performance.

Analytics can be used to ascertain which products provide the highest level of sales and profits. As observed by Davenport (2009), optimization tools facilitate analysis of the profit contribution of each brand and Stock Keeping Unit (SKU) on the category. A point of sale system provides accurate records of the hourly activity, from which a manager can schedule his staff better to match the demand and accurate sales information, improve the quality of ordering, and hence maintaining the stock position on the shelves. Based on historical sales at the product characteristic level by store, a retailer can optimize the mix of products at the individual store level, minimizing both the likelihood of having too little of a particular item and the likelihood of having too much.

This includes 5 items that improve inventory control measures by tracking out-of-stock items and better procurement of stock. BI tools helps in fraud detection of inventory, misstatement of inventory records etc. (1) better stock optimization; (2) better analysis of shelf space; (3) better analysis of fraud detection; (4) effective billing at POS. Respondents were asked to rate the impact of BI tools on effective handling of retail operations on the four aspects mentioned above on a five point Likert scale (1 = "very negative"; 3 = "neutral"; 5 = "very positive").

In view of the above, we propose the hypothesis:

Hypothesis 3: Retailers implementing BI will have better ability to handle retail operations.

Customer Orientation

To retain loyal customers, retailers employ several customer specific programs and service, such as customer loyalty cards and frequent customer discounts. Implementation of this marketing concept is possible when retailers maintain detailed knowledge of customers that is stored in the data warehouse. The primary reason to maintain knowledge on customers is to increase customer satisfaction, which in turn generates increased sales and profitability (Lee et. al, 2005). Leveraging the enormous available customer data for aligning precious resources with customers' needs has made retailers to deploy advanced tools and techniques for data analysis and generation of reports for effective decision-making.

Over the past decade, retailers have been able to collect enormous amounts of information at the customer level measuring customer purchases, marketing activities and customer attitudes (Verhoef et. al, 2010). Retailers are investing heavily in information systems for accurate tracking and responses to changing buyer needs (Grover and Ramanial, 1999; Varadarajan and Yadav, 2002), explained in CRM practices. These practices suggest that firms expect information systems to support their customer orientation efforts and thereby strengthen business performance; IT capability and information services quality deserve examination as potential moderators. Customer orientation is the organization-wide gathering, sharing and use of intelligence about customers, and coordinated actions based on that intelligence (Deshpande, Farley and Webster, 1993).

Empirical studies are suggestive of the supportive role of information services quality in customer orientation. Jayachandran et al. (2005) show how especially CRM information processes are positively related to customer outcomes, such as customer satisfaction and retention. Ramani and Kumar (2008) show how a customer interaction focus, in which customer value management is an integral part, is also positively related to customer outcomes. Thus, there seems substantial conceptual and empirical evidence that CRM is positively related to firm performance either directly or through improved customer outcomes. Retailers often record transaction data, which can be aggregated to the customer level measuring the number of previous transactions, historical value and types of products purchased (Verhoef et al., 2003). It can also be aggregated to store level, producing metrics, such as total number of visits to a store, total store sales and category sales (Bucklin and Gupta, 2002).

Market Basket Analysis (MBA) is used to understand the probability of a set of products purchased together by a customer (Shailendra and Anil, 2011). Through loyalty programs, MBA and demographic data, retailers are more capable than ever in understanding income levels, buying habits, regional preferences and other factors that can help them design better promotions, product assortments and store layouts.

In view of the above, we propose the following to find the impact of BI on customer orientation to assess whether BI helps to understand customer behavior and their interactions to plan more strategically for customer acquisition and retention.

Present study considers 4 items for customer orientation: (1) identifying customer purchasing patterns; (2) effective customer segmentation; (3) improving customer acquisition and retention; (4) targeting suitable programs for profitable customers.

Respondents were asked to rate the impact of the BI tools on customer orientation along the four aspects mentioned above on a five point Likert scale (1 = "very negative"; 5 = "very positive").

Hypothesis 4: Retailers implementing BI will have better ability towards customer orientation.

Organizational Performance

Business performance in IT is often examined exclusively in financial terms, such as cost ratios. However, business performance should be framed as multi-dimensional (Chan, 2000). Business performance comprised of two dimensions market performance and financial performance (Brady and Cronin, 2001; Morgan and Piercy, 1996). In an empirical study of 168 Belgian firms, DeWoot, Heyvaert and Martou (1978) found that financial performance was not explained by technical innovations themselves, but rather by innovation processes that involved little irrelevant disagreement and an attempt to integrate technology with strategy.

A typical method for assessing the monetary value of any investment is to calculate the return on investment (ROI). The problem in calculating the ROI for BI is that the output of the BI process is intelligence; in other words, some kind of processed information. BI tools enhance retailer's performance in terms of ROI by providing visibility into right measures at right point of time as retailers and work to keep costs down while building profits.

In view of the above, we consider 3 items (1) improved return on investment; (2) reduction of operational costs; (3) improved sales per employee, which in turn affects organizational sales and profitability. Because of the reluctance of retail managers to divulge financial data, the authors employed subjective measures (5 five-point Likert scales) to rate the perceived relative performance with the BI tools.

Hypothesis 5: Retailers implementing BI will have better ability towards organizational performance.

Research Methods

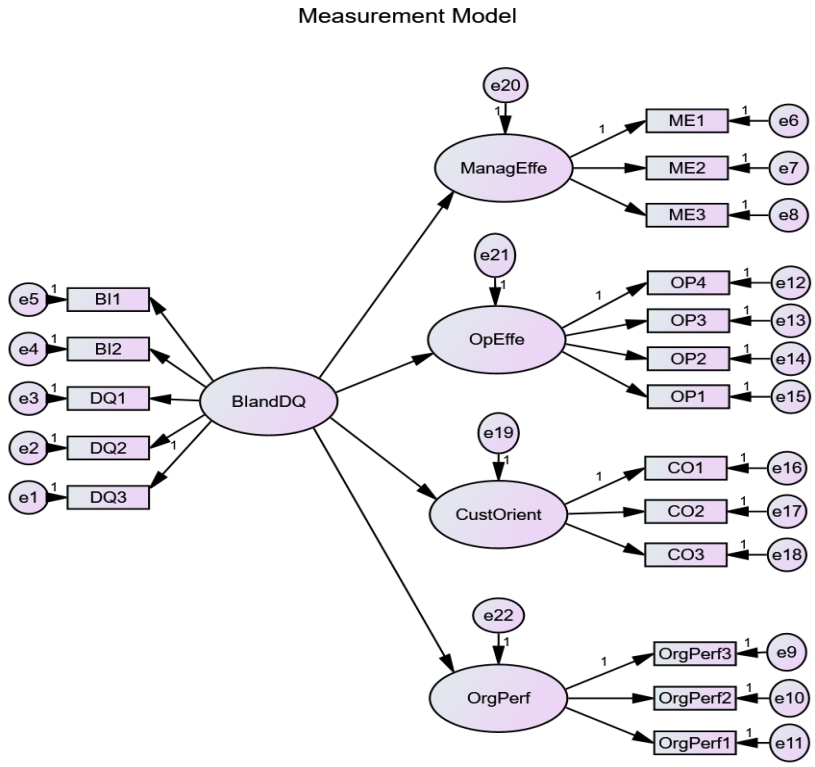
Sample Selection and Data Collection

For this exploratory research, the study population is represented by employees of organized food and grocery retailers in Hyderabad city. Hyderabad city is considered as one of the oldest evolution patterns for supermarkets and is a retail intensive place with IT enabled service hubs. The sampling method is convenient sampling, employees belonging to the six retailers, namely More (Aditya Birla Group); Reliance Fresh (Reliance Group); Spencer's (R.P Goenka Group); Big Bazar (Future Group); D Mart (Avenue Supermarts) Ltd; Metro Cash and Carry (Wholesale Retailers-Indian subsidiary of Metro AG).

Sample

Target respondents were the senior IT managers, data analysts, senior marketing managers, floor managers, as they were best suited to answer questions about both their management domain and firm performance and the sample is constrained to specific organized food and groceries retailers. A total of 150 employees were considered, the respondents representing 6 retailers, convenience sample approach was followed and ensured that key informants were chosen as respondents on the basis of their knowledge of business intelligence tools at the respective retail outlets. The sample size was equally distributed among the six organized retailers from the Hyderabad city because it is among the first cities in India that consist of different organized retail formats - convenient stores, supermarkets, hypermarkets and wholesale retailers with large customer base. The respondents were employees of the respective retailers with experience ranging from two years to above 5 years.

Fig. no. 1. Measurement Model



Data Analysis

An exploratory factor analysis (EFA) using SPSS 21 was conducted to identify major dimensions of impact of BI tools on organizational performance. The reliability of the variables was measured using Cronbach's alpha to establish inter-item reliability; KMO and Bartlett's Test was used to measure sample adequacy. To examine relationships among BI and data quality and other factors, AMOS 21 was used to perform Structural Equation Modeling (SEM) based on a correlation matrix with the maximum likelihood. Overall fit of the model was assessed by various statistical indexes such as tests of absolute fit (Chi-square (χ^2)) and tests of relative fit. Figure no. 1 provides a graphical summary of our hypotheses (path-model).

Findings and Discussion

Exploratory Factor Analysis

The research process includes two steps. The first step involves the preliminary design of questionnaire that included literature survey to identify various parameters that measure the impact of BI tools in organized food and groceries retail. After combining various parameters following the literature survey and learning from personal interviews reviewed by marketing faculty and senior sales people from food and groceries retailers, a total of twenty attributes identified as discussed above are considered for factor analysis. The questionnaire was administered to 20 known senior employees; the collected responses were then discussed with them to explore their opinions. Exploratory factor analysis using SPSS 21 was applied to the responses; considering the factor loadings more than 0.40 were selected; 18 operational variables found to be more than 0.4 were used in this study to learn the effect of BI tools on organizational performance from the employee's perspective. Factor analysis resulted in five factors; one item from BI and data quality (data relevance) and one item from customer orientation (improving customer acquisition and retention) resulted in factor loadings less than .4 and hence were removed.

The second step consists of a cross-sectional research design with a survey administered to 150 employees of six organized food and grocery retailers. The study was conducted during the months of October-November 2016, by personally approaching the employees by inviting them to participate in the survey to complete the questionnaire. Questionnaire based on the 18 items, was prepared on a 5 point Likert scale, was then distributed personally to senior IT managers, data analysts and senior marketing managers belonging to the six retailers of different organized food and groceries retail chains, located in Hyderabad city.

In order to identify the relationship between the variables, a PCA with VARIMAX rotation was performed to obtain the factor structure. The factor analysis resulted in five factors in the rotated component matrix. The KMO and Bartlett's Test value is 0.758, suggesting appropriateness for sample adequacy. Also, the test relates to the significance of the study thereby showing the validity and suitability of the responses collected to the problem being addressed in the study. Performance measures should be valid, reliable, relevant, practical and well suited to the particular measurement situation (Hannula, 1999;

Lönnqvist, 2004). According to Kaydos (1999), anything can be measured to a useful degree, especially in a business environment. The rotated factor analysis suggests 5 factors with a total variance of 75.751%, with overall reliability 0.832. It is observed that the rotated component matrix resulted in significant factor loadings show the correlations between each variable with values greater than .5.

The five factors with the factor loadings along with the variance and reliability coefficient, Cronbach alpha (α) is shown in table no. 1**.**

Table no. 1.

The KMO and Bartlett's Test value is 0.758; Total variance is 75.757%		
Dimensions	**Variables**	**Factor loadings**
BI and Data Quality: *this factor has variance of 31.691%; Reliability Coefficient 0.844.*		
BI and Data Quality	1.Data storage 2.Data transparency 3.Reliability of data 4. Effective data processing 5. Better support for decision making	.737 .833 .721 .615 .808
Managerial Effectiveness: *this factor has 17.861% of variation; Reliability Coefficient 0.811.*		
Managerial Effectiveness	1. Improved promptness in services, operating hrs, payment options, etc. 2. Better employee retention 3. Improved quality of work of employees that promotes wellness and happiness	.790 .858 .842
Operational Efficiency*: this factor has 11.820% of variance; Reliability Coefficient 0.862*		
Operational Effectiveness	1.Better visibility into supply chain 2.Better stock optimisation 3.Better analysis of current business practices 4.Better analysis of fraud detection	.541 .722 .770 .771
Customer Orientation*: this factor has 7.374% of variance; Reliability Coefficient 0.891*		

Customer Orientation	1.Identifying customer purchasing patterns; 2.Effective customer segmentation; 3.Targeting suitable programs	.713 .939 .867
Organisational Performance: *this factor has variance of 7.011%; Reliability Coefficient 0.762*		
Organizational Performance	1.Improved return on investment 2.Reduction of operational costs 3.Improved sales per employee	.606 .567 .752

From table no. 1 it is observed that the variance of the first factor (BI and data quality) is found to be 31.691%, with a reliability coefficient (α) of .844; the second factor (managerial effectiveness) has a variance of 17.861%, with α equal to .811; the variance of third factor (operational efficiency) is 11.820%, with α equal to .862; the fourth factor (customer orientation) has a variance of 7.374% with α equal to .891; and the variance of the fifth factor is 7.011%, with α as .762. The individual item reliability for all the factors resulted in high values, all construct-specific loadings range from .762 to .891.

Validation of Measurement Model

A Confirmatory Factor Analysis (CFA) was conducted using AMOS 21 to measure acceptable levels of goodness-of–fit for the measurement model and to find specific evidence of construct validity. The constructs were subjected to Convergent validity, Composite Reliability and Discriminator validity to satisfy the validity and reliability constructs.

The measurement model evaluates the latent constructs measured in terms of observed variables and describes the validity and reliability of the measurements. Before testing the structural equation model, multiple indicators of each construct was grouped together in order to equalize measurement weight across indicators (Byrne, 2001).

Table no. 2 a: Calculated as [Σ(std. loading)^2] / [Σ(std. loading)^2 + Σξ*i*]
b: Calculated as [Σstd. loading]^2 / [(Σstd. Loading)^2 + Σξ*i*]

Variables	**Mean**	**Std. Deviation**	**Cronbach's Alfa (α)**	**Standardised Regression Weights**	**AVE[a]**	**CR[b]**
BI and Data Quality			0.844		0.718	0.926
BI1	5.177	1.177		0.751		
BI2	4.633	1.671		0.854		
DQ1	5.333	1.213		0.680		
DQ2	5,667	1.061		0.621		
DQ3	5.267	1.080		0.735		
Managerial Effectiveness			0.811		0.658	0.846
ME1	4.533	1.422		0.797		
ME2	4.533	1.252		0.970		
ME3	4.667	1.408		0.565		
Operational Effectiveness			0.862		0.750	0.920
OP1	5.267	.8277		0.627		
OP2	4.667	1.322		0.682		
OP3	5.233	1.165		0.935		
OP4	5.600	.6746		0.516		
Customer Orientation			0.891		0.732	0.898
CO1	4.200	1.788		0.761		
CO2	4.200	1.540		0.939		
CO3	4.233	1.633		0.895		
Organizational Performance			0.762		0.610	0.818
OrgPerf1	5.333	1.112		0.621		
OrgPerf2	5.433	.8172		0.591		
OrgPerf3	6.066	.7112		0.380		

Table 2 summarizes the results of the measurement model, including the mean, standard deviation, factor loadings (standardized regression weights), construct reliability and average variance extracted (AVE) for each construct. The standardized factor loadings suggest that all the items have significant factor loadings that range from 0.516 to

0.970, except for one variable in organizational performance with a value of 0.380. It is suggested that the reliability and variance extracted for a latent construct must be computed separately for each multiple indicator construct in the model using indicator standardized loadings and measurement errors (Hair et al., 1998). Cronbach's Alphas (α) range from 0.762 to 0.891 indicate strong reliability of the measurement model (Nunnally, 1978).

All average variances extracted (AVE) are higher than 0.50 (Fornell and Larcker, 1981), ranging from 0.610 to 0.750. Hence, convergent validity shows that each measurement item correlates moderately with its assumed theoretical construct. Reliability of the factors was estimated by checking composite reliability. According to Fornell and Larcker (1981), composite reliability (CR) greater than 0.7 is considered to be adequate. The composite reliabilities of construct have higher values than 0.70, indicating adequate internal consistency, that range from 0.818 to 0.926. Discriminant validity is done by comparing the AVE's with the squared correlation for each of the constructs. Discriminant validity is supported when the square root of AVE between each pair of constructs is greater than the squared correlations between constructs (Hair et al., 1998; Maxham and Richard, 2002). Discriminant validity is shown when each measurement item correlates weakly with all other constructs except for the one to which it is theoretically associated. Discriminant validity for the study is shown in table no. 3.

Goodness of Fit

The 18 variables were used to measure five constructs through confirmatory factor analysis (CFA). The goodness of model fit for confirmation factor analysis was high with chi-square value of 234.894, with 133degree of freedom, χ^2/df=1.766,(chi-square =234.984; df=133) the statistic for model fit states that the null hypothesis of a good fit to the data cannot be rejected, suggesting acceptable model fit.

Table no. 3

Discriminant Validity					
Component	BIandDQ	ManagEffe	OpEffec	Custorient	OrgPerf
BIandDQ	.847				
ManagEffe	.035	.812			
OpEffec	.546	.236	.866		
CustOrient	.490	-.035	.285	.856	
OrgPerf	.301	.160	.255	.063	.781

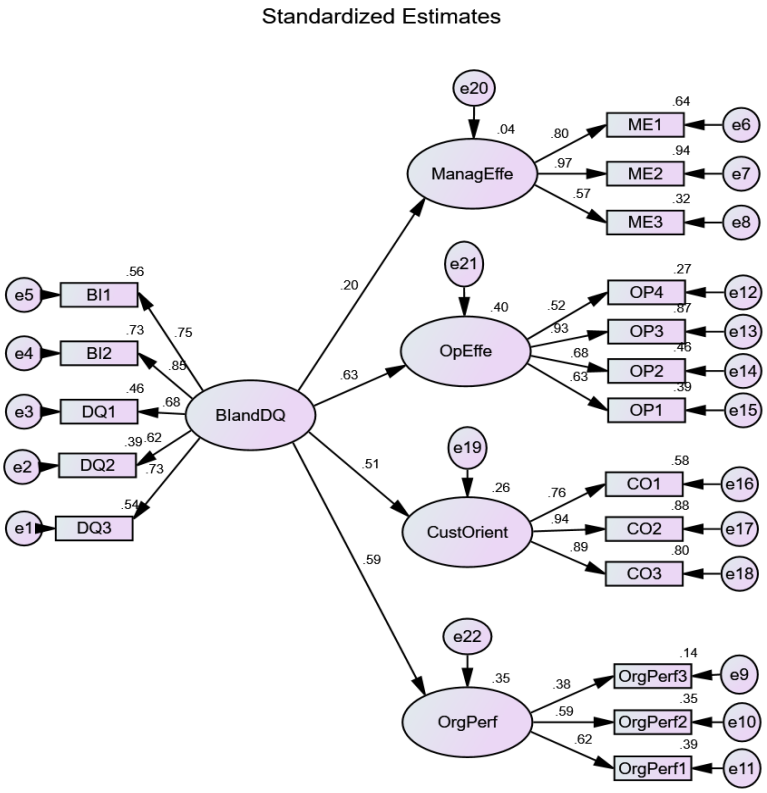
Tests of Relative Fit

Various descriptive fit statistics to assess the overall fit of a model to the data indicate are given as: The Comparative Fit Index (CFI) = 0.925; Incremental Fit Index (IFI) = 0.897 and Normed Fit Index (NFI) = 0.795. The RMSEA value of 0.063 was well within the recommended range between 0.05 and 0.08 (Byrne, 2001 and Browne and Cudeck, 1993).

From figure no. 2 it is observed that the standardized coefficients show a stronger relationship between the factors. The squared multiple correlations (R^2) explain the amount of variance in the endogenous constructs in the model and are indicative of the predictive power of the exogenous latent variables. The explained variance of most of the variables was substantial to moderate (Chin, 1998). The study shows higher values of R^2, indicating that the model is accounting for a large proportion of the variance in the measured items. The R^2 for the constructs is the proportion of its variance that is accounted for by BI and data quality with customer orientation is .265 (26.5%); with operational effectiveness is .399 (39.9%); with organizational performance is .349 (34.9%) while managerial effectiveness has low value of 0.04 (4% of variance). Figure 2 depicts the final structural equation model in terms of standardized factor loadings of indicators for measurement model and significant path coefficients for standardized path coefficients for each relationship.

Having established the reliability, convergent validity and discriminant validity of the constructs, the next step involves testing the structural model for the hypothesized paths.

Fig. nr. 2. Evaluation of the Structural Model



Hypothesis Testing

Structural Equation Modeling (SEM) using AMOS 21 was performed to test hypothesis H1 to H18. The measurement path estimates were set equal to 1 in order to scale the latent variables.

Table no. 4. Standardized Regression Estimates of the Hypotheses Tested

No	Constructs/Hypothesis	Path Coefficient	Critical ratio or t value	Hypothesis Supported/not Supported
H1	**BI Management**			
1	Adequacy of data volume	1*	1*	-

2	Data Transparency	.296	3.879	Supported
3	Reliability of data	.260	4.381	Supported
4	Effective data processing	.287	3.504	Supported
5	Better support for decision making	.410	3.197	Supported
H2	**Managerial Effectiveness**			
6	Improved promptness in services, operating hrs, payment options, etc.	1*	1*	-
7	Better employee retention	.275	3.934	Supported
8	Improved quality of work of employees that promotes wellness and happiness	.225	3.179	Supported
H3	**Operational Effectiveness**			
9	Better visibility into supply chain	1*	1*	-
10	Better stock optimization	.608	2.454	Supported
11	Better analysis of current business practices	1.007	2.571	Supported
12	Better analysis of fraud detection	1.115	2.807	Supported
H4	**Customer Orientation**			
13	Identifying customer purchasing patterns	1*	1*	-
14	Effective customer segmentation	.202	5.260	Supported
15	Targeting suitable programs	.209	5.134	Supported
H5	**Organizational Performance**			
16	Improved return on investment	1*	1*	-
17	Reduction of operational costs	.147	2.282	Supported
18	Improved sales per employee	.151	2.967	Supported

R- Squares

- Managerial Effectiveness (4%)
- Customer Orientation (26.5%)
- Operational Effectiveness (39.9%)
- Organizational Performance (34.9%)

*****Standardized factor loading; the first item for each construct was set to 1. Significant at $p<0.05$

At significance level of 0.05, any critical ratio that exceeds 1.96 in magnitude would be called significant (Arbuckle, 2013). From the table, it is observed that all the values are found to be greater than 1.96 and denote significant covariance between the variables at the 0.05 level (*t*-values >1.96 represent significance level $p < 0.05$).

The path estimated were found to be best for customer segmentation (t = 5.260) and targeting suitable programs (t = 5.134), while other parameter estimated are also significant at $p<0.05$**.** By examining causal relationships among all constructs, it was found that all the five constructs of the model has significant positive relationship between BI and managerial effectiveness; BI and customer orientation; BI and operational effectiveness; BI and organizational performance, thus supporting hypothesis H1 to H18. The significant relation between the intrinsic attributes of BI and data quality outputs can help the retail managers to identify improved decision making resulting in improved promptness for various functional areas and improved organizational performance.

Discussion and Implications

The purpose of this research was to evaluate the impact of BI on organizational performance by developing a hypothesized model in organized retail. The confirmatory factor analysis showed an overall satisfactory model fit and hence, the theorized model fit well with the observed data and can be concluded that the hypothesized five factor CFA model fits the sample data well, confirming the predicted relationships. The results confirm that BI and data quality strongly influences the operational effectiveness (.63), organizational performance (.59) and customer orientation (.51), while managerial effectiveness has moderate influence (.20). It has been observed that retail employees are considering strengthening their organizations' use of BI. This study found that BI and data quality corresponds significantly with operational effectiveness and organizational performance. Quality information is helping retailers in verifying the status of the firm’s inventory by directly accessing the customer database, which is in turn reducing the order lead times, resulting in reduced inventory costs for the retailers.

Conclusion and Limitations

Earlier studies revealed that advanced technology tools supports retailers in the process of storage of data, retrieving it and transforming the information in order to manage the information in an effective way. By using common database and shared management BI tools helps manage in effective information sharing among different functional areas to create an effective value. The outcome of the study shows that advancements of data and analytics is enabling retailers towards customer orientation to understand customer's buying behavior resulting in providing product availability, as and when customer needs. To better meet the needs of customers, retailers are trying to keep track of customer preferences and behaviors by implementing predictive analytics and data mining solutions.

From the study the positive association between endogenous factors of BI and data quality reveals that advanced technological tools are transforming data into valuable information to make better decisions that give retailers a competitive advantage and improve the performance of the organization.

However, there are several success factors that consistently enhance BI, understudied and represent an important gap in our knowledge and provide an opportunity for future research. Review of the literature reveals that studies examining the association between information technology and organizational performance are divergent in how they conceptualize key constructs and their interrelationships (Melville et.al, 2004).

The study was limited to food and groceries retailers, the findings are technically applicable only to that group. Retailers with similar operations may find that this study's findings apply in their settings. The researchers chose food and retail in particular because it is observed that information systems are being used in retail operations since previous decades involving POS scanning that has greater visibility in retail than in other industries.

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The Causality between Government Expenditure and Economic Growth in Nigeria: A Toda-Yamamoto Approach

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Abstract
The relationship between government expenditure and economic growth has been an issue of debate over the years. This study investigates the causality between government expenditure and economic growth in Nigeria between 1985 and 2014. Following the Toda-Yamamoto non-Granger causality testing approach, it finds that government expenditure and economic growth have no causal effect on each other. This offers evidence to invalidate Wagner's law and the Keynesian proposition in Nigeria. This study recommends that government should strengthen its efforts to curtail corruption as well as introduce stricter checks and controls to reduce or eliminate the profligacy of public funds.
Keywords: Government expenditure, Economic growth, Wagner's law, Keynesian proposition, Nigeria.

Introduction

Government (public) expenditure is a fiscal policy that reflects the size of government in the economy. It still remains a debatable issue

among economists whether increasing government expenditure fosters economic growth. Government expenditure has a dominant role to play in reducing regional inequalities, improving social overheads, provision of infrastructural facilities, education and training, growth of industries and research and development among others (Bhatia, 2002). However, increase in government expenditure may be a hindrance to overall performance of the economy, if it comes at a cost of increased taxes and/or borrowing to fund government activities (Alshahrani and Alsadiq, 2014).

The two schools of thought that explain the relationship between government expenditure and economic growth are Wagner's law and the Keynesian proposition. The Wagner's law also referred to as "law of increasing public activities" postulates that government expenditure is endogenous of national income which measured economic growth. In other words, public sector expansion is as a result of growth in the economy. The Wagner's law argues that economic growth is an essential determinant of public sector growth (Loizides and Vamvoukas, 2004). The Keynesian proposition opposes the Wagner's law and it argues that increase in national income is as a result of increase in government expenditure. It suggests that economic growth is endogenous of government expenditure. Keynes (1936) states that government expenditure is a policy measure used by the government to solve economic downturns, by borrowing money from the private sector of the economy, and then distributing it back to them through spending programmes, hence leading to economic growth.

In a developing country like Nigeria, understanding the causality between government expenditure and economic growth is pertinent for the economic policy decision making. The extant literature on the causality between government expenditure and economic growth in Nigeria has provided mixed evidence. Therefore, it is apparently ambiguous whether public sector growth determines economic growth or economic growth determines public sector growth in Nigeria. Also, previous studies on Nigeria have focused on the causal link between government expenditure and economic growth without considering the role of public debt. The failure to control for public debt may lead to misleading result because the Nigerian government often implement the

budget deficit which is mostly financed through either internal or external borrowing. It is on this backdrop that this study examines the causal link between government expenditure and economic growth

along with public debt in a trivariate framework using the causality test developed by Toda and Yamamoto (1995). The rest of the paper is organised as follows: Section 2 reviews empirical literature, Section 3 focuses on the methodology, Section 4 presents the results and discussions and Section 5 provides the conclusion.

Literature Review

Empirical Evidence from Developed and Developing Countries

Hsieh and Lai (1994) examined the impact of government spending on the growth of the G-7 countries (Canada, France, Germany, Italy, Japan, United Kingdom and United States). The study found that there is lack of consistent evidence to show that government spending can enhance economic growth as well as to support the negative argument. Also, it found that the impact of government spending is not substantial in the most countries. Cheng and Lai (1997) found bidirectional causality between government expenditures and economic growth in South Korea between 1954 and 1994. Sinha (1998) did not find causal relation evidence between government expenditure and economic growth in Malaysia between 1950 and 1992. However, it showed evidence of long-run relation between government expenditure and economic growth.

In a study of Greece, United Kingdom and Ireland, Loizides and Vamvoukas (2004) observed that government size measured by share of total government expenditure in Gross National Product (GNP) drives economic growth in the three countries in the short-run and in the long-run for Ireland and United Kingdom. Also, economic growth causes increases in the size of government in Greece, and, when inflation is included, in the United Kingdom. Jiranyakul (2007) assessed the causal relation between government expenditures and economic growth in Thailand using quarterly data between 1993 and 2004. It found that causality only exists from government expenditures to economic growth. Arpaia and Turrini (2008) analysed the short-run and long-run relation between government expenditure and potential output in 15 European Union (EU) countries from 1970 to 2003. The study failed to accept the hypothesis of a common long-run elasticity between cyclically-adjusted primary expenditure and potential output close to one. However, over the decades, the long-run elasticity greatly reduced and it is significantly higher than one in catching-up countries, fast-

ageing countries, low debt countries and in countries with weak numerical rules for the control of government spending.

Cooray (2009) investigated the role of government on the growth of 71 economies by extending the neo-classical production function to include size (measured by expenditure) and quality of government. The study discovered that size and quality of government are crucial factors to promote economic growth. Mulumba (2009) assessed the long-run relationship and causality between government expenditure and economic growth in 13 Southern African Development Community (SADC) countries from 1998 to 2004. It found that there is evidence of a long-run relationship. Also, it showed that economic growth predicts government expenditure in the short-run and long-run. Wu, Tang and Lin (2010) examined the causal relationship between government expenditure and economic growth using a panel dataset consisting of 182 countries. The results offered support for both the Wagner's law and Keynesian view irrespective of how government size and economic growth are measured.

Ebaidalla (2013) investigated the causal direction between government expenditure and national income in Sudan and observed that in both, the short and long run, government expenditure cause national income. Srinivasan (2013) based on an error correction model discovered that in both the short and long-run, causality runs only from economic growth to public expenditure in India from 1973 to 2012. Medhi (2014) found a unidirectional causality from economic growth to government expenditure in India for the period 1974 to 2014.

Odhiambo (2015) examined the dynamic causal relationship between government expenditure and economic growth in South Africa. The study showed there is short-run bidirectional causality between government expenditure and economic growth, however, in the long-run, causality runs from only economic growth to government expenditure. Using a panel dataset consisting of 9 Asian countries, Lahirushan and Gunasekara (2015) inquired whether government expenditure causes economic growth between 1970 and 2003. It found two-way causality between government expenditure and economic growth.

Empirical Evidence from Nigeria

Chiawa, Torruam and Abur (2012) examined the relationship between government expenditure and economic growth between 1970 and 2008.

The study found one-way causality from economic growth to total capital expenditure and total recurrent expenditure. Also, it found that total capital expenditure, total recurrent expenditure, total expenditure on health and total expenditure on defence have positive and significant impact on economic growth. Nasiru (2012) observed that capital expenditure drives economic growth between 1961 and 2010, while recurrent expenditure does not. Also, economic growth does not drive both capital and recurrent expenditures. Olaiya, Nwosa and Amassoma (2012) conducted a trivariate causality test among government expenditure, inflation and economic growth from 1970 to 2011 within a vector error correction model. The study found that there is a bidirectional causal relationship between government expenditure and economic growth.

Sevitenyi (2012) observed that causality moves from government expenditure to economic growth only between 1961 and 2009. Oyinlola and Akinnibosun (2013) evaluated the causal link between public expenditure and economic growth in Nigeria from 1970 to 2009 and found that economic growth has a causal effect on public expenditure, thus validating Wagner's law. Dada and Oguntegbe (2013) found that Wagner's law holds in Nigeria between 1961 and 2011. Udo and Effiong (2014) offered evidence to support the Wagner's law and Keynesian hypothesis for the period 1970-2012. Aregbeyen and Kolawole (2015) did not find evidence of causality between government spending and economic growth from 1980 to 2012.

Methodology

Data Issues

This study aims to determine the causality between government expenditure and economic growth in Nigeria between 1985 and 2014. Data were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin (2014). The data include gross domestic product (GDP) at current basic prices (Nominal GDP) (which is proxy for economic growth), government expenditure (GE) and public debt (PD)(i.e. sum of outstanding domestic and external debts). For over 70 years, GDP has been the widely used measure of economic growth. GDP became

recognised as the primary tool for measuring economic progress after the Bretton Woods conference in 1944 (Li, Li, An, Wang and Yu, 2014). National income (NI) and GDP per capita (GDPC) were sourced from the World Development Indicators (WDI) database to perform the robustness check.

Model Specification and Estimation Procedure

The causality test among gross domestic product (GDP), government expenditure (GE) and public debt (PD) was done in a Vector Auto regression (VAR) framework. The trivariate causality test was performed using the Toda-Yamamoto (T-Y) Granger non-causality test. This test is based on a modified Wald statistic which allows valid parameter estimates to be produced even when variables are not co-integrated. The T-Y model in VAR framework is stated as:

$$lnGDP_t = \propto + \sum_{n=1}^{k} \gamma\, lnGDP_{t-1} + \sum_{p=k+1}^{k+d_{max}} \beta lnGDP_{t-p} + \sum_{n=1}^{k} \sigma lnGE_{t-1} + \sum_{p=k+1}^{k+d_{max}} \tau lnGE_{t-p} + \sum_{n=1}^{k} \rho lnPD_{t-1} + \sum_{p=k+1}^{k+d_{max}} \theta lnPD_{t-p} + \varepsilon_t \quad ..(1)$$

$$lnGE_t = \propto + \sum_{n=1}^{k} \sigma lnGE_{t-1} + \sum_{p=k+1}^{k+d_{max}} \tau lnGE_{t-p} + \sum_{n=1}^{k} \gamma\, lnGDP_{t-1} + \sum_{p=k+1}^{k+d_{max}} \beta lnGDP_{t-p} + \sum_{n=1}^{k} \rho lnPD_{t-1} + \sum_{p=k+1}^{k+d_{max}} \theta lnPD_{t-p} + \varepsilon_t \quad ..(2)$$

$$lnPD_t = \propto + \sum_{n=1}^{k} \rho lnPD_{t-1} + \sum_{p=k+1}^{k+d_{max}} \theta lnPD_{t-p} + \sum_{n=1}^{k} \gamma\, lnGDP_{t-1} + \sum_{p=k+1}^{k+d_{max}} \beta lnGDP_{t-p} + \sum_{n=1}^{k} \sigma lnGE_{t-1} + \sum_{p=k+1}^{k+d_{max}} \tau lnGE_{t-p} + \varepsilon_t \quad ..(3)$$

Results and Discussions

Unit Root Test

The T-Y Granger non-causality test does not consider the presence of unit root in time series data. However, unit root test is

performed so as to determine the maximum order of integration (d_{max}) among the series. The MZa and MPT statistic in the NG-Perron unit root test was used to determine the order of integration – I(d) of each series. The Perron unit root test with structural break was performed in an innovative outlier model to establish the order of integration of each series in the presence of structural changes.

