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QUANTITATIVE METHODS
IN ECONOMICS

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CONTENTS

HUMAN INVOLVEMENT AND E-BANKING

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Abstract: The fast advancing global information infrastructure (including information technology and computer networks such as the internet and telecommunications systems enable the development of electronic commerce at a global level. The nearly universal connectivity which the Internet offers has made it an invaluable business tool. These developments have created a new type of economy, which many call the 'digital economy'. The aim of this paper is to offer the reader a means by which human involvement in e-banking may be evaluated and improved. At the heart of this problem lies a need to characterise human involvement, since, once the issues are clear, the specific e-banking factors can be related to them in the form of a model. In this work we therefore take as our task: 1. What do we mean by human involvement or participation, and how does this compare to the often overwhelmingly technology-based approaches to information systems developments? 2. Where might human involvement be grounded theoretically? 3. How is this theoretical grounding to be taken forward to a set of pragmatic approaches to be applied by practising managers? E-banking owes its existence to a revolution in the enabling technologies. In this paper, however, we are less concerned with the technologies in themselves, and more with how value and advantage may be leveraged from them. To understand the issues here we need to go back to their roots, which lie in the adoption and application of information technology. In the early days of IT, most approaches to its implementation and management focused on the technology (the so-called "technology-based" approach). The sections which follow therefore begin with this, before outlining the more recent human-centred methods which are of such value in e-banking. Consequently, we will first look at participation from a recent historical perspective, and use this to develop an approach to human involvement which is applicable to the domain of e-banking. Finally, we will present action guidelines for human involvement in e-banking, and describe how these may be used to evaluate and implement e-banking solutions which are true to participative needs.

Keywords: e-banking, human involvement, information technology

INTRODUCTION

As has been argued earlier in this material, e-banking owes its existence to a revolution in the enabling technologies. In this paper, however, we are less concerned with the technologies in themselves, and more with how value and advantage may be leveraged from them.

To understand the issues here we need to go back to their roots, which lie in the adoption and application of information technology. In the early days of IT, most approaches to its implementation and management focused on the technology (the so-called "technology-based" approach). The sections which follow therefore begin with this, before outlining the more recent human-centred methods which are of such value in e-banking.

The technology-based approach

It has been argued that the design and development of information systems (IS) has been traditionally dominated by technical, problem solving approaches, leading to tensions when the system to be developed is more user based. The need for discovering the requirements of users seems not to be disputed by information systems developers, but is typically achieved by including a user analysis stage within an existing problem solving approach. This approach, inherited from computer systems development, relies primarily on the systems development life cycle (Figure 1).

The systems development life cycle is a stage wise or waterfall method, whereby each stage is undertaken in a linear sequence, and in principle requires the completion of one stage before the next is commenced. So, for example, work on system design would not be authorised until the system specification was written and approved.

Figure 1. The systems development life cycle
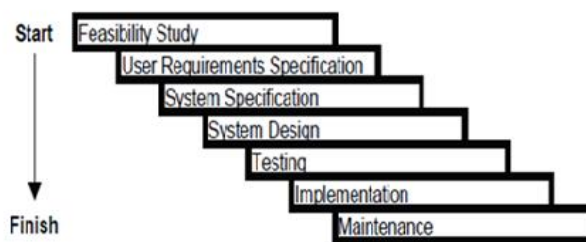
Source: own elaboration

User requirements specification fits uncomfortably into this process, since such requirements are seldom fixed, but change over the life of a project. As can be seen from the following example, there are situations where such an approach is

desirable, but care needs to be taken to ensure that the necessary conditions are in place for it to succeed – and e-banking simply does not fit this model.

A number of methodologies adhere to these principles, through which information systems development is perceived largely as a technology-based, problem solving, engineering task, geared to engineering the best solution to meet a given requirement specification within the known or anticipated constraints.

Technology-based approaches: the problem

The argument for an alternative to these technology-based approaches is supported by the findings from a number of studies of systems failure. Examples range from simple failure to meet performance goals, to catastrophic failure of the type evidenced in the London Ambulance Service and Taurus, the London Stock Exchange System. The British Computer Society has a special interest group which looks at organisational aspects of information technology (OASIG). A study by this group [OASIG 1996] concluded that up to 90% of information technology (IT) investments do not meet the performance goals set for them, and listed the technology-led nature of the process, and the lack of attention to human and organisational factors as key issues in this lack of success, [Beath and Orlykowski 1994] support this view, and mount a convincing critique of the interaction between users and systems professionals in IS, concluding that the concentration on, and commitment to, user participation is revealed as ideological rather than actual, with users frequently shown to be passive rather than active participants in the process. They see the various systems development methodologies as containing 'incompatible assumptions about the role of users and IS personnel during systems development.'