Table no. 1. Unit Root Test Results

1A: Ng-Perron Unit Root Test					
	Level		First difference		
Series	MZa	MPT	MZa	MPT	I(d)
lnGDP	6.53459[b]	13.9495[b]	-13.7419**[a]	1.79075**[a]	I(1)
lnGE	-112.169*[b]	1.10143*[b]	----------	----------	I(0)
lnPD	-2.74470[b]	31.2729[b]	-12.0637**[a]	2.06977**[a]	I(1)
lnNI	-4.16670[b]	20.8883[b]	-13.7311**[a]	1.80333**[a]	I(1)
lnGDPC	-3.54565[b]	23.9306[b]	-13.1482**[a]	1.89859**[a]	I(1)
1B: Perron Unit Root Test with Structural Break					
	Level		First difference		
Series	Break date	Coefficient	Break date	Coefficient	I(d)
lnGDP	1993	-0.767989	2012	-1.118566*	I(1)
lnGE	1994	-0.918253	2012	-1.624954*	I(1)
lnPD	2003	-0.468007**	----------	----------	I(0)
lnNI	1991	-0.661823**	----------	----------	I(0)
lnGDPC	1991	-0.733938**	----------	----------	I(0)

Source: Authors' analysis

Notes: * and ** imply series has no unit root at 1% and 5% asymptotic critical value, respectively and[a] and[b] indicate intercept only and trend and intercept respectively. Asymptotic critical values for Perron unit root test with structural break were obtained from Table 1(e) in Perron (1997).

It can be deduced from Table no. 1 that the maximum order of integration among the series is 1 whether structural break is ignored or not in the unit root test.

T-Y Granger Non-Causality Test

The existence of co-integration is not a pre-requisite to employ the T-Y Granger non-causality test unlike the Pairwise Granger non-causality test. Therefore, the test for co-integration was ignored. The optimal lag length (k) was first determined using the VAR lag length

selection criteria with the maximum lag set at 4. The sequential modified LR test statistic, Final Prediction Error (FPE), Akaike Information Criterion (AIC) and Hannan-Quinn Information Criterion (HQ) selected *k* to be 2 while Schwarz Information Criterion (SC) chose *k* to be 1. A *k* of 2 was used for the VAR model.

Table no. 2. VAR Lag Length Selection Results

Lag	LR	FPE	AIC	SC	HQ
0	NA	0.035751	5.182340	5.327505	5.224142
1	129.2723	0.000202	-0.001368	0.579292*	0.165841
2	18.38803*	0.000159*	-0.276851*	0.739304	0.015765*
3	9.903514	0.000186	-0.203513	1.248137	0.214510
4	6.284548	0.000271	0.005368	1.892513	0.548797

Source: Authors' analysis

Notes: * indicates lag length selected by criterion. Also, each test is performed at 5% significance level.

After estimating the VAR model with a *k* of 2, VAR residual serial correlation test was performed and AR Roots graph was plotted so as to ensure that the VAR model is ideal for the study.

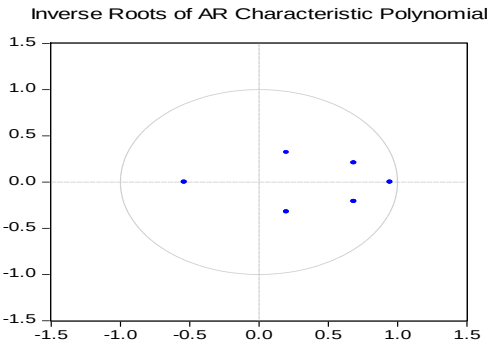
Table no. 3. VAR Residual Serial Correlation Test Result

K	LM-Stat	p-value
1	9.335565	0.4069
2	11.68648	0.2316
3	7.151908	0.6213
4	5.686568	0.7708

Source: Authors' analysis

It can be seen from Table no. 3 that the null hypothesis of no serial correlation was accepted at the selected optimal lag length of 2. Also, the AR Roots graph shows that the VAR model is dynamically stable and not wrongly specified because no roots lie outside the unit circle. Fig. no. 1 depicts the graph of the AR Roots.

Fig. no. 1. AR Roots Graph



Source: Authors' analysis

The T-Y Granger non-causality test is based on a modified Wald (MWALD) statistic. In the T-Y VAR model, the lag length (p) is sum of $k + d_{max}$. The lag length for the T-Y VAR model is 3.

Table no. 4. T-Y Granger Non-Causality Test Results

Null Hypothesis	MWALD statistic
lnGE does not Granger cause lnGDP	2.922341
lnGDP does not Granger cause lnGE	0.362340
lnPD does not Granger cause lnGDP	0.522891
lnGDP does not Granger cause lnPD	1.342657
lnGE does not Granger cause lnPD	0.736947
lnPD does not Granger cause lnGE	5.433663***

Source: Authors' analysis

Note: *** implies rejection of null hypothesis at 10% significance level.

From Table no. 4, it can be inferred that there is no causal link between government expenditure and gross domestic product, as well as between public debt and gross domestic product. It can also be observed that there is a unidirectional causal flow from public debt to government expenditure.

Robustness Check

The rationale for the robustness check is to confirm the consistency of findings when economic growth is represented with other measures of economic growth, other than gross domestic product. The

robustness check was performed by replacing GDP with two economic growth measures in the T-Y VAR models. The growth measures are GDP per capita (GDPC) and national income (NI). A lag length of 3 was used in the T-Y VAR models after an optimal lag length of 2 was chosen based on the Schwarz Criterion.

Table no. 5. Robustness Check Results

5A: NI as proxy for economic growth	
Null Hypothesis	MWALD statistic
lnGE does not Granger cause lnNI	0.125836
lnNI does not Granger cause lnGE	0.082763
lnPD does not Granger cause lnNI	0.505964
lnNI does not Granger cause lnPD	3.702842
lnGE does not Granger cause lnPD	3.207486
lnPD does not Granger cause lnGE	4.095891
5B: GDPC as proxy foreconomic growth	
Null Hypothesis	MWALD statistic
lnGE does not Granger cause lnGDPC	0.252222
lnGDPC does not Granger cause lnGE	0.250801
lnPD does not Granger cause lnGDPC	0.182964
lnGDPC does not Granger cause lnPD	6.263001**
lnGE does not Granger cause lnPD	2.856777
lnPD does not Granger cause lnGE	4.342673

Source: Authors' analysis

Note: ** implies rejection of null hypothesis at 5% significance level respectively.

From Table no. 5, it can be seen that causality is absent between government expenditure and the economic growth measures (national income and GDP per capita). This finding is consistent with the observed causal link between government expenditure and gross domestic product.

Conclusion

There are two contrasting views on the relationship between government expenditure and economic growth. The Wagner's law states that causality is from economic growth to government expenditure while the Keynesian proposition is that causality is from government expenditure to economic growth. Therefore, this study examined the

causality between government expenditure and economic growth in Nigeria using an augmented version of the Granger causality test introduced by Toda and Yamamoto (1995). It found that there is no causality between government expenditure and economic growth. This finding suggests that the Wagner's law and the Keynesian proposition are not valid for Nigeria. This implies that expansion in the public sector or increase in government size/activities in the economy is not a determinant of economic growth and economic growth does not cause public sector growth. The inconsequential impact of government expenditure on the economic growth of Nigeria may be due to high incidence of corruption and embezzlement of public funds and continuous excess of recurrent expenditure over capital expenditure over the years. This study recommends that government should strengthen its efforts to curtail corruption as well as introduce stricter checks and controls in its parastatals and agencies to reduce or eliminate the profligacy of public funds. Also, government should increase its investment in the productive sector and invest more on capital projects.

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Business Excellence Assessment - from an Integrated Reporting Perspective

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Abstract
Economic globalization effects can easily be seen in various levels of decision process, affecting financial performance of each entity drastically. An essential variable on the decision process that is considered by managers, shareholders and stakeholders as well is the uncertainty of the economic environment that can be reduced through a flexible and up to date financial reporting model. In the light of the last evolutions of financial reporting model, standard-setters, researchers and practitioners as well, have realized the need for a change in the financial reporting regulation. Among listed entities, on which case financial transparency is essential on gaining investors trust, there has been drawn up a change in orientation concerning financial reporting model. As the focus falls now on value added potential, the new philosophy of integrated reporting has become of high interest for managers, shareholders and stakeholders as well. The paper is trying to describe this philosophy, from the perspective of business

excellence models, widely spread globally nowadays. We will try to explain the integrated reporting utility on decision process by underlining the way this voluntary corporate reporting solution can give relevant information about value added potential of a reporting entity.
Keywords: business excellence, EFQM model, integrated reporting, value creation, business model.

Introduction

Nowadays, we are witnesses to a constant evolution of financial reporting model, under the pressure of investors and other stakeholders as well. Essence of actual financing model changes from predominance of banking system to the solution of international capital markets, providing sources of financing to a lower cost of capital. But the cost of capital depends mainly on investors' expectations, which base their behavior on markets dynamics. On these circumstances, financial information takes a central place in the decision process, as long as efficient market hypothesis is valid. What happens in the light of the new behavioral economic theories, as they were raised for discussion different other market theories such as adaptive market hypothesis? The studies reveal that stock price on a capital market is not purely determined by financial information, but environment conditions as well, like biases such as overconfidence, anchoring, self-attribution, illusion of control, loss aversion, ambiguity aversion, or confirmation bias.

On this perspective, standard-setters and professionals as well have realized the need to revise the traditional financial reporting model. The voice of capital markets emphasize the need of listed entities to work on financial information quality and financial transparency, essential pillars for managers to lower the cost of capital and increase shareholder value on a sustainable way. Along the last years, they have been outlined a series of new financial reporting philosophies which do not limit only to financial information disclosure, but to non-financial information as well. The result is the development of different forms of corporate reporting, through which there is depicted a story behind the financial figures disclosed by the financial statements. Reporting frameworks like UNGC principles or integrated reporting framework, guidelines such as GRI guideline, or international

standards such as several ISOs, became basic tools on the vision of corporate reporting.

No matter the reporting framework used, the most important thing is that this story has to be clear and relevant in order to efficiently influence investors' behavior, meaning the information has to be material and it has to be presented in strong connection with the financial information referring to. Even if there is not a unanimous opinion on the direct connection of non-financial disclosure with the economic benefits generated by a more transparent financial reporting, non-financial information disclosure build trust and confidence in the relation managers-investors. Actually, non-financial information help better long-term investors focused on securing their investments, compared with the investors chasing for short-term gains. That is why non-financial information is strongly connected with financial information, but referring especially to management strategy and environmental context of the decision process.

The main objective of a company is to maximize shareholders' value, through different investment, financing and operational policies. Combining those elements is the secret of value creation. Exceeding investors' expectations will amplify the amplitude of value creation processes. Achieving the maximum potential of value added for a company is actually the best definition we will give for the concept of business excellence. Once business excellence is achieved, the company would gain some economic benefits and would consolidate the relations with long-term investors. In order the shareholders and stakeholders to be able to asses business excellence level, there has to be in place a proper reporting framework, able to disclose information about the potential of the company to create economic value, about the level of value added achieved from the total potential, the way value creation is achieved and the way value added is distributed to the main determinant factors.

In this article we will emphasize the utility of integrated reporting framework on assessing business excellence. It is extremely important to disclose not only value-added information, but value creation process information, as well. On this way, we cannot only reveal the strategic perspective of the financial figures, but the sustainability of the business model, as well, with its implications on shareholder value and company sustainable growth. Only this way, managers can reveal the innovation and social aspects of the business

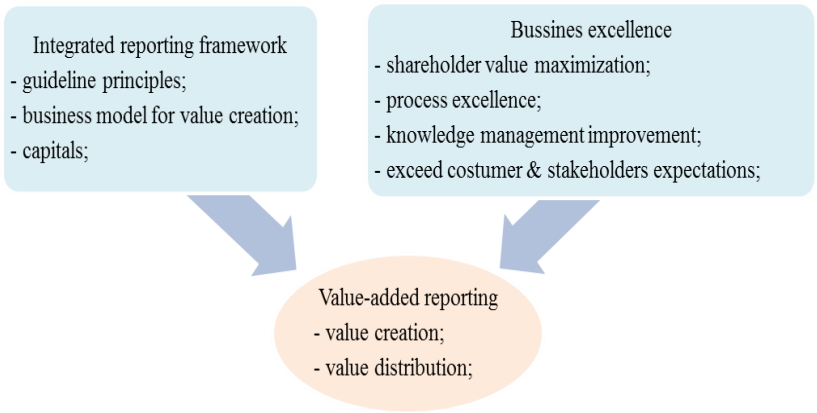
model. Not at least, we will realize that this path will eventually lead to public trust and positive capital markets effects.

Methodology and Data

In this article we will resume our research in two directions. Both will lead to a convergent point, namely the disclosure of information concerning value creation process and value-added distribution.

Our research consists of an analysis of how integrated annual reports can become a core reporting tool for business excellence of reporting companies. After all, value creation is the core element on integrated reporting philosophy. On the other side, only through business excellence companies can reach to their potential of value added created.

Figure no. 1. Research framework sketch



Source: Authors' own projection

We will proceed to a comparative analysis checking how an integrated report can give answers to investors and stakeholders, as well in order that they can be able to make a business excellence assessment on a company they are interested on investing or supporting. For this we will realize a cross-sectional analysis that should reveal how useful an integrated report can be in such a business excellence analysis. The business excellence model used will be the EFQM model.

We will base our analysis on a more simplified framework that view the business excellence model focused on value creation, as the other criteria considered on the EFQM model are properly addressed on the CSR & sustainability reports, reminding here that the GRI reporting guidelines are

extremely rigorous, well-structured on a high level detail and proper to be used as an alternative source of information for business excellence assessment of a company.

Literature review

Business excellence is a complex concept that preoccupies nowadays all managers, shareholders and stakeholders. Business excellence is actually an extended perspective of total quality management, as it focuses not only customer satisfaction, but also to the other stakeholders of the company, with focus on process management and performance improvement (Kanji, 2002). This opinion can be easily reflected through the well-known models of business excellence, as by now they are few ones intensively referred to, such as: (i) Malcolm Bridge Excellence model (MBNQA), (ii) EFQM Excellence model, (iii) Deming Excellence model, (iv) Canadian Business Excellence model or (v) Australian Business Excellence model. The most referred models are the first two ones, but along the last years it has been underlined a slight evolution of Baldrige model towards the EFQM model (Brown, 2014). There is also a Romanian business excellence model, mainly derived from the EFQM Excellence model, namely Juran Excellence model.

All of these models are aimed to measure business excellence level for a company, models based each on specific set of criteria. The question is how such models are already reflected partially through already mandatory ISOs for specific industries and particular categories of companies, as for instance Zink (1998) emphasized, comparing the EFQM model with ISO 9000 requirements. We underline this aspect as such kind of overlapping is actually causing information cost increase, like is already continuously debated the problem of financial reporting that has to be done complying to different mandatory reporting frameworks.

Business excellence and performance reporting

Overall, all those models are focused on measuring business excellence starting from several basic components, naming here the need of leadership on achieving business excellence, the customer focus, the need of strategic alignment, the role of organizational learning, innovation and improvement, the place of knowledge management, the ability of companies to develop and consolidate beneficial partnership relations, the process-oriented operational

improvements, social responsibility or the results focus (Porter & Tanner, 2004).

All those models have in common the focus on financial and non-financial results, but with slightly different proportion. Results focus is actually split into several areas of analysis. More exactly, in case of Baldrige Malcom model, the results consist of product and process results (12%), customer-focused results (8%), workforce-focused results (8%), leadership and governance results (8%) and financial and market results (8%) (Brown, 2014). On the other side, the EFQM model focuses on results concerning human resources (9%), customer satisfaction (20%), CSR (6%) and financial results (15%).

Even if those models do not focus mainly on financial information, which is actually normal in the actual context of really complex business model, we can admit that all aspects addressed have, directly or indirectly, financial implications for the reporting company. For instance, there is given high importance to customer satisfaction and human capital resources. But, as long as there is ensured a growing evolution of customer satisfaction results, the company can benefit of significant increase in revenue in time and will surely consolidate its market share. Same logic is if we refer to human capital impact on the financial results, as intangible assets like patents or processes improvements achieved will definitely lead to either growing revenues of cost savings. If we continue the same logic, we would realize that those elements cannot be analyzed separately, the organization being forced to build a system of knowledge management that ensure: knowledge transfer, a motivation system that determine the people to be involved in the project they are assigned, or a strategic thinking that should create an integrated approach of all company's projects following the core concepts and values the company share through its culture and policies.

There are voices that put in discussion, nowadays, the opportunity of recognizing the customer satisfaction as an asset in the balance-sheet (Dobroteanu, 2005). Also, they are some who claim that financial reporting model, that currently does not address properly the problem of human capital, should consider it as an asset in the balance-sheet as well (Diaconu et. al., 2003; Feleaga and Malciu, 2004). But all of these *latent assets* cannot be addressed through an accounting standard as they do not comply with an asset definition. In spite of this, nobody will forbid companies to disclose additional information about

those generators of economic benefits. On the contrary, they are encouraged to do so, but managers just stick to the old reason of financial reporting costs or even competitive costs.

Not the least, we underline the need of an approach between the financial reporting model and the management accounting model, that in some limits can bring benefits to the company, as long as aggregate information about financial results can be presented based on company's processes, together with potential cost savings and increasing revenues expected from the success of some major projects. Those can be completed with a longer list of traditional financial reporting lacks, such as: risk management model description, social balance sheet, environmental balance sheet, project-based profit and loss statement, synthetic balanced scorecard etc. All of these would imply an increase in corporate reporting costs, but the differentiation can be applied based on the *voice of the costumer*, in this case the voice of investors and the other stakeholders of the reporting company.

Even there is not agreed by now a global mandatory implementation of a non-financial reporting framework regulation, we foresee a favorable position of accounting standard-setters that will translate, in time, in more action towards a corporate integrated reporting model. A real proof of this direction is even the 95/2014/EU directive that mandate listed companies to complete the financial reporting model with non-financial information, as well.

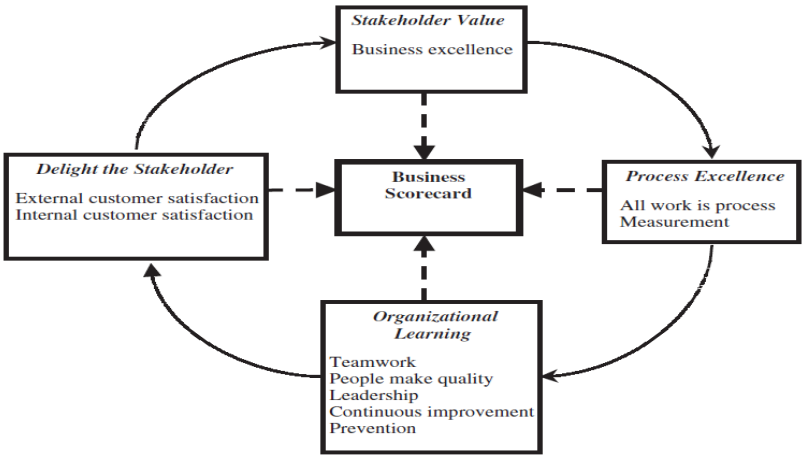
Business excellence through integrated reporting

The literature has discussed different forms of value creation reporting and business excellence assessment. From our point of view, even if by now it has been applied by a small number of companies, the integrated reporting framework respond properly to the considerations we've mentioned by now in the article. Indeed, integrated financial reporting would mean, not only revealing value added information, but disclosing the background behind the business results, as well. The results are analyzed, similar to the balance-scorecard model proposed by Kaplan and Atkinson (1998), from financial perspective, from customer satisfaction perspective, from process management perspective and from innovation perspective. But the focus does not fall on the financial perspective, through integrated reporting being established a balanced approach of all those perspectives. Even if they are voices that claim there is high risk those integrated reports can become core marketing

tools for managers (Dumitru et. al., 2015), they can be extremely useful for investors and stakeholders.

Integrated reporting represent a brand new alternative to existing corporate reporting solutions, which promote not only a focus on information needs of the shareholders, but on the information needs of different stakeholders too. Eccles and Serafeim (2014) sustain, integrated reporting model does not only focus on revealing integrated relevant information on investment and financing process, but also give the opportunity to managers to align their strategies closer to shareholders expectation (shareholders engagements). Its philosophy circle around the need to disclose relevant and complete information regarding value creation model, as the main output an entity should achieve through its operating, financial and investments decisions.

Figure no. 2. Business scorecard of shareholder value cycle



Source: Kanji (2002), Measuring Business Excellence, p. 127

Through its concepts, guiding principles and content elements, IIRC framework give a clear image of how an overall picture of the potential of value creation of an entity should be. If we start from Kanji (2002) perspective on business excellence, integrated reporting framework could be a proper reporting framework solution for business excellence assessment.

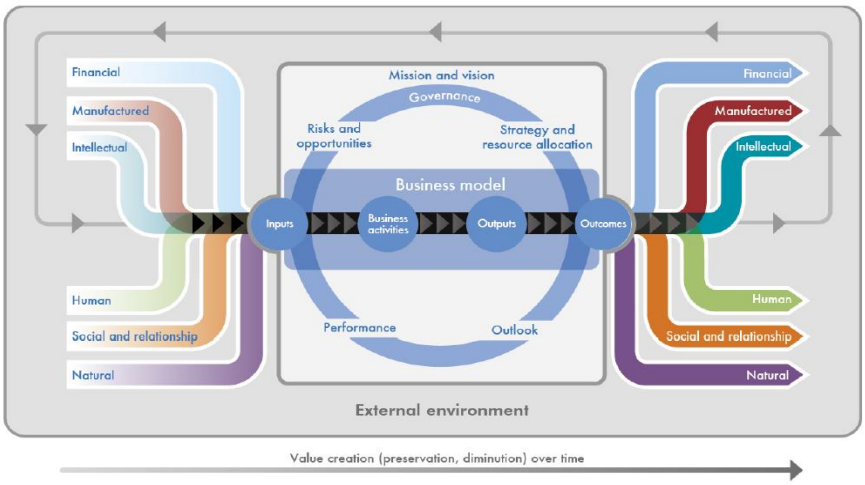
Once those core elements are defined, business excellence measurement can be translated in shareholders' and stakeholders' satisfaction. As currently customer satisfaction is considered, not only a

premise for business excellence, but a criteria of entity's existence, we should focus on how business excellence models translate in shareholders' and other stakeholders' satisfaction. For instance, Kanji (2002) propose a business scorecard monitoring the excellence of a business model that consists of four dimensions, namely: shareholder value maximization, process excellence, knowledge management improvement and stakeholders delighting. But, eventually all those elements converge to one main goal, namely shareholder value maximization. Thus, achieving customer satisfaction would generate sales growth, the increase in sales can be transformed in valuable investment in processes and people, while the return on investment can lead to stakeholders delighting.

This means that financial and non-financial information are extremely important on valuing the elements of the business model. Integrated reporting framework even offer a general format of business model and how it should be analyzed, starting from a set of guiding principles and a content elements perspective. The framework is extremely flexible, recommending no predefined format of presentation or method of measurement. This is why this framework can work very well in conjunction with other reporting frameworks as is the case of GRI (Adams, 2013), or ISO standards (McKinley, 2010). On this direction we can remind even IIRC framework which sustain that an integrated report should be disclosed independent of a sustainability report as the objectives of the reports are different, the final users are different and the materiality of the information to be disclosed can differ significantly. There are even built already different versions of KPIs cross-reference between integrated reporting framework and those specific sustainability reporting frameworks.

Actually, the next scheme is relatively similar with Porter (2008) value chain analysis configuration, just that Porter's model is more function-based oriented as the value chain analysis process is actually a model used internally by each company. Additionally, integrated reporting framework just underlines the external environment impact, through the risk and opportunities section and is fundamentally based on a strategic view, rather than on an operation view.

Figure no. 3. The value creation process



Source: The International <IR> Framework, p. 13

Overall, core concepts of <IR> reflect the objective of an integrated report, the means used to obtain the value added and, of course, the processes combining the capitals and leading to value added creation. What is admitted, even by IIRC, is the classification of the capitals in the different categories mentioned before, based on the specific of the activities run by the reporting entity. But, at the end, as shown even on the value creation process scheme above, this classification should not influence fundamentally. What we can see as an impact would be the specific of function processes that can differ from one type of capital to another, and the externalities that can differ based on the different processes in place.

The entire value creation process is really simple. In order to be transparent and tell clearly the story of value creation behind, entities should disclose the resources available to be affected for the management strategies, should depict the external environment profile relevant to its mission and vision, should describe the influence of stakeholders and external environment on entities value creation capability, should identify the risks and opportunities and should describe reliably, concisely and consistently the business model configuration, and reveal the processes and mechanisms behind the transformation of the input capitals into output capitals.

Integrated reporting is based on seven guideline principles (IIRC, p. 5):

- strategic focus and future orientation
- connectivity of information
- stakeholder relationship
- materiality
- conciseness
- reliability and completeness
- consistency and comparability

Those guiding principles, actually illustrate the wider view of value, promoted by IIRC framework, where the value creation is not analyzed only from the perspective of value added created for shareholders, but the value added created for the stakeholders and society, too. It is essential to underline the fact that this reporting framework addresses not only to long-term investors, but to short-term and medium-term shareholders and stakeholders also, leading an integration of thinking among investors.

It is really important the connectivity of information, as the value created is based on the concomitant use of six categories of capital (financial capital, manufactured capital, intellectual capital, human capital, social and relationship capital and natural capital). It is essential that the managers realize that focusing only on the extensive/intensive use of one capital would not generate a positive impact of the processes on financial performance. That is why, integrated reporting promote a more balanced management of capital, not as is the case of traditional model, oriented especially on financial results, but neglecting the other categories of capital. Overall, integrated reporting is actually showing that an entity is able to create internal (shareholder) value only in positive correlation with the value they can create value for the environment it operates in.

Concerning the capitals involved on the integrated reporting, we have to emphasize the fact that the difference between integrated reporting framework and financial reporting framework is actually referred to some extremely controversial elements like is the case of intellectual capital accounting (intellectual property, organizational capital), human capital reporting (expertize, experience and capabilities of the employees), or social and relationship capital reporting (brand, reputation). From the personal point of view, wonderings regarding reporting those special categories of capital still persist in case of social capital and it is really hard to evaluate the advantage that an entity has,

as a consequence of its own system of procedures, its own culture, or the management alignment to the shareholders engagements.

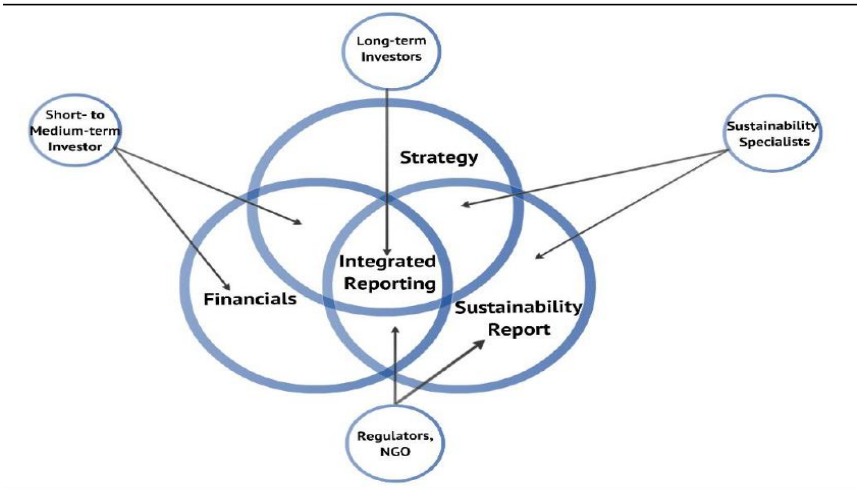
Stakeholder relationship is fundamental on setting up an efficient communication process, between the managers on one side and the stakeholder on the other side, with the aim of reducing as much as possible information asymmetry. The power of this relation is already explained through *legitimacy theory* and *stakeholders theory*, which just underline the dependences between an entity and its external environment. This means that, as long as the entity is able to explain clearly its strategic view to all stakeholders, management will get support from the entire society, or at least will not meet constraints raised by different stakeholders. That is why we subscribe to those who believe that a value added statement is urgently needed to become mandatory for all listed and big companies, disclosing information of value creation and value distribution. That is why integrated reporting is again seen as a model for the future corporate reporting system configuration.

Managers have to give great attention to information characteristics like: materiality, conciseness, reliability, completeness, consistency, comparability, as practice regularly claims that integrated reports are extremely voluminous and sometimes ambiguous. This is because of various application of materiality principle that gives them the opportunity to present the information in their favor (*narrative reporting*) using different techniques of impression management (Jones, 2010).

Information about organizations overview is useful to establish the institutional framework an entity has set up to create and improve continuously the internal value adding processes. Beside this, shareholders and stakeholders should be aware of the boundaries of the internal environment that can be managed towards strategies implementation. But, in order to establish the limits of the boundaries between the external environment and the internal environment, there should be revealed also information about the internal environment configuration, together with the mechanism, the processes, the procedures and the organizational culture. Once external environment and the business model are defined, the managers should report information about the risks the entity is exposed (historical risks with immediate or future effect on the entities performances and expected risks rising from actual proposed strategies). All these being set up, in

strong relation with the management strategy, the stakeholders can decide on the effectiveness of management actions considering the overseen opportunities. We would consider the last, but not the least the governance mechanisms that are really important when we talk about the monitoring system of the management team on a continuous way, so that significant gaps between managers actions and strategy confirmed by shareholders to be corrected on time.

Figure no. 4. Integrated reporting, an intersection of different value creation perspectives



Source: USB (2012), What is "Integrated Reporting"?, p. 3

An integrated report is designed in order to provide information about (IIRC, p.5):

- organizational overview and external environment
- governance
- business model
- risks and opportunities
- strategy and resource allocation
- outlook
- basis of presentation

In the end, business excellence should translate into positive impact for shareholders and stakeholders as well. Important is the way managers communicate, not only the value creation, but the value added distribution as well. Only this way, the entity can be sure of

shareholders and stakeholders support and the managers can use the capitals of the entity. We underline this fact as we are talking not just about traditional forms of capital (financial capital, natural capital, manufactured capital), but also about a refined concept of capital that means intellectual capital, human capital and social capital too. All those categories of capital need stakeholder's commitment to the management strategic plans. This way the public trust can be re-established, the investors can regain their confidence on capital markets and the KPIs will become relevant for the decision process.

Results and discussion

The base of the integrated reporting model is the <IR> framework, issued on December 2013, after about 3 year of public consultation, starting from a pilot program including 140 companies, from 26 countries. A significant increasing number of companies implementing the <IR> reporting framework have been encountered especially in the period 2013-2014. Even thought, this framework was implemented only by a small number of companies'. This reporting model is voluntary for all companies worldwide, except the case of the listed companies on Johannesburg Stock Exchange (JSE) which are mandated to publish yearly an integrated report. The reason is that managers, investors and stakeholders do not have yet a clear image on the balance between the cost inquired to prepare an integrated report and the benefits derived from such an option. Indeed, there is small literature on this area, as IIRC reporting framework is relatively new. Even more, we believe there has not yet been revealed the usefulness of the integrated annual reports, like is the case of integrated reports that can be used on the business excellence assessment, by analysts and investors.

We have underlined until now that, through business excellence, companies aim for value creation maximization. On the other hand, we have clearly emphasized that integrated annual reports are actually addressing, in a financial perspective, the flow of value creation process. The question is how useful is an integrated report on assessing business excellence for a company and which are the limits of this reporting model. That is why we need to integrate the information disclosed by the integrated annual report into the business excellence model scorecard. For this we will refer to EFQM model, in case of Coca Cola HBC Company.

Tabel no. 1. The European Model for Business Excellence

Criterion	*Weighting (%)*	*Number of sub-criteria*	*Sub-criteria weighting*
Enabler criteria Comprising:	*50*		
1. Leadership	10	5	Equal
2. Policy and strategy	8	4	Equal
3. People	9	5	Equal
4. Partnerships and resources	9	5	Equal
5. Processes	14	5	Equal
Results criteria Comprising:	*50*		
6. Customer results	20	2	6a 75%
			6b 25%
7. People results	9	2	7a 75%
			7b 25%
8. Society results	6	2	8a 25%
			8b 75%
9. Key performance results	15	2	Equal

Source: Porter & Tanner, Assessing Business Excellence. A guide to business excellence and self-assessment, Elsevier, p. 165

The EFQM model is a business excellence model issued by the European Foundation for Quality Management, mean not only to build a solid culture of TQM on a company level, but also to increase European industry competitiveness on a regional scale. The set of criteria behind the model scoring, concentrate on the enablers and on the results as well, are reflected in table no. 1. On its bases stay the flow that explain the results through organization processes, processes run and continuously improved by human capital organization's resources. That is why the processes and the human capital are placed in a central position of the model.

On the other side, we can easily realize that this business excellence model can be properly described through the integrated annual reports. The diversity of the information disclosed by the integrated report can provide a business excellence profile of the reporting company, using a smart format of presentation, focused on graph presentation, narrative disclosure techniques, information materiality and information connectivity. EFQM model consist of a set of 9 criteria, which is divided into other 32 sub-criteria.

Cross-sectional analysis between information disclosed by integrated reports and information disclosed by self-assessment report/ feedback report reveal, from our perspective, show the limits of the integrated report, as it provide relevant information for business excellence assessment only in terms of value creation and business strategic analysis. In this equation, the human capital and the innovation potential are essential, as they are enablers of value creation.

It is obvious that an accurate image of a business model excellence scorecard can be depicted only starting from an external audit mission, led by specialists. We also know that integrated report content is really flexible, impossible to be somehow standardized. But this does not mean that investors or other stakeholders are not able to build an overall profile on the business excellence level a company has reached. We would actually see this approach as being a new perspective of integrated report analysis, as every investor, analyst or other stakeholder objective differs when analyzing and interpreting the information disclosed by the integrated report. On those circumstances, we would encourage managers to continue disclosing not only an integrated report, but sustainability and CSR reports as well, because those corporate reporting tools diverge once the objective of analysis does not address only value creation and distribution.

From our point of view, the marked cells in table no. 2 underline a conceptual connection between the elements included in the EFQM model and the Integrated Reporting framework. Overall, all resulted element from the cross-sectional analysis are valid, that their validity differ based on each industry or company particularities, except the marked ones which are general and should be seen in every integrated report. For instance, an integrated report addresses the model of company governance, extremely useful on company's efforts to preserve its assets and affects its resources effectively and with respect to all legal requirements. But the governance model does not necessarily follow up customer satisfaction.

Tabel no. 2. Cross-sectional analysis on EFQM model versus <IR> framework

			EFQM model results			
			People	*Customer satisfaction*	*Partner ships*	*Business*
Integrated report	**Content elements**					
		Organizational overview and external environment			X	X
		Governance			X	X
		Business model		X		X
		Strategy and resource allocation	X			X
		Performance	X	X		X
		Outlook				X
		Basis of presentation				X
	Capitals affected					
		Financial capital	X		X	X
		Manufactured capital		X		X
		Intellectual capital	X	X		X
		Human capital	X			X
		Social and relationship capital			X	X
		Natural capital			X	X

Source: Authors' own projection

The section of the EFQM model, addressing the problem of excellence in company's workforce, reveal information not only on human capital and company's potential of innovation, but also information concerning leadership and excellence culture consolidation. This section is only partly addressed in the integrated report, with focus on human capital impact on the value creation process and the policies the company set up in order (financial motivation, promotion, professional training and formation). This section depend on the industry the company activates, as we cannot compare an IT company with a manufacturing company, as in a manufacturing plant the processes can be standardized usually, while the contribution of a software programmer is unique for a project progress. What is fundamental in both perspectives is the need of communication that is hard to be measured and usually is kept as internal information. If we would sum up leadership weighting (10%) with people weighting (9%) and people results weighting (9%), we would realize that human capital

resources are the most important element of the EFQM model. The situation is similar for the other business excellence international model, reason why we would think for a profile model construction that bases not only on information disclosed by the integrated report, but also on information revealed through CSR and sustainability reports.