Human-Centered Methods

The limitations of technological approaches to IS gave rise, from the 1960s on, to the so-called 'soft' or human-centered methods. It is argued that traditional 'engineering' approaches are 'hard' or technology-based, being premised on a view of the World which sees it as composed of determinable, rule-based systems. 'Soft' methods, by contrast, take a human-centered stance: issues are seen as determinable only from the viewpoints of human participants. Many examples are available for the use of human-centered approaches to IS, including, for example, soft systems methodology [Checkland & Haynes 1994] and interactive planning [Ackoff 1981], which rely on a more holistic view: to understand an information system, the technology, organisation, and human activity need to be addressed interdependently, not as separate, independent issues. This recognition of the merits of both 'hard' and 'soft' approaches to IS has further given rise to a number of methods of IS development which may be categorised as mixed for example: ETHICS [Mumford and Henshall 1978; Mumford 1994], multiview [Wood-Harper, Antill et al. 1985; Watson & Wood-Harper 1995], and client led design [Stowell 1991; Stowell & West 1994]. The information systems failure example

from London Ambulance, outlined below, is a clear example of the need for integration of technical and human issues in an intervention, and the outcomes to be expected when this is inadequately carried out.

A report on the failure [Hamlyn, 1993] makes it clear that implementation of any future system must be supported by a full process of consultation. Whilst the project management, and technical aspects of the implementation, were far short of that which would have been expected for this kind of project, there were in addition a number of 'human' aspects which had been inadequately considered, including poor training and incomplete 'ownership' of the system. The finding by consultants reviewing the failure that 'the computer system itself did not fail in a technical sense … but … did what it had been designed to do..', further suggested issues stretching beyond purely technical boundaries. Following this initial failure, a new computer-aided dispatch system was successfully implemented, but only through an approach which paid heed to the whole system of concern, of which the technical system was just one interactive part. A clear trend can be discerned here, toward approaches which have the potential to address both technical and human-centered issues within a single intervention. In the next section, a theoretically and practically informed grounding for such an approach is developed and discussed.

Information Systems as Social Systems

The conclusion to be drawn is that a view of information systems as a purely technological domain is an inadequate one. Such a perspective reduces the complexity of the system of study, and attempts to define it in terms of rules and procedures by which given inputs can be turned into predictable outputs: a so-called deterministic system. A human-centered approach is quite different. Human activity systems are 'complex' and 'adaptive', and cannot be fully described in terms of rules and procedures: to understand such systems requires recourse to social theory.

Recent work with emergency services, outlined in the example below, serves to highlight some of the benefits to be derived from seeing IS as social systems.

A number of key issues emerged from this which helped guide the future of the study. One key example was that, in spite of massive investment in communication technologies, most operational-level communication used mobile telephones. This was surfaced by one group seeing their operation as 'isolated islands of information, linked by tenuous pieces of wire'; when they should have been 'complex, social, communicative structures with no perceivable barriers to communication.' The interesting fact was that the technology to support the later is already owned by each service, but is not used in the way that those involved in the day to day operation would see as most beneficial. Furthermore, such a conclusion demonstrates the relevance of this debate to e-banking. In the last twenty years or so, information systems have become more fragmented and distributed, 'user' issues have grown in importance. E-banking represents a highly distributed form

of technology-enabled information, in which a disparate user base needs to be catered for. In effect, the social system to be 'served' is gaining ascendancy over the technical system: the later has the task of facilitating or enabling – technology has finally ceased to be an end in itself!

The question to be answered, then, is how this system of concern might best be perceived from a social theoretical perspective. Many information systems theorists have found the classification presented in Figure 2 to be the most applicable categorisation of social theory within the IS domain.

This is drawn from original work by Burrell and Morgan [1979], according to whom all social theories can be categorised into one of four paradigms: functionalist, interpretivist, radical humanist and radical structuralist. A functionalist approach sees social action as the application of labour to advance humankind through instrumental means.

The World is seen as a set of problems to be solved: objective problems which can be determined independently of any human viewpoint. In e-banking design (Figure 2), for example, this describes well a technological, expert-informed approach, where the views of users are seen to be secondary.

Figure 2. A classification of social theory [Clarke 2000]
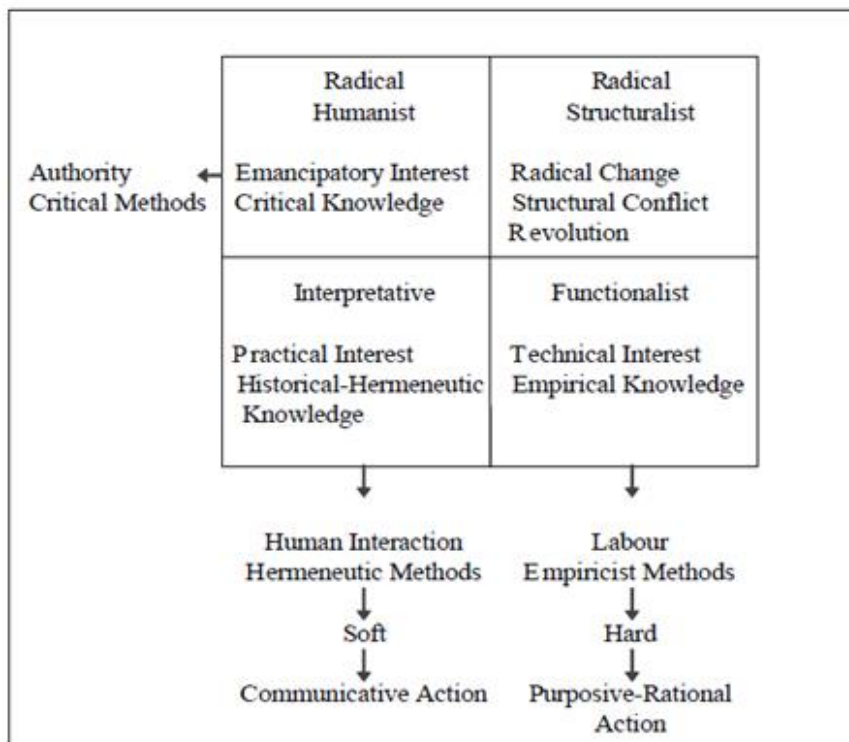
Source: own elaboration