Customer satisfaction is the core element of all TQM model, but this is not the same situation for EFQM model, as its weighting sum up only 20%. This is explainable as the objective of customer satisfaction means not only to meet customer expectation, but even to exceed them, objective achievable only through a strategic and operational quality planning, focused not on detection, but on prevention. That is why, we would dare to say that those 20% for customer satisfaction actually can go over 30%, as customer satisfaction means compliance with manufacturing processes (referred to manufactured capital), plus drastic (Six Sigma methodology) and continuous (Kaizen philosophy) improvement of the processes (referred to intellectual capital). This area represent a limit of the integrated reports, as project improvements reporting imply a high risk of losing the competitive advantage a company has in relation with its concurrence.

In the context of a globalized economy, the problem of developing and consolidating partnership relations and using efficiently and effectively the resources, is fundamental. Talking about partnership relations is as we talk about company's chances to grow sustainable, especially in the light of growing efforts of supply chain optimization. Here the companies are willing to share plenty of information with the stakeholders, in terms of strategic projects and perspectives of development and consolidation. But that information is limited, in the integrated reports, to information that can facilitate value creation and can create public trust about the company's viability. This section, similar with the section addressing the social reality of the company, can be fulfilled much more properly based on environmental and social reports that are even regulated by financial reporting standard-setters, as an integrated report will present this information from a strategic point of view that should lead to an underlining of a positive scenario of the company in terms of value creation and risk management optimization.

In the same area of interest they are the relations between the managers, investors and the other stakeholders. On this direction, integrated reporting model promote managers engagements, representing a form of stewardship culture on the light of the new

corporate reporting model. Only this way, managers can gain investors and we would say, more important stakeholder's support, on implementing company's objectives. The question that still remains open is how accurate the data disclosed by the integrated reports are. There is solution on this direction as well, consisting of auditing those reports against several assurance standards like AA1000 *Accountability Principles Standard*, or ISAE 3000 *Assurance Engagements other than Audits or Reviews of Historical Financial Information*. But those standards are watching only to ethical considerations, procedural issues, planning aspects or information quality requirements (Lungu, 2013).

The area in the EFQM model that discusses the business model of a company is well-drawn in an integrated report, along its entire content. Actually, this area is concerning the dissemination of financial and non-financial information disclosed by an integrated report. An integrated report achieves to make up a story behind the financial figures with the help of the non-financial information. The integrated report can describe the combination of capitals considered by a company in order to achieve the targeted results. It is particularly designed in order to underline the positive aspects of the management activity, concerning financing, investment and operations decisions. Overall, the business results disseminated on the integrated report reduce to the business model presented on a prospective and visionary/ strategic perspective that implies an efficient resources allocation, in uncertain economic, social and environmental context.

Instead, the integrated report is offering conclusive, but limited, information on the technology used by the company as well, in order the gain customer's trust. Also, there is small volume of information revealing knowledge management considerations, because of competitive advantage preservation. This is another limit of the integrated reports, as through knowledge management processes, company's viability can be ensured. Moreover, improvements encountered on local facilities cannot be properly replicated globally, or even regionally, as there is not an efficient system of knowledge transfer.

If we change our perspective analysis to look on the integrated report usefulness through the lens of EFQM model, as a possible angle of underlining some points of improving the integrated reports structure, we would realize that all core elements of the business excellence model should result in shareholder value maximization and equitable value

added distribution to its enablers. On these circumstances, as the content of an integrated report is relatively flexible, the stakeholders and the investors can use business excellence models as referential to interpret better the information disclosed by the integrated report. If the guideline principles mentioned in the <IR> framework refer to the content of an integrated report and the format the information is presented, EFQM model show us a possible model of information analysis and interpretation. Thus, the investors and the stakeholders could analyze the integrated reports beyond the traditional review of an integrated report, by focusing on:

- efficiency and effectiveness of management's policies;
  - the analysis should not limit to the traditional financial ratios, or even to the extended set of traditional and value-based ratios, as non-financial information can give relevant clues to the reader concerning potential economic growth determined by the intangible assets, the human capital, or by the business process reengineering projects;
  - the results analysis has to be done on a wider time perspective as different functions of the company, design various improvement projects for which the return on investment (ROI) can be calculated only based on the entire lifetime project, or along the complete cycle of a process;
  - business results can be defined as the consequence of human capital productivity and business processes' efficiency; it is essential that value creation determinants should be studied in strong correlation, with focus on training programs effects on workforce productivity, innovation capabilities and improvement initiatives;
- customer satisfaction impact on company viability an value creation process capabilities;
  - meeting customer expectations is not enough anymore nowadays, but exceeding costumer expectations, as industry certification standards require, like is the case of VDA requirements, valid for German automotive industry; that is why the integrated report should be looked for forward-looking non-financial information that would clarify company's perspectives of viability;
  - in order to exceed costumer expectations, the company has to go beyond its internal processes and resources, by building partnership relations in order to gain economies of scale and build public trust;

- leadership and premises for development and consolidation of a culture for improvement; it is extremely important the managers' vision on the business model and company's ability to run an effective strategic planning of the business, in order that all human resources are deeply involved and motivated to run successfully the task assigned within company's portfolio of improvement projects;
- realistic process-based management, starting not only from investors an stakeholders expectations, but considering aggregate historical performance information as well;
- human capital development and motivation policies, like HR professional training programs;
- intellectual capital capitalization and knowledge management optimization, as it could translate into a consolidated competitive advantage, even a technologic monopoly;
- increasing learning curve and innovation capabilities
- corporate social responsibility.

Overall, we can realize that an integrated report can be seen as a part of the self-assessment report done by the managers of a company enrolled on a business excellence award contest. But this will not minimize its value relevance as long as the information disclosed by the integrated reports are randomly cross-checked or completed with other sources of information.

Conclusions

Aiming for business excellence is part of every company's way of existence. The secret for each company is its organizational culture for excellence and the measure its people follow it. As Collins (2007) has defined business excellence, starting from an empirical analysis of some American companies, realities such leadership phenomenon, excellence culture development and consolidation, competitive advantage management, or sustainability thinking implementation, can be considered central pillars in the definition of the successful path to business excellence. But the concept of business excellence is extremely complex, dynamic and subjectively measurable. That is why the solutions raised along the last decades are controversial and sometimes even dual.

It is obvious that business excellence assessment, no matter the business excellence model used, can be fairly and accurately realized only starting from the conclusions of an external audit, like there are such

practices already worldwide. The question is how investors and other stakeholders can appreciate the stage a company is ranked in terms of business excellence parameters.

We propose on this article a completely new approach of business excellence assessment, by using existing corporate annual reports, with focus on the integrated reports. With causation, this reporting tool can surely be used by stakeholders as a basic source of information, as the business model is presented on a strategic, dynamic and prospective light, with focus on assessing company's value creation potential. This even more possible, as long the company capitalize information technology recent developments, leading to a more concise and costless model of corporate reporting, open for all its shareholders and stakeholders. But a cross-sectional analysis between a business excellence model and the integrated reporting philosophy has led us to the conclusion that an integrated annual report, or even a sustainability report, have to be perceived as similar with a self-assessment business excellence report the company would prepare.

What worth to debate further is the way corporate reporting model can be revised, as the limits of integrated reporting model can easily be identified through the lens of a business excellence model. We do not say integrated reporting model has to be changed in order to answer the questions raised by a business excellence model, as its main objective is the emphasis on value creation potential and equitable distribution model. Instead, we would just think further how corporate reports can be combined and result into an aggregate model of business excellence reporting model that should not limit only to value-added reporting, but to CSR and sustainability aspects as well. Moreover, such kind of model can be implemented on an online platform, up to date, with open access for all shareholders and stakeholders and with possible online sessions of debate. This way, everybody can be easily involved into the continuous improvement direction of the company, dictated by a visionary and responsible management team.

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An Application of the Fuzzy Method in the Analysis of Family Farms

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Abstract
One of the most important characteristics of new EU member states consists in the fact that the importance of agriculture and rural areas is much higher than in the EU15 states. This is especially true with reference to Romania where even among the new member states the economic and social importance of agriculture is especially prominent. As in most of the new member states a dual agricultural structure has formed in Romania as well. This situation raises several questions to be answered: what are the reasons and how these processes evolve following the EU accession? That is: can small farms survive, will the heirs want to continue farming? In order to achieve our research goals we have used several data sources and different study methods. Beyond literature, official documents and case studies we used interviews conducted with local specialists, as well as statements and grant application materials made available to us locally. With reference to questionnairing we applied the gradual (multistage) random selection. In conformity with the problem to be examined and the nature of farms we did not

consider farms, but households as accounting or questioning units. As a result of our research we may assume that present land structure will not undergo fundamental change in the upcoming years. We may assert this both on the basis of the conducted interviews and founded on the fuzzy model drawn up on the database of our questionnairing. Thus it seems that the agricultural structure of Szeklerland is quite „crisis resistant." This is partially due to social determinants, partially to economic incentives and constraints (increasing food prices, lack of jobs, low income, etc.).

Keywords: agriculture, family farm, part-time farm, fuzzy modell, households.

Introduction

One of the most important characteristics of new EU member states consists in the fact that the importance of agriculture and rural areas is much higher than in the EU15 states. This is especially true with reference to Romania where even among the new member states the economic and social importance of agriculture is especially prominent. Differences are also striking regarding agricultural enterprise forms. As in most of the new member states a dual agricultural structure has formed in Romania, as well. That is beyond the large farms that despite their scarcity are still fulfilling a significant role both in production and in land-usage, a multitude of small farms are operational. In the case of Romania, this structure also shows significant regional differences as well: in mountain areas (that is also in Szeklerland) large farms are rather rare, small farms are more significant not only in their number, but also in land usage.

This situation raises several questions to be answered: what are the reasons and how these processes evolve following the EU accession? That is: can small farms survive, will the heirs want to continue farming? It turned out that beyond these originally phrased questions another similarly striking question arose: how do these farms deal with the economic crisis? It is especially important in Szeklerland as agriculture is one of the most significant branches of economy, one of the key sources of livelihood for rural households, it is part of rural

existence, a defining element of land use. In our research of 2010 that also contained our own empirical data collection, we considered it particularly important to study very small farms that could be found in very large numbers in Szeklerland. Especially given the fact that in our case the question always arises: what will happen to them in the future - will the fully or partially self-sufficient ones survive and be transformed into commodity producers or will they be liquidated? We attempted to find the appropriate research methods in order to answer these questions.

Methodology and Purpose of the study

Territorial delimitation, interviews, case studies

Szeklerland is an approximately 12 450 km² - sized piece of land which belonged to Hungary until 1920 and constituted the Eastern-Southeastern border of the country. After 1920, as a result of the peace agreement following World War I, it became part of Romania, geographically situated in the middle of the country. Between 1940-1944 it belonged to Hungary again. The majority of its inhabitants are still Szeklers. Szeklers are a Hungarian - speaking ethnical group who were settled to their present-day territory in order to defend the south-eastern border of Hungary. For this reason, they had enjoyed tax exemption for a long time, and they had formed a sense of freedom for themselves.

At the territorial delimitation of Szeklerland what poses special difficulty is that its borders do not coincide with the present administrative division and thus neither with the statistical system. However, we consider that it is a good compromise to view Szeklerland as consisting of the whole of Harghita and Covasna counties and the Marosszék part of Mures county. We have chosen this division as a solution.

In order to achieve our research goals we have used several data sources and different study methods. Through collecting and analyzing the literature of the domain as well as available documents we have clarified terms and we have identified the main characteristics of agriculture in Romania and in the Szeklerland. In order to prepare and interpret the empirical data collection we have conducted case studies with reference to the four microregions. Beyond literature and official documents, as sources for these case studies, we used interviews

conducted with local specialists, as well as statements and grant application materials made available to us locally.

In preparing the questionnairing and in interpreting the data we used interviews. When choosing our interviewees we tried to select different types of farms, respectively households. We have also conducted so-called expert interviews providing information on the given microregion's and the given farm types' main characteristics. These interviews have proven very useful in understanding the motivation of farms and households and in describing local conditions, informal relations and cooperation among farms.

Questionnairing, sample selection

With reference to questionnairing our initial consideration was to select a sample that was economically feasible but still suitable for generalizations. Given the fact that lists regarding the basic population (all the family farms in Szeklerland) were not available, we did not have the possibility to implement a simple random sampling. Therefore, we applied the gradual (multistage) random selection. This method proved expedient not only because it gave us the opportunity to eliminate the problems arising from the lack of a population frame, but also because we concentrated the sample regionally. Thus we managed to make the questionnairing less expensive and better controllable, and thus ultimately more reliable. The criteria and phases of the gradual sampling consisted in the following.

In the first phase we decided to sample in the different microregions. We drew up a work plan according to which we were to choose four microregions and to question 100 persons/microregion. Thus we also created the opportunity to achieve a sample that would be suitable for the analysis of features characterizing the entire Szeklerland, but also features specific for the given microregions. The microregional partial samples made the questionnairing easier while also giving us more useful research results in the development practice of the given microregion. Based on all the above (and taking into account basic population rates), we considered it feasible to choose 2 microregions in Harghita county, 1 in Covasna county and one in the Marosszék part of Mures county. We chose the Alcsík and the so-called Hegyalja microregions in Harghita county, in Covasna county the Targu Secuiesc Microregion that is essentially identical with the former Kézdiszék, while in Mures county we selected the Nyárádmente

microregion. This was followed by the selection of settlements according to the following method: from all the microregions three municipalities were selected for the sample from which characteristic villages from these municipalities were chosen so that both smaller and larger villages would be represented in suitable proportion to their population. The next step was the random selection of households to be questionned in these given villages. This was done on the basis of available maps. In conformity with the problem to be examined and the nature of farms we did not consider farms, but households as accounting or questioning units. This decision was supported by the fact that in the case of small farms the household and the farm are not separated with regards to the usage of production factors and neither to the spending of income. It has become more and more widespread also in international literature to create census of households and not farms in order to study the features and reactions of small farms.

Literature review

Fuzzy logic. A system close to the human rationaling and thinking.

If we say young or old, we talk about categories that are relative from many points of view: in a Pygmy tribe an old man does not mean the same age as in the case of a European person; a man at 50 considers himself middle aged; for a child, a human above 30 is old. But these categories do not have clear and set borders. We cannot say that one person at 34 is young, while another at 35 belongs to the middle aged group.

Lotfi A. Zadeh (1965) phrased the fuzzy theory defining it as the theory of non-crisp values and non-crisp membership. Such membership has no clear borders. Accordingly we can argue that a 34 year-old man is 45% young and 55% middle ages, while a man of 35 is only 42% young and 58% middle aged. The fuzzy logic expresses how humans think about things: inaccurately. This logic transfers the knowledge of the domain experts in computable data. The mapping relationship between the input and the output in a fuzzy system consists of a set of fuzzy IF-THEN rules. If we have domain experts, these rules are formulated by them; in other cases we can use an evolution of the rules and/or the membership functions.

Fig. no. 1. Age represented in fuzzy logic

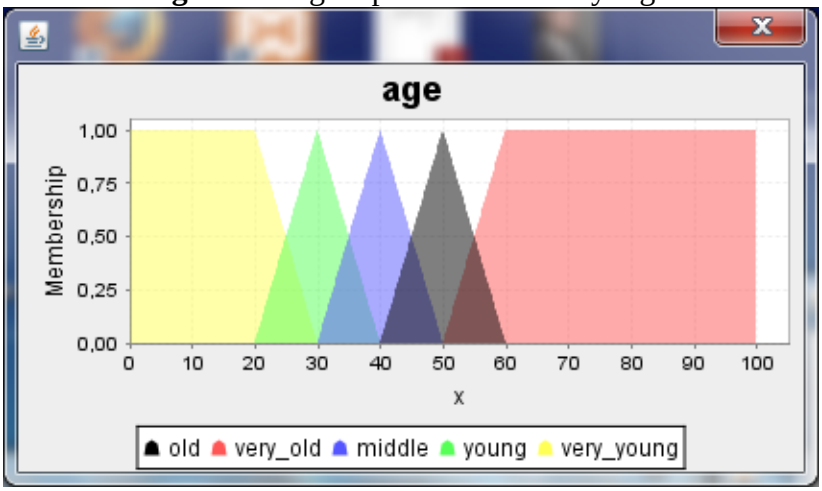


Fig. no. 1 presents the *membership functions* for the *age* factor in our and in the SCARLED research (Fritzsh-Möllers-Bruchenrieder 2010). Instead of the Matlab™ and the fuzzy package from that software, we use the JFuzzyLogic package in Java language developed by Cingolani and Alcala-Fdez (2012). Figures 1, 3-12 are also performed by that package output.

The output of the fuzzy computation could be also a class with fuzzy membership, like our diversification potential in figure 3, or a crisp value. As we see on figure 10, the *potential* output is made with a method called Center of Gravity, that is one method to make mappings from a lot of inputs formulated in fuzzy mode and one fuzzy output.

First level of our fuzzy system contains ten attributes with values, that are fuzzyfied crisp values or fuzzy values itselfs. *Dependecy ratio* reflects how many not active (old and youth) people are related to total members of the family involved) and was measured as the share of persons older than 64 years and younger than 20 years as a proportion of the household members between 20-64 years old (economically active age). Households without economically active members, i.e. pensioner households, were assigned the value 3.0 to keep them in the sample.

Fig. no. 2. The two level fuzzy system (from Fritzsh-Möllers-Bruchenrieder 2010)

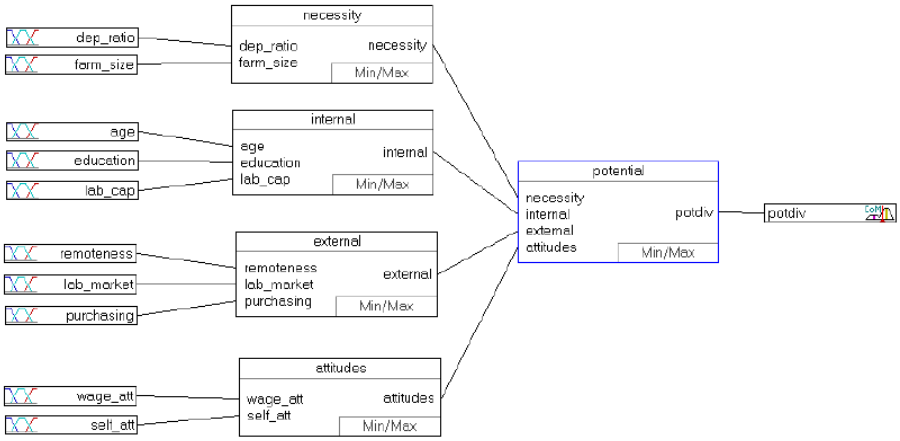
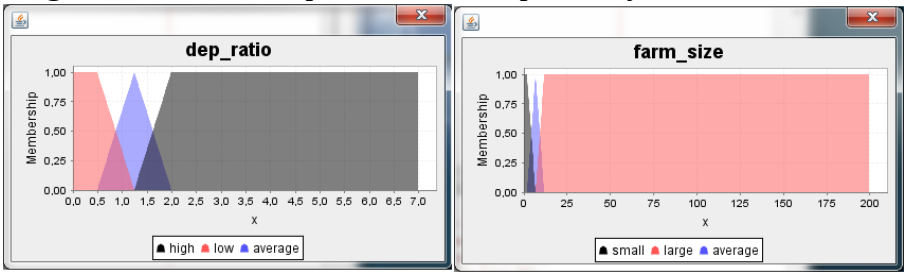


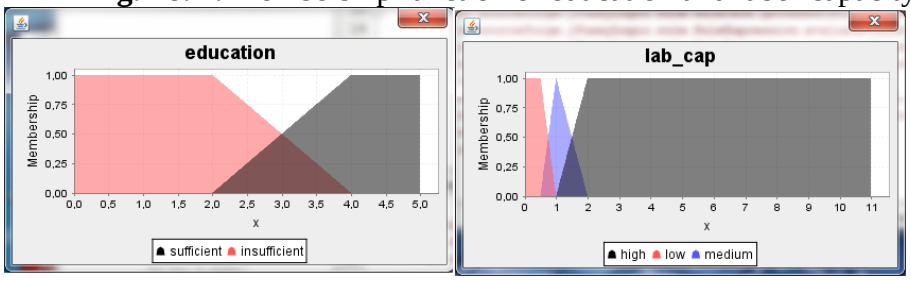
Fig. no. 3. Membership function for dependency ratio and farm size



Farm size was measured in total available area of agricultural land, which includes permanently fallow land. We can see that upper 12 ha land are considered large.

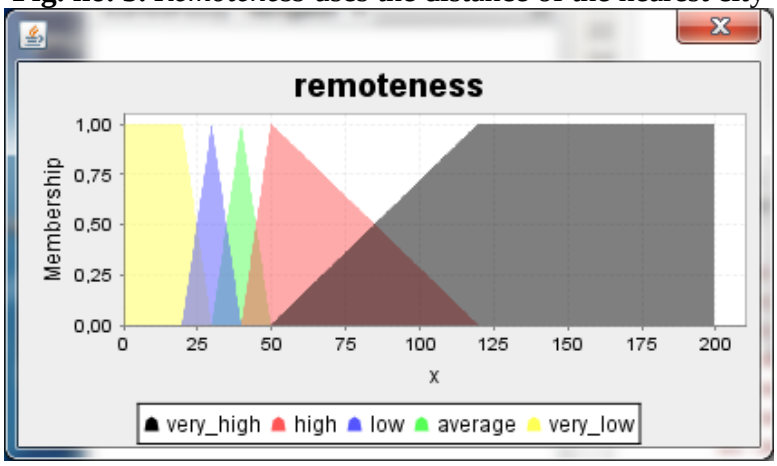
Age is the age of the had of the family. The age attribute was considered in figure no.1.

Fig. no. 4. Membership function of education and labor capacity



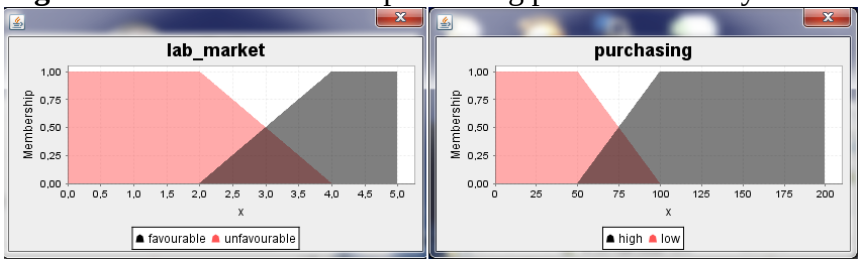
Education is the education of the head of the family. This attribute could have seven different values, from no school to faculty. "*Labor capacity* was measured in person equivalents that is the sum of all household members of an economically active age plus the number of pensioners up to 69 years old multiplied with 0.5, plus the number of pensioners between 70 and 74 years old multiplied with 0.25 to account for their reduced, but still existent labour capacity." (Fritzsh, J., Möllers, J., Buchenrieder, G.)

Fig. no. 5. *Remoteness* uses the distance of the nearest city



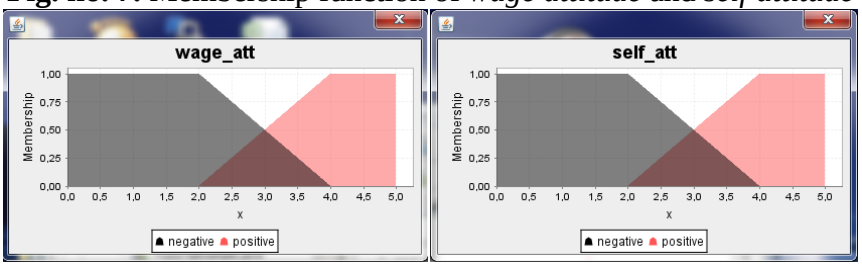
"Household members older than 19 years were asked for an assessment of the local labour market (lab_market). The question was how they rated their chance of finding a job on the local labour market. For each household, the maximum rating of all answers was entered in the calculation."(Fritzsh-Möllers-Bruchenrieder, 2010)

Fig. no. 6. Labor market and purchasing potential in fuzzy manner



The purchasing power of the region was measured relative to the country average. This was computed in correspondence of GDP per capita.

Fig. no. 7. Membership function of *wage attitude* and *self attitude*



"The attitudes towards wage employment (wage_att) and self-employment (self_att) were assessed among all household members older than 19 years and the maximum rating was included in the model. In general, households have more positive attitudes towards waged jobs than towards self-employed activities." (Fritzsh-Möllers-Bruchenrieder, 2010)

One output of a fuzzy subsystem can be an input for another fuzzy subsystem. In our case, we have two levels of the fuzzy system We can see this in figure 2 where the diversification potential of households are computed in two steps. The inputs *farm size* and *dependency* ratio generate an output named (1) *necessity*. Inputs *education*, *age*, *labour capacity* maps in output named (2) *internal conditions*, the memberships of *labour market*, *purchasing potential*, *remoteness* generate the (3) *external conditions* membership and the *self attitude* and *wage attitude* goes to (4) *attitude* membership. In the next level, these four output factors become inputs and with their fuzzy memberships get through a Center of Gravity processing and result in a *diversification potential*, as we can see in figure 10. The Scarled authors (Fritzsh-Möllers-Bruchenrieder, 2010) define the IF-THEN rules we also use, from where we pick some:

"RULE 1: IF necessity IS unnecessary AND internal IS low AND external IS low AND attitudes IS negative THEN potential IS low"

"RULE 37: IF dep_ratio IS low AND farm_size IS small THEN necessity IS necessary"

"RULE 46: IF age IS very_young AND education IS insufficient AND lab_cap IS low THEN internal IS low"

"RULE 76: IF remoteness IS very_low AND lab_market IS unfavourable AND purchasing IS low THEN external IS low"
"RULE 96: IF wage_att IS negative AND self_att IS negative THEN attitudes IS negative"

Fig. no. 8. The necessity and internal conditions membership functions at the 2nd level

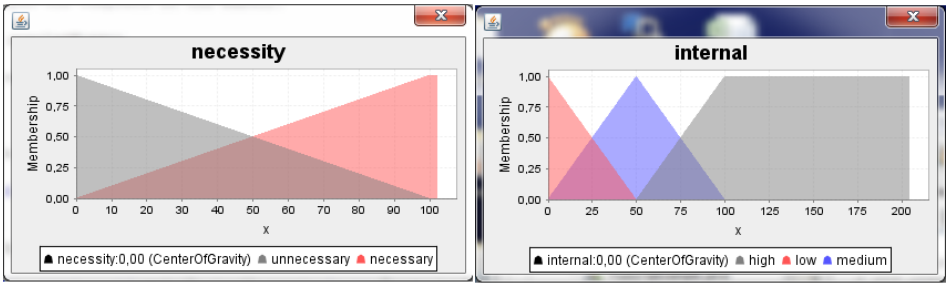
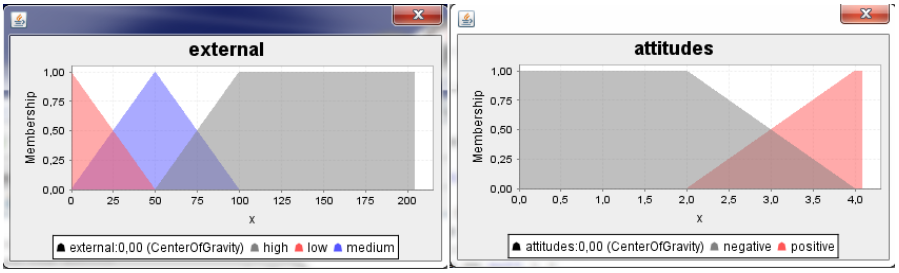
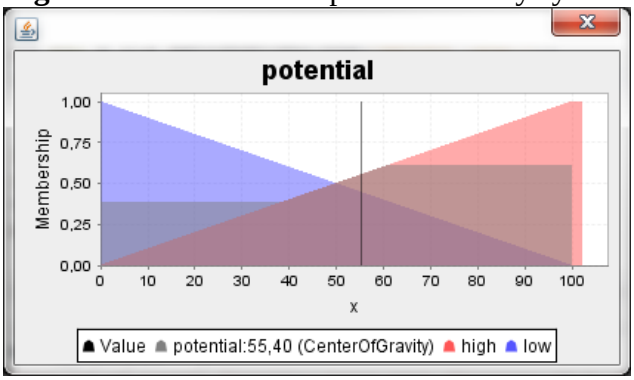


Fig. no. 9. The external conditions and attitude membership functions at the 2nd level



The factors in the IF conditions are the inputs of the system, the factor after the THEN keyword represents the output. As we can observe, the first level rules are rules 37, 46, 76 and 96. The second level rule (RULE 1) has inputs from the output of the first level.

Fig. no. 10. The final output of the fuzzy system



Data collected through questionnairing have been used for the characterization of farms of the given regions and of the farm-owning households. Beyond this, however, we also performed modelling through using the fuzzy theory. In our case the sample served to estimate the diversification potential of households. For our estimate we have used the fuzzy application that an international research developed exactly for this problem. (Fritzsh - Buchenrider - Möllers, 2010.)

The essence of the sample consists in the fact that it arranges variables in four factors in the database of households.

Factor 1: need for diversification

Factor 2: preconditions of internal diversification

Factor 3: preconditions of external diversification

Factor 4: attitudes.

With variables belonging to the first factor we measure the incentive/coercive (compressive) effect on achieving income outside of agriculture. The second and third factors measure suction forces. The fourth factor measures whether a household is characterized by employer mentality or rather "one's own boss" one occasionally even in case of modest income. Through sampling with these four factors we may estimate to what extent the given households are prone to diversification.

Results of the study

As mentioned before, one of the most important features of agriculture in Szeklerland is the relative small size of estates. Within this, of course, there is also differentiation. While conducting the interviews, we tried to visit both farmers of larger as well as smaller

farms. In the interviews conducted with specialists we specifically focused on the differences in the situation of farms and households of different sizes and production structures.

It is true that generally the larger farms are the winners of EU accession, but the economic crisis has affected those involved in livestock breeding, more specifically: cattle breeders, and especially dairy farms. Their majority managed to meet the acceptance requirements increased by the EU accession, but they were shocked by the drastic decline of milk prices in the spring of 2009. Thus, they have tried to survive by transiting to meat cattle breeding, or by switching at least part of the livestock to meat cattle, or by some other type of enterprise (forestry, woodwork, tourism, food processing). Standing on multiple feet has always been characteristic of the region, while now it has become even more appreciated, which means that even larger farms are forced to the diversification of their activities.

Middle size farms are almost all part-time farms. It is very rare to find even one working age family member, who would not have some other source of income. This is the typical situation, even if the main source of income is the farm. The reason for this consists in the aspiration to safety, social security and pension. These people tend, however, to get external employment rather than starting an enterprise outside agriculture. They mainly look for employment that would fit their tasks on their own farm and its contact system: flexible work time, education and information useful both on their own farms and at their workplace.

This farms are quite stable, both from the point of view of family background and from that of rentability. One of the most important pillars of stability consists in subsidies. Many of the interviewees said that in fact the subsidies constituted the profit of farming, a profit that they received in a lump sum and thus they could use for investment. The rest of the continuous revenue (either milk-money or selling potatoes) is rather merged with the household and is used for the operating expenses of the farm or for household targets.

A few years ago livestock breeders were still working with 3 to 8 animals, but by today they have lowered this number to the minimum number required for the state subsidy (3). Thus former commodity producing dairy farms (producing for the market) have been replaced by production for own production (maybe for supplying dairy products for the neighborhood). The complete elimination of livestock is not

characteristic in the case of middle sized farms, they have rather become partially self-sufficient. This process seems to have two reasons: on the one hand, maintaining the state subsidy, on the other, they are still hoping for better times to come.

A good crop to be sold by farmers are potatoes. Crop rotation also depends on it. Livestock breeding also partially serves the purpose of producing organic fertilizers for the maintenance of the land's fertility. Produced grain is fed to the animals, while the excess is sold. Farms are relatively well-equipped, even if not with the most modern machinery. It is typical for two-three farms to "work together": they purchase machinery together (complementing each other), they perform the most important works together, they hire a shepherd together, etc. More extensive cooperation can be found only in connection with the two most important commodity products: potatoes and milk.

The smallest, mainly self-sufficient farms (or those turned into such in the previous couple of years) are also characterized by stability rather than the intent of liquidation, at least what regards the near future. What is interesting is that this is not only due to the fact that these people do not have enough money to switch from self-grown food to food purchased on the market, but also because of the fact that if you consume your own product, you "know what you are eating." There is obvious mistrust towards food sold in supermarkets. A further element belonging to this line of argument is the quite frequent use of food home-grown by acquaintances as well as direct selling. A further consideration supporting self-sufficiency: household tools (land, stables, skills, fraction of labor force) must be exploited. At the same time: uncultivated land will become weedy, will lose from its value, etc.

In the case of almost all types of farms we found the existence of informal relations to be typical, without which they would experience considerable difficulties in their functioning. Transforming these into regulated relations would pose serious challenges to everyone. For example, land use is often based on favors. Besides the members of the household, the registered farmer and his family members' wider kinship also participates in farm works and receive their share from the profits. A system of mutual favors has been formed that is operational even today. We have even noticed as an element of this informality that in the case of smaller, more remote villages authorities do not care whether machinery, tractors have their registration papers in order or whether drivers have licenses. Of course, machinery may be taken to the fields

also on "side roads", but they may just as well pass a couple of hundred meters on public roads, as well. Making such specifications more stringent or taking them more seriously would rather restrict the market presence and subsidy application of partially self-sufficient farms, rather than result in their total liquidation. The decisive majority of village households produce the most important foods for their own use themselves, regardless of the size of their farm.

Farming has a very strong social embeddedness and restrains. You are more than certain to fail if you remain outside the informal social network. This also hinders the participation of external investors as well as the development of larger local farms as a larger farm obviously cannot work without (full-time or seasonal) employees. This, however, also has limitations arising from the specificities of the local society consisting in the fact that the owner himself has to give directions to the employees, distribute work and check whether it has been done. So-called delegated authority is not considered legitimate. The owner may appoint someone to act as manager on his behalf on one of the worksites, but the other employees will not expect tasks and neither rewards from this person. The "boss" (farmer) has to be aware of everything, has to be present everywhere, if he wants things to go well. This means that hierarchical relations are also more personal than formal.

Discussion

Originally we were planning to interview 100 households in each of the microregions. Following the cleaning of data we dispose of 384 questionnaires, in the Hegyalja and the Kézdivásárhely microregion 100 each, in the Alcsík microregion 99 and in the Nyárádmente 85.

The size of the interviewed farms may well be characterized by the land that they use. These data with reference to the years preceding the interviewing are:

Table no. 1. Land use of farms (ha, 2009)

Region	Miniumum	Maximum	Average	Standard deviation
Alcsík	0,20	45	3,92	5,44
Hegyalja	0,04	100	6,55	11,86
Kézdiszék	0,03	34	5,06	6,54
Nyárádmente	0,10	70	5,95	10,93
Total	0,04	100	5,37	9,22

Based on the size of farms we could even be shocked by the large percentage of labor time spent with farmwork by the members of the household. Table no. 2 presents these data.

Table no. 2. Labor time spend with farming (%)

Region	Minimum	Maximum	Average	Standard deviation
Alcsík	12,07	100	72,54	28.49
Hegyalja	0,04	100	78,37	24.21
Kézdiszék	0,03	34	73,98	25.94
Nyárádmente	0,10	70	82,90	23.75
Total	0,04	100	76,95	26,04

The following tables (no. 3 and no. 4) offer some explanation to the phenomenon. Despite the large standard deviation, we can state that in all these microregions the average of self-sufficiency production is higher than three quarters of total production. This percentage is especially prominent in Hegyalja and Nyárádmente. What is even more, such high average may be experiences also in the case of lower standard deviation such as in Alcsík or Kézdiszék.