Through interpretivism, the World becomes socially constructed through communicative action. Here, e-banking (Figure 2) would be understood as a social, communicative, subjective phenomenon, in which the views and opinions of participants become fundamental to its understanding. From a radical humanist, or critical perspective, the early, technological, view of IS as functionalist, 'hard', problem solving, is seen to be an impoverished one, overfocused on the use of computer technology. 'Soft' or human-centered methodologies have been pursued as a solution to this problem, and have been to some extent successful. But recent thinking questions the ability of 'hard' and 'soft' approaches to achieve the agenda they apparently set out for themselves, and points to a need to combine approaches under the umbrella of social theory. Radical humanism offers the potential to achieve this, and is therefore pursued in the next section, with focus on two issues of particular relevance in e-banking management:

1. Determination of the scope, or boundaries, of the system.
2. Given the boundaries, choice of development, implementation, and management methodologies.

To complete the picture from the perspective of social theory, radical structuralism looks to ways of changing the World in which we live by altering the material conditions that surround us. In terms of e-banking, this might be relevant where direct political action were required – for example, if a particular Political regime banned the use of relevant technologies. Our view is that this perspective has limited relevance in Western industrialised economies.

Scoping e-banking Management: The Critica l. Assessment of System Boundaries

In e-banking management, making a decision on the system boundary is therefore an issue to be settled before further progress can be made. Whilst the problem of system boundaries has exercised the minds of both academics and practitioners for many years (for a summary of early works see [Jones 1982], it is from Ulrich [1983; 1988; 1996] and Midgley [1992] that the recommendation to critically challenge what should or should not be considered part of any system is drawn. Midgley's approach is to begin with a boundary definition which is accepted as arbitrary, and progress by " looking for grey areas in which marginal elements lie that are neither fully included in, nor excluded from, the system definition." The critical choices made at the boundary are of truth and rightness: truth being represented by questions of what is, and rightness by questions of what ought to be. In respect of e-banking, we have to balance availability and security, whilst gaining the enabling benefits of new technologies. Taking such a stance gives a starting point for the critique of boundary judgements in an e-banking intervention as represented by Figure 3. Here, a typical approach to e-banking design, implementation and management, is represented by the primary boundary. The information to be included is often corporate, but at best might be requested

from an expert group (marketing, for example). Most of the activity takes place between designers and managers, with system users cast in a passive role.

Figure 3. Critique of the system boundary (adapted from Midgley 1992)
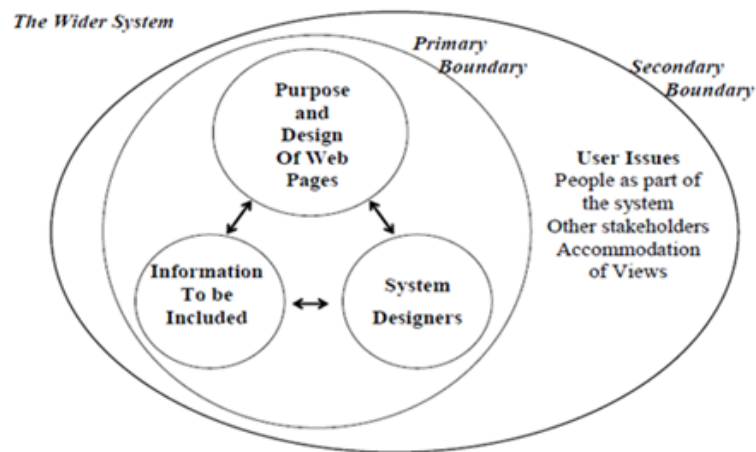
Source: own elaboration

By contrast, it is recommended that critical assessment of the system boundary be undertaken by a representative sample of participants in the system. The approach might work as detailed below.

1. An arbitrary system definition is presented (Figure 3). The primary boundary represents the main area of concern, whilst the secondary boundary encompasses that which is seen to be marginal to that area. Beyond this, all other issues are represented by the 'wider system'.