Table no. 3. Rate of self-sufficiency in production (%)

Region	Minimum	Maximum	Average	Standard deviation
Alcsík	0	100	77,11	36,18
Hegyalja	0	100	92,32	22,70
Kézdiszék	0	100	77,76	35,00
Nyárádmente	0	100	89,22	27,65
Total	0	100	84,78	43,96

What is also remarkable is the fact that in all these microregions on average at least half of the food consume of these households comes from their own products. It is not surprising that the average of Hegyalja and Nyárádmente while standard deviation is also lower here. That is, in these two microregions self-sufficiency production and consuming self-grown food is not only very frequent but low dispersion proves its overall prevalence.

Table no. 4. Rate of self-sufficiency in consumption (%)

Region	Minimum	Maximum	Average	Standard deviation
Alcsík	0	100	50,63	42.54
Hegyalja	0	100	61,08	42.63
Kézdiszék	0	100	53,28	46.24
Nyárádmente	0	100	64,38	41.60
Total	0	100	56,78	31,06

Social statistical data of these households also illustrate the consequence of these data and phenomena. In all the microregions the heads of the households are over 50 years old, dispersion being relatively low (12-15 years). The most frequent highest level of education is vocational school, we can find heads of households with higher education degrees almost only in the case of large farms. Due to the method of sample selection all of them live in rural settlements. However, given the small-town settlement structure of Szeklerland they live close to towns, the distance being less than 15 km.

Despite the proximity of towns and the small size of farms diversified households that dispose of non agricultural income are rare: this number is lower than one quarter of the interviewed households. Fully consistent with former data, data with reference to Hegyalja and Nyárádmente are also very low.

Table no. 5. Number and rate of diversified households

Region	No of house-holds	Out of wich diversified household	%
Alcsík	99	34	34,44
Hegyalja	99	19	19,19
Kézdiszék	86	22	25,58
Nyárádmente	91	18	19,78
Total	375	93	24,80

Diversification potential (Table no. 6) calculated by applying the fuzzy method is much higher than actual diversification. This numbers illustrate the difference between available jobs and needs. At the same time they also draw attention to the fact that living conditions of the

studied microregions' population should be improved through measures aiming the creation of possibilities to attain income outside of agriculture (job creation, development of small enterprises).

Table no. 6. Number and rate of households with diversification potential

Region	No of house-holds	Out of wich diversified household	%
Alcsík	99	55	55,55
Hegyalja	99	61	61,61
Kézdiszék	86	53	61,63
Nyárádmente	91	49	53,85
Total	375	218	58,13

Conclusion

Literature as well as our empirical study show that Szeklerland's agriculture is characterized by family farms. As a result of our research we may also assume that present ownership structures will not undergo fundamental change in the upcoming years. We may assert this both on the basis of the conducted interviews and founded on the model drawn up on the databasis of our questionnairing.

During the research we realized that not all the rules from the fuzzy model were useful for our data sets. We can change these rules by giving them weights and evolving these weights with genetic or evolutionary algorithms to fit the analysed data better.

Our empirical study show that those who have profited from the EU accession are the larger (family) farms; however, their growth is limited (lack of land, "the farmer needs to be present everywhere"). At the same time, middle-size almost entirely part time farms have also proven stable: the interviewees consider this activity to be rational use of the resources (workforce, land, other tools), while the social embeddedness of this type of farming is also strong, it is appreciated by local communities, social capital can be used efficiently. Production (also) for self-sufficiency characterizes almost every farm, but - of course - its rate is the highest in the case of the smallest farms. This is not only due to the fact that these small farms have the most difficulty to get to the market, but also because here we find the highest level of subsistence constraint to produce the greatest possible part of their

family's food demand. Beyond this one also has to take into account the consumer demand to "know what I'm eating," as well as the tradition and practice of processing one's own food.

Thus it seems that the agricultural structure of Szeklerland is quite „crisis resistant." This is partially due to social determinants, partially to economic incentives and constraints (increasing food prices, lack of jobs, low income, etc.). At the same time, we can presume that diversification in the field of income possibilities outside agriculture would lead to decrease in the role of self-sufficiency. This fact is also suggested by the gap between the diversification potential and actual diversification of households.

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The Accounting Framework and the Financial Information Management

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Abstract
The present article aims to emphasize the impact of the accounting framework on the financial information management. Being a very wide theme, it is natural to be taken into consideration only several aspects, an exhaustive point of view not being possible. Thus, there are analyzed the reasons why the decisional factors resort to creative accounting practices and their effects on the main financial statements of the companies. In order to give a practical feature to the work, a concrete example will be presented.
Keywords: accounting framework, reasons, financial statements, financial information, management

Introduction

Creative accounting is considered a real "apple of discord" among specialists. Thus, the specialized literature has managed to draw two wide categories of accounting policies. These policies are translated, either by an imaginative accounting, in order to exploit any legal vacuum through various methods and techniques of accounts' improvement or by an intent

accounting that provides accounting, as a science, with the possibility of keeping up with innovations in the area of the financial tools and policies.

While creative accounting policies aim a maximization of profits, or the assurance of a certain autonomy and financial flexibility provided by a minimal binomial return - risk, the creative accounting itself reflects the efforts of the normalizers to align to the financial specialists' requirements. In other words, the internationalization of the financial markets, the dynamics of the globalized markets and the continuous process of globalization, asked the decision factors to build up certain evaluated forms of financing investment policies and of covering the operational needs.

Methodology and Data

In order to accomplish this work, there was necessary to use multiple methods such as: comparative analysis, synthesis, induction and deduction or mathematical modeling.

Research results

Therefore, the accounting has to adjust its rules to the evolution suffered by the economical systems. To correlate the current needs of the decision factors concerning financial management with the legislation in force, in order to be able to make a clear distinction between an unlawful accounting and a legal "reforming" accounting, it is necessary to start from the premises of this phenomenon.

The "yawn" created between the legal accounting framework and the illegal accounting practices could have as main causes:

- the acceptance of alternative accounting treatments of different economical operations, such as the cost of borrowing required by IAS 23 concerning the option of capitalization or reporting to the period expenses of various financing costs associated with an asset's production or acquisition;
- the need of accounting to work with estimations or forecasts within an uncertain economical environment, where forecasts have a mistrust degree, caused either by the tendency of willful manipulation or by attitudes and perceptions of the accounting specialists on value, by update rates or by methods of calculation;
- the lags occurred in the development of finance and accounting environments, generating the impossibility of accounting to reflect the true image of the economic condition of a company,

as long as financial mechanisms such as the securitization of receivables, the issuing of hybrid securities, or deleveraging may not be reflected using the accounting terminology and instruments.

The motivation of the decision factors to resort to creative accounting techniques are numerous and various, covering a large part of the directions pursued by the financial management of the entity recalling in this regard:

- the costs released from the phenomenon of informational asymmetry that exists among the users of accounting information;
- the mandate costs and restrictions, correlated with an acute incompetence of the decision factors in order to find solutions to revive the economic health of the entity;
- the trial to conceal a healthy company, by the „signaling" techniques, related to the dividend policy, the debt policy or the investment one etc.;
- the need for hedging policies using the financial risk instruments, despite the fact that these instruments are still not clearly defined within the current accounting framework;
- the multitude of assessment bases tacitly imposed by the economic and financial particularities, practically endless, which distinguishes the fields of activity between them;
- the conceptual relativism and the professional judgment subjectivism, the arbitration between the need for applying rules, often rigid and the appealing to value judgments;
- the accounting information users' attitude regarding the relevant indicators in the annual financial statements;
- the doubling of the goal for covering risks using financial derivatives, with a direction of dematerialization of patrimonial substance of the entity by extending financial policies in the operating cycle (speculating with the help of investment securities, homogenizing economic policies by forming consortia, building up joint venture companies), increasing the efforts to shift to a knowledge and brand based management (increasing the share of patents, licenses and trademarks).

The possibilities of fructification of the breaches occurred within the national and the international reference accounting framework, in terms of ensuring the compatibility of the two ones, it is taken into

consideration either an improvement of the economical situation reflected through risk indicators and financial autonomy (balance sheet), financial balance and liquidity (financing picture), or return and solvency (balance sheet and income statement).

Concerning the balance sheet, we could mention:

a) the deleveraging in fact, that consists of a transfer of assets and also debts to a trust, without changing the legal relationship between borrowers and initial lenders;

b) the revaluation of depreciable fixed assets;

c) the issuing of hybrid securities, which merely question the foundations of the bases for classifying financial securities, however weakened by the passage of time and the current economic and financial evolutions;

d) selling and return practices.

Concerning the income statement, we could mention:

a) the lease-back operation, which consists in selling an asset and taking it immediately on location;

b) the increasing of differences in purchasing, aiming through an undervaluation of the purchased asset, approved by both, the head of department and the auditor, an increase in reserves, as long as the accounting rules allow this fact;

c) the increasing of the collaborators expenses, encountered mainly within the small and medium enterprises, seen as an alternative of the dividend policy;

d) the recording an additional and artificial result from the disposal of an asset, which consists in its settling to the current income of the accounting income obtained, while its collection will appear in a subsequent accounting period;

e) the recording of an ascending production cumulative stored from one month to another, a situation which is rather dictated by an economic context than by an accounting option;

f) the circular transactions practice, which involves the collaboration between two companies, by conducting reciprocal transactions by which to improve their financial situation within the financial statements, because of the differences between input and output of such traded assets;

g) the diminution in receivables loss, which consists of giving up to prudential provisioning policies, in the favor of receivables' insurance, with the obligation to pay an insurance rate; this way, the

entity is able to report the entire value of the receivable, in exchange for a relatively insignificant cost of insurance, considering the spread character of the rate.

Concerning the financing picture, we could mention:

a) the arbitrary classification of financial securities in investment securities or non current securities, taking into consideration the fact that the entity does not know with certainly their finality;

b) the electing and the calculating of the discount rate to the future cash flows, with the purpose of incorporating the financial and the economic risks;

c) the subscribing to insurances, in case of uncertain receivables, case in which there are affected in the same measure, both the lead financing flows and the balance sheet or the income statement; it is important to notice that this operation is similar to the deleveraging technique and that it is a way of covering against the risk of nonpayment.

There are also creative accounting effects arising from the accounting policies themselves, as we could notice the provisioning policy, the policy of depreciation, the accounting of long-term contracts or the conversion of the costs of capitals increase in issuing premiums.

We will consider in this regard, that our entity appeals to the deleveraging technique, in order to transfer to a third party a receivable of 3,000,000 lei, collectable in three annual installments (45% in the first year, 35% in the second year, 20% in the third year) with an interest rate of 10% (r_c), and also a debt of 3.500.000 lei, with an interest rate of 5% (r_d), repayable in three annual and constant installments.

In this matter, it is questionable the decision of the third person to accept such a "barter" as long as he pursues a future gain, allegedly to be given by the claim superiority of the updated installments of the receivable collected compared to the annual reimbursements related to the debt assumed.

For an annual receipt we have $Receipt_{Updated} = Receipt_i/(1+r_c)^i$, where $i = \overline{1,3}$. The annual claim to receive is given by Receipt = Receivable × p_i. Of the present value $Receipt_i$ it is substracted the updated value $Receipt_{Updated}$, obtainig the interest gained from this operation $Interest_{gained} = Receipt_i – Receipt_{updatedi}$.

Table no. 1. Updated receipt and gained interest

Year	% receipt	Receivable collected	Updating factor	Updated receipt	Interest gained
1	35%	1.350.000 lei	0,8696	913.043 lei	436.957 lei
2	20%	1.050.000 lei	0,8264	495.868 lei	554.132 lei
3	40%	600.000 lei	0,5120	614.400 lei	-14.400 lei
Total		**3.000.000 lei**		**2.023.311 lei**	**976.689 lei**

For an annual receipt we have $Payment_{Updated} = Liability \times r_d/1-(1 + r_d)^{-n}$, where $n = 3$, which is constant for the entire repayment period. The annual payments are calculated according to the relation $Payment_i = Liability/n$. Of the present value $Payment_i$ is substracted the updated value $Payment_{Updatedi}$, obtainig the interest gained from this operation $Interest_{Owed} = Payment_i - Payment_{Updatedi}$.

Table no. 2. Updated payment and gained interest

Year	Updated receipt	Updated payment	Financial result	Interest gained
1	913.043 lei	1.285.230 lei	-372.186 lei	318.393 lei
2	495.868 lei	1.285.230 lei	-789.362 lei	435.569 lei
3	614.400 lei	1.285.230 lei	-670.830 lei	-132.963 lei
Total	**2.023.311 lei**	**3.855.690 lei**	**-1.832.379 lei**	**620.999 lei**

Therefore, the earnings from the capitalized interest of 620,999 lei, owed to the time value of money is significant, it does not cover the additional cost of 1,832,379 lei that the entity thought the receivable and the debt has to bear from its own treasury. Consequently, conducting such an operation is not taken into consideration.

But, if we admit that also the receivable is collected under constant annuities, than the financial result of the payments will be $\Delta = Receivable \times r_c/1 - (1 + r_c)^{-n} - Liablity \times r_d/1 - (1 + r_d)^{-n}$. So we get the value $\Delta = 3.000.000 \times 0,4380 - 3.500.000 \times 0,3672$, meaning an annual profit of 28.701 lei, thus a total profit of 86.103 lei.

Obviously, there is an interest conflict, born by the desire of the principal debtor to lower his overall risk with an as low as possible cost, while the third person, who takes over the debt and the debt from the administration, aims to obtain a gain as high as possible from the difference between the gained interest and the owed interest.

We notice that the report (Debt/Receivable)×100 is approximately 116.67%, but not to forget that the difference between the updating rate of the receivable and the debt interest rate is positive, in amount of 10%. The rationality of the financial policy is that this operation emits a profit of 86.103 lei. But much more important is the reduction of the deleveraging level of the entity, which decreases by 0,020%.

If we take into consideration some balance sheet elements, the impact will be the following:

Table no. 3. Adjusted financial statements elements

	N	**$N_{adjusted}$**	**%**
Non current assets – Total	22.253.002 lei	22.253.002 lei	0,000%
Current assets – Total	4.413.732 lei	4.410.732 lei	-0,068%
Debts: sums that have to be paid in a period less than a year	3.561.335 lei	3.561.335 lei	0,000%
Debts: sums that have to be paid in a period more than a year	2.822.317 lei	2.825.817 lei	0,124%
Shareholders' equity – Total	14.056.147 lei	14.056.147 lei	0,000%
Deleveraging rate	0,6329	0,6331	0,020%

Similar is also the case of the lease-back operation, which specifically aims to improve current liquidity of the company, accepting the sale of an asset and its immediate recovery through a leasing contract, which requires costs with the interests broken down over several financial periods. Moreover, such an operation is even more advantageous, as long as it is used as a recovery of the asset way, a location-exploitation contract.

Conclusions

Each imaginative or intent accounting method, exposed above, produces different effects, in various forms, in different sizes within the financial statements. The mission of the Romanian normalizors is to identify solutions in order to limit such practices, considered "intentional legal pollution", which was built up in powerful tools for

generating economic superior and artificial rentabilities, with much undervalued risks.

These all lead, in one way or another, to the distortion of the true image reflected by the financial statements, by value or structural mutations in the financial structures, or by issuing of false signals and deliberate misinformation, framed by the legal context in force, or by a set of rules that are too rigid, either through an uncontrolled "liberalization" of the accounting conceptual frame.

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Data Envelopment Analysis for estimating Health Care Efficiency in the Southwest Teaching Hospitals in Nigeria

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Abstract
Health care services in Nigerian teaching hospitals have been considered as less desirable. In the same vein, studies on the proper application of model in explicating the factors that influence the efficiency of health care delivery are limited. This study therefore deployed Data Envelopment Analysis in estimating health care efficiency in six public teaching hospitals located in southwest Nigeria. To do this, the study gathered secondary data from annual statistical returns of six public teaching hospitals in southwest, Nigeria, spanned five years (2010 - 2014). The data collected were analysed using descriptive and inferential statistical tools. The Inferential statistical tools used included Data Envelopment Analysis (DEA) with the aid of DEAP software version 2.1, Tobit model with the aid of STATA version 12.0. The results revealed that the teaching hospitals in Southwest Nigeria were not fully efficient. The average scale inefficiency was estimated to be approximately 18%. Result from the Tobit estimates showed that insufficient number of

professional health workers, especially doctors, pharmacist and laboratory technicians engineers and beds space for patient use were responsible for the observed inefficiency in health care delivery, in southwest Nigeria. This study has implication for decisions on effective monitoring of the entire health system towards enhancing quality health care service delivery which would enhance health system efficiency.

Keywords: Data Envelopment Analysis, Healthcare efficiency, TOBIT model, technical efficiency

Introduction

The quality of health care is a global issue which requires rapid transformation in order to meet the increasing needs and demands of the population of patients in any nation. Increase in demand for health care resources is essential to the need to improve efficiency in the health sector. Nigeria's ageing population, increased personal use of health care, and increased treatment options associated with medical advances contribute to the rising demand for health care. Due to the large size and rapid growth of health care expenditure, even small size increases in efficiency can lead to considerable savings of resources or expansion of services for the community.

In almost all the non-profit health institutions in Nigeria, especially public hospitals, it is not unusual to find long queues of patients waiting for several hours to be attended to with health resources that are very scarce in supply. Stakeholders in the Nigerian health care sector are regularly under intense pressure to find more beds, hire more doctors and nurses, provide more drugs, and other health care resources that will ensure efficient delivery of health care services. Lack of proper application of these health care inputs may lead to adverse or negative effects in the lives of patients'. In the same vein, doctors and nurses may become helpless as their patients` health care statuses are affected because basic health care materials are not readily available in the right proportions. In some cases, the quality of health care is hampered by instances such as damaged beds, insufficient or unavailability of drugs, too many administrative staff members, and few qualified medical personnel. In other cases, particularly where patients rely heavily on the expertise provided by tertiary health institutions such as teaching

hospitals, the inefficiency of healthcare systems may result in loss of lives owing to low quality of treatment from the health care service providers.

In order to proffer solutions to the challenges which face health care delivery, studies such as Iyang (2008) have identified the need to evaluate efficiency of health institutions, especially the non-profit ones, due to the high rate of poverty among ordinary individuals who are mainly in need of the most basic health care services. But the suggestions proffered by these studies have not been given enough or sustained empirical base. Moreover, in Nigeria, there is dearth of literature which deals with the evaluation of efficiency of health care system. The existing limited study in the Nigerian health care system such as Ityavyar (1988) provided mixed conclusions and inconsistencies associated with the concept of efficiency. Furthermore, Ibiwoye and Managi (2009) identified the problems facing the health sector as underfunding and the procedure for allocating resources being faulty. These problems were examined from the perspective of efficient use of resources; the absence of which may seriously jeopardize the effectiveness of any expenditure on health, irrespective of the size of budget. The extant literature has identified input-related issues as constraints to efficient delivery of health care services, which equally implies efficiency estimates from a technical point of view. For profit-oriented hospitals, such as private ones, evaluation of efficiency would be more appropriate from the allocative point of view, which requires the consideration of budgetary allocation and cost of operation. However, available evidence such as Asuzu (2004), Polsa, Spens, Soneye and Antai (2011) has shown that the low income earners in Nigeria, who constitute the majority, always seek to patronize non-profit health institutions. Hence, there is need for input-output-oriented approach to the study of efficiency which has not been given any concrete focus in the existing literature.

In Nigeria, there are limited studies on the efficiency of health facilities that have been conducted using Data Envelopment Analysis technique (DEA). This study will therefore be significant in estimating efficiency level of the teaching hospitals in Southwest Nigeria, using more robust techniques and generate information that will be useful for policy implementation, to improve the efficiency of the healthcare delivery.

The reminder of the study is organized as follows: Section two reviews the relevant empirical literature on measuring efficiency of hospitals using DEA techniques. Section three illustrates data and methodology. Section four describes and discusses the empirical results. Section five contains conclusion and recommendations.

Literature Review

Data Envelopment Analysis (DEA) is a non-parametric method used in measuring productive efficiency of the decision making units (DMU). The non parametric way of measuring efficiency was first introduced by Farrell (1957). Charnes, Cooper and Rhodes (1978) proposed a general methodology of DEA (named CCR), a model based on the assumption of Constant Return to Scale (CRS), implying that any proportional change in inputs usage results in the same proportional change in outputs, in order to measure and evaluate the performance of any decision-making unit (DMU). It was further extended by Banker, Charnes and Cooper (1984) (named BCC), a model based on the assumption of Variable Return to Scale.

Al-Shayea (2011) worked on measuring hospital units' efficiency using the DEA approach. This technique was applied by him to study the performance and efficiency of King Khalid University Hospital departments in Saudi Arabia. The results showed that only two, out of nine departments, have 100% efficiencies throughout the 12 months period.

Park, Fowler and Giebel (2011) discussed the measurement of hospital operating efficiencies for strategic decision, with a view to measuring and benchmarking the operational efficiency of a regionally-based hospital in Colorado, by using the Data Envelopment Analysis (DEA) for a period of two years (September 2007-August 2009), in order to fully understand the relationship among variables that affect hospital performance. Their findings indicated that revenue will need to increase for the future, because reducing operating expenses will only result in short-term improvement. They concentrated on revenue and efficiency measures, and laid more emphasis for further research which includes other performance measures such as patient waiting time, patients' satisfaction, service quality, as well as other financial measures.

Kundurzhiev and Salchev (2011) focused on technical efficiency in psychiatric hospital care in Bulgaria. In doing so, they assessed the

technical efficiency of psychiatric treatment facilities on the basis of input resources and output product, go ahead to compare groups of treatment facilities in relation to their efficiency. The Data Envelopment Analysis (DEA) model was used; it finds increasing application in many spheres of public life, including health care. During the process, treatment facilities for hospital psychiatric care were subdivided into three groups according to hospital type: State psychiatric hospitals (SPH) – 12; Regional dispensaries for psychic diseases with inpatient wards (RDPDI) – 12; Psychiatric clinics and wards in multi-profile hospitals for active treatment (PCW-MHAT) – 17. In all, these studies comprised all psychiatric treatment facilities in the public sector. The technical efficiency of the treatment facilities studied for hospital psychiatric care was assessed in accordance with the DEA model previously stated. In calculating efficiency, they used software developed by the scholars, based on the module for solving optimization problems "Solver" in MS Excel and a programming code of Visual Basic for Applications (VBA). They also presented a possible assessment method, which provides an opportunity for improving efficiency in the sector.

Ancarnai, Di Mauro and Giammanco (2009) pointed out that hospital efficiency has been largely underexplored. Therefore, their study examined the relationships between decision making processes of a hospital ward and technical efficiency using Data Envelopment Analysis (DEA). The results indicate that both decisions internal to the hospital and exogenous re-organizations affect the hospital's efficiency.

Akazili, Adjuik, Jehu-Appiah and Zere (2009) used DEA method to calculate the technical efficiency of 89 randomly sampled health centers in Ghana, to determine the degree of efficiency of health center and recommend performance targets for inefficient facilities. The result revealed that 65% of the health centers were technically inefficient and were using resources that they did not actually need. It showed that there is inefficiency in the health care delivery system of public health centers and that significant amount of resources could be saved if measures were put in place to curb the waste.

Coyne, Richards, Short, Shultz and Singh (2009) measured efficiency and cost indicators in relationship to hospital size and ownership. What their research revealed is that small and large not-for-profit hospitals appear to achieve higher efficiency levels than

government-owned hospitals, but that larger hospitals of both ownership types report greater efficiency than that achieved by small hospitals.

Other researchers have examined the different ownership forms of hospitals and efficiency performance of Taiwanese hospitals (Hsu and Hu, 2007; Hu and Huang, 2004; Wei, 2006). Hu and Huang (2004) observed that public ownership significantly worsens a hospital's efficiency, while higher ward capacity utilization helps improve efficiency. Similarly, Huerta, Ford, Peterson and Brigham (2008) opined that profit institutions had a significant and negative impact on efficiency, supporting the notion that publicly-run and non-profit hospitals may be more efficient than those privately-owned. Harrison and Sexton (2006) noted that religious, not-for-profit hospitals are becoming more efficient in management of resources, and goes on to highlight the importance of the hospital's unique mission to the community, in order to ensure continuing support. Similarly, Friesner, Roseman and McPherson (2008) examined whether or not hospital efficiency is affected by seasonal inefficiency. What is indicated is that hospital efficiency does vary over time, but that the type of inefficiency depends on the specific efficiency being measured.

Zere, Mbeeli, Shangula, Mandlhate, Mutirua, Tjivambi and Kapenambili (2006) examined the technical efficiency of some hospitals in Namibia, with a view to quantifying the level of technical inefficiency in the country, so as to alert policy-makers of the potential resource gains to the health system, if the hospitals that absorb a lion's share of the available resources are technically efficient. All public sector hospitals (n = 30) were included in the study. Hospital capacity utilization ratios and the Data Envelopment Analysis (DEA) technique were also used to assess technical efficiency. The DEA model used three inputs and two outputs. Data for four financial years (1997/1998 to 2000/2001) were used for analysing the economic efficiency scores. The findings suggest the presence of substantial degree of pure technical and scale inefficiency. The average technical efficiency level during the given period was less than 75%. Less than half of the hospitals included in the study were located on the technically efficient frontier. Increasing returns to scale is observed to be the predominant form of scale inefficiency. Based on this, it was concluded that the existing level of pure technical and scale inefficiency of the district hospitals is considerably high and may negatively affect the government's initiatives to improve access to quality health care and scaling up of interventions

that are necessary to achieve the health-related Millennium Development Goals.

Hagen, Veenstra and Stavem (2005) analysed the effects of a reimbursement reform on somatic hospitals' efficiency and quality, measured as patient experiences in Norwegian hospital. By the reform, a capitation-based block grant system was replaced by an activity-based system. Data on efficiency and patient satisfaction from 213 hospital departments before (1996) and after the reform (1998, 2000 and 2003) were analysed using a mixed model approach. At the same time, the efficiency ratings were developed at the level of the hospital using Data Envelopment Analysis, while the patients' satisfaction scores were at department level data from recent patients' surveys. The result showed that both, technical efficiency and patients' satisfaction increase after the reform. They interpreted it by increasing technical efficiency as a direct effect of the reimbursement reform. In the same vein, higher patients' satisfaction is understood as an effect of lower waiting time, which in turn is an effect of the introduction of activity-based financing.

Kirigia, Lambo and Sambo (2000) investigated the technical efficiency of public hospitals in Kwazulu-Natal Province of South Africa. They employed the use of Data Envelopment Analysis methodology to identify and measure individual hospital's inefficiencies. The result revealed that forty percent of the hospitals had some degree of technical inefficiency and fifty-eight percent were scale inefficiency indicating that the following inputs such as doctors, nurses, paramedics, technician, administrative staff, labor provisioning staff, other staff & beds are currently wasted and not utilized in the production of hospital output in Kwazulu-Natal public hospitals. These specific input reductions are required to make inefficient hospitals become technically efficient. Based on this, it was concluded that DEA result constitute a strong guide to health care decision making, especially with regards to practical ways of increasing efficiency and rational use of health care resources.

Rutledge, Parson and Knaebel (1995) examined the model of DEA and its ability to determine the relative efficiency of each of the latest twenty- two (22) months of available data for a midsized non-profit hospital in Southeast, United States. The DEA was able to simultaneously consider multiple inputs and outputs (five each) which are classified in months, as efficient or inefficient. Accordingly, the specific inputs and outputs that caused the month to be considered

inefficient were identified, as well as the magnitude of the excess inputs and insufficient outputs. The results were discussed with the hospital management. They considered DEA as an efficient and effective tool, a potential device that will assist in reducing hospital costs.

It is obvious that previous studies has tried to measure the technical efficiency of hospitals in developed and developing countries using DEA, but there is rarity of studies that has tried to measure the technical efficiency of public teaching hospitals in Nigeria, particularly in Southwest Nigeria. This reflects the significance of the current study that attempt to measure the technical efficiency of public teaching hospitals in Southwest Nigeria.

Objectives of the study

The aim of this paper is to use Data Envelopment Analysis to estimate the health care efficiency level in selected teaching hospitals in southwestern Nigeria, while the specific objectives are to:

(i) determine the applicability of DEA in modeling health care efficiency in the teaching hospitals selected for this study;
(ii) determine the operational efficiency of facilities in the teaching hospitals selected for this study;

Research Questions

(i) How can DEA model be applied in health care efficiency in teaching hospitals selected for the study in Nigeria?
(ii) How operationally efficient are the facilities in the teaching hospitals selected for this study?

Methodology

The study covers six public teaching hospitals in Southwest Nigeria. The data were obtained from the annual statistical returns of the teaching hospitals for the period of five years (2010- 2014). Descriptive and inferential statistics were used. The inferential statistics include Data Envelopment Analysis (DEA) with the aid of DEAP software version 2.1; Tobit model with the aid of STATA version 12.0.

The Data Envelopment Analysis Methodology

Efficiency in DEA is defined as the ratio of the weighted sum of outputs to the weighted sum of inputs (Hollingsworth and Parkin, 1998;

Smith, 1998). Given *p* outputs and *m* inputs, efficiency (h_0) for hospital 0 is defined in the following way:

$$Maximize: \ h_0 = \frac{\sum_{r=1}^{p} u_r \times y_{r0}}{\sum_{i=1}^{m} v_i \times x_{ij}}$$

Subject to:

$$\frac{\sum_{r=1}^{p} u_r \times y_{r0}}{\sum_{i=1}^{m} v_i \times x_{ij}} \leq 1$$

where:

yr_0 = quantity of output *r* for hospital 0
u_r = weight attached to output *r*, $u_r > 0$, $r = 1,\ldots, p$
x_{i0} = quantity of input *i* for hospital 0
v_i = weight attached to input *i*, $v_i > 0$, $i = 1,\ldots, m$

The weights are specific to each unit so that $0 \leq h_0 \leq 1$ and a value of unity imply complete technical efficiency relative to the sample of units under scrutiny. Since the weights are not known *a priori*, they are calculated from the efficiency frontier provided by DEA framework.

The DEA model

The Data Envelopment Analysis input oriented dual formulation for hospital j or decision- making unit (DMU) j:

X_{ij} = the number of health resources (input) used in health hospital j in a year
X_{1j} = the number of beds available in health hospital j in a year
X_{2j} = the number of doctors available in hospital j in a year
X_{3j} = the number of nurses available in hospital j in a year
X_{4j} = the number of pharmacist available in hospital j in a year
X_{5j} = the number of technician available in hospital j in a year
X_{6j} = the number of administrative staff available in hospital j in a year
X_{7j} = the number of engineers available in hospital j in a year
X_{8j} = the number of other support staff available in hospital j in a year

While:

Y_{ij} = the number of patients categories attended to in hospital j in a year
Y_{1j} = number of outpatient visit attended to in hospital j in a year
Y_{2j} = number of inpatient surgeries attended to in hospital j in a year
Y_{3j} = number of inpatient visits attended to in hospital j in a year
Y_{4j} = number of emergency cases attended to in hospital j in a year

Y_{5j} = number of maternal and child health cases.
j = teaching hospitals considered in the study while J ranges from 1 to 6. 1 denotes LUTH; 2 denotes OOUTH; 3 denotes UCH; 4 denotes LAUTH; 5 denotes OAUTH and 6 denote EKSUTH.
Θ = Relative efficiency of the hospital
λ_j = weight attached to the inputs used and outputs in each hospital j

Generally it is not expected that teaching hospitals would be found prospecting for more patients in order to increase output, rather cost minimization might be the objective.

Therefore, the input minimizing model used for the teaching hospital is:

$$Minimize: h_0 = \theta$$

Subject to:

Input constraints

$\sum_{j=1}^{6} \lambda_j X_{1j} \leq \theta X_j$ Bed constraints

$\sum_{j=1}^{6} \lambda_j X_{2j} \leq \theta X_j$ Doctors' constraints

$\sum_{j=1}^{6} \lambda_j X_{3j} \leq \theta X_j$ Nurses constraints

$\sum_{j=1}^{6} \lambda_j X_{4j} \leq \theta X_j$ Pharmacist constraints

$\sum_{j=1}^{6} \lambda_j X_{5j} \leq \theta X_j$ Technicians' constraints

$\sum_{j=1}^{6} \lambda_j X_{6j} \leq \theta X_j$ Administrative staff constraints

$\sum_{j=1}^{6} \lambda_j X_{7j} \leq \theta X_j$ Engineers' constraints

$\sum_{j=1}^{6} \lambda_j X_{8j} \leq \theta X_j$ Other support staff constraints

Output constraints

$\sum_{j=1}^{6} \lambda_j Y_{1j} \geq Y_j$ Outpatients visits constraints

$\sum_{j=1}^{6} \lambda_j Y_{2j} \geq Y_j$ Inpatients surgeries constraints

$\sum_{j=1}^{6} \lambda_j Y_{3j} \geq Y_j$ Inpatients visits constraints

$\sum_{j=1}^{6} \lambda_j Y_{4j} \geq Y_j$ Emergency cases constraints

$\sum_{j=1}^{6} \lambda_j Y_{5j} \geq Y_j$ Maternal and child health cases

$\sum_{j=1}^{6} \lambda_j = 1$ Scale constraints

$\lambda_j \geq 0$, (Non-Negativity Constraints)

where j = 1, 2, 3, 4, 5 and 6

The model above assumes that the objective is to minimise input use in the selected teaching hospitals for a given level of output. This

system of equation is to be formulated and solved for each of the hospital selected in this study, that is, six (6) runs.

DEA Inputs measures used for this study

Physical input data are proxy for the capital and labor factors. As proxy for capital, we used total number of beds (Beds) and the labor proxies were employees who are physicians (i) Doctors (number of medical doctors including residents and interns), (ii) Nurses (number of nurses), (iii) pharmacists, (iv) technicians, (v) number of administrative staffs,(vi) engineers, (vii) other support staff

DEA outputs measures used for this study

The output measures consist of outpatients' visits (total number of outpatients), inpatients' surgeries, inpatient visit, emergency cases, maternal and child health cases. There are usually a number of factors which determines efficiency in hospitals, in terms of both inputs and outputs.

Tobit regression model

Tobit regression model was used to predict the determinants of efficiency level of health care delivery in Nigeria. The Tobit equations are expressed as follows:

$I = b_o + b_1X_1 + b_2X_2 + b_3X_3 + \ldots.. + b_nX_n = f(X_i)$

and $y = g(I)$

Where; $y = 0$ if $I < I^*$

$Y = I - I^*$ if $I \geq I^*$

Specifically:

$y = b_iX_i + e_i$

Where:

y = efficiency scores obtained from DEA estimation,

b_i = parameters of I,

e_i = random error term,

X_i refers to independent variables (i= 1, 2, 3… 8),

I = represent the equation of all the independent variables.

I^*= censored value

Results and Discussion

Table no. 1. DEA Technical Efficiency for teaching hospitals (2010 – 2014)

Year	TEV	TEC	TEI	SE
2010	0.734	0.767	0.812	0.721
2011	0.736	0.864	0.797	0.823
2012	0.689	0.745	0.766	0.904
2013	0.639	0.654	0.729	0.869
2014	0.742	0.894	0.804	0.763
Mean	0.708	0.785	0.782	0.816
Standard deviation	0.044	0.096	0.034	0.074
Minimum	0.639	0.654	0.729	0.723
Maximum	0.742	0.894	0.812	0.904

TEV, TEC and TEI are the average technical efficiency scores from Data Envelopment Analysis under Variable Returns to Scale, Constant Returns to Scale and Non-increasing Returns to Scale. SE represents scale efficiency of the sampled health institutions. Table no. 1 shows the efficiency score estimates for teaching hospitals over the sampled period of five years. Overall, the technical efficiency analysis indicates that there are inefficiencies in health care delivery in Nigeria. Average scale efficiency was 82%, suggesting that pure technical inefficiency is the main factor that hinders health sector to operate at optimal scale. The results indicate that scale efficiency was highest in the year 2012 across the sampled hospitals. Scale efficiency in the Nigerian health sector was at its lowest in 2010. The findings indicate a possibility of reaching the optimal level of health care efficiency, if the estimated inefficiency of 18.4% is addressed.

Evidence from the results of Tobit model which analyzed the optimal gap in health care efficiency is presented in Table no. 2. Parameter estimates from the Tobit model indicates that insufficient number of professional health workers (doctors, pharmacist and laboratory technicians), engineers and beds space for patient use are responsible for the observed inefficiency in health care delivery, in the studied hospitals in Southwestern part of Nigeria.

Table no. 2. Analysis of Determinants of Scale Efficiency

Variables	Coeff	Z value
number of beds	-0.07	2.43**
number of doctors	-0.672	3.10**
number of nurses	0.04	1.65*
number of non medical staff	0.324	1.62
number of pharmacist	-0.231	1.73*
number of technician	0.001	2.90**
number of administrative staff	0.242	1.54
number of engineers	-0.15	2.32**
Constant	1.04	
LR chi2	214.1661	
Prob > chi2	0.000	

Table no. 3 shows the descriptive statistics of the inputs and outputs of the teaching hospitals. The results show that the average number of outpatient visit in the selected hospitals for the entire sampled period is approximately 106,780. The hospital with the least number of outpatient visit recorded 12,480, while the highest reported in the selected teaching hospitals was 305,097 number of outpatient visit. The average number of inpatient surgeries in the selected teaching hospitals for the sampled period stood at 12,021; the average number of inpatient visits in the selected teaching hospitals for the sampled period was 48,083. The average number of emergency cases was 9,170. The average number of beds available in the sampled teaching hospitals was 510, an indication of insufficient facilities in the hospitals relative to the number of patients in need of such facilities. Descriptive statistics showed that the average number of doctors and nurses in the teaching hospitals were 394 and 595 respectively. The average number of nurses was found to be higher than that of the doctors. The highest number of doctors and nurses for the period were 909, and 1447 respectively.

Table no. 3. Descriptive statistics of input and output variables of study

Variables	Mean	Standard deviation	Minimum	Maximum
Number of outpatient visit	106,779.5	88,311.04	12,480	305,097
Number of inpatient surgeries	12020.8	9,264.382	2,420	38,787
Number of inpatient visit	48,083.2	16,843.73	31,240	71,205
Number of emergency cases	9,170.533	7,233.313	1,415	31,787
Number of maternal and child health cases.	1,890.733	1,248.323	290	4,343
Number of beds	510	299.0125	214	899
Number of doctors	394.9333	332.0952	143	909
Number of nurses	595.5333	483.8778	210	1,447

Conclusion

The DEA investigates the health care efficiency of the teaching hospitals in south west Nigeria for the period of five years (2010-2014). Overall, the technical efficiency analysis indicates that there are inefficiencies in health care in the teaching hospitals in Southwest, Nigeria. From the data analyses, average scale efficiency was approximately 82% and indicates that pure technical inefficiency is the main factor that causes the inability of the health sector to operate at optimal scale. The results also indicate that scale efficiency was highest in 2012, across the six selected teaching hospitals. Scale efficiency in the Nigerian health sector was at its lowest in 2010. The findings indicate a possibility of reaching the optimal level of health care efficiency, if the estimated inefficiencies of 18% are addressed. Parameter estimates from the Tobit model indicates that insufficient number of professional health workers (doctors, pharmacist and laboratory technicians), engineers and beds space for patient use are responsible for the observed inefficiency in health care delivery, in the studied hospitals in the Southwestern part of Nigeria.

There is need for the government to recruit more healthcare professionals especially doctors, pharmacist, laboratory technicians,

also engineers and also provide more funds for the teaching hospitals so as to increase the capacity of the facilities like the number of beds in the hospitals in order to reduce the technical inefficiency rate of the teaching hospitals in Nigeria. In addition, the managers of healthcare facilities at various hospitals should ensure optimal use of resources at their disposal for greater level of efficiency.

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Accounting and Legal Aspects regarding the Online Romanian Crowdfunding Platforms` Operations

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Abstract: The present paper aims to detail the law and the accounting aspects related to the platforms of participative funding running. Even if, the crowdfunding, as a funding method, is internationally used more and more often and for a certain period of time, it represents a new concept in Romania. In principle, the crowd funding or the participative funding, as the term has been assumed in Romania, represents the funding of a project elaborated by an individual or by a legal entity, by any interested person. The operations unfold using online platforms, which connect the investors and the projects' developers, requesting a commission in exchange for this service.
Keywords: crowdfunding, online platform, accounting aspects.

Introduction

In the present article, we propose to present some case studies on crowdfunding operations. We have to note that the case studies are

hypothetical and the accounting and tax approaches of the case – studies represent the opinion of the authors of the article, given that now, in Romania, the functioning of crowdfunding is not regulated.

Research issue

The studies will analyze the impact of operations both at the level of the companies that own online crowdfunding platforms, as well as at the level of the companies that benefit from the amounts raised through this way of financing. As a result, we will not consider the situations in which the projects are of social, humanitarian nature and regard foundations, associations and other non-profit organizations.

Results and discussions

Because in Romania, in 2016 there is no legislation which specifically regulates the activity of crowdfunding, we will use below the definitions, notions and legal basis proposed by the draft law regarding the development of crowdfunding from September 2015.

After trying to specify the object of the Law (which is not very clear if it is about crowdfunding, as the title of the law says or about the functioning of the online platforms of crowdfunding) and the definition of the main terms, the project presents the features of crowdfunding. From this presentation, it follows that we are talking about direct investments made on request of project developers. In order to be treated as crowdfunding, these investments must meet certain features:

- the investors expect to make a profit from the investment of capital;
- the projects are initiated by the project developer who is a legal person;
- the funding is meant to a specific, clearly defined and limited project;
- the funding is made by one of the forms specified by the law.

The draft law further does some other clarifications regarding the conditions that must be met by a legal person to be able to obtain an online crowdfunding platform and the registration requirements of these platforms by the Authority for Financial Supervision. These requirements refer both to the company that has to prove that it is capable from the logistic and financial point of view (the minimum

capital is of 25.000 Euros) to ensure the operation of the platform, as well as the moral probity of its owners.

The draft law presents the forms by which the crowdfunding of projects can be implemented, namely:

- issue of securities (shares) or bonds (in case of joint stock companies);
- issue of debt securities, which give the investors the right to charge interest.

As a consequence, those who invest in projects financed through an online platform can either become associates/shareholders of the company that proposed the project, or creditors who apart from the sum they invested; they can also receive an interest.

It can be seen, that the draft law refers only to two of the four forms of crowdfunding which appear on international level, namely crowdlending (ie Loan-based crowdfunding) and crowdinvesting (or Equity – based crowdinvesting), without including crowddonating (namely Donation-based crowdfunding) or reward-based crowdfunding.

The draft law also limits the maximum amount collected for a project through the crowdfunding platforms at the equivalent in lei, at the exchange BNR rate of the day of posting the project, to 1 million euros.

Case study

We take into consideration the Company Platform S.A. which registers as crowdfunding platform, receiving the consent from the Authority for Financial Surveillance to operate online operations. The main services offered by the platform are:

- receiving and publishing on the platform the financing projects;
- ensuring the link between the potential investors and project proponents;
- collecting the amounts from the investors and transferring them to the final project developer, if the projected amount is raised or returning the amounts to the investors if the desired amount is not raised (the platform applies a policy of “all or nothing”, which means that only those projects for which the full amount is raised will be financed).

For these services, the platform charges a commission from the amount collected, which differs depending on the complexity of the

services it offers, being higher when funding with issue of equity securities.

In addition to these services, other services are offered against payment, such as assistance and support for making publicity to the projects etc.

S.C. Mobila S.A. is a profitable company, with a strong economic growth in recent years, which has expanded into new markets and wants to open new factories in another location. Because besides the desire to invest on a large scale, the company also intends a restructuring of the capital by coping new shareholders, one has chosen as a way of funding the crowdinvesting or Equity-based crowdinvesting. Another reason, for which the two shareholders of the company have decided to seek crowdinvesting and not to seek a small number of persons to purchase the newly issued shares, is that by co-opting a large number of shareholders, each with a small financial contribution, they will keep the control over the business.

The representatives of S.C. Mobila S.A. made the necessary analysis and concluded that a capital increase by 500,000 lei would ensure the necessary resources for expansion without the old shareholders to cede the control over their business.

The next step was to prepare the necessary documentation, which involved both accounting documents, especially financial reports from the last years, but also other information about the company that might be relevant to the potential investors. In order for these data to attract as many investors as possible for the project, they were elaborated in a more accessible and attractive form.

The representatives of the platform have checked the veracity of the data submitted by S.C. Mobila S.A. and decided to place the application for funding on the platform. Finally, the platform made the information available, regarding: general description of the business, presentation of the shareholders, managers and other decision makers within the company, presentation of the financial situation, the structure of the capital and debts etc. Considering that, the form of funding was the one of Equity – based crowdfunding, an important component of information was the description of type, class and way of registering the offered equities, as well as of the essential features and risks associated to the issuer of shares and of its guarantors, and the situation of the possible disputes. Another important category of information for this type of funding refers to the description of rights related to the issued

equities, the way of exercising them, the convertibility of the equities, as well as any limitations of these features, including the right of sale and redemption. The period of the funding campaign was set at 30 days.

Due to the prior advertising campaign made by S.C. Mobila S.A. in the real and virtual business environment, when launching the project on the platform, the potential investors already knew it, so the raise of the amount was completed within 20 days.

The general procedures for issuing the new shares and allotting them to the investors will be made by the funding platform. The commission charged by the platform for its services is of 10% from the accessed amount.

Being equity – based crowdfunding, the general operations are:

a) At S.C. Mobila S.A.: guarantee deposit of 5%; issue of new shares; receiving the amounts; receiving the invoice issued by the platform for its services; paying the invoice;

b) At the funding platform: receiving the guarantee; raising the amounts from the investors; transferring the amount to the developer; invoicing the services; cashing the equivalent value for the services.

Registration of the operations in the developer's accounting

Since the amount required to finance is of 500,000 lei, the deposited guarantee will be of 25,000 lei and supposes the transfer of the amount of 25,000 lei from the account of S.C. Mobila S.A. into the account of the funding platform. Being a guarantee, it will be recognized in the accounting of S.C. Mobila S.A. as a short-term debt and will be registered in a distinct analytical of 461 account. "Various debtors". Under these conditions, the accounting formula of the operation will be:

25,000	***461.0x***	**=**	***5121***	**25,000**

The chosen form of funding being that of equity – based crowdfunding, it will be registered the issue of new shares in the amount of 500,000 lei:

500,000	***456***	**=**	***1011***	**500,000**

When cashing the amounts in the bank account, the debt towards the new shareholders will be redeemed:

500,000	***5121***	**=**	***456***	**500,000**

And at the same time, the transformation of the subscribed unpaid capital into subscribed paid-up capital:

500,000	***1011***	**=**	***1012***	**500,000**

The repayment of the guarantee deposited at the beginning of the project in sum of 25,000 lei is going to be registered:

25,000	***5121***	**=**	***461.0x***	**25,000**

For its services, the platform issues an invoice. Since the amount collected within the project was of 500,000 lei and the commission charged by the platform id of 10% of this amount, the invoice will be of 60,000 lei from which 50,000 lei the value of the services and 10,000 the VAT:

50,000	***628***	**=**	***401***	**60,000**
10,000	***4426***			

Paying the invoice is registered in accounting like below:

60,000	***401***	**=**	***5121***	**60,000**

The registration of the operations in the accounting of the funding platform

The first operation made by P.F.P. will be cashing the guarantee of 5,000 lei deposited by the developer. As the amount does not belong to it, the platform will register the amount as a short – term debt, in a distinct analytical of 462 account "Various creditors".

5,000	***5121***	**=**	***462.0x***	**5,000**

For conducting the operations regarding the funding project of the developer S.C. Cuptorul de Aur S.R.L., the funding platform opens a collecting account (C.C.) in a bank in Romania, where the amounts

raised from the investors within the 20 days of the funding campaign will be registered as follows:

100,000	***5121C.C***	**=**	***462.0x***	**100,000**

After the whole amount is raised, it will be transferred in the account of the project developer S.C. Cuptorul de Aur S.R.L., refunding the guarantee deposited by it:

100,000	***462.0x***	**=**	***5121 C.C***	**100,000**
5,000	***462.0x***	**=**	***5121***	**5,000**

The funding platform invoices the services carried out towards S.C. Cuptorul de Aur S.R.L. (namely the commission of 6% applied to the drawn amounts):

7,200	***4111***	**=**	***704***	**6,000**
			4427	**1,200**

and cashes this amount in its running account:

7,200	***5121***	**=**	***4111***	**7,200**

Cashing the amounts from the project developer representing the credit rates and the interests and their transfer towards investors depending on the deposited amounts, will generate the same type of accounting operations as cashing, namely transferring the initial amounts, when financing the project (through accounts 462.0x "various creditors" and 5121 C.C. " Bank accounts in lei").

From the fiscal point of view, the operations carried out by the funding platform will generate taxable incomes from services, registered when invoicing, as well as VAT collected on the income.

As for the other forms of crowdfunding, namely reward-based crowdfunding and crowddonation, we suggest the following registrations.

In the case of reward-based crowdfunding, the advantage is that the developer has the market ensured for some of its products, while the financers build an initial market with an expansion opportunity. Under

these conditions, the amounts received from the financers (through the means of the platform) will be registered as advance from the clients:

5121 "Bank accounts in lei" = 419 "Creditor clients"
4427 "Collected VAT"

From this registration we can see that a disadvantage of the method is VAT collection, when cashing the amount of money, as the Tax Code provides (art. 282, paragraph 2, letter b), but VAT being a temporary debt to the state budget, meaning either a reduction of the amounts which remain available for the project developer or requesting a higher amount, including also VAT, encumbering the funding process.

After carrying on the production flow, final products are obtained and these are delivered and financed to the financers, who are beneficiaries of the products:

4111 "Clients" = 701 "Income from selling final products"
4427 "collected VAT"

Simultaneously, the advance and the VAT are regularized.

419 "Creditor clients" = 4111 "Clients"
4427 "Collected VAT" due to the advance in red (with minus)

When funding through crowd donation, when the amounts collected are transferred by the platform in the account of the project proponent, the income from donations are recognized.

5121 "Bank accounts in lei" = 7582 "Income from the received donations "

From the taxation point of view, the income from donations will be chargeable if the recipient is a company, so it has a profit-making activity.

Conclusions

From the presentation of the features of crowdfunding, which is intended to be the equivalent of the crowdfunding operations in Romania, it follows that the online funding platforms existing nowadays in Romania (Crestemidei.ro, Kazuu.ro, Multifinantare.ro, PotSiEu.ro, We-are-here.ro, etc.), the majority of which are non-profit organizations and mainly support social and/or humanitarian projects, and the beneficiaries of the mounts are natural persons, do not fall into this category.

Another conclusion is that the actual draft law regarding the crowdfunding is far too restrictive, as imposing drastic conditions both to the companies that will fund the online funding platforms, as well as to the possible developers, project proponents. Taking into consideration that this form of funding is worldwidely seen as an easier and cheaper funding method, the way in which the legislation of this activity will not be incentive at all for the companies interested in it.

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Role of Apex Banks: The Case of Nigerian Economy

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Abstract
The paper focuses on the role of Apex banks, with special focus on Nigeria between 1981 and 2015. Findings from the study showed that the Apex Banks have significant role to play in stimulating an economy. It is therefore suggested that monetary policy instruments like broad money supply and monetary policy rate are very effective monetary policy tools and that monetary authorities should design appropriate interest rate target that can galvanize the private sector's interest in the economy.
Keywords: Apex Banks, Economic Growth, Money Supply, Monetary Policy, Nigeria

Introduction

The faltering development processes of the economy and the need for professionalism in economic policy formulation and management clearly justifies the call for the Central banks to become more actively involved in macro-economic policy matters. Consequently, the need to rekindle the role of central bank in the economic growth in Nigeria becomes crucial since price stability does not imply macroeconomic stability, nor does it automatically lead to growth and employment creation (Epstein, 2014; Galli, 2014; Sayeed, 2014). Furthermore, there is no clear empirical evidence on the degree

of appropriate inflation target that can ensure economic progress in a developing economy like Nigeria. Epstein (2014) opined that the source of inflation is crucial and needs to be handled carefully, rather than chasing the shadow and neglect the fact that poor monetary coordination can lead to economic instability.

In Nigeria, the Central Bank is the Apex regulatory authority of the Nigerian banking sector and it was established in 1958. However, among the objectives of Central Bank in developing economies is the promotion of economic development. The CBN does this by creating the environmental and institutional framework necessary for the mobilization and channeling of resource from the surplus to the deficit sectors of the economy. In this regards, CBN plays a significant role in the development of the Nigerian economy (CBN, 2010). Since inception, the Central Banks have been engaged in fostering the development of modern financial structure and economic growth (CBN, 2010). The CBN act as amended in 1969 increase the legal framework of the bank to enhanced economic liberalization and deregulation measures. In 1986, the structural Adjustment programme (SAP) resulted in the emergence of more banks and financial intermediaries. All these amendments were therefore enacted to strengthen and extend the power of CBN to cover new institution to enhance effectiveness of monetary policy, regulation and supervision of banks, as well as non-banking institution. Unfortunately, in 1997, the federal government of Nigeria enacted the CBN (amendment Degree 3) and BOFIA (amend) to remove completely the limited autonomy which is enjoyed by the bank since inception (CBN, 1998). To this end, the banking sector reform received attention of the National Economic Empowerment and Development Strategy (NEEDS) in 2004 (Odeniran and Udeaja, 2010).

In 2009, the world economy experienced the global financial melt-own which was subsequently remedied with appropriate monetary and fiscal policies. In particular, 2011 witness a balance approach to economic growth and development that is economically beneficial, but socially relevant and environmentally sound in Nigeria (Sanusi, 2011). The CBN focuses on improving governance, transparency and accountability, supporting capacity building, restructuring and refinancing facilities, creating awareness on the significance of financial inclusion in Nigeria (CBN, 2012). Between 2013 and 2014, a rethinking and refocusing agenda for new direction was created. Central Bank authorities were more concern in creating employment opportunities

through empowerment, as well as maintaining stability, while also trying to bridge inequality gap (CBN, 2014).

To this end, the central question this paper seeks to answer is the significant role of Central Bank on economic growth in Nigeria and how sustainable is it? Admittedly, some scholars have made several attempts to investigate the link between the role of Apex Banks and economic growth. Some of these studies include – Kenaway (2009), Haron and Ahmad (2002) and Malik (2010) among others. However, many of these earlier studies only focused on interest rate and broad money supply in their analysis without both Treasury bill and monetary policy rate. It is on record that most commercial banks in Nigeria depend on the monetary policy rate of the Central Bank to determine the appropriate interest rate and lending rate to charge. Hence, this present study deviates from the previous studies in this light and contributes to existing knowledge by bringing in broad money supply, Treasury bill rate and monetary policy rate into the model to capture the role of the Apex Banks, which other studies often neglected. This is done to determine if this attempt will significantly alter the conclusions of the previous studies. The rest of this paper is made up of five sections. Section two focuses on the theoretical underpinnings, as well as review of previous studies, while section three provides a robust description of the research methodology. Section four contains the analysis and empirical results of the study, while discussion and possible policy recommendation are the focus of section five.

Literature review

The knowledge that exists today about the way the economy function is the result of prolonged research efforts often involving intense controversy and an ever-increasing data bank of experience (Blanchard, 1977). Ali *et al* (2008) examine that whether fiscal stance or monetary policy is effective for economic growth in case of South Asian countries using annual data series during 1990 to 2007. Gross domestic product, broad money (M2) and fiscal balance were considered. Auto Regressive Distributed Lag (ARDL) and error correction model (ECM) have been used to determine the relative effectiveness of monetary and fiscal policy on economic growth. Results suggest that monetary policy rather than fiscal policy has greater influence on economic growth in South Asian countries.

Jawaid, Qadri and Ali (2011) examines the effect of monetary, fiscal and trade policy on economic growth in Pakistan, using annual time series data from 1981 to 2009. The study used money supply, government expenditure and trade openness as proxies of monetary, fiscal and trade policy, respectively. Also, the cointegration and error correction model test indicate the existence of positive significant long run and short run relationship of monetary and fiscal policy with economic growth. Empirical result also indicates that monetary policy is more effective than fiscal policy in Pakistan. Fasanya *et al* (2013) examined the impact of monetary policy on economic growth using time series data covering the period 1975-2010. The effects of stochastic shocks of each of the endogenous variables were explored using Error Correction Model (ECM). Findings of the study reveal a long run relationship among the variables. Also, the core finding of the study shows that inflation rate, exchange rate and external reserve are significant monetary policy instruments that drive growth in Nigeria. Khabo (2002) evaluated the impact of monetary policy on a small and open economy in the case of South Africa, for period 1960-1997. He used M3 to measure monetary policy. The ordinary least square (OLS) method was employed, as well as the Augmented Dickey Fuller test to check for stationarity. Results of the study indicate that economic growth is significantly influenced by money supply.

Similarly, Starr (2005) used the Granger causality test to investigate the relationships between monetary-policy variables and both output and prices in the post-stabilization period, in four core CIS countries (Russia, Ukraine, Kazakhstan and Belarus), using quarterly data from 1995 to 2003. Results of the study provide little evidence of real effects of monetary policy in the four core CIS countries, with the notable exception that interest rates have a significant impact on output in Russia. Mwenda and Mutoti (2009) investigate the effects of market-based financial sector reforms on the competitiveness and efficiency of commercial banks and economic growth, in Zambia. By using variables such as per capita GDP and inflation effects, however the remaining of the variables have positive results on economic growth, Biekpe (2002) empirically investigates the factors of bank's sector competition and intermediation influences in Ghana. The finding suggests a market structure which is not part in competitive environment of banking sectors in the Ghanaian banking system, in which financial intermediation managed by the hampers. Poshakwale and Qian (2007)

empirically investigate the impact of financial reforms on assertiveness and growth efficiency of the banking industry, as well the long-term and short-term impact on economic growth in Egypt during the period of 1992 to 2007. The study suggests that the reforms have a positive and significant effect on assertiveness and growth efficiency in Egypt banking industry. They also found the result which shows that government banks are generally well efficient than private banks, and foreign banks, which are less aggressive than domestic banks.

Moreover, Ekpenyong and Acha (2011) researched into the role of banks on economic growth in Nigeria. The study which employed correlation and error correction analysis found that monetary policy instruments are very significant in stimulating economic growth in Nigeria. It was also observed that there is positive relationship between banks performance and economic growth. It was therefore recommended that the country should do more to promote growth by putting in place appropriate monetary policies to stimulate the economy in the desired direction. Dori (2016) looked at the effect of the Central Bank of Nigeria's development finance on economic growth and on the development of the country. It was observed that Central Bank of Nigeria's development finance policies and schemes have increased the productivity, investment, savings, employment and output of the economy at large, despite the fact that several productive sectors still lack access to basic financial services. It was recommended that Central Bank should do more to correct such imbalance to stimulate economic growth. Clearly, almost all previous studies were carried over a decade and the recent ones are based on the conventional theories which only reflect our earlier assumption about the workings of the economy. The dynamic change in the economic event also reflects the crucial role this study will play in the reshaping of the Nigerian economy.

Methodology

The Model

The autoregressive econometric model approach employed by Ocran (2010) for the case of South Africa is adopted to analyze the inter-relationship between the role of Central Bank and economic growth, in Nigeria. The autoregressive model is very appropriate for this study, as it makes possible for the lagged value of the dependent variable to be employed as an explanatory variable in the model. In this case, the current value of the real GDP is also determined by the last

year value. Hence, we adopt the model to enable us to determine the effect of previous value of the real GDP on the current value of the real GDP vis-à-vis other explanatory variables in the model. To this end, the model is expressed as:

$$RGDP_t = f(RGDP_{t-1}, MPR_t, TBR_t, INRT_t, MS_t, LR_t) \quad (1)$$

Thus, equation (1) is explicitly stated as:

$$RGDP_t = \alpha_0 + \alpha_1 RGDP_{t-1} + \alpha_2 MPR_t + \alpha_3 TBR_t + \alpha_4 INRT_t + \alpha_5 MS_t + \alpha_6 LR_t + \varepsilon \quad (2)$$

Where: RGDP = economic growth Indicators (real GDP); MPR= Monetary policy rate, TBR= Treasury bill rate, INRT= Interest rate, MS= Broad Money supply (M_2), LR = Lending rate. Furthermore, α_0 = intercept or constant; α_{1-6} = parameters or co-efficient of explanatory variables; and u = error term. This is basically referred to the sign and size of the parameters of economic relationship. It is purely determined by the principle of economic theory. The data for this study is purely secondary, and it is obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin (2016).

Estimation techniques

The time series properties of the variables incorporated in multiple regression model (iii) is examined using the Augmented Dickey-Fuller unit root test in order to determine the long-run convergence of each series to its true mean. The test involves the estimation of equations with drift and trends as proposed Dickey and Fuller (1988). The test equations are expressed as:

$$\Delta Z_t = \eta_0 + \eta_1 Z_{t-1} + \sum_{i=1}^{n} \pi_i \Delta Z_{t-i} + \nu_t \quad (3)$$

$$\Delta Z_t = \eta_0 + \eta_1 Z_{t-1} + \eta_1 t + \sum_{i=1}^{n} \pi_i \Delta Z_{t-i} + \nu_t \quad (4)$$

$$H_0: \quad \eta_1 = 0$$

$$H_1: \quad \eta_1 < 0$$

The time series variable is represented by Z_t and ν_t as time and residual respectively. Equations (3) and (4) are the test model with intercept

only, and linear trend respectively. The specified multiple regression model (2) is estimated with Ordinary Least Square Estimator.

Results and Discussion

The time series properties of the variables incorporated in multiple regression model (2) is examined using the Augmented Dickey-Fuller unit root test to determine the long-run convergence of each series to its true mean. The test involves the estimation of equations with drift and trends, as proposed Dickey and Fuller (1988).

Table no. 1 presents the results of the stationarity test. This pre-test was carried out before estimating the long-run relationship between Apex Banks and economic growth in Nigeria (1981-2015).

Table no. 1. Augmented Dickey-Fuller (ADF) Unit Root Test

Variables	ADF Test	Critical Value at 5%	Critical Value at 10%	Stationary
RGDP	-5.304311	-2.960411	-2.619160	I(1)
MS	-3.180309	-2.960411	-2.619160	I(1)
INTR	-4.282246	-2.963972	-2.621007	I(1)
LR	-5.659209	-2.963972	-2.621007	I(1)
MPR	-4.913153	-2.963972	-2.621007	I(1)
TBR	-5.407161	-2.960411	-2.619160	I(1)

Source: Authors' Computation, 2016

The augmented Dickey-Fuller test result presented in Table no. 1 shows clearly that all the variables estimated in the model are stationary at first difference. This is because none of the variable was stationary at levels, hence the first difference values of the ADF test are reported. This implies that there is no unit root in all variables employed in the study. Since the variables are stationary at first difference, we proceed to run the cointegration test to confirm if there is long run relationship among the variables.

Cointegration Test

In table 2a an 2b, it is reported the cointegration result. The trace statistic result in the first table shows that the there is one cointegrating equation at 5% level of significance. Also, the maximum eigenvalue test confirms that one cointegrating equation exists at 10% level. This implies that there is long run relationship among gross domestic product, interest rate, money supply, monetary policy rate, treasury bill rate and lending rate. This means that we can now estimate the long run model.

Table no. 2a. Unrestricted Cointegration Rank Test (Trace Statistic)

Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**5% Critical value**	**Prob****
None *	0.716560	104.3824	95.75366	0.0112
At most 1	0.551245	65.29897	69.81889	0.1088
At most 2	0.514264	40.45936	47.85613	0.2065
At most 3	0.301187	18.07459	29.79707	0.5605
At most 4	0.195805	6.965060	15.49471	0.5817
At most 5	0.006744	0.209760	3.841466	0.6470

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level, * denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values

Table no. 2b. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	**Eigenvalue**	**Max-Eigen Statistic**	**5% Critical value**	**Prob****
None **	0.716560	39.08342	40.07757	0.0644
At most 1	0.551245	24.83960	33.87687	0.3959
At most 2	0.514264	22.38477	27.58434	0.2013
At most 3	0.301187	11.10953	21.13162	0.6364
At most 4	0.195805	6.755300	14.26460	0.5185
At most 5	0.006744	0.209760	3.841466	0.6470

Max-Eigen test indicates no cointegrating eqn(s) at the 0.05 level but one cointegrating eqn(s) at 0.1 level, * denotes rejection of the hypothesis at the 5% level; ** denotes rejection of the hypothesis at the 10% level, ***MacKinnon-Haug-Michelis (1999) p-values

Correlation Analysis

In examining the association among the variables, we employed the Pearson correlation coefficient (correlation matrix) and the results are presented in table 3.

Table no. 3. Correlation Matrix

	RGDP	INTR	LR	MS	MPR	TBR
RGDP	1	-0.24163	0.177394	0.974724	-0.29971	-0.3512
INTR	-0.241632	1	0.838748	-0.24084	0.835932	0.740017
LR	0.1773941	0.838748	1	0.157685	0.786726	0.704964
MS	0.9747238	-0.24084	0.157685	1	-0.35854	-0.41724
MPR	-0.299705	0.835932	0.786726	-0.35854	1	0.95618
TBR	-0.351199	0.740017	0.704964	MS	MPR	TBR

Source: Authors' Computation, 2016

The use of correlation matrix in most regression analysis is to check for multicollinearity and to explore the association between each explanatory variable and the dependent variable. Table no. 3 focuses on the correlation between economic growth a proxy of GDP and monetary policy rate, money supply, interest rate lending and Treasury bill rate. The findings from the correlation matrix table shows that monetary policy rate as a Central Bank control indicator of banks (MPR; GDP - 0.29971) was negatively and weakly associated with economic growth a proxy of GDP. This implies that monetary policy rate of Central Bank has a negative association with GDP that is an increase in the MPR will lead to decrease in the GDP of Nigeria.

In the case of lending rate (LR; GDP = 0.177394) we observed that it was positively and weakly associated with economic growth a proxy of GDP. This suggests that if Central Bank authorizes to charge an appropriate lending rate, it will result to growth in the economy. A look at money supply (MS; GDP = 0.974724), indicate that money supply was positively and strongly correlated with economic growth. This also suggests that Central Bank control based on money supply is strongly associated with economic growth. We also observed that in the case of interest rate, which was negative, but weakly associated with GDP (INTR: GDP = - 0.24163). This means that interest rate if manipulated will reduce the GDP in Nigeria. It was observed that in the case of Treasury bill rate, was positive, but weak associated with economic growth (TBR: GDP = - 0.3512). This means that Treasury bill rate could reduce economic growth in Nigeria.

Long Run Estimation Results

Table no. 4. The Autoregressive Result

Dependent Variable: GDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.757538	0.151942	4.985703	0.0000
INTR	0.371893	0.123351	3.014916	0.0059
LR	0.509802	0.122663	4.156119	0.0001
MS	0.735683	0.133870	5.495504	0.0000
MPR	-0.337365	0.399139	-0.845233	0.4060
TBR	0.033753	0.131285	0.257095	0.7992
GDP(-1)	0.757384	0.140936	5.373962	0.0000
R-squared	0.994824	**Mean dependent var**	7.957483	
Adj. R-squared	0.993582	**S.D. dependent var**	2.141357	
F-statistic	800.8107	**Akaike info criterion**	0.497190	
Prob(F-stat.)	0.000000	**Durbin-Watson stat**	2.018198	

Source: Authors' computation, 2016

The regression result presented in table no. 4 indicates that interest rate is positively related to gross domestic product. Its coefficient of 0.37 implies that a unit increase in interest rate while keeping the other explanatory variables constant will boost GDP by 0.37. The implication of this is that interest rate positively impact GDP in Nigeria. A high interest rate will lower investment and consequently aggregate demand in the short run, but in the long run, which is the focus of our analysis, lower consumption spending and lower aggregate demand will cause interest rate to fall, thereby boosting planned level of investment in the economy thereby translating to increase in the gross domestic product. Moreover, it follows that Nigerian investors have always taken advantage of a low rate of interest to access funds in the banking sector, which has consequently boosted growth over the study period. Lending rate's coefficient of 0.5098 implies that a 1% increase

in the lending rate, ceteris paribus, will cause the GDP to rise by about 50%. That shows that over the period of study, lending rate in Nigeria positively impact the gross domestic product. This is in consonance with the result of the interest rate which also has similar effect on GDP.

Result of the long run estimation also shows clearly that a 1% increase in money supply, while keeping all other explanatory variables in the model constant, will cause a 74% rise in GDP. This is conformity with our a priori expectation as any efforts to increase money stock in the economy by the Central Bank of Nigeria is seen as an expansionary monetary policy, which will subsequently expand consumption expenditure, aggregate level of investment and also boost the general level of transaction in the economy. Also, the result indicates that if on the other hand, there is a contractionary monetary policy, the level of economic activity in Nigeria will shrink leading to a fall in the gross domestic product. Since this study focuses on the role of the Central Bank on Nigeria's economic growth, it thus implies that the Central Bank has a key role to play in the Nigerian economy as it pertains to the control of money supply.

The result shows that monetary policy rate negatively impacts GDP: i.e. a unit increase in monetary policy rate will cause the GDP to fall by 0.34, while keeping other variables constant. Also, the Treasury bill rate is also found to positively impact GDP as its increase of 1% will make GDP to rise by about 3%. The implication of this is that monetary policy rates in Nigeria should be well managed and kept as low as possible to bring the country out of its current economic recession. To complete our result, we introduced the lagged value of GDP into the model, because it is believed that its previous value will have effect on its current value. The result shows that the GDP value of last year will cause its value of this year to increase significantly. A look at the result shows that about 99% of the variation in GDP is explained by all the explanatory variables in the model, while only 1% is explained by the error term. This means that the model is a good fit. Also, after removing the effect of insignificant variable in the model, the adjusted R squared value of 0.9935 still shows that the model is a good fit. In terms of statistical significance, the result shows that interest rate, lending rate, money supply and the lagged value of GDP are statistically significant in the model at 1%, 5% and 10% respectively. It is only monetary policy rate and Treasury bill rate that are found to be statistically insignificant in the model. Also, the Durbin-Watson value

of 2.0 reveals that there is no serial correlation in the model i.e. all the error terms are serially uncorrelated. Moreover, the probability of the F-statistic shows that all the explanatory variables are linearly related in explaining changes in the gross domestic product.

Conclusion and Recommendations

This study found that there is a negative and insignificant relationship between monetary policy rate (MPR) and economic growth. The findings of Abdurrahman (2010) which studied the role of monetary policy on economic activity in Sudan and found that monetary policy had little impact on economic activity during the period under consideration; this finding was consistent with the findings of our study. Chuku (2009) on the other hand, studied the effects of monetary policy innovations in Nigeria. In this study, the monetary instruments he used were broad money (M2) as quantity-based nominal anchor, monetary policy rate (MPR) and interest rate (INTR) as price-based nominal anchors, and found that the use of M2 was the most influential monetary policy instrument used in the country. It is therefore suggested that the Apex Bank should explore ways in which monetary policy instruments like money supply and interest rate can be made more effective in stimulating real GDP in Nigeria. The Central Bank can set an appropriate interest rate target that enables, and will not shrink economic activities. In the same vein, the Central Bank of Nigeria must ensure that the monetary policy rate is employed appropriately to achieve desired objective, since it is obvious that it has negative impact on economic growth. Hence, the monetary policy rate must always be kept low in order to stimulate real output in Nigeria and also to bring the country out of recession. Finally, the Nigerian domestic investors should be encouraged by Apex Bank to access opportunities in the economy by providing them with favorable monetary policies that can stimulate their productivity and boost economic growth.