2. A brainstorming session [de Bono 1977] is set up, attended by representatives of all the key participant areas. The purpose of the session is to enable participants in the system (those 'involved and affected') to conduct the critique on their own behalf.

3. The system is critiqued within the brainstorming session by a combination of Midgley's and Ulrich's approaches to boundary critique:

   • Midgley's [1992] approach to examining what is in the margin for elements which support the secondary boundary or the primary boundary.

   • Ulrich's [1996] approach to challenging system boundaries through twelve "critically heuristic boundary questions" which address issues of motivation, power, knowledge and legitimisation (see Table 1).

In this example, Ulrich's critical boundary questions are applied to the web design aspects of e-banking. This reconceptualisation of the system is an important part of the intervention, focusing discussion not on a clearly defined technical or organisational problem to which a solution is to be found, but on the complex and

Table 1. Critically heuristic boundary questions

Question	"Is" Mode	"Ought" Mode
1	Who is the client? Whose purposes are served by the system? *The web site manager.*	Who ought to be the client? *All who are involved in and affected by the system of concern.*
2	What is the purpose? *To present a corporate presence via the internet.*	Who ought to be the purpose? *To meet the changing requirements of all involved and affected.*
3	What is the measure of success? *Up-to-date web presence.*	Who ought to be the measure? *"User satisfaction".*
4	Who is the decision maker? *Senior management.*	Who ought to be the decision maker? *Decision rests with management, but should be informed by participant involvement.*
5	What conditions are actually controlled by the decision maker? *Resources, final approvals.*	What components of the system ought to be controlled by the decision maker? *Should manage, not control.*
6	What conditions are not controlled by the decision maker? *External factors.*	What resources and conditions out to be part of the system's environment? *All on which it potentially impacts.*
7	Who is the system designer? *Web designers under the web site manager.*	Who ought to be the system's designer? *Web design should be professionally carried out, but informed by the changing requirements of participants.*
8	Who is involved as an expert, what is the nature of the expertise and what role does the expert play? *Designers: control the whole development within guidelines laid down by the management.*	What kind of expertise ought to be involved, who should exercise it, and what should his/her role be? *Mixture of technical and social issues to be considered.*
9	Where is the guarantee of success? With experts, political support etc? *Experts.*	Where ought the guarantee of success to be? *Full participation.*
10	Who represent the concerns of the affected (but not involved)? *Not represented.*	Who ought to represent these concerns? Who among the affected ought to become involved. *The views of all involved and affected should be taken into account.*
11	Are the affected given the opportunity to emancipate themselves? *Not involved.*	To what extent ought the affected to be given such an opportunity? *Participation only works where users are free and able to participate.*
12	What World view underlies the system of concern? *Command and control system.*	On what World view ought the design of the system to be based? *Inclusive, participative, informed.*

Source: own elaboration

ideals of the stakeholder groups involved in the system. The task becomes not one of how to engineer a solution to a known and agreed problem, but how to study and improve a problem situation made up of complex interacting issues. *People are not only part of the system, they are the primary focus of study.* From the issues raised by boundary critique, it becomes possible to consider intervention strategies.

Discussion: Future Trends

The impetus for undertaking this study has been the failure of hard and soft systems development methodologies to address the needs of all participants in an e-banking system. Theoretically it has been demonstrated that this failure, at least in part, can be traced to the uncritical nature of both hard and soft methodologies, and a need, from a social systems viewpoint, to combine hard and soft approaches within a critical framework. Critical boundary setting, focusing on the normative system definition, has further enhanced this study. Just as a structured approach tends to focus on technical issues, so a concentration on 'what is' tends to lead to a belief that there is only one accurate perception of the system of concern.

A critical approach to boundary judgements has opened up a wider consideration of 'what ought to be' in e-banking, including those involved and affected as participants with whom expertise is seen to reside. The richness this has brought to 'user analysis' within the web systems analysis example contrasts with the simplicity with which this part of an e-banking intervention is normally undertaken. Since the early stages of this study, theoretical and empirical work in this domain has progressed significantly, and this paper would be incomplete without a consideration of these issues.

A useful general summary of thinking concerning mixing of methodologies, methods or techniques, can be found in Mingers and Gill [1997]. In outline, the thrust of both theoretical and empirical analysis has focused on the perceived shortcomings of approaches which concentrate on a single methodology or paradigm, and alternative conceptions of how methodologies, methods or techniques drawn from different paradigms might contribute within a single intervention. So, for example, Mingers and Brocklesby [1997] see the main approaches to mixing "methods, methodologies and techniques within the broad field of management science" as the system of systems methodologies [Jackson & Keys 1984] and TSI. They criticize these approaches for effectively promoting the use of whole methodologies – a view which it could be contended is supported by the strong suggestion within TSI that there should be dominant and dependent methodologies within an intervention. A better approach, they suggest, would be to mix methodologies, or parts of methodologies, from different paradigms, promoting this approach as "multimethodology". They argue, for example, that TSI: "provides no structure for the ongoing process of the intervention – leaving that entirely up to the selected methodology", and offering in its place an: "appreciate, analyze, assess, act" framework.