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The Eastern Partnership as a Vector of Economic Growth for EU Neighbours: Evidence from Panel Data

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Abstract
The global economy is significantly shaped by a complex process of globalization and regional economic integration that has induced various global transformations. In Europe, the regional integration deepening has generated significant socio-economic developments for the EU Member States, as well as for candidate countries or other EU neighbouring partners. Therefore, the research performed within this paper aims to analyse the role played by the Eastern Partnership (EaP), as a vector of economic growth for EU's Eastern neighbours. The main focus is on the impact of international trade and capital flows emerged after 2009 (when the EaP was signed) upon the economic activity of six EU partners, as well as during longer time series, respectively 1992-2015. Thus, we have developed various macroeconometric double-log and semi-log (*lin-log*) models, processed through the correlated panels corrected standard errors (PCSE) method of estimation. The results highlight a significant positive impact of international trade flows upon the economic activity, an increase in exports and imports, as well as a higher openness degree

towards the global market leading to improvements in GDP per capita levels. At the same time, international investment, mainly the foreign direct investment inflows, have important positive effects upon the living standards and welfare of citizens within the six panel considered economies.
Keywords: EaP, regional integration, international trade, FDI, economic growth

Introduction

The European Union has a strategic key objective to ensure stability, improve the coordination and collaboration degrees across Europe, along with the economic growth of EU's Southern and Eastern neighbours. Moreover, its partners in Eastern Europe and South Caucasus are also focusing on intensifying their relations with the EU. In this context, the European Union has developed a proactive policy in order to grant them constant support in the efforts performed for joining the EU, as well as for implementing various reforms that are extremely necessary for their long term economic development. This particular assistance is provided through a specific East oriented dimension of the European Neighbourhood Policy (ENP) under the framework of the Eastern Partnership (EaP). Thus, through the ENP as a key component of EU's Foreign Policy, the European Union co-works with Southern and Eastern neighbours to develop a tight political association and a higher degree of economic integration. This objective is build based on a series of common interests and values, like democracy, rule of law, human rights and social cohesion.

The last two decades have brought significant changes in the Eastern part of the European Union, therefore along with the Partnership Agreements signed for a better cooperation between the EU and its Eastern neighbours, the following enlargements have ensured a wider geographical proximity, while the reforms supported through the European Neighbourhood Policy have brought these countries closer to the EU in political and economic terms.

The European Union has an important responsibility towards its partners in terms of guiding them to overcome numerous economic and political challenges that they are facing, and to support their efforts in joining the EU within the context of a deeper regional economic integration process.

To this respect, the linkages developed by the EU with some Eastern countries have been strengthened through the Eastern Partnership signed by the EU in 2009 together with six East-European partners: Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine. This partnership is based on the commitment to international law principles and fundamental values of democracy, rule of law, human rights and social inclusion. In economic terms, the EaP provides constant support for the market economy, sustainable economic development and good governance.

Literature review on regional economic integration

In the relevant literature there are several authors trying to explain that regional economic integration is a process through which the boundaries between state-nations become less discontinue, thus leading to the formation of more comprehensive systems (Viner, 1950; Marchal, 1965; Bourenane, 1997; Haile, 2000). To this respect, Viner (1950) highlighted that the economic integration could lead either to trade creation or to a reorientation of trade flows, due to significant reduction in trade barriers between neighbouring countries, towards a gradual strengthening of international trade.

Haile (2000) pointed out that regional integration as a process involves a unification of various structures, mainly industrial, economic and administrative, for the member states. This type of process is directed by a recognition of the fact that national economic welfare can be improved more efficiently through a such partnership, compared to unilateral policy design performed by each country.

Regional economic integration can thus be defined as an association of two or more countries in order to strengthen their reciprocal economic relations that will lead to economic growth and several benefits for the population through the coordination of fiscal and trade policies, along with efficient resource allocation.

Ousmane (1997) pointed out that trade policy represents a key element of growth and industrialization for developing economies that also coordinates other macroeconomic and sector policies adopted and implemented by these countries. The general strategic framework for long term economic development has shaped trade relations between these nations and the rest of the world, having at the same time a significant impact upon their tendency to operate on regional markets. To this respect, in the relevant literature there is a significant amount of

empirical work that has attested strong interdependencies between the macroeconomic and trade policies developed at country level and the impact of such policies upon global trade and economic growth (Oyejide, 1986; Avillez et al., 1988; Krueger et al., 1988; Mundlak et al., 1989; Stryker, 1990; Dollar, 1992; Ousmane, 1997).

The study of regional economic integration implies recognition of the key role played by international trade within the economic development process (Ousmane, 1997). However, a large part of the literature suggests that the failure of traditional regional integration systems is mainly due to governments (Berg, 1988; Mytelka, 1997). Steven (2004) refers to different integration degrees that are influenced by mutual trust, respect, common interests and responsibility.

The empirical evidence on regional economic integration impacts upon economic growth is still controversial. Vamvakidis (1998) considers that open economies have higher economic growth rates and that countries having large neighbours with increased openness degrees are developing much faster, but their own growth rates do not generate a significant positive impact upon the other neighbouring areas. Moreover, Vamvakidis (1998) examines the effects of regional integration within ASEAN, Andean Community and the European Union upon the economic growth rates of their member states. The results obtained show that there aren't significant effects induced by regional economic integration in the case of the above mentioned trade blocks, except for the European Union, and suggests that trade agreements between small, closed and developing countries are less likely to induce a faster economic growth path.

Schiff and Wang (2003) reveal that they found no empirical evidence on the dynamic effects generated by regional integration based on technology diffusion between partner and non-partner states. They continue their research by showing that NAFTA imports have increased productivity rates (between 5.5-7%) in Mexico, while the extra-regional imports don't have a significant economic impact.

European economic integration and the importance of European Neighbourhood Policy

Open markets and regional economic integration are essential for the economic development of EU partner countries. Therefore, the Association Agreements (AA) provides access to common markets and creates new opportunities on both sides that also warrant the political

stability of the area. Moreover, the association agreements include as a main purpose the creation of a deep and comprehensive free trade area (AA/DCFTA) with every partner of the EU. These free trade areas will be established once those countries become WTO members, thus substantially covering the overall trade flows, including the energy sector, and aim at the highest possible liberalization degree (with a correspondent asymmetry of the liberalization degree that is appropriate for EU partners).

Within this context, the *European Neighbourhood Policy – ENP* coordinates the relations developed by the EU with 16 of the closest neighbouring countries in the Southern and Eastern parts. Thus, at South we find partnerships formed by the EU with *Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria* and *Tunisia*, while at the East there are partnerships with *Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine.* Even though the Russian Federation is an EU neighbour, the bilateral relations are approached differently compared to the ENP, Russia taking part in the EU's cross-border projects (European Commission, 2015b).

The European Neighbourhood Policy was launched in 2003 and developed gradually during 2004 with the main objective to avoid the emergence of separating lines between the enlarged European Union and its neighbours and, at the same time, to strengthen the stability, security and prosperity for all the countries involved, by complying to the values of democracy, rule of law and human rights. The ENP also approaches some of the strategic aims debated at the European Security Strategy in December 2003 and was renewed in 2011 due to the significant changes induced by the Arab Spring. Still, taking into account the recent development in the EU neighbouring area, starting with 2011 the constant re-examination of the ENP became more obvious. Therefore, the most recent guidelines have been defined on November 18, 2015, after a public consultation attended by all partner countries, international organizations, civil society and various experts on external policy. Through the ENP, the European Union focuses on designing a coherent approach of its relations with the Eastern and Southern neighbourhood that will allow an intensified cooperation between these countries in order to create a stable and prosperous area. The central element of the ENP is represented by bilateral action plans established by the EU with each of its partner countries. These plans

define a program of political and economic reforms with targets set on short and medium terms.

The Eastern Partnership (EaP): fundamental mechanism of a deeper European economic integration

The Eastern Partnership (EaP) represents a political initiative developed by the European Union with the main purpose to deepen and strengthen its relations with six Eastern neighbouring countries, namely *Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine*. The EaP was launched at the Prague Summit in May 2009, being focused on encouraging and supporting the reform initiatives performed by the associated countries for the socio-economic welfare of their citizens. Therefore, the Eastern Partnership is based on the commitment of these countries to the principles of international law and fundamental values that include democracy, rule of law, human rights and freedoms, along with empowering the market economy, sustainable economic development and good governance (European Commission, 2015b).

The EaP is comprised within the Eastern dimension of the European Neighbourhood Policy, being constantly updated, so that its initiatives and objectives were firstly reconfirmed at the Warsaw Summit in 2011, and afterwards at the Vilnius Summit in 2013. Moreover, the latest EaP common declaration was performed on May 2015 at the Riga Summit, when the cooperation strategies were revised and thus established future common action guidelines (European Commission, 2015c). There are two basic coordinates of the EaP: *(i)* bilateral and *(ii)* multilateral. The *bilateral dimension* covers political and economic reforms implemented by partner countries in order to ensure the EU adhesion and deeper economic integration, respectively to support people's mobility and no-visa travels as the main long term objective. Therefore, the bilateral cooperation programs contribute to achieving these objectives by granting support on priority areas identified by each partner country. The *multilateral dimension* complements bilateral relations with a series of thematic platforms used for the exchange of good practices on various issues of common interest, like good governance, economic integration and development, energetic security and transport. At the same time, there are new initiatives designed within the context of regional cooperation programmes in other areas that cover environment, energy, natural disasters, border management, SMEs.

Through the Eastern Partnership, the European Union took its commitment to develop a tight cooperation with its six partner countries, regardless of the individual level of implication in their relations with the EU. To this respect, the AA/DCFTAs established in 2014 have brought the EU relations with Georgia, Moldova and Ukraine to a different (higher) level. These arrangements have the main purpose to enforce the political and economic integration degree, thus representing a set of reforms that will bring the six partner countries closer to the EU, through aligning the legislation and own standards to the community ones and improving the living standards of citizens in a tangible manner. Moreover, a differentiated and better shaped approach of the relations developed with Armenia, Azerbaijan and Belarus will contribute to the inclusive nature of the EaP (European Commission, 2015a). Thus, Armenia's tight political association and economic cooperation with the European Union will be accomplished in line with other international commitments previously assumed by it. At the same time, the European Union performs constructive negotiation with Azerbaijan in order to develop a closer political and economic relationship that reflects common values and interests, while deepening the critical commitment acknowledged with Belarus.

Data and methodology: developed models, equations

Based on the main coordinates of the Eastern Partnership developed by the European Union with six neighbouring countries within the context of a deepen regional economic integration process, we have assessed the importance of this partnership through the effects induced by international trade and capital flows of EU's EaP partners upon their economic growth, living standards and long-term development. The panel thus comprises six countries (Armenia, Azerbaijan, Belarus, Georgia, Moldova, Ukraine) and a complex set of macroeconomic indicators complied during 1992-2015. The main data sources accessed are Eurostat (European Commission) and UnctadStat (United Nations Conference on Trade and Development – Statistics – Data Centre). The macroeconomic indicators used as proxies and variables of developed models include: *(i)* the GDP growth rates and GDP per capita; *(ii)* export and import of goods and services (thus comprising international trade operations performed by these countries in terms of product sales and purchases on a global market), along with the trade openness degree; *(iii)* international investment as FDI (foreign

direct investment) inflows and outflows that reflect the globalization degree of an economy based on the economic environment during a certain period of time, as well as its relative attractiveness in performing new FDI; *(iv)* total labour force.

Fig. no. 1a. GDP growth (left), GDP per capita (middle) and Exports (right), 2015

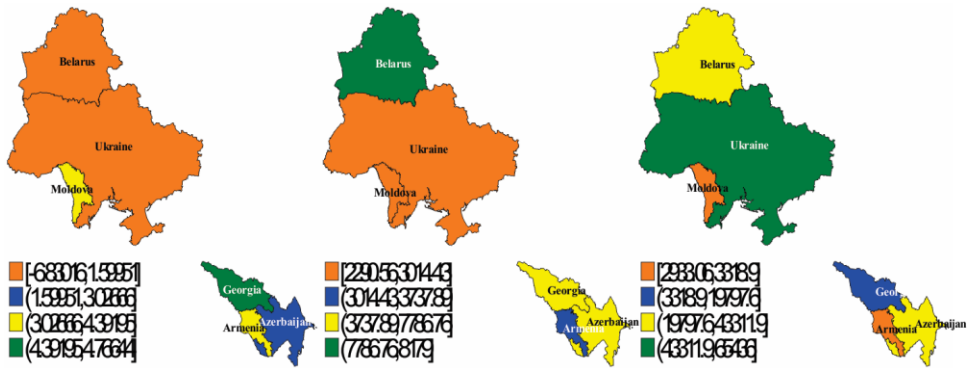
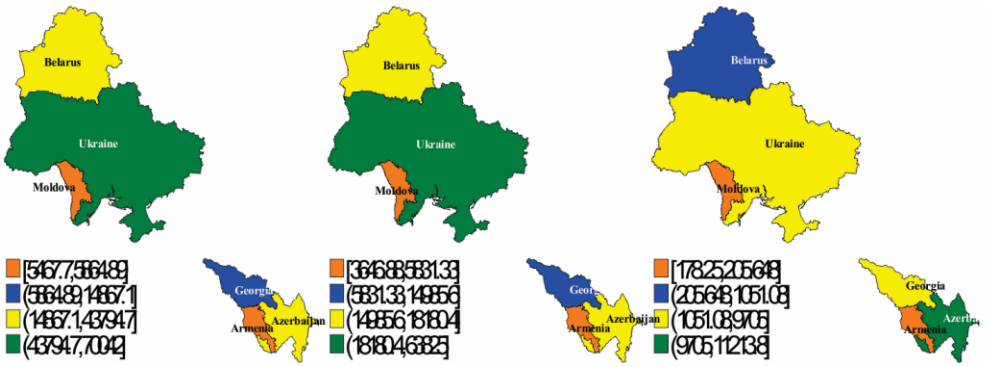


Fig. no. 1b. Imports (left), FDI inflows (middle) and FDI outflows (right), 2015

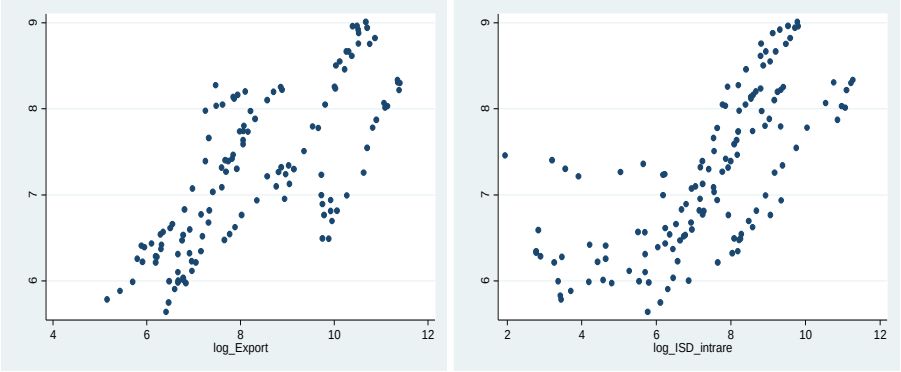


Source: own process of panel data with Stata 13

In the first stage of the performed research we've focused on dynamic evolutions, trends and patterns of selected indicators for the six panel considered economies. Thus, the total GDP, its growth rates and per capita levels have registered an increasing trend during the last two decades, especially for Ukraine, but these positive tendencies were counterbalanced by the negative effects of the global economic and

financial crisis during 2008-2010, being followed by a new upward trend of economic growth after the EaP development in 2009. However, the present geopolitical context and the areas' instability have negatively reflected upon Ukraine's economy, both total and per capita GDP significantly decreasing. On the other hand, the living standard has improved for two of the EaP partner countries (Azerbaijan and Belarus), as reflected by significant increases in GDP per capita levels. International trade flows developed by the EaP countries globally have intensified starting with the second half of 2000 and especially during 2009-2013, with positive upward trends even though the imports are larger than exports, so that the overall trade balance is on deficit. At the same time, the openness degree reveals the important position held by Ukraine, Belarus and Azerbaijan on the global market compared to the other EU partners under the EaP.

Fig. no. 2. Panel correlation of GDP per capita and exports (left), respectively GDP per capita and FDI inwards (right)



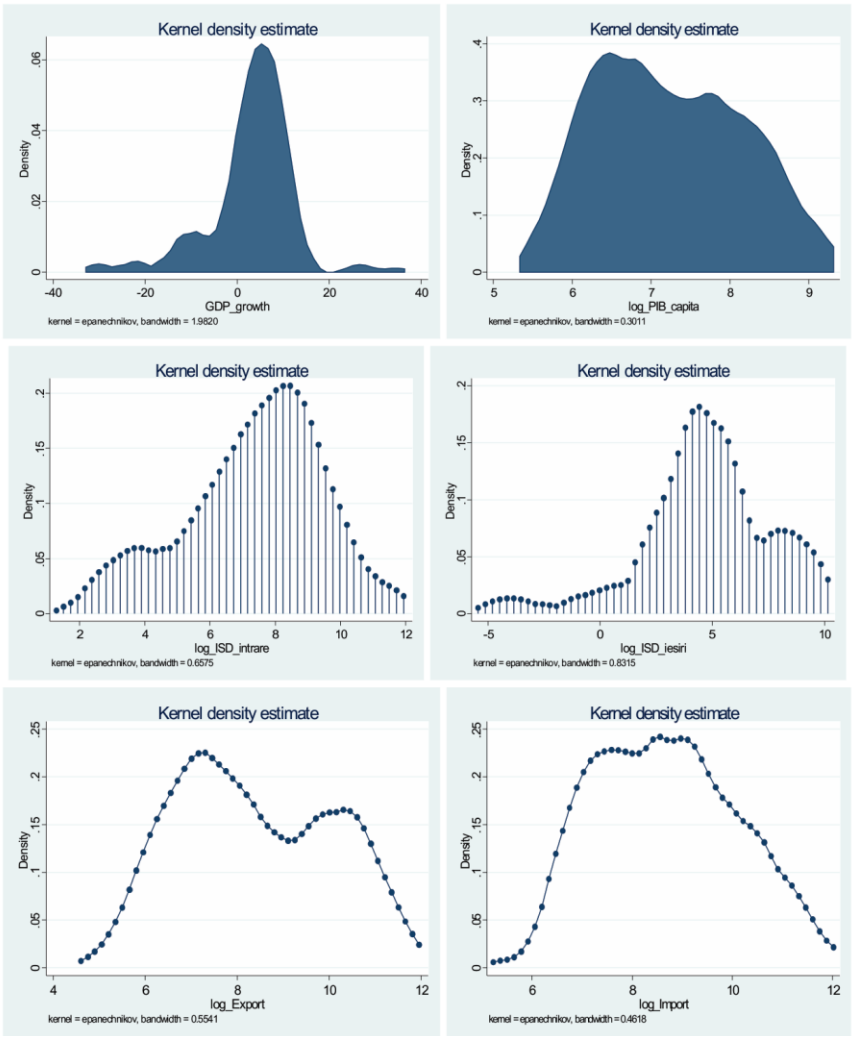
Source: own process of panel data with Stata 13

By analysing the FDI patterns for panel considered economies, it can be noticed that Ukraine leads the way for foreign investors with an important upward trend during 2004-2015, both in terms of inflows and outflows. Moreover, the FDI outwards shape a different view upon the six considered economies, and bring up front the dominant position of Azerbaijan compared to the other EaP countries, along with the important positive evolutions of Ukraine's investment.

A second step of the research performed was made in order to ensure the validity of developed models and the accuracy of the results

(coefficients) obtained by applying the panel corrected standard error (PCSE) method of estimation.

Fig. no. 3. Kernel density estimates for the main panel indicators used within the empirical analysis



Source: own process of panel data with Stata 13

Figure no. 3 highlights a good panel distribution of data used for the empirical analysis revealed by the associated Kernel density estimates.

On the final stage of the research, we've assessed the impact induced by international trade and capital flows emerged in the context of regional economic integration and EaP developments upon the economic growth and long term development. To this respect, we've developed two sets of five macroeconometric double-log and semi-log (lin-log) multiple regression models by using as endogen and exogenous variables the indicators described in the previous section and compiled within a panel of six EaP countries during 1992-2015. Therefore, the panel comprises 144 observations, respectively six countries (panel spatial units) and 24 years (panel temporal units). However, some of the time series are incomplete due to unavailable or lack of data. As a result of the detailed analysis of macroeconomic indicators and relevant literature review, we were able to design the econometric models used for the empirical assessment of the impact generated by international trade and capital flows upon the economic activity (in terms of GDP per capita and growth rates).

The first set of macroeconoemtric models uses as dependent variable the GDP growth rate and the second set comprises the GDP per capita along with a combination of explanatory variables that are proxies for international trade and capital flows.

The general form of the models synthesised in table no.1 is:

Model 1

$$GDP\_growth_{it} = \beta_0 + \beta_1 Open\_\deg ree_{it} + \beta_2 FDI\_inward_{it} + \varepsilon_{it}$$

Model 2

$$GDP\_growth_{it} = \beta_0 + \beta_1 Export_{it} + \beta_2 FDI\_inward_{it} + \varepsilon_{it}$$

Model 3

$$GDP\_growth_{it} = \beta_0 + \beta_1 import_{it} + \beta_2 FDI\_inward_{it} + \varepsilon_{it}$$

Model 4

$$GDP\_growth_{it} = \beta_0 + \beta_1 Export_{it} + \beta_2 FDI\_inward_{it} + \beta_3 Labour_{it} + \varepsilon_{it}$$

Model 5

$$GDP\_growth_{it} = \beta_0 + \beta_1 import_{it} + \beta_2 FDI\_inward_{it} + \beta_3 Labour_{it} + \varepsilon_{it}$$

The general configuration of the models comprised in table 2 is:

Model 1

$$GDP\_capita_{it} = \beta_0 + \beta_1 Open\_\deg ree_{it} + \beta_2 FDI\_inward_{it} + \varepsilon_{it}$$

Model 2

$$GDP\_capita_{it} = \beta_0 + \beta_1 Export_{it} + \beta_2 FDI\_inward_{it} + \varepsilon_{it}$$

Model 3

$$GDP\_capita_{it} = \beta_0 + \beta_1 import_{it} + \beta_2 FDI\_inward_{it} + \varepsilon_{it}$$

Model 4

$$GDP\_capita_{it} = \beta_0 + \beta_1 Export_{it} + \beta_2 FDI\_inward_{it} + \beta_3 Labour_{it} + \varepsilon_{it}$$

Model 5

$$GDP\_capita_{it} = \beta_0 + \beta_1 import_{it} + \beta_2 FDI\_inward_{it} + \beta_3 Labour_{it} + \varepsilon_{it}$$

We've specifically selected the explanatory variables associated with each model in order to comprise the cumulative impact of international trade and foreign direct investment upon the economic activity.

Results and discussions

The results obtained after processing the first set of five macroeconometric models based on PCSE method are synthesised in table no. 1.

Table no. 1. Results of the macroeconometric models, PCSE method, dependent variable: GDP growth rate

	(1) *GDP_growth*	*(2)* *GDP_growth*	*(3)* *GDP_growth*	*(4)* *GDP_growth*	*(5)* *GDP_growth*
log_Open_degree	-2.904***				
	(0.665)				
log_FDI_inward	3.605***	3.298***	3.708***	2.616***	3.408***
	(0.729)	(0.692)	(0.683)	(0.680)	(0.693)
log_Export		-2.370***		-0.222	
		(0.559)		(1.043)	
log_Import			-3.745***		-2.497*
			(0.661)		(1.255)
log_Labour				-3.533**	-1.821
				(1.310)	(1.271)
_cons	1.309	-1.686	7.917	14.58***	14.33***
	(4.189)	(3.836)	(4.181)	(4.262)	(3.337)
N	126	131	132	131	132
R^2	0.234	0.200	0.257	0.243	0.270

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

For the first set of macroeconometric models, the PCSE estimated coefficients have a high degree of statistical significance, mostly at 0.1% level, thus confirming the influence induced by the selected independent variables upon GDP growth rates.

The results reveal a very strong positive impact of international capital flows (reflected through FDI inwards) upon the economic activity of EaP countries, while the international trade tends to negatively impact the GDP growth rates. At the same time, the r-square values point out that around 20% of the variations in GDP growth rates could be explained through the variations in international trade flows (goods and services) along with international investment.

Moreover, if we consider the impact of regional economic integration measured here through trade and FDI upon living standards and welfare of EaP citizens, the results highlight important positive effects induced by these two types of international flows, as shown in table no. 2.

Table no. 2. Results of the macroeconometric models, PCSE method, dependent variable: GDP per capita

	(1) *log_GDP_cap*	*(2)* *log_GDP_cap*	*(3)* *log_GDP_cap*	*(4)* *log_GDP_cap*	*(5)* *log_GDP_cap*
log_Open_degree	0.308***				
	(0.0480)				
log_FDI_inward	0.142**	0.174***	0.171***	0.0183	0.0593*
	(0.0438)	(0.0426)	(0.0415)	(0.0231)	(0.0254)
log_Export		0.252***		0.741***	
		(0.0391)		(0.0379)	
log_Import			0.301***		0.768***
			(0.0506)		(0.0558)
log_Labour				-0.805***	-0.681***
				(0.0415)	(0.0429)
_cons	3.551***	3.854***	3.369***	7.558***	5.768***
	(0.351)	(0.328)	(0.368)	(0.125)	(0.0890)
N	126	131	132	131	132
R^2	0.615	0.611	0.611	0.859	0.812

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After processing the second set of five macroeconometric models (double log multiple regression models) that focus on assessing the impact induced by international trade and investment flows upon GDP per capita levels (used here as a proxy for the living standards and welfare of the population), we've obtained highly statistically significant coefficients, along with improved levels of the r-squared that point out a tighter interdependence between selected endogen and exogenous variables (more precisely, around 80% of the variations in GDP per capita could be explained by the variations in international trade and capital flows along with the total labour force and about 60%, if we consider only the international flows).

Thus, there are positive significant effects upon the six panel considered countries, generated by a higher openness degree towards the global market, as a result of closer relations developed with the EU through the EaP, corroborated with additional exports and imports that also induce increases in the GDP per capita levels (with about 0.252%, respectively 0.301%). Moreover, additional foreign direct investment inflows into the six EaP panel considered economies have positive effects on the living standards of their population, with significant improvements in the GDP per capita.

Conclusions

The analysis of EU's Eastern Partnership and its role as a key mechanism in deepening regional economic integration is relatively new in relevant literature and extremely important in the present context of the globalized world economy. The EaP represents a key component of the European Neighbourhood Policy, part of the EU's Foreign Policy, that was developed in 2009 at the Prague Summit with some of its Eastern neighbours, namely Armenia, Azerbaijan, Belarus, Georgian, Moldova and Ukraine and constantly revised until present. Through the EaP, EU takes the commitment to support its partners in various strategic areas that require a coherent set of reforms necessary for long term economic development and welfare in the benefit of their citizens, thus ensuring to EaP countries a gradual integration within the EU.

Based on all these aspects, the empirical analysis performed within this paper highlighted the importance of international trade and capital flows emerged due to recent developments of the European economic integration, especially for the six panel considered countries as EU Eastern Partners.

The results reveal positive effects of the external trade in goods and services performed by the EaP countries, along with additional FDI inflows, upon their economic activity, especially in terms of GDP per capita levels and, to a smaller extent, upon GDP growth rates. Therefore, the results are in line with some of the theories found in the literature that recognise the importance of regional economic integration, respectively international trade and investment, in the process of long term economic development.

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Stock Market Liquidity and Investment Decisions of Non-Financial Quoted Companies in Nigeria

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Abstract
The study examined the impact of market liquidity on investment decision of 50 non-financial quoted companies in Nigeria between 2006 and 2012. The study employed secondary source of data collection. Data collected were analyzed using descriptive statistics and inferential statistics such as pool OLS and fixed effect model. The results showed that Size of the Firm (FS) and Firms' Age (FAGE) were the only significant determinants of Return on Investment (ROI). The turnover ratio (TOR) which is a proxy for market liquidity had positive but insignificant effect on ROI. Based on the above findings, the study concluded that for most of the companies operating in the non-financial sector of the Nigerian economy, the influence of market liquidity on investment decision is positive, but not significant. The study recommended that management should place more emphasis on the firm age and in particular firm size as they can be employed to predict the return on investment.

Keywords: Stock Market Liquidity, Investment Decisions, Firms Value

Introduction

Liquidity plays a crucial role in financial exchange markets. Without the availability of counter-offers, markets cease to exist and they are replaced by individualized bilateral contracts. Thus, some liquidity is necessary even for the existence of a financial exchange market. Further, high liquidity expands the set of potential counter-offers and enhances the probability of a favorable match. Thus, higher liquidity increases the expected level of satisfaction (utility) of market participants. These participants perceive a financial asset as liquid, if they quickly can sell large amounts of the asset without adversely affecting its price. Liquid financial assets are thus characterized by having small transaction costs; easy trading and timely settlement; and large trades having only limited impact on the market price. This is true irrespective of the particulars of the organization of the market. However, the realization of the enhancing role of market liquidity has very important implications on the relative benefits and drawbacks of different market organizations.

A market is said to be liquid, "if traders can quickly buy or sell large numbers of shares without large price effects" (Wuyts, 2007). It refers to the willingness of a market participant, a liquidity supplier, to take the opposite side in a transaction initiated by another trader, the liquidity demander. Note that a supplier can be a dealer, but also another trader, as in limit order markets. The reasoning is that investors are more likely to participate in the market if they are able to buy and sell stocks easily, quickly and at low costs, or in other words: when liquidity is high. This greater number of participants limits the price impact of trades and thus increases the stability of the market.

Investment decision is concerned with the efficient deployment of capital fund. Financing decision requires an appropriate selection and combination of capital from available source while dividend decision involve the periodical determination of proportion of a firm's total distributable earning that is payable to its ordinary shareholders. The larger the dividend paid the less funds are retained for reinvestment and the more the company will have to rely on other source of long term funds (Such as additional issues of equity and or debt capital) to finance projects.

Over the years, there have been indications that investment decisions of non-financial quoted companies has been distorted due to conflict of interest. The fact that management is better informed than outside investors about the company's financial situation creates an informational asymmetry. This, in turn, may result in management being unable to convince its outside investors of the true value of the company, as well as of management's intentions.

As a consequence, management also may find that it is not able to raise as much capital as it wants or needs to finance new projects, or that management may have to surrender too much of the value of the firm to raise the capital it wants or needs. This has negatively impacted the managers' morale as the managers always love embarking on long-term investment which invariably will demand more retained profit and indirectly reduce the dividend to be declared which the shareholders see as unfair to their own part. Therefore, to avoid the wrath of these shareholders especially those ones that own major shares who can easily influence their removal, the investment decisions have been selective and this has greatly affected the corporate performance of Nigerian firms. As a result of this, a potential conflict of interest among managers and shareholders exists in the concentration of ownership.

Recent empirical evidence theory supports that liquidity can help overcome the free-rider problem by facilitating the appearance of block-holders or by increasing their holding. In a more liquid market, large shareholder can make more capital gains on the shares they purchase and the gain from the new purchase help cover the cost of their monitoring activities (Maug, 1998) . These also reducing agency problems, holding larger- than- expected cash balances (Opler, Pinkowitz, Stulz ., Williamson, 1999), and that public pools of liquidity allows firms to diversify their portfolios because of information asymmetry between firms and public market (Myers, Majluf, 1984).

When insiders sell their stocks, reducing their share holdings, they allow more shares to circulate in secondary markets, increasing market liquidity. The increase of market liquidity has the effect that speculators engage in the stock market introducing additional volatility in stock prices. They buy and sell stocks to gain benefits depending on market information. The marginal benefit they make must be equal to the marginal cost of external corporate governance (Mu-Shun, Shaio, An, 2011).

In view of this, most studies in developed economies have shown that market liquidity can reduce conflict of interest and enhance investment decisions, while there has been argument for and against this view in Nigeria amongst professionals. There is therefore the need to clarify the argument on whether or not market liquidity can influence investment decisions. Apart from the above introductory section, the rest of this study has been divided into four sections. In section two, we discuss the theoretical framework and literature review of the study. Section three discusses the methodology, while section four focuses on results. The study is concluded in section five.

Materials and Methods

In this study, only the companies that are observable during the periods were covered and hence; balanced panel data was used. The data were obtained from audited annual reports and accounts of the 50 non-financial companies for the periods 2006–2012 and these were collected from the Nigerian Stock Exchange. Descriptive statistics such as percentages, ratios, graphs, arithmetic mean, median, standard deviation and skewness were computed to describe values and features that are typical of some variables. Pool OLS and fixed effects model were used in data analysis.

The study is concerned with market liquidity and investment decisions, which were captured by turnover ratio and return on investment respectively. A functional equation that relates market liquidity to investment decisions is specified as follows:

$$ROI_{it} = f(FAGE_{it}, CP_{it}, FINLEV_{it}, FS_{it}, INVOPP_{it}, TOR_{it}) \quad \text{.....(i)}$$

Where:
ROIit represents Return on Investment of company i in period t;
FAGEit is the Age of the company i at time t;
CPit is the control power of the company i at time t;
FINLEVit is the financial leverage of company i at time t
FSit is the firm size of the companies i at time t
TORit is the turnover ratio of company i at time t
INVOPPit is the investment opportunity of company i at time t

Given the theoretical linkage between market liquidity and investment decision, there is need to build linear equations that was used to capture their relationship. Therefore, the linear relationship between market liquidity and investment decision is as shown in equation (ii) below:

$$\mathbf{roi}_{it}=\beta_0+\beta_1 fage_{it}+\beta_2 cp_{it}+\beta_3 finlev_{it}+\beta_4 fs_{it}+\beta_5 invopp_{it}+\beta_6 tor_{it}+\varepsilon_{it} \ldots \text{(ii)}$$

A Priori Expectation:

β_1…….β_6 greater than zero

Where:

β_0 is the constant term, β_1,…….β_6 are the slopes of the regression to be estimated and ε_{it} is the stochastic error term.

Literature Review

Market Liquidity, though an elusive concept has become one of the most important influential factors in every corporate entity because of its long-term effect on investment decisions. While most observers would agree whether a given market is liquid or not, it is difficult to draw up precise definitions of market liquidity. This is because market liquidity is multi-faceted: the definition necessarily changes depending on what aspect one wishes to emphasize. "A market is said to be liquid if traders can quickly buy or sell large numbers of shares without large price effects" (Wuyts, 2007). It refers to the willingness of a market participant, a liquidity supplier, to take the opposite side in a transaction initiated by another trader, the liquidity demander. Note that a supplier can be a dealer, but also another trader, as in limit order markets. Although having the advantage of simplicity, the definition is also general and hard to implement in practice when analyzing liquidity.

In order to make the definition more specific, Black (1971), O'Hara (1995) and Harris (1990) identify several dimensions of liquidity. The bid-ask spread is a commonly used measure of market liquidity. It directly measures the cost of executing a small trade, with the cost typically calculated as the difference between the bid or offer price and the bid-ask midpoint (or one-half of the bid-ask spread). The measure can thus quickly and easily be calculated with data that are widely available on a real-time basis.

However, a drawback of the bid-ask spread is that bid and offer quotes are good only for limited quantities and periods of time. The spread therefore only measures the cost of executing a single trade of limited size. The quantity of securities that can be traded at the bid and offer prices helps account for the depth of the market and complements the bid-ask spread as a measure of market liquidity. A simple estimate of this quantity is the quote size, or the quantity of securities that is explicitly bid for or offered for sale at the posted bid and offer prices. A drawback of this estimate, however, is that market makers often do not reveal the full quantities they are willing to transact at a given price, so the measured depth underestimates the true depth.