Midgley [1997] argues that it is more helpful to think in terms of methodology design than just the choice of whole methodologies, or even, by implication, simple choice of parts of methodologies, and promotes the idea of the "creative design of methods" as an application of their oblique use [Flood & Romm 1995], and as a way of enhancing TSI in practice. Another stream that has informed intervention practice in recent years is action research (AR). AR explicitly relies on critical reflection as a means of validating the outcomes of a given investigation, and in this sense may be seen to have much in common with the critically informed intervention approached recommended in this paper. Further information on the position of AR in relation to organisational intervention may be found initially in Flood and Romm [1996] and Clarke and Lehaney [1997]. Our position in relation to these approaches is still developing, and it offers many challenges which have not as yet been addressed by me or other practitioners. To progress this, I feel concentration now needs to be on a Kantian view of critique as promoted and developed, for example, by Ulrich [1983], and on creatively designing methods, having regard to the issues raised from the critiques of TSI and the system of systems methodologies, always within a critical framework. Finally, action research practice needs to be embedded into the intervention framework.

CONCLUSION

Arguments about whether to use a hard or soft methodology, and which hard or soft methodology to use, in web development, implementation and management, seem to offer only a limited perception of most e-business problem situations.

A 'critical complementarist' view gives a richer image. The argument should not be about whether to use this or that methodology, but rather what critically, theoretically, and practically informed mix of methodologies best deals with the problem contexts encountered in a given intervention. From this perspective, the hard-soft debate seems to offer only a partial view of e-banking. Such systems are not *per se* computer systems, but are systems of human activity or micro social systems, consequently, functionalist science or interpretative sociology appear an inadequate basis on which to study them, a wider critical social context seeming more relevant.

The approach currently most widely tested in this respect is total systems intervention, underpinned by the theoretical endeavour of critical systems thinking, but emerging evidence suggests developing this into a richer critical systems practice, focusing on a Kantian view of critique within a broader action research framework. From all of this can be drawn general findings, together with guidelines for future development, implementation and management of e-banking, which are presented in summary form below.

Findings

From the discussions of this paper, the following general findings can be distilled:

1. The domain of information systems is dominated by technology-based methods, weakly mediated by human-centered ones.

2. Human activity is more fundamental to the domain than such an approach acknowledges, and consequently the investigation of methods underpinned by theories of social interaction are indicated.

3. From research in the social domain, a foundation in critical social theory emerges
   as a promising direction.

4. Within such an approach, the first issue to be addressed is that of *understanding* the problem context. For this, critical social theory points to the use of critical systems heuristics and critical boundary judgements to critique and determine the system boundary.

5. Boundary critique further informs intervention strategy. The methods required must embrace functionalist (technological), interpretive (human-centered), and radical humanist (emancipatory, participatory, 'social inclusion') issues.

6. In any future work, the ongoing research in the application of critical theory to management issues must be considered, and a brief outline of this is provided.

Given these findings, how might a manager seek to action them?

Guidelines: The Implications for Managers

(1) Determine the initial scope of the system of concern. (2) Identify the social group(s) involved in and affected by that system. (3) Form representative samples from these groups.

In terms of management action, the challenge here is *not* to see e-banking development and management as a problem to be solved by an expert group of developers. A framework (for example, of user groups) needs to be established, from which the contribution from those participating in web usage can be drawn. But a word of caution: the groups and membership of them should not be fixed, and, of course, should not be limited to managers or those in authority.

Actions

(1) Conduct boundary critique to initially determine the system of concern. Continue this throughout the project. (2) Use participative forums to discuss all issues of web design, development and implementation. (3) Choose and implement the relevant methodological approaches in a critical complementarist framework.

Initially, formal boundary setting sessions will be needed to set the scene. Quite quickly, groups will form their own clear views about the scope of e-banking developments within a particular organisational context (it will become 'culturally'

ingrained), and less time will be necessary in formal sessions to discuss this. The forums can then be used to surface the issues, the only primary requirement in terms of expertise will be a facilitator who can assist with guidance on the process.

E-banking management is a task to be conducted within a social framework. A purely technical approach, or even a technical approach informed from participative analysis is insufficient to address the complexity of the problem contexts encountered. It is essential to recognise that what is being dealt with is a social system, albeit enabled by technology, and, this being so, it is difficult to envisage how such an undertaking could be informed from anywhere other than social theory.

What has been presented in this paper is argued to be a thoroughly theoretically and pragmatically informed approach based on these principles. Try it – it works!