An alternative measure of market depth is trade size. Trade size is an ex-post measure of the quantity of securities that can be traded at the bid or offer price, reflecting any negotiation over quantity that takes place. Trade size also underestimates market depth, however, as the quantity traded is often less than the quantity that could have been traded at a given price. In addition, any measure of the quantity of securities that can be traded at the bid and offer prices does not, by definition, consider the cost of executing larger trades.

A popular measure of liquidity, suggested by Kyle (1985), considers the rise (fall) in price that typically occurs with a buyer-initiated (seller-initiated) trade. The Kyle lambda is defined as the slope of the line that relates the price change to trade size and is typically estimated by regressing price changes on net volume for intervals of fixed time. The measure is relevant to those executing large trades or a series of trades, and together with the bid-ask spread and depth measures provide a fairly complete picture of market liquidity. A drawback of this measure, though, is that the data required for estimation, including the side initiating a trade, are often difficult to obtain, particularly on a real-time basis.

A liquidity measure used in the Treasury market is the "liquidity" spread between more and less liquid securities, often calculated as the difference between the yield of an on-the-run security and that of an off-the-run security with similar cash flow characteristics. Since liquidity has value, more liquid securities tend to have higher prices (lower yields) than less liquid securities, as shown by Amihud and Mendelson (1991) and Kamara (1994). A nice feature of the liquidity spread is that it can be calculated without high-frequency data. Moreover, because the spread reflects both the price of liquidity as well

as differences in liquidity between securities, it provides insight into the value of liquidity not provided by other measures. The spread can be difficult to interpret, however, for the same reason. In addition, factors besides liquidity can cause on-the-run securities to trade at a premium, confounding the interpretation of the spread. Furthermore, the choice of an off-the-run benchmark against which to compare an on-the-run security can result in considerable estimation error.

Trading volume is an indirect but widely cited measure of market liquidity. Its popularity may stem from the fact that more active markets, such as the Treasury market, tend to be more liquid, and from theoretical studies that link increased trading activity with improved liquidity. The measure's popularity may also reflect its simplicity and availability, with volume figures regularly reported in the press and released by the Federal Reserve.

A drawback of trading volume, however, is that it is also associated with volatility (Karpoff, 1987), which is thought to impede market liquidity. The implications of changes in trading activity for market liquidity are therefore not always clear. Another important measure is the turnover ratio. Ratio of total turnover and average market capitalization is a measure of market efficiency and indicator of liquidity. A higher value of turnover rate means more liquidity.

The German market, together with the Hungarian and Polish markets have had an increase in turnover rate signaling an increase in liquidity. Turnover has increased (as individual liquidity indicator this signals better liquidity) more than market capitalization (function of price increase-high change in price, lower liquidity). The Croatian, Slovenian and Bulgarian markets have had a reverse trend due to a larger increase in market capitalization than turnover, which indicates lower liquidity.

A closely related measure of market liquidity is trading frequency. Trading frequency equals the number of trades executed within a specified interval, without regard to trade size. Like trading volume, high trading frequency may reflect a more liquid market, but it is also associated with volatility and lower liquidity. In fact, Jones, Kaul and Lipson (1994) show that the positive volume-volatility relationship found in many equity market studies reflects the positive relationship between the number of trades and volatility, and that trade size has little incremental information content. (Fleming, 2001).

Empirical Review

Poor investment decisions which has led to mediocrity in firms' corporate performance has given spur to increasing the debate on whether or not there is relationship between market liquidity and investment decision. This is viewed in the perspectives of the developed and developing countries.

Hoshi, Kashyap and Scharfstein (1991) found liquidity and investing activities to be directly related. To them, companies closer to banks have better access at financing and can keep a high liquidity, thereby supporting investing activities. Why banks prefer to finance companies with closer relation is because banks have more opportunities to know the real financial situation of the company and reduce information asymmetry. The study divided samples into two sets of firms, independent firms and group firms, and predicted that liquidity is a more important determinant of investment for independent firms than for group firms with close banking ties. The proxy variables are cash flow and short-term investment.

Holmstrom and Tirole (1993) found that managers had more opportunities to get stock bonuses after the company is listed. Stock bonuses not only increased liquidity, but also provide a good way for external investors to watch the company. Under equilibrium among external investors, major stockholders and managers, the ideal quantity of stock holdings and equilibrium prices will be reached. If managers performed better, external investors would like to hold more shares, and we guess the relation between the two is positive.

Some papers often used liquidity as a proxy variable for investment activities. Fazzari, Hubbard and Petersen (1988) mentioned that a low-dividend policy would increase retained earnings and reduce constraints on liquidity. Therefore, it can be deduced that the relationship between investment and liquidity is significant. That means the over-investment hypothesis and underinvestment hypothesis provided by Myers and Majluf (1984) explain management entrenchment. It is believed that the board of directors inclines to execute the low-dividend policy to examine management performance and understand managers' investing decision when liquidity is high.

McConnell and Servaes (1990) argued that, when low shareholding insiders increase their holdings, the interest of minor shareholders can improve but, when the shareholding of insiders is high, interests between insiders and minor shareholders will be

inconsistent. Given that insiders can affect investment-cash flow sensitivity in a nonlinear method, managers invest excessively in internal cash. Hadlock (1998) thought the investment-cash flow sensitivity would drop as the stock insiders hold decreases.

That will produce more snatch effect when managers hold certain proportion of stocks in the company. The board of directors wants to replace the managers, which is not easy to do. External shareholders also think acquisition and merger are not easy. Entrenchment effects cause the incentive perusal of managers to be weak when they face external shareholders. Therefore, the incentive effect aims at managers who are lacking in ownership.

Slovin and Sushka (1993) discussed the impact of the transfer of controlling rights on corporate performance under the hypothesis that the controlling shareholder dies. They found the relation between stock price and the death of controlling shareholders positive, especially when the shareholding of major shareholder is above 10%. Brennan, Chordia and Subrahmanyam (1998) revealed the deregulation for non tradable shares increased outstanding shares, leading to a decline in the price of tradable shares. This can be confirmed if government selling state shares through IPO or issuing more new stocks leads to lower market price of shares. Reform of the division of equity tradability is intended to solve the problem of the lack of liquidity caused by limits on nontradable stocks. To reduce the impact on the stock market, it needs nontradable shareholders to offer reasonable compensation to tradable shareholders. Xie and Yang (2007) found the consideration rate positively relates to market performance.

Li (2007) studied the influence of relisted companies on market performance and the relation between the consideration and market performance. The paper pointed out that investors are sensitive to the proportion of consideration in the early stage of reform. He (2006) pointed out, the major shareholders would issue equity financing for their interests before the reform, because interests of major shareholders are from dividends and cash capital increases, not from market returns. This will have an entrenchment effect on minor shareholders. After the reform, managers will avoid equity financing and prefer debt financing. The interest of major shareholders will be consistent with minority shareholder because of the increasing number of minority shareholders.

The research infers that the increase of outside shareholders will raise the debt ratio. They are inclined to debt financing that extrapolates the incremental debt ratio. This method of financing would increase consistent interests between external investors and large shareholders. The increase of management ownership will improve the efficiency of investment spending and improve market performance.

Boyle and Gupthrie (2003) explored the reaction of investment-cash flow sensitivity on liquidity and the effect of uncertainty on investment. Baum, Caglayan, Ozkan and Talavera (2006) argued the influences of liquidity and uncertainty on managers' performance. They developed a static cash management model, which includes the signal deletion mechanism. They argued cash possession, bond interests and uncertainty are positively related. Specifically, they found companies increase cash on hand because of uncertainty.

Baker and Stein (2004) developed a model that helps to explain that an increase in liquidity predicts lower subsequent returns in both firm level and aggregate data. They posit that irrational investors participate only on over-valued market because of short sales and they over react to private signals about future fundamentals and this leads to sentiment shocks. They find that measure of equity insurance and share turnover are highly correlated and that sentiment indicators from market liquidity may be responsible for low expected returns.

Recently, Mu-Shun et. al (2011) in their work discussed the relation between market liquidity, investment decision and financial performance. The results from an analysis of 1002 firms show that reforms have significant impacts on the investment decisions. It was discovered that there is a nonlinear relationship between market liquidity and financial performance. They argued that this explains a high ratio of tradable-shareholders shareholdings. They divided tradable shareholders into five groups by different ranges ownership percentage. The results were significant but the directions of influence in each group were different.

In summary, market liquidity matters for firm value with the following economic effects. First, more liquid securities are expected to have higher values as rational investors discount securities less because of lower trading costs, ceteris paribus (Amihud and Mendelson, 1986; Kamara, 1994; Eleswarapu, 1997). As investors require a higher return to hold stocks with greater private information (Easley, Hvidjkaer and O'Hara, 2002), improved liquidity mitigate this information asymmetry

problem as informed traders can disguise their trades and lower their price impact in a more liquidity market. Easley and O'Hara (2004) show that market microstructure can help a firm to reduce its cost of capital by affecting the precision and quantity of information available to investors. Second, market liquidity could enhance performance monitoring (Diamond and Verrecchia, 1981; Holmstrom and Tirole, 1993), improve manager incentives to engage in value-increasing activities (Faure-Grimaud and Gromb, 2004) and increase the effectiveness of corporate governance (Kyle and Vila, 1991, Kahn and Winton, 1998, Maug, 1998, and Noe, 2002). Also, market liquidity can improve stock price informativeness (Holmstrom and Tirole, 1993; Faure-Grimaud and Gromb, 2004), which can ultimately improve corporate decisions and firm performance (Khanna and Sonti, 2004; Ferreira and Laux, 2007).

Theoretical Framework

The need to anchor the concepts of market liquidity and investment decision within the framework of certain theories cannot be over emphasized. The theories upon which this study was anchored were restricted to Agency theory and stewardship theory.

Agency theory, developed by Jensen and Meckling (1976), has been fruitfully applied in examining the nature of the relationship in a firm that exists between the principal and the agent (Denise, 2001). The firm is viewed as a "nexus of contracts between different stakeholders of the organization" (Jensen and Meckling, 1976).

The most important basis of agency theory is that the managers are usually motivated by their own personal gains and work to exploit their own personal interests rather than considering shareholders' interests and maximizing shareholders' value. For example, managers may be attracted to buying lavish offices, company cars and other extravagant items, since the cost is borne by the owners. Thus, the key predicament indicated by agency theory is ensuring that managers pursue the interests of shareholders and not only their own interests. Controversy occurs because principals are unable to monitor the performance of agents (Jensen and Meckling, 1976).

Unlike agency theory, stewardship theory based on a psychological and sociological approach, maintains that the interests of corporate executives (as stewards) are aligned with those of the organization and its owners. Stewardship theory takes an opposite

perspective and suggests that the agents are trustworthy and good stewards of the resources entrusted to them, which makes monitoring unnecessary (Donaldson and Davis, 1994). Since managers are not opportunistic and act in the best interests of owners, they should also be given autonomy based on trust and this reduces the cost of monitoring and controlling their behavior. They observed, "Organizational role-holders are conceived as being motivated by the need to achieve and exercise responsibility and authority, to gain satisfaction through effectively performing essentially challenging work and to gain recognition from peers and bosses".

According to this theory, the behavior of the steward is collective, because the steward seeks to achieve the organization's goals, for example, profitability. This, in turn, benefits the principal through the positive effects of profits on dividends and share prices. Managers believe that their interest is aligned with those of the firm's owners. Thus, stewardship theory maintains that the optimum governance structures are those that enable effective coordination in the enterprise.

Results and Discussion

Table no. 1 showed the results of descriptive analysis of the data collected on six determinants of return on investment from 2006-2012. It provided information about sample static mean, median, maximum and minimum value and distribution of the sample measured by the skewness, kurtosis, and Jarque-Bera statistics for 50 companies given 315 observations. Table no. 1 showed that the average values of FAGE, CP, FINLEV, FS, INVOPP and TOR were 1.61, 0.24, 0.59, 6.62, 0.29 and 0.28 with standard deviation of 0.19, 0.43, 8.71, 0.82, 1.47, and 1.45 respectively which measured the extent to which the data series dispersed around the mean. The skewness, which is a measure of asymmetry of the distribution of the series around the mean, was computed as -1.33, 1.19, 17.10, 0.33, 12.25, and 15.48. Except value of FAGE, others were positive and this is an indication that data sets have long right tail and hence, most of the companies' FAGE, CP, FINLEV, FS, INVOPP and TOR tend towards less than the median values (i.e, median> mean).

Also, Kurtosis statistics which measured the peakness or flatness of the distribution of a series were far greater than the standard 3.0. This is an indication that the distribution of the data series for each of the variables was peaked (i.e leptokurtic) relative to the normal. Being

peaked however is an indication that there were very few observations within the region where the median value resided. Jarque-Bera is test statistics for testing whether a series is normally distributed or not and it measures the difference of the skewness and kurtosis of the series with those from normal distribution of all the ROI drivers data series. Their Jarque-Bera statistics 162.81, 78.76, 1166530, 5.65, 412062.6 and 879311.5 with their probability values less than 0.01 (i.e. $p<0.01$) suggested that the null hypothesis of normality in the distribution were rejected.

Table no. 1. Descriptive Statistics

	ROI	FAGE	CP	FINLEV	FS	INVOPP
Mean	0.1416	1.6079	0.2468	0.5842	6.6144	0.2869
Median	0.0979	1.6628	0.0000	0.0000	6.4814	0.0471
Maximum	1.9786	1.9445	1.0000	152.8720	8.6062	22.727
Minimum	-0.6979	0.8451	0.0000	-6.0892	4.4391	-1.0000
Std. Dev.	0.2622	0.1851	0.4319	8.6924	0.8167	1.4684
Skewness	2.6318	-1.3385	1.1743	17.1302	0.3330	12.2690
Kurtosis	17.0850	5.3063	2.3790	300.1119	3.0358	179.0386
JarqueBera	2976.8887	164.3868	77.70542	1177748	5.855881	415957.5
Probability	0.000000	0.0000	0.0000	0.0000	0.0535	0.0000
Sum	44.75310	508.0974	78.0000	184.5964	2090.142	90.66953
Sum Sq. Dev	21.66093	10.79762	58.74684	23800.88	210.1296	679.2832
Observations	316	316	316	316	316	316

Source: Author's Computation, 2015

The average return on investment of the non-financial quoted companies was computed as 0.78 with standard deviation of 6.57 and skewness was computed as 11.60 and being positive implied that return on investment distribution had a long right tail and hence the ROI distribution of most of the non-financial quoted companies tend towards greater than the median. The kurtosis of the distribution of the series was computed as 153.82 which was greater than standard value of 3.0. This is an indication that return on investment was peaked (i.e. leptokurtic) relative to the normal. This implied that the distribution is not normal and Jarque-Bera statistics of 305606.4 ($p<0.01$) indicated that the null hypothesis of normality in the distribution should be rejected.

Multicollinearity Test

The correlation matrix was carried out in order to test for multicollinearity in all the independent and dependent variables. It tells how the variables are related. The result showed that all possible combinations for return on investment, firm age, control power, financial leverages, firm size, investment opportunity and turnover ratio had correlation coefficients which were very low, less than 0.9, weak, positive and negative.

Table no. 2. Correlation Matrix

	ROI	FAGE	CP	FINLEV	FS	INVOPP	TOR
ROI	**1.0000**						
FAGE	0.0523	**1.0000**					
CP	-0.0634	0.0769	**1.0000**				
FINLEV	0.0289	-0.0058	-0.0543	**1.0000**			
FS	0.2270	-0.0160	0.0781	0.0574	**1.0000**		
INVOPP	-0.0259	-0.0405	-0.0533	-0.0054	-0.0020	**1.0000**	
TOR	-0.0289	0.0187	-0.0032	-0.0105	-0.2245	-0.0059	**1.0000**

Source: Author's Computation, 2015

This revealed that independent variables were independent of each other and implied that the variables can be included in regression analysis as independent variables using Ordinary Least Square (OLS) technique of estimation without obtaining spurious results.

Unit Root Test Results

The variables used in the regression and econometrics analysis were further subjected to unit root tests using Levin, Lin and Chut, Im, Pesaran and Chi-square, ADF-Fisher Chi-square as well as PP-Fisher Chi-Square. This is done in order to reinforce and ensure robustness and to boost the confidence in the reliability of the results.

Table no. 3. Unit Root Test Result

Variables		**Levin, Lin &Chu t***	**Im, Pesaran & Chi-square**	**ADF-Fisher Chi-square**	**PP-Fisher Chi-Square**	**Order of Integration**
ROA	Level	-19.167*** (0.0000)	-5.45430*** (0.0000)	134.663*** (0.0000)	234.606*** (0.0000)	I(0)
ROI	Level	-53.311*** (0.0000)	-9.22525*** (0.0000)	143.132*** (0.0000)	179.282*** (0.0000)	I(0)
INVOPP	Level	-23.934***	-4.9205***	152.790***	192.330***	I(0)

		(0.0000)	(0.0000)	(0.0000)	(0.0000)	
FS	Level	-33.843*** (0.0000)	-12.4334*** (0.0000)	257.605*** (0.0000)	271.188*** (0.0000)	I(0)
FINLEV	Level	-23.639*** (0.0000)	-4.63823*** (0.0000)	128.570*** (0.0000)	85.2479*** (0.0000)	I(0)
FAGE	Level	-7.5849*** (0.0000)	-563.463*** (0.0000)	902.708*** (0.0000)	633.621*** (0.0000)	I(0)
TOR	Level	-91.899*** (0.0000)	-20.0985*** (0.0000)	182.033*** (0.0000)	279.568*** (0.0000)	I(0)

Source: Author, Computation 2015
Note: *** denotes significance at 1% level

Unit root tests were carried out to determine the order of integration of all variables employed and the result revealed that the variables are stationary at level. The essence of this is to ensure that the estimated parameters obtained from regression models using OLS are Best Linear Unbiased Estimators (BLUE). When this is taken into consideration, the result will be reliable, efficient and consistent. As shown in table no. 3, the test of null hypothesis for the presence of a unit root was rejected for the variables under consideration which mean that they are stationary at level.

In order to achieve the objective of the study, the results of pooled and fixed effects panel methods were presented in the column (1) and column (2) of Table no. 4. The Hausman (1978) specification test showed that fixed effects models had better results and hence was reported. Using pooled effect, Firm Size (FS), (β =1.926, $p<0.01$) was the only significant determinant of Return on Investment (ROI) as a unit increase in the FS will result in an increase of about ₦1.93 million increase in ROI, while the turnover ratio (TOR) which is a proxy for market liquidity did not significantly affect ROI as a unit increase in TOR (β =0.10575, $p>0.05$) will generate a ₦0.1057 million increase in ROI.

Table no. 4. Summary Result of the Regression Analysis

Variable	**Pool Effect (1)**	**Fixed Effect (2)**	**Random Effect (3)**
Intercept	-15.14136 (-3.422444)	-33.63584 (-3.815488)	-15.14136 (-3.492612)
FAGE	2.180374 (1.109711)	9.534687** (2.130261)	2.180374 (1.132462)
CP	-1.338713 (-1.574992)	-0.759890 (-0.425533)	-1.3388713 (-1.607283)
FINLEV	0.008225 (0.196856)	-0.077175* (-1.748652)	0.008225 (0.200892)

FS	1.926466*** (4.209468)	2.920881*** (3.666218)	1.926466*** (4.295772)
INVOPP	-0.122331 (-0.495266)	-0.058813 (-0.224762)	-0.122331 (-0.505420)
TOR	0.105749 (0.412735)	0.047679 (0.169563)	0.105749 (0.421197)
F-Statistic	3.479925	1.518242	3.479925
Prob (F Statistics)	0.002416	0.017046	0.002419

Source: Author, Computation 2015

Note: *, **,*** denote 1%, 5% and 10% level of significance respectively, t-statistics are in parenthesis.

Using fixed effect however, a unit increase in the FAGE, (β =9.534, $p<0.05$) would generate an increase of about #9.534 million increase in ROI. While a unit increase in FINLEV (β = -0.0177, $p<0.01$), would significantly reduce ROI by #0.0177 million, a unit increase in FS (β = 0.10575, $p>0.01$) would significantly generate a #0.1057 million increase in ROI.

This implied that as firms continue to exist, all things being equal, there will be expansion which invariably will lead to increase in return on investment. With this, large firms in Nigeria have more chances of successful investment pursuits than those with less age and size.

This result is consistent with the works of Fazzari, Hubbard and Petersen (1988), Majluf (1984), Holmstrom and Tirole (1993) coupled with the work of Hoshi, Kashyap and Scharfstein (1991) who found liquidity and investing activities to be directly related. To them, companies closer to banks have better access to financing and can keep a high liquidity, thereby supporting investing activities.

Conclusion and Recommendation

From the findings of this study, it can be reasonably concluded that for most of the companies operating in the non-financial sector of the Nigerian economy, market liquidity plays insignificant role in influencing the investment decision of non-financial quoted companies. Hence, it can be used to predict the future value of return on investment of these companies.

It is therefore recommended that management should place more emphasis on the firm age and in particular firm size as they can be

employed to predict the return on investment as both are positively and significantly correlated with return on investment.

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Parameters of Economic Growth in Kosovo

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Abstract
This paper analysis the macroeconomic components that influenced macroeconomic growth in a country, more concretely, the focus will be on the measurement of components that affected economic growth under nominal GDP, in Kosovo. We intend to found out which component of nominal GDP has the biggest and the lowest influence on economic growth. Thus, in order to measure it, GDP components must be analysed: consumption measurement, investments measurement, government expenditures measurement and export measurement. These parameters will be measured by analysing their importance in relation to one another, and the major influence on the growth of nominal GDP. The paper includes a graphic analysis of nominal GDP in relation to consumption, investments, governmental expenses and export.
Keywords: nominal GDP, consumption, investments, government expenditures, export.

Introduction

According to the reports of World Bank and International Monetary Fund, since 1999, Kosovo is in the trend of economic growth. We do not possess any exact data when it comes to economic growth of Kosovo during the time period 1999-2003[1]. However, from 2004 until 2014 we possess dates from the World Bank and Kosovo Agency of Statistics.

During the last years, Kosovo had the biggest economic growth in the region, for as long as the regional economies are affected by the 2008 financial crisis, and later from the Eurozone debt crisis, which has touched especially some of the main commercial and investing partners in Kosovo. While Croatia and Serbia faced recession, Macedonia and Albania had a small economic growth, whereas in 2012 Kosovo had an economic growth of 3.9% of Gross Domestic Product (Pula, 2013). And, since the beginning of the financial crisis that gripped Eurozone during 2008-2012, the average economic growth of Kosovo was 4.5% (World Bank, 2012). The economic growth of Kosovo for 2016 was predicted to be 3.6%, a bit lower than in 2015 when it was 3.9%, whereas it is predicted that in 2018 the economic growth of Kosovo will reach to 3.7% (World Bank, 2016).

Currently Kosovo is facing many macroeconomic problems, regardless the fact that in the last years Kosovo had an economic growth. But, its economy keeps facing extraordinary challenges, poverty problem, unemployment and immigration (Baleci and Heeman, 2013). Huge influences on economic growth have Diaspora incomes. The Diaspora influence is meaningful, based on the survey of Riinvest Institute of 2007. Approximately 70% of the immigrants send remittances in their families in Kosovo and the research shows that 70% of the immigrants visit Kosovo, and influence the growth of general consumption through the expenses made during the visit (Instituti Riinvest, 2010).

[1] **Note:** Up to 1999 Kosovo was occupied. After 1999 it had a Resolution from Security Council of United Nations (UN), which has been established for an International Administration in Kosovo. This margin functioned until 2007, whereas since 2008 Kosovo has the Constitution of the Republic of Kosovo, as an independent and sovereign state.

Remittances play an important role in Kosovo's economy. In 2006 remittances were in the amount of 184.7 million euro, whereas in 2012, 218.6 million euro (BQK, 2013). However, there is a larger amount of remittances coming from Diaspora through their friends and family. These remittances are not registered and it is very difficult to measure them. According to data obtained from Anadoly Agency (AA), Kosovo is the major beneficiary of immigrants' remittances, where the yearly amount of these remittances is 700 million euro (Koha Ditore, 2016).

World trends of the most developed countries show that the financial crisis had a great impact on worldwide economic development, affecting economic decrease, decrease of foreign investments, of public investments, of export in a worldwide level, and of granting soft loans by the most developed countries. Therefore, it can be said that the crisis directly and indirectly affected and is affecting the Kosovo's economy. In this paper we will analyse which indicators had the greatest and the lowest impact on economic growth, through measuring the nominal GDP components.

Literature review

The starting point of the conventional theory of economic growth is the neoclassic model. The basic assumptions of the model emphasize the Savings and Investments as GDP indicators, being very important determiners of economic growth for short-term and long-term periods. For long-term periods of economic growth, the technical process is to be mentioned; that is the reason why it was not analyzed in an adequate manner, going back to the issue of convergence and divergence, as a model that affects the rates of economic growth, and based on the fact that the economy of poor countries will increase faster compared to the economy of rich countries. The involvement of technological factors will directly influence the growth and economic development of a country (Patrakos et al., 2007).

Since the end of the 1980s, macroeconomists' attention has been shifted to Governmental Policies on long-term rate of economic growth. This change reflected partially the recognition that the difference between prosperity and poverty in a country depends on how fast the economy of that country grows in different time periods. Except fiscal and monetary policies which play an essential role in economic development, there are other factors in addition that characterize a state;

that has to do with the character of a nation, under Basic Politics, Law and Economic Institutions (Barro, 1999). Economic policies can affect some aspects of the economy through investments in human capital, legal infrastructure, the improvement of legal and political stability, and so forth. The stability of the macroeconomic environment can be in favour of the increase of economic development of a country, by being focused on inflation, fiscal policy, budget deficit and tax load. These parameters influence the growth and development of that country. At the same time, there are sane theoretical reasons to believe that there exists a strong and positive connection between opening the trade doors to other countries, influencing growth and economic development. This can be done in several ways such as: using comparative advantage, transfer of technology and knowledge-sharing (Patrakos et al., 2007).

The scale of international openness was measured by the report on Export and Import. This scale is very sensitive towards the size of a country; the big countries have a tendency to relatively be supported in foreign trade (Barro, 2003). Foreign Direct Investments (FDI) has recently played a role in economic activities and they are the main source of technology transfer and economic growth on long-term periods (Patrakos et al., 2007). The investment in human resources can improve the quality of the living standard of that country, and can have a more positive effect in GDP (Todaro and Smith, 2012).

The relationship between demographic tendencies and economic growth has attracted a lot of attention especially in the last years. It appears that also some other factors played a key role in economic growth such as: population growth, density of the population and so on (Kormendi and Meguire, 1985; Dowrick, 1994; Kelley and Schmidt, 1995; Barro, 1997; Bloom and Williamson, 1998; Kelley and Schmidt, 2000).

A range of theories and competing attitudes in the study of economic development have been reviewed, representing the method of strong and weak points. Therefore sometimes derive contradictory values from state to state (Todaro and Smith, 2012). Economic policies aim at fixing inequalities inside and outside a state, within International World Policies (Patrakos et al., 2007). The economy of Kosovo is increasing each year. In 2015, economic growth was 3.9%; in 2016 was 3.6% (World Bank, 2016). But, despite the fact that the economy of Kosovo is increasing each year, Kosovo still faces the problem of unemployment and poverty.

Kosovo has become a state in the last years (2008), so the consumption for different products and for capital investments in the recent years was rising. But nowadays, Kosovo remains one of the poorest countries in the region, with an unemployment rate of 45%, and with the rate of extreme poverty of 15% (Baleci and Heeman, 2013). It is estimated that unemployment rate is 45% (Bertelsmann Stiftung, 2012). Most of the firms do not have any income increase, but instead sometimes there is a decrease; the demand for employment has not changed for the better, there are also a considerable number of the firms that operate informally and in this way negatively affect the labour productivity of other businesses (World Bank, 2010). EU countries keep representing the main source of Foreign Direct Investments (FDI) in Kosovo (Banka Qendrore e Kosovës – BQK, 2012).

Data and context

Determinants growth rate of many countries differ extremely in different periods. The reason for these changes lies in the economic policies of that country (Barro, 2003). The macroeconomic indicators in Kosovo have marked an economic growth in the last 11 years. The economic growth in 2015 was 3.9%; in 2016 was 3.6%, whereas it is predicted for 2017 to be 3.9%, and for 2018, 3.7% (World Bank, 2016). Although Kosovo has an increasing economy growth rate each year, it is again facing macroeconomic problems such as unemployment, poverty and immigration.

Therefore, we will analyse nominal GDP components as a measure of economic growth for a country, and as a measure of the living standard of the citizens. The data in the analysis belong to the time period 2004-2014, because only for this timeframe the data regarding consumption, investment, government expenditures and export could be obtained. The table below clearly shows the changes in consumption, investment, government expenditures, export, import and percentages of nominal GDP. In the table below we can see the connection between nominal GDP and its components that have affected and are affecting economic growth in Kosovo. Therefore, in order to analyse the nominal GDP components with the data, the method of multiple linear regression will be used, as one of the most suitable means for econometric analyses.

Table no. 1. The dynamics of the variables included in the model (2004-2014) (million €)

Years	GDP nominal	cf	cg	i	e
2004	2911.8	2487.6	725.1	701.2	310
2005	3002.8	2638.4	729.2	722.2	332.8
2006	3120.4	2770.8	695.4	798.3	441.4
2007	3460.8	3145.9	664.7	892.5	547.1
2008	3882.7	3488.9	683.3	1208.7	608.9
2009	4069.6	3528.5	693.1	1267.4	694.9
2010	4401.9	3768.2	748.3	1450.6	878.0
2011	4814.6	4142.3	833.2	1632.4	943.4
2012	5058.7	4458.1	862.3	1465.1	922.1
2013	5326.6	4652.4	886.9	1470.9	927.1
2014	5567.5	4926.2	929.1	1434.9	1091.5

Source: Kosovo Agency of Statistics (2016)[2]

According to the structural theory, the key variables in economic growth are government indicators such as government expenditures and total investments (percentage of GDP). The structural theory suggests that both these variables have a positive effect on GDP, because they increase the influence of state intervention and stimulate the economy. These two variables show the manner in which governments can use fiscal policy to urge economic growth. The economists that support this theory believe that government expenditures and investments are necessary for economic growth (Stiglitz, E. J., 2009). The export of goods and services represent the demand of other countries for products

[2]**Note:** Gross Domestic Product in expenditure approach (2004-2014), the values in the table are in million euro

and services, and is an independent variable that has connection with dependent variable under economic development. Many theories and practices of other countries have shown that the influence of export in economic growth is positive.

The numerical data for the selected variables which are presented in the table, in order to be used in the model, are obtained from the Kosovo Agency of Statistics and they are in nominal amount (million euro, €). Hence, through multiple linear regressions, it is necessary to have a longer series of the data. However, the data we have for the time period of 11 years are sufficient for such an analysis, in order to reach to conclusions. In our case, we are in possession of data only for the time period 2004-2014.

Empirical analysis

The main aim of this study is to get information on current development of economic growth in Kosovo, by presenting different analysis regarding this process. This study aims to analyze and study deeper the current situation in the country, regarding the process of economic growth in Kosovo under nominal GDP.

In this paper the analysis based on the data and the results obtained from international institutions and Kosovo Statistics Agencies will be conducted. At the same time, the analysis of secondary data will be conducted, taken from relevant institutions that deal with the issue of economic growth and the measurement of this increase through nominal GDP components. This analysis will be helpful to reach a perception of socio-economic analysis in the country, and to identify the parameters which influence economic growth, trough nominal GDP. For nominal GDP we possess data for a longer time period compared to real GDP. That is the reason why in this analysis nominal GDP was included due to the available data for a longer time period. Nevertheless, both, nominal and real GDP are an economic mirror for a country.

The paper includes the analysis of the graphs through components such as consumption, investments, government expenditures and export, and their relation compared to nominal GDP. The variables used in the model are defined as follows: nominal GDP are a dependent variable, while independent variables are considered:

family consumption (cf), government consumption (cg)[3], investments (the formation of gross capital)[4] and export.[5]

Thus, taking into account the presented variables, the equation for analysing these variables will be:

$$GDP_n = \beta_0 + \beta_1 cf + \beta_2 cg + \beta_3 i + \beta_4 e \qquad (1)$$

The symbols represent:
GDPn – Gross domestic product (nominal)
cf – Family Consumption
cg – Government Expenditure
i – Investment
e – Exports

Sequentially in this paper, the analysis of descriptive statistics will be presented.

Descriptive Statistics

Before the results of the regression model will be analysed, we will present and discuss the descriptive statistics of the variables that are used in the model.

Table no. 2. Descriptive statistics: Nominal GDP, Family Consumption, Government consumption, Investment and Export

Variable	Obs	Mean	Std. Dev.	Min	Max
gdp	11	4147.036	958.4714	2911.8	5567.5
cf	11	3637.027	835.6632	2487.6	4926.2
cg	11	768.2364	92.57053	664.7	929.1
i	11	1185.836	344.0986	701.2	1632.4
e	11	699.7455	270.299	310	1091.5

Source: Author's calculation

[3]The expenditures of final consumption of the Government - Kosovo Government, donators (salaries), foreign employers, local employers, the expenditures of final consumption of non-profit institutions serving households (NPISH)
[4]Gross fixed capital formation and changes in inventory
[5]Gross fixed capital formation and changes in inventory

From the descriptive statistics point of view, it can be noticed that the number of observations is 11, whereas the variables used are: Nominal GDP (gdp), family consumption (cf), government consumption (cg), investments (i) and export (e).

Average GDP within the years is 4,147 million €, with a standard deviation 958 million €.

The minimum value of GDP is 2,911 million €, whereas the maximum value is 5,567 million €.

The average family consumption for a year is 3,637 million €, with a standard deviation of 835 million €. The minimum value of family consumption is 2,487 million €, whereas the maximum value is 4,926 million €.

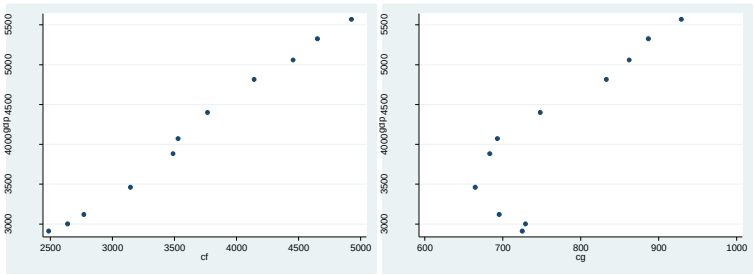
Regarding government consumption, the yearly average is 768 million €, with a standard deviation of 92 million €. The minimum value is 664 million €, whereas the maximum value is 929 million €.

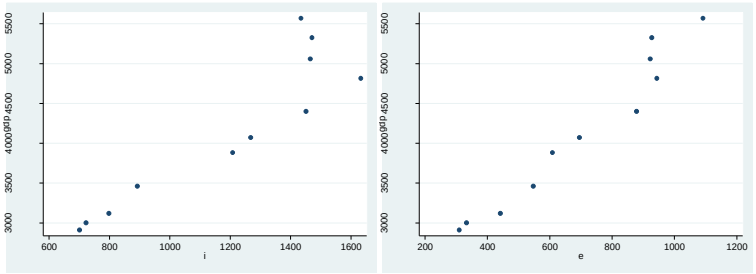
Investments are in average 1,185 million €. The standard deviation is 344 million €, the minimum value is 701 million €, while the maximum value 1,632 million €.

In average, the export is 699 million €, with a standard deviation of 270 million €, the minimum value 310 million € and the maximum value 1,091 million €.

Sequentially, using graphics through scatter plot diagram, we will notice the connection between the dependent variable (GDP), in relation to each independent variable (cf, cg, i, e).

Fig. no. 1. The scatter plot diagrams of GDP in relation to CF, GDP in relation to CG, GDP in relation to i, and GDP in relation to e.