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INTERNAL MIGRATION OF LABOR AS A REGULATORY MECHANISM IN THE AREA OF A SINGLE CURRENCY. THE EUROZONE AND ALBANIA

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Abstract: The purpose of this paper is to provide the impact of mobility labour market in social and economic aspects. Labor market flexibility is defined in different ways by different authors. Some define flexibility as the speed at which the labor market can act as a regulatory agent in response to an economic shock. Others identify flexible labor market as a mechanism that helps in establishing a stable equilibrium, with a low degree of structural unemployment. Increasing labor market flexibility also occurs through the distribution of the labor force, between employers, countries or different tasks. This can be achieved through the promotion of geographical mobility of labor across regions and across borders. This article makes clear how the geographical mobility of labor is a regulation mechanism in the economy, which helps him adjust to economic shocks.

Keywords: labor market, migration, European integration

INTRODUCTION

The last development of the theory of OCA, said that the relative wage flexibility and capital mobility economies offer alternative ways for economy to adapt with economic shocks. Most importantly, if these mechanisms are strong enough, then a currency area may be able to respond

effectively to asymmetric shocks even if geographical mobility of labor is lower.

The combination of high capital mobility and wage flexibility encourage capital to derive toward regions with high unemployment. Low geographical mobility in the EU may not be a big obligation, so it is sometimes perceived. However, it remains particularly important if other mechanisms regulating regional disparities are weak. Some reasons put forward to the low level of geographical mobility throughout the EU and the decline of migration rates in recent decades.

These includes:

1. The general increased unemployment all over Europe since 1970, has a little incentive to move to a region of unemployment "lower" if opportunities are still limited [Pissarides and McMaster, 1990].

2. Narrowing of income per head across the EU: the gap between wages or income has been narrowed between EU member states, it has decreased incentives to migrate.

3. Structural factors: this includes the role of the housing market regulations and transactions costs, high use of fixed-term contracts, which carry a decrease in job security and in this way discourage labor mobility.

4. Cultural factors, such as language barriers and family networks. This article lists a number of reasons which explain the low level of geographical mobility throughout the EU - and the lower migration rates during last decades.Also it will be given a picture of the mobility of the labor force in Albania in relation to past and current trends of motion.

FREE MOVEMENT OF LABOR FORCE

Geographical mobility of labor is an regulation mechanism in the economy, which helps it to adapt with economic shocks. Geographical mobility also has an impact in socially aspect, it may strengthen or undermine family and social networks.

Labour mobility is important to help people who can find work when they need it. If we can compare the mobility between EU countries and the US states we can see that mobility is weaker in Europe than in the US. Also has contrasts of the geographical mobility in the euro area with the UK and US [HM of Treasure 2002a]. This could constitute as a big obstacle for general flexibility of the labor market in Monetary Union, only when other characteristics of labor market flexibility are stronger. A study of the United States treasure shows the way that the geographical mobility of labor power was an important mechanism for economic regulation in the US. So after a shock to the US economy, migration has been the main mechanism by which the employment rate was returned to its original level.

Other authors noted that the labor movement for all European countries may remain lower than the volatility of the US labor. As long as labor mobility will be

the main source of economic regulation shocks in the European area, shocks will be bigger and longer because of the regulatory effect mobility of the labor market is not very effective.

Adjustments of shocks effect of relative unemployment in Europe will have more time in the space of the common European currency. This can turn into a process of painful and Macroeconomic costs that come from low geographical mobility have moved representatives of EU member states to develop the suitable and easily policies to increase geographical mobility of labor in the single currency area[4]. But for some, low geographical mobility in the EU can not be a significant absence, as previously perceived. However, geographical mobility is preferable because it opens up new opportunities for work and training. Geographical mobility in the existing monetary unions should be high, so that monetary unions of work may be more successful. On the contrary, lower mobility rates in the euro area will raise some concerns about its sustainability as a single currency area.

In his original work, Mundell has analyzed the response to the riots economies in terms of fixed exchange regimes rate.In his original work, Mundell has analyzed the response to the riots economies in terms of fixed exchange regimes rate. His analysis assumes that nominal wages and prices were slow to fix the economy if the relative wage flexibility was limited. According to that case in a fixed exchange regime, the mobility factor, including geographical mobility of labor must be provided an adjustment mechanism after a regional stroke asymmetrical. In particular, geographical mobility will impose the unemployed to move from a depressed area into a bloom restore balance.

The last development of the theory of OCA, said that the relative wage flexibility and capital mobility economies offer alternative ways for economy to adapt with economic shocks. Most importantly, if these mechanisms are strong enough, then a currency area may be able to respond effectively to asymmetric shocks even if geographical mobility of labor is lower.

The combination of high capital mobility and wage flexibility encourage capital to derive toward regions with high unemployment. Low geographical mobility in the EU may not be a big obligation, so it is sometimes perceived. However, it remains particularly important if other mechanisms regulating regional disparities are weak. Some reasons put forward to the low level of geographical mobility throughout the EU and the decline of migration rates in recent decades.

These includes:
1. The general increased unemployment all over Europe since 1970, has a little incentive to move to a region of unemployment "lower" if opportunities are still limited [Pissarides and McMaster, 1990];
2. Narrowing of income per head across the EU: the gap between wagesor income has been narrowed between EU member states, it has decreasedincentives to migrate;

3. Structural factors: this includes the role of the housing market regulations andtransactions costs, high use of fixed-term contracts, which carry a decrease in job security and in this way discourage labor mobility. [see Davies and Hallet 2001] and HM Treasury [2002a) for an overview].
4. Cultural factors, such as language barriers and family networks.

Characteristics of the labor market mobility

A fully flexible economy would be one in which price adjustments and then the amount will immediately answer from a stroke, in order to ensure full utilization of resources. For the labor market, perfect flexibility means that after any changes in the economic environment, labor market should be reorganized immediately to achieve an efficient use, for unemployment to remain at the level of structural unemployment.

In practice, there are costs and obstacles for an immediate adjustment, which is examined in detail in Section 4 of the institutional environment. That factors will depend from the time that require relative prices and quantities are fully reflected in the new economic environment.

This adjustment period will be these period of use that aren't optimal resource level. In the labor market, this means as an increase in unemployment. In the case of a flexible labor market, the adjustment period will be short, as a rapid movement of prices and quantities to restore the balance. But for the less flexible economy, this period of adjustment will be more extended.

This means that policies must be directed to maximize the flexibility of the labor market. However, the arguments go across the labor market, recognizing the flexibility of capital and product market.

A higher degree of flexibility in the labor market means a faster adjustment to economic shocks. So the economy must spend a shorter period to reach a balance, or eliminate the output gap, the actual production should remain closer to that potential. Therefore it is much needed a better flexibility of the labor market. However, there are differences in the degree of flexibility between different regions of a union. Economic literature shows how such differences can affect the transmission mechanism of economic shocks. A stroke that primarily has a symmetrical effect throughout the Monetary Union will be transformed into an asymmetric shock, if in a region adapted much more quickly than another.

However a greater flexibility in all areas will help to ensure more effective process of adaptation including the area of a single currency. It is important that the existing euro area, must be flexible in order to realize completely the benefits of Monetary Union to achieve further progress in the fulfillment of the Lisbon plan.

General characteristics of the labor market include:
1. Geographical labor mobility, which means the ability or willingness of workers to travel, or to change the place of residence in order to find a job.

2. The flexibility of employment, which means the ability of employers to adapt work rules, relating with specific work conditions. Which involve the use of part-time work.
3. Functional flexibility, which means the ability of the labor force to perform various tasks, to receive and apply different skills, making it possible to enable performing wide range of jobs, and easily adapt to technological change.

Geographical mobility of labor was mentioned as a key mechanism in the regulation of the first versions of the theory of (OCA). Later developments of the theory of OCA's, emphasized that real wages relatively fleksibilile nominal and capital mobility can provide alternative ways for economies to adjust to economic shocks. If these mechanisms are quite strong in an area of a single currency, they may be able to efficiently respond to asymmetric shocks even if geographical mobility of labor is low.

However, a big flexibility in any dimension will give the opportunity the labor market to operate more effectively and to raise its ability to adapt with changing economic conditions.

The importance of free movement of the labor force

During the last 30 years the global economy, suffered from strokes. They have been largely symmetrical in nature and have resulted in significant increase of unemployment since the 1960's , however, economic adjustment paths were different [Lagos 1994, Pissarides 1997, Forstater 2000]. Labour market performance is a key element for economic and social prosperity. A flexible and efficient market work, combined with the macroeconomic environment, sustainable means an economy that is really, more competitive and more productive. It also means an economy that is better able to respond to economic change. In particular, the labor market:

1. Is the key for the sustainable rates of the economic growth and contributes to the overall competitiveness and productivity.
2. There is a significant impact on the welfare of individuals and families
3. It can help in the fiscal burden, especially if it has an aging population, especially when the high employment rates are useful for the sustainability of public finances and pension systems.

If a country wants to join the European Monetary Union, it means that the national interest rate and the nominal exchange rate can not act as a mechanism of adjustment of economic shocks. This would mean that the economy in this country will have difficulties to answer shocks in the economy. It is important that the forces of the economy should be able to adapt to other tools as may be adjustments in, labor market and capital markets. "For a succesful membership of a country in the monetary union is necessary to labor markets, products and services should work effectively. Losing the internal control over monetary policy and the exchange rate, as a tool to adapt with shocks, It has made a greater adjustment burden falling on the

factors of labor markets ". Economic regulation indicators in a particular country caused by an asymmetric stroke may ask for a change in the real exchange rate and relative wages between the countries to keep the adverse impact of unemployment and low level of production. For outside countries monetary union, this can be achieved through regulation of the nominal exchange rate, or by regulation of production factors and goods with an appropriate monetary policy. Without the nominal exchange rate and a single currency, it would mean a less flexible economy.