Source: Author's calculation

Taking into consideration the graphical representation of data which show that a positive linear connection between nominal GDP in relation to individual variables exists, after data processing with STATA software, the chosen model of linear regression will be as follows:

$$GDP = - 317 + 0.838\ cf + 1.07\ cf + 0.384\ i + 0.196\ e \qquad (2)$$

From this formula it can be seen that β_0 has the negative sign of -3.17, that represents the regress estimated ordinate in origin (y – intercept), whereas the results of β_1 are 0.838 and represent family consumption; the result of β_3 is 1.16 and represents expenditures and government investments, β_3 in investments are 0.384; and the last independent variable is export with β_4, with the value of 0.196. Based on this formula, it can be notices that it exist a positive linear connection between dependent and independent variables.

Results

The results of linear regression for the studied variables as determiners of nominal GDP increase, and the coefficient and the level of significance are shown in the following chart:

Table no. 3. Regression analysis

Source	SS	df	MS	Number of obs =	11
				F(4, 6) =	970.02
Model	9172489.6	4	2293122.4	Prob > F =	0.0000
Residual	14183.9672	6	2363.99453	R-squared =	0.9985
				Adj R-squared =	0.9974
Total	9186673.56	10	918667.356	Root MSE =	48.621

gdp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
cf	.8383528	.0942632	8.89	0.000	.6076989	1.069007
cg	1.070463	.3488687	3.07	0.022	.2168122	1.924114
i	.3840605	.1530133	2.51	0.046	.0096505	.7584706
e	.1967286	.3357236	0.59	0.579	-.6247575	1.018215
_cons	-317.537	204.0539	-1.56	0.171	-816.8391	181.765

Source: Author's calculation

If the results of linear regression are analysed, it will be seen that all the studied variables have a positive effect on GDP increase, which was also obvious even through graphical representation. But, the variables with the biggest statistical importance are the consumption of the families and the government consumption. Their influence appears to be the most important and the largest for the observed time period. This is understandable for the situation of the economy of Kosovo, as GDP mainly relies on family consumption and government expenditures.

In the regression analysis, the variable with the major influence and statistically importance are family consumption. The model suggests that if family consumption increases with 1 euro, the average GDP will increase with 0.838 euro, with the condition that other variables are unchangeable and constant. With other words, if family consumption increases with 1 million euro, the average of Kosovo's GDP will increase with 838 000 euro, if other variables remain constant.

The other variable with statistical importance is government consumption in the level of significance 0.022. If government expenditures increase with 1 euro, the average GDP will increase with

1.07 euro, when other variables remain unchanged. Or, if the government invests 1 million euro, the GDP in average will increase with 1.07 million euro, when other variables are constant.

The other variable with statistical importance is investment (the formation of gross capital) with the level of significance 0.046. The model implies that if investments grow with 1 euro, the GDP will increase with 384,000 euro, if other variables remain constant.

Export has also a positive influence on GDP growth, but based on the results, the influence is insignificant for the studied time period in the level of significance 0.579. The model implies that if export increases with 1 million euro, GDP will increase with 196, 000 euro, when other variables remain constant.

If the determination coefficient that has the value 99.8% is analysed, it can be concluded that the chosen model is very suitable due to the value 99.8%. In this case, GDP can be explained through the variations of independent variables.

In addition, if we study the analysis of the variation of the explainable and unexplainable variables and the total variation, it can be noticed that the statistically chosen model is significant because the calculated value F is bigger than the chart value of F test; this means that at least one of the linear regression coefficients is different than zero.

In our case we have two coefficients that are different from zero (β_1) and (β_2), in the sense that they are statistically important and have a larger influence in the explanation of the dependent variable. This can be verified even through probability criteria; in our case the value of *p* is 0.000, smaller than the level of significance 0.05, or 0.025.

Conclusions

Based on the results gained through descriptive statistics analysis, graphics and multiple linear regressions, we concluded that the component that influenced the most and is still influencing the economic growth within the measurement of nominal GDP is family consumption. The influence of this component on GDP is the highest and has a level of significance of 0.0001.

The factor that is influencing the most the increase of family consumption in Kosovo is the remittances from Diaspora. It is also influenced by the increase in the family's income.

The second component that has influenced and is influencing economic growth under nominal GDP is government expenditures, where capital investments and consumption expenditures are included. These expenditures and government investments were high and continuously growing, as the war in Kosovo ended in 1999 and in 2008 it became an independent state. Investments where made in new ministries establishments, government capital investments, constructions of schools and universities and so forth. All of the above-mentioned had and are influencing economic growth under nominal GDP measurement. By analysing the empirical findings in this study, it can be concluded that nominal GDP component results to have the significance 0.022.

The third component with the highest influence after the family consumption and government expenditures is investment. Based on the analysis and empirical findings using multiple linear regressions and also the most impeccable program STATA, it can be concluded that investments has influence on economic growth under nominal GDP. The influence is in the level of significance 0.046.

One of the factors that had and is still influencing this component is financial crisis, which affected the decrease of the aids and donations for the poor countries after 2008.

The fourth component with the lowest influence compared to family consumption, government expenditures and investments, is export. The trade balance in Kosovo is negative, and the difference between export and import is high. This is due to the fact that import is higher than export that is why in this analysis only export is included. Import was not included, as it is negative.

Based on empirical findings, it results that export has a positive influence on economic growth under nominal GDP for the observed time periods, and is insignificant in the level of significance 0.579. The results of this component are reasonable, because the trade balance of Kosovo is different from the other countries. Moreover, export shows that the Kosovo citizens are more consumers than producers. This negatively affects the improvement of the living standard of the citizens.

Therefore, if the average relation of import being 88% and of export 12% should change, economic growth would be more stable and have a larger influence on other macroeconomic parameters.

These economic growth components are not improving the economic situation in the country. The biggest beneficiaries of

economic growth in Kosovo are the importers, government contractors that are related with the government through political parties and family relations.

Kosovo's economy mainly relies on the remittances from Diaspora, but in the long-term it will fade, taking into account the remittances' decrease in other Balkan countries.

Economic growth in long-term run should be based on the reduction of trade deficit, by having an impact on stimulating businesses to export, because this is a more stable parameter. It can also keep economic growth constant and would have a macroeconomic impact on that country, by reducing unemployment and poverty.

Government should execute a radical change in the process of approaching the growth of economy, by not dealing only with budget collection, but should analyse which GDP component would influence economic growth and its stability, and thus improve the living standards for the citizens. With any other government perception, based on the rule of law, there would be an influence on increasing foreign investments, indirectly helping and stimulating the businesses, helping agriculture through subventions, changing the approach of public investments and so on. All these factors would positively influence economic growth and its stability that would contribute in unemployment and poverty alleviation. Moreover, it will influence the increase of living standards of Kosovo citizens, followed by immigration decrease.

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The Financial Turbulence in the Economy: Case of Ukraine

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Abstract
The article analyzes the causes and consequences of violation of financial stability. The famous historical examples of inflationary bursts emerging have been showed, as well as ways of establishing financial equilibrium. In particular, the article states that the main cause of violations of financial stability becomes inflationary boom, which arose by wars, socio-economic and political contradictions. The paper examines the impact of modern social and economic challenges on growth in inflation and on the deterioration of other macroeconomic indicators in Ukraine. At the end, recommendations to overcome financial problems in national economy have been provided. The importance of the exchange rate stability of currency has been emphasized.
Keywords: financial stability, market economy, banks, inflation, institutional reforms, European integration.

Introduction

Nowadays Ukraine is in a difficult historical period of reformation socioeconomic and geopolitical relations. In this regard the circumstances have developed, under which our country has to properly

address current global challenges. This caused changes in social and political course, and therefore disrupted balance of the state institutional basis; specifically it caused financial instability, disclosed contradictions in the current legal background that regulates business instruments for cooperation and institutional incompliance with the economic reality, wherein the implementation of European principles and public administration methods take place.

Methodology and Purpose of the study

Theoretic background includes fundamental conditions of economic and institutional theories, research papers of national and foreign scientists related to the issue. The methodological framework consists of general scientific methods such as analysis and synthesis, comparison, historical method etc. In particular, both the examination of core of the financial stability, main causes and consequences of its violation, and provision of practice advises on overcoming of financial problems of the national economy were based on the historical method.

The purpose of the article is to analyze financial stability on the basis of examination of historical retrospectives and current Ukrainian realities.

Literature review

Institutional theory has recently being used in the sphere of economic researches. Basis of its methodology was provided in research papers of T. Veblen (1970), J. Clark (1908), J. Commons (1961), V. Mitchell (1949) and others, and soon it was developed with theoretical advances of neo-constitutionalists R. Couz (1937), D. North (1990), Eirik G. Furubotn, R. Richter (1997). Amid the economic transformations, capacities of institutional theory have also been applied by Ukrainian scientists: T. Gaidai (2008), A. Chukhno (Chukhno, Yukhymenko, Leonenko 2008), who tried to apply this theory, taking into consideration the problems which causes economic disturbance. This issue was also analyzed by many foreign scientist's, such as R. Gabbard (2007), M. Friedman (1953) and others. Today there are still discussions concerning specific aspects of this issue.

Results of the study

The causes and consequences of violation of financial stability: historical retrospective

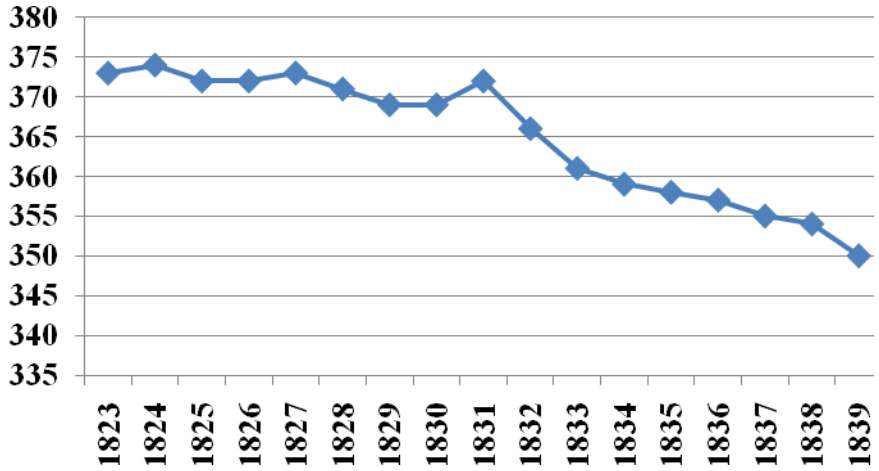
Historical examples of violation of financial stability of a country show that frequently, the inflationary boom alongside with its frustrating and detrimental effects on a state and people has been becoming the main cause of it. Therefore, in tsarist Russia this happened during the period of feudal-servile system. In the early 19th century, the need to finance the war against Napoleon caused the need of essential banknote (assignations) issue, which for the first time was put into circulation in the mid-1769. The fourfold increase of the assignations issue caused exceptional depreciation of assignations. Alexander the First failed in his attempts to stop inflationary boom (Orlov, Georgiev, Georgieva, Sivohina, 2004). Since that time the economy of the empire had frequently suffered disturbances while state budget bore crushing blows of wars, crop setbacks and epidemics, though certain public executives had been ensuring quotable solving of these extremely difficult economic circumstances.

Thus, in 1839-1844, a financial reform upon the initiative of the Minister of Finance (1823-1844) count Kankrin was implemented, according to which the basis for money turnover was silver ruble. Since 1843, the extracting of assignations has started. It was implemented by exchange of the compulsory course (3.5 Ruble in assignations were set equal to 1 silver Karbovanets) to credit tickets, which could be exchanged to silver. This reform had strengthened the financial system of the state and provided stability of financial-credit operations.

Thinking of the ways to obtain the utmost efficient operation of the monetary system, the statesman noticed that "paper money" is to be treated "carefully and responsibly" and the administrative measures in regulation and support purchase of paper currency are to be conducted very carefully, because incorrect actions can provoke their depreciation. "In case of war it is better to resort to crediting, T-bonds issuing, setting of special taxes and, only when absolutely necessary, to the banknote issuing. Moreover, it should be done openly. Following the end of war, it is necessary to rapidly take appropriate measures to support purchase" (Russkiy rubl, 1994). Furthermore, the financier was persuaded that even in extreme cases, the problem of deficiency of necessary financial resources in budget needs to be closed by proper governmental profit alongside with maximal avoiding of new borrowing, specifically foreign

(Bozheryanov, 1897). Although full giving up of credits had not been obtained, the external loans had folded insignificant part in the deficits of state budgets of that period. It allowed to retain a stable course relatively, both on an internal and external international economic scene. Thus, for 16 years ruble depreciated only in 23 kopecks or in 6 percent.

Figure no. 1. The silver ruble's rate to the assignation kopecks in 1823-1839



Source: Based on the data (Russkiy rubl, 1994)

However, the Crimean War (1853-1856) violated the established rate equilibrium again, and the military campaign required colossal spending that nearly reached biennial profit of the state in 1855-56 (Russkiy rubl, 1994). Due to the money scarcity for its proper primarily military necessity, the state had to borrow loans. The need of loans that had been growing during few years has caused rapid internal debt growth, so it was 550 million rubles and 1 billion rubles with warrant papers respectfully, in 1861 (Gindin, 1927).

Table no. 1. The budget of Russian Empire in 1852-1857

Year	Regular budget, million rubles		Emergency budget, million rubles		Deficit
	Profit	Expenses	Profit *	Expenses	
1852	252.4	280.3	-	-	-27.9
1853	265.3	313.1	-	-	-47.8
1854	283.5	383.8	-	-	-100.3
1855	270.0	526.0	2.7	-	-253.3
1856	361.8	619.4	2.8	-	-254.8
1857	297.3	347.9	11.0	-	-39.6
Total:					-723.7

** Profit data on the emergency budget is unadjusted for loans.*
Source: (Russkiy rubl, 1994)

The internal loans come from consumer's savings. The establishment of excess interests provided inflow of such savings. The capitals of defense contractors, who collected a lot of "cheap" money during the military campaign, presented the main part of these savings. This money was directed to the bank institutions in order to increase percent (Borovoy, 1958). Therefore, as borrowing external loans was problematic during the war, and the internal loans did not save the situation, government decided to carry out additional emission that was really supported by nothing. Such decision had provoked inflation. The inflation stipulated spike in gold prices, demand for which has considerably grown at once. The urgent need of defense of finance and credit sector of economics has risen. By order of the Ministry of Finance from February 27, 1854, it was prohibited to export gold. During the next few years, these measures had positive effect. Nevertheless, after the end of the Crimean War it became obvious that retaining of considerable part of deposits in government-owned banks was inappropriate and overburden some, because the banks were not capable of paying out tremendous sums, made up through interest charge on the savings that were directed to nothing.

To stop the inflow of incomes and direct "dead" money to the development of branches of domestic economy, the government decided to mark down bank deposit interest rates from 4 to 3 percent (Batyushkov, 1904). In addition, although interest rates were marked

down only by one percent, it has entailed the continual and out-of-control process of outflow from the banks of capitals.

Massive outflow of bank savings of people led to unexpected and quite unwelcome result – panic. The daily swift ebb of capitals has grown quickly, deflating the bank tills and absorbing new issues of currency (Batyushkov, 1904). Moreover, in outflowing bank capitals, nearly 150 million rubles belonged to foreign citizens, who started to redeem the earned credit notes in gold at once. Moreover, as metal part of exchange fund of the Empire did not fully cover issued credit notes until 1858, the critical situation has been brewing. Everything was happening so fast that the government had to take measures to restrict the exchange of credit notes into gold emergently. On November 22, 1857 it was approved by the regulations of the Committee of Finance that not more than 500 rubles could be exchanged into gold (for one person) and the daily total has amounted to 15000 half imperials. Soon, this conversion started to apply only for silver and from May 16, 1858, it nearly stopped at all (Mihalevskiy, 1925). Nevertheless, even after that, the capitals that have been growing for decades continued to outflow from the state. It was supported by the new customs schedule adopted in January 1857, according to which, the interest rates for all foreign goods were rapidly marked down, specifically for expensive manufacturing goods (Vessel, 1897).

However, the financial fragility of the state, persistent budget deficit of those years and spurts in inflation were related not only to the war, but also to tsarist extravagance, with its need to subsidize landowners and to the containing of large bureaucratic and police apparatus etc., that have prompted the tsarist government to the systematic use of printing presses.

In addition, one of the major causes that have strengthened massive outflow of capital from the pre-reform banks of tsarist Russia in late 1850-ies was a fight between weakened landowners and progressive industrialists for carrying the palm of impact on the market. Thus, a group of foreign and Russian capitalists was very interested in that; it consisted of members of the “Main Society of Russian Railways" and some high officials who intended to direct the bank deposits that were pushed out to their own securities. According to the researchers, they have succeeded (Mihalevskiy, 1925).

The deplorable result of military hostilities of the Crimean War proved that state needed constructive, radical changes in all the sectors

of the economy. The exploitative form of government has not justified itself and deepened the socio-economic backwardness, which in its turn had negative impact not only on domestic, but also on foreign economic and political conditions.

Normal methods of getting rich of sedentary nobility and government officials have not produced the desired result. Overtaxes have taken almost all the profit from farmers and completely deprived them from the possibility to survive and continue to produce agricultural products. It required purchasing of tools, extension of their crop area etc. The disincentive caused a stable trend of decline in production in agricultural sector. Noble tenures have also experienced a decline. Serfs, not interested in making profits, have been performing the exploitation of land with primitive tools. Landowners hardly ever spent on new harvesters, mowers and plows, as the workers who were forced to work has been breaking the expensive tools constantly. Military actions, unsuccessful monetary and fiscal policies, backward agricultural production have led to a critical drop of the primary means of support to gold (exports). During the war, the exports of bread decreased 13 times, the exports of flax – 8 times, of claps – 2.5 times, and the imports of machinery fell 10 times (Shevchuk, 2009).

The circumstances have given a rise to evolutionary institutional changes that led to changes in public administration. As during the military campaign, initiative of effective getting rich has shifted from passive landowners to enterprising merchants, industrialists, factory owners and lenders, who provided the initial capital although under unacceptable conditions for business. Therefore, the transformation of informal economic rules has occurred following by changes of institutional structure of political system and economy. The evolution of production urgently needed an attraction of investments and capital accumulation; however, the pre-reform state banks, because of their bureaucracy and economic inequalities, were not able to supply the demand for credit that was induced mainly by medium and small traders and producers.

After the war, a question of solving the problem of protection and security of financial and credit sector in new market environment arose. To achieve that, an importation of formal institutions has occurred, i.e. the adoption and implementation of certain legal provisions, official and generally binding regulations. In particular, further development of financial and credit system involved the

formation of commercial financial institutions that had to be adopted and approved by the legislative and were to become a powerful financial advantage for trade and production. Structural reform of the state system of that period was a decision making process that took into account many contingencies and unpredictable factors such as:

- depressed state of domestic economy;
- impact of various political organizations representing business;
- effect of prevailing attitudes in the society;
- prevailing economic concepts, including the views of the French economists-sensimonists and members of the Manchester school of economics, which essence reduced to the glorification of role of industrial class ("everything for the industry, all with industry" (Bunge, 1895) and establishment of dominant role of a loan for industrial development of the country;
- demands of international organizations.

Changes in basic institutions of the feudal society have become the core of institutional reforms. These were the changes of feudal methods of economy management and principles, on which it relied. As a result, the feudalism was replaced with capitalism.

With formation of new institutional environment, significant changes in property relations occurred, new management techniques were formed, as well as some types of partnerships between the state and the entrepreneurs. The need of a combination of public and private interests has encouraged the rise of new forms of economy management, including trusts, corporations, syndicates etc. Transformational changes in the financial sector occurred as well, following by the initiating of market financial and credit system establishment.

The long-term development plans of either the state or business have defined the expectations of new socio-economic relations. However, under these circumstances, the government tried to maintain its dominant position by imposing such forms of cooperation with employers that were advantageous for it, which did not meet the terms of development of mutually beneficial public-private cooperation. In this context, the asymmetry of relationships between the state and private capital becomes apparent. Institutional gaps and barriers that have arisen in the course of forthcoming new individual business patterns and the lack of package of measures aimed to implementation of system approach to economic cooperation management processes

between business and the state, have facilitated its deepening. The dominant approach had been repeatedly criticized either by public servants at various levels or private entrepreneurs, industrialists, financiers and caused ambiguous attitude regarding methods of private purposes adaptation to the new policy.

The lack of clearly defined "awards" for conducting and implementing relevant reforms which were necessary in certain areas (particularly in financial) was also a significant institutional barrier that baulked progress towards building economic relations based on market principles. In addition, the ultimate purpose of gradual reforming was not defined clearly. Thus, the organization principles of the reformed market banking system activity (that has also been acting on Ukrainian territory since 1860), were borrowed from the developed Western states, but the State Bank continued to exercise dubious functions, namely to give soft, "irregular loans" to nobility, which mostly were not returned, to subsidize other state banks and to cover government debts at its own expense, i.e. with private deposits. Therefore, it is worth paying attention to subjective conditions, such as benefits from a privileged form of cooperation, which are determined by interests of ruling elite, keep the state from full relying on the new institutional framework, and carry more impact on the measure and rate of changes in economic areas, than formally declared general rules. Obviously, under certain circumstances, the political preferences of the ruling elite have greater impact on intensification or weakening of any socio-economic process than engagements of a state according to officially adopted resolutions or laws.

That is why the era of inflation in tsarist Russia ended up in the late nineteenth century, with the introduction of reforms of talented Minister of Finance, S. Witte.

It should be noted that during the XVIII-XX centuries, the rage of financial instability which mainly has shown itself in form of inflation, has also occurred in another countries in certain periods and under certain circumstances. Thus, the US during the American War of Independence has issued an oversize amount of "continental money" for funding of military operations in 1775-1779, which have depreciated sharply (in early 1780 a silver dollar costed 50-60 dollars). For the second time, the acute inflation in the US was observed during the Civil War between the northern and southern states in 1861-1865, where the federal government has issued 450 million dollars, so-called

"greenbacks" (i.e. “green backs”, as their reverse side was green) to fund the war (Rotbard, 2009). Exceptionally unfortunate financial and economic, including monetary policy, has caused uncontrolled emissions and sharp increase of total money supply in the state (gold coins, banknotes of states’ banks, subsidiary silver coins, “small currencies”, notes and checks of the national banking system and greenbacks). In 1860, it came to 745.4 million dollars and by the end of 1865, this criterion increased up to 1.773 billion dollars or by 137.9 percent (Rotbard, 2009).

The panic, created as a result of it, led to hyperinflation, which helped industrialists to make huge profit out of production price bulge and erosion of wages. Since 1860 to 1865, only the wholesale price index in the US has risen by an average of 110.9 percent (from 100 in 1860 to 210.9 in 1865), while the nominal wages index has increased only by 43 percent (Rotbard, 2009). The US top finance officials shifted a responsibility for continued economic disaster onto innominate “currency profiteers”. In March 1863, the functionary campaign of accusations against the gold market has started, of which then, Minister of Finance S. Chase, in behalf of the fight against the devaluation of national currency, tried to take his own control and to phase out. However, all this vanity has lasted until the Minister was dismissed from office.

The hyperinflation of 1919-1923 in Germany, which was the result of lost World War I and disastrous post-war financial policy, is also an instructive example of economic, in particular financial destabilization for contemporaries. Uncontrolled emissions of d-mark during this period resulted in thousand fold increase of prices in the state in some months of 1923. The people’s bank savings, securities, government loan bonds etc., the sum of which has came to over 100 billion d-marks before the War, were totally depreciated with inflation (Potashov, 2012). The middle class and highly qualified workers and farmers, who have had money deposits and steady income, suffered most. Social groups, whose incomes were made of government payments (primarily the holders of annuity, people with disabilities, combat veterans etc., as well as educators, operators and other salaried workers), have also become victims of the inflation. The inflation rage had its positive aspect, as during the years of disorder, a new middle class that has got rich because of financial difficulties, was formed. Financial resources of these people were invested in real values, and credit debts were leveled off through the inflation. Distorted reality has

created new opportunities of getting rich for speculators and profiteers who have been skillfully using the monetary chaos and making their way to the power.

Stabilization of d-mark was reached in late 1923 by creation and issuance of the new currency - rental mark, which emission has been exercised by the rent bank. The rental mark's stability has been ensured by hard restriction of emission and its "binding" to gold at fixed rate of 4.2 marks for 1 dollar, corresponding to the pre-war parity of gold mark. One rental mark was exchanged for 1 billion inflation marks. Such measures led to improvements in already few weeks - the increase of price for goods and services and outflows of bank deposits stopped, the level of interest rates was recessed, favorable investment climate was set up. However, tough monetary measures of the government had also negative outcomes for the economy in such cases. The need of substantial cuts in public spending led to forced dismissal of workers and employees. The private sector has also suffered of staff redundancy, resulted in temporary increased unemployment. Nevertheless, the disastrous difficulties were overcome. Since that time, the German financial policy has been remaining traditionally conservative and anti-inflationary, and the German mark as the most hard currency in Europe has become the basis of the common European currency, the euro.

Consequently, in conditions of the market economy establishment, the entities' status depends on such institutional factors as efficiency of democratic institutions, the level of social and economic responsibility, principles of financial and fiscal policies, methods of business regulation, approaches to the protection of property rights and so on. In particular, the success of financial institutions is affected by degree and nature of their compliance with formal and informal rules, which were established in certain societies. The incompletion of laws (formal rules) determines the identification mechanism of financial transactions accuracy and provokes breach of economic relations by their parties. Conscious or unconscious ignorance of role and importance of institutions, and institutional changes, incompatibility, inconsistency and untimeliness of proposed measures concerning changes in the financial system and established hierarchy of financial institutions, will invite the failure of reform from its inception.

The capability of the system to change in coherent, evolutionary way substantially depends on how the basic structure of society's moral values can adapt to new problems and challenges. Formation of new

rules of the civil society in a state has to be accompanied by preparation of an appropriate level of the rights and stateness. The systems which are not capable of structural adaptation, so necessary for their survival, disappear. However, their collapse does not mean that in place of the old system a new one can be created easily. For a new system to start satisfying core requirements of legitimacy, order and welfare, the time during which evens the smallest changes of institutional structure, can cause a transformation chain. The benefits of sustainable institutional changes are usually distributed among all the economic actors; the cost is borne only by certain groups of people. There is a probability of parasitism on inconsistency of rules.

The accumulated historical experience should be a warning for states, allowing significant financial fluctuations, as the situation may get out of control at its certain stage of development and prohibit the financial institutions to perform functions, which are vital for the economy. In this regard, D. North has introduced into scientific discourse the definition of the development historical dependence (North, 1997). Thus, it is fair to say that evolutionary changes allow only the development of rules by analogy, except for their radical correction and interpretation in accordance to changed conditions and/or public demand. In fact, the same rule can reflect endlessly under various circumstances, in different forms, both legal and illegal. Problems do not arise if the rule is efficient for insurance of interaction and multifunctional ab initio.

The effectiveness of work of the institute of finance in Ukraine: present realities

The effectiveness of the institute of finance is crucial for efficient exercise of stabilization functions by the state of Ukraine, as well as reconstruction and development of the Ukrainian market economy. Thorough analysis of the causes and consequences of violation of financial stability indicates that the main cause of this phenomenon in contemporary Ukraine is the institutional instability and the lack of clear formal and informal priorities, poor accountability, dual approach to the definition of property rights, the formation of the environment in which different groups can play by their own rules etc. All this promotes:

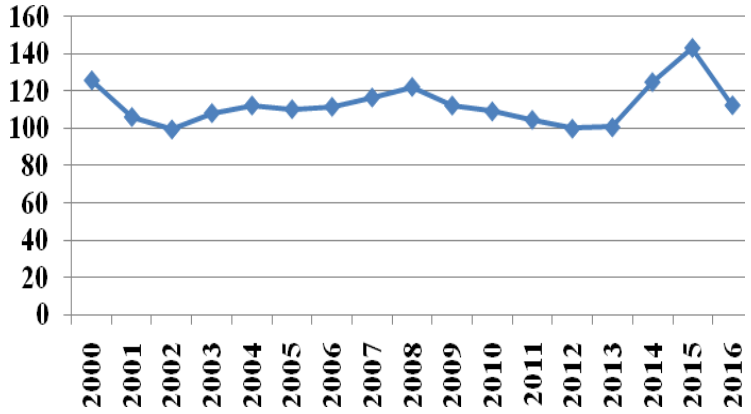
- political crisis (2013-2014, the Revolution of Dignity and modern power conflicts);

- oligarchic opposition;
- geopolitical challenges (annexation of Crimea, anti-terror operation), followed by loss of energy resources and the need of substantial increase in funding for defense;
- policy changes (EU integration vector);
- excessive inflationary expectations;
- imbalance between revenues and expenditures;
- uncontrolled money supply growth, due to excessive emissions.

The consequences of violation of financial balance in recent years are:

- growth of the budget deficit;
- growth of the volume of public debt [on 31 December, 2016, the total public and publicly guaranteed debt amounted to 70.97 billion USD (Statystychna informatsiia shchodo borhu, 2016); this amount is especially catastrophic, given the present disappointing hryvnia exchange rate, as well as the continuing trend of its depreciation];
- galloping inflation growth [thus, only in 2015, the official inflation rate was 143.3 percent, in 2016 - 112.4 percent (Figure no. 2)], and therefore the Ukraine ranked second in the world anti-rating, the first went to Venezuela, where the inflation rate exceeded 275 percent due to fall of oil prices (Za rivnem infliatsii Ukraina nablyzylas do Venesuely, 2017).

Fig. no. 2. The movement of the inflation index in Ukraine in the period 2000-2016



Source: (Statystychna informatsiia: Derzhavna sluzhba statystyky Ukrainy, 2017)

- growth of investments inflation peril, lowering of investment activity;
- reduction of overall foreign direct investment (from 57.1 billion USD in 2014, to 3,76 billion USD in 2015 (Statystychna informatsiia: Derzhavna sluzhba statystyky Ukrainy, 2017);
- decline in real incomes (significant erosion of wages – Table no. 2);
- significant increase in prices of goods and services (producer price index for 2012 was 100.4, in 2014 - 131.8, in 2015 - 125.5, in 2016 - 135.8 7 (Statystychna informatsiia: Derzhavna sluzhba statystyky Ukrainy, 2017);

Table no. 2. Rate of hike/erosion of nominal and real wages (2001-2016)

Year	Nominal wages December through December of previous year, %	Real wages December through December of previous year, %
2001	127.7	120.4
2002	117.0	115.6
2003	124.4	113.8
2004	127.7	120.8
2005	144.9	131.5
2006	125.2	111.7
2007	131.1	110.3
2008	119.5	97.0
2009	111.6	99.1
2010	120.1	110.5
2011	116.2	111.0
2012	110.6	111.4
2013	107.9	106.7
2014	114.2	89.0
2015	125.2	94.0
2016	128,5	114,3

Source: Statystychna informatsiia: Derzhavna sluzhba statystyky Ukrainy 2017; Statystychna informatsiia: …u m. Kyievi 2017.

- depreciation of savings of individuals and entities in national currency (since 2013, the national currency had depreciated by more than 3 times);

- collapse in confidence in the banking system (in early 2017, 100 solvent banks have continued operating in Ukraine and 77 more were classified as insolvent by the National Bank of Ukraine during 2014-2016) (Statystyka: Natsionalnyi bank Ukrainy, 2017); the outflow of deposits from banks at year-end 2014 has become the largest crisis after 2009: 56.5 billion or 13.4 percent in the national currency and foreign 11.4 billion or 36.9 percent in USD (Zvit pro vykonannia Zakonu Ukrainy, 2016);

- increase rate of discount from 6.5 percent in 2013 to 30 percent (!) in 2015 (Statystyka: Natsionalnyi bank Ukrainy, 2016);

- breaches of economic relations, growth of arrears in payments (at the end of January 2017 households debt only for housing and utility payments amounted to 25.4 billion (Statystychnyi portal, 2017);

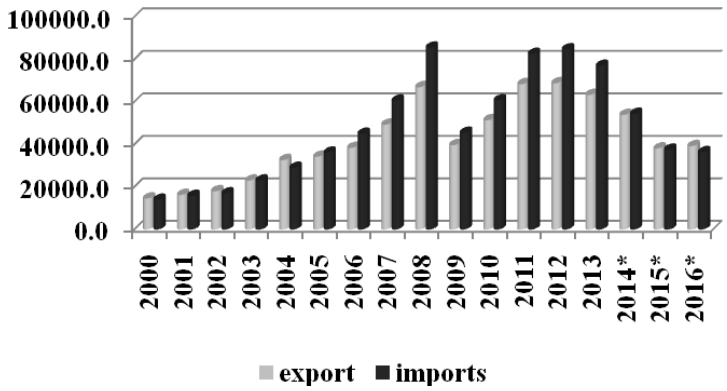
- deterioration of living conditions of the majority of citizens, a significant decrease of their purchasing capacity;

- strengthening of explicit and hidden unemployment (the lowest unemployment rate since 2000 was in 2008 and amounted to 6.9 percent, i.e. 596 thousand officially registered unemployed; in 2015, according to official statistics, it reached 9.7 percent or 458.6 thousand (Statystychna informatsiia: Derzhavna sluzhba statystyky Ukrainy, 2016), it is significantly that the number of economically active and formally-employed has considerably decreased due to the annexation of Crimea and conducting the anti-terrorist operation;

- loss of traditional markets;

- fall of exports, which in 2015 fell to 38.1 million USD, while the pre-crisis 2012 totaled at 68.8 billion USD (Figure no. 3);

Fig. no. 3. Movement of volume of visible exports and imports of Ukraine in 2000-2016, million USD



**Without including of temporarily occupied territory of Autonomous Republic of Crimea and Sevastopol*

***Excluding the zone of anti-terrorist operation*

Source: Statystychna informatsiia: Derzhavna sluzhba statystyky Ukrainy, 2017

- decline in commodity production (2014): in industry by 10%, in construction by 21.7% (Zvit pro vykonannia Zakonu Ukrainy, 2017);
- lowering of quality of products on the market;
- difficulties of long-term planning of economic activity;
- redistribution of income and wealth;
- transfer of savings into foreign currency and its deficit;
- reduction of confidence in government;
- strengthening of the shadow economy development;
- worsening of socio-economic contradictions;
- growth of social inequality.

Conclusions

Consequently, the foregoing indicates that financial instability harms a society. It is the cause and consequence of social conflicts and redistribution of income, and the fall of the real economy. The basis of violation of financial balance is primarily institutional changes that give rise to social challenges and contradictions. Typically, the most disastrous outcome of the violation of market, including financial

stability, is hyperinflation, which results primarily affect owners of savings, qualified employees and social strata of the population, whose income are state benefits (especially pensioners, the disabled and other low-income groups of the society). Urban residents are needier, while farmers are experiencing it less. Debtors and borrowers often find themselves on the winning side, i.e. when loans were received in the national currency, as well as energetic and resourceful entrepreneurs, who can quickly cross over to new market conditions and needs. The main form of fighting against financial instability is tough monetary reform, which has to restore the stability of currency as soon as possible. For this purpose, it is necessary to:

- take measures to reduce/eliminate the budget deficit;
- stimulate export growth, including through the real support of local business and increasing competitiveness of goods;
- activate the real fight against corruption;
- eliminate the structural distortions;
- destroy monopolistically-oligarchic system on the market;
- adapt tax legislation to the new realities and trends, international standards and practices;
- stimulate lending and investment activities, including by reduction in liquidity of savings due to growth of interest rates;
- develop market services, especially in education and science.

Discussion

The historical experience should be a warning for states, allowing significant financial fluctuations, as the situation may get out of control at its certain stage of development and prohibit the financial institutions to perform functions, which are vital for the economy of a state. Economic, including financial stability can be achieved through the institutional equilibrium and evolutionary changes involving the establishment of formal and informal social rules, including the preparation of relevant level of the law and stateness, real support of the prioritized areas of the national economy etc.

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