THE BARRIERS TO LABOR MOBILITY WITHIN THE EU

The experience of previous waves of EU expanding, suggest that increased cross-border of labor mobility pursuant to the moderate expansion must especially in the medium and long term. Moreover, further economic studies estimate a possible increase labor mobility in the course of EU expanding. These experiences and general forecasts coincide with the low level of geographical mobility of labor within the EU. Referring to the European Commission [April 2008]" the rate of movement of EU citizens is about half the rate of movement of citizens of the US. This study of the European Commission, for geographical mobility of labor in the European Union puts the percentage of workers from Member States of the EU who live in another member state from their country of origin at 1.5%. Temporary movement is the most frequent of labor mobility in the EU. There were several reasons that have contributed to low level generally of international labor movement in Europe, which may continue to limit the growth of labor mobility within an enlarged EU.

In economic literature, often is cited that the reason for obstructing international labor mobility in the EU are: the existence of legal and administrative barriers, the absence of familiarity with the languages and cultures of other European monetary costs of moving and accommodation, inefficient market, limits of pension right , absence of the international recognition of professional qualifications and school non-formal and absence of transparency of countries.

It's difficult to think that all those reasons, or if not all, but at least remove some of these barriers between member states of the EU. In fact, some barriers, such as recognition of qualifications, can be too high for citizens of the EU-10 during the start of the expansion even though they may be reduced by the time [European Commission 2006)]. These barriers for this reason has the right to restrict the cross-border movement of labor within the EU. Belgium established restrictions on labor migration from the EU-8, applying its system of work permits. Denmark established restrictions on labor migration from the EU-8. Migrants can enter to that country looking for job, but they were unable to insurance benefits during this period to find a job. If they were incapable to find a job, or if they lose their job, that remove immigrants the right of a residence permit in Denmark. Germany has put constraints on labor migration from the EU-8. It has kept its existing system of work permits.

Such as continual quotes for temporary workers in construction and agriculture as the Polish seasonal workers.

France has put constraints on labor migration from the EU-8. It has kept its existing system. Where permits are issued based on a certain number of criteria, including labor supply, salary and qualifications of the applicant. Migrants from the EU-8 have the same social insurance procedures for French citizens and can make family reunification. Different rules apply to the seasonal workers, students. Ireland opened its door to immigrants from the EU-8, puts constraints on receiving social benefits. This change in the legal status and the job market was made to ensure the same rights for all applicants for work as for those immigrants from the EU-8 that were settled in Ireland after 1 May 2004 and for those immigrants from the EU-8 who were before 1 May 2004, legally or illegally in Ireland [EIRO 2004] Migrants from the EU-8, and all other countries of the EU except the United Kingdom, don't benefit from social assistance to Ireland for the first two years of work. The situation was different in the United UK, for citizens of EU-8 did not require special certificate until they can be employed in Ireland. Italy has put constraints on labor migration from the EU-8.

This immigration quote was established to limit the number of immigrants from EU-8 to a maximum of 20,000 per year. The situation was different in the United UK, for citizens of EU-8 did not require special certificate until they can be employed in Ireland. Italy has put constraints on labor migration from the EU-8. This immigration quote was established to limit the number of immigrants from EU-8 to a maximum of 20,000 per year. Portugal puts constraints on labor migration from the EU-8. Immigrants are required to apply for a work permit, however, the annual number of work permits issued to foreign workers employment limited to 6,500 per year. Finland has put constraints on labor migration from the EU-8. Under normal circumstances, immigrants must apply for a work permit and can be employed without a work permit only if there are no workers available local labor. Sweden opened its door to employ immigrants from EU-8. Some measures were taken to allow for a greater control in construction projects, monitoring of self-employment and to allow unions to control that collective agreements are being observed in jobs where they are not representative.

THE MOVEMENT OF THE LABOR FORCE IN ALBANIA

The migration phenomenon is probably the most important political, social, and economic development in post-communist Albania, and has been a dominating fact of everyday life in the last decade. Many facts documented since 1990 around a fifth of the total population has left the country to live abroad. Also Albania has experienced of a big-scale migration from rural to urban areas. Migration from rural to urban or international in Italy or Greece, is the most common strategy of face living in the country, and it serves as an important valve to avoid unemployment and other economic difficulties resulting from the transition to market economy. Official

estimates of remittances are the biggest source of foreign exchange, greater than combined value of exports and foreign direct investment, constituting 14% of GDP [IMF 2002].

The rural areas of migration is seen as a potential solution of poverty problem in rural areas of Albania. Illegal migration is also a source of tension between Albania, the European Union and its neighbors. Migration from Remittances results, as a necessary ingredient in the recipe for development of Albania. Ultimately, improvements in Albanian economy, in rural areas in particular, will serve as a major factor in the stabilization of migration flows and reducing the Albanians trends to migrate. This positive fact for the movement of workforce serve as a support element for our country if he would join the Eurozone.

The past and current trends in the workforce movement

Albania has a long history of immigration extending back by centuries. The earliest movements were Albanian immigrants in Italy in the year 1448, the soldiers who were given to the king of Naples from military commander Skanderbeg, the Alliance of Albanian nobles and Albania's national hero.

The death of Skanderbeg in 1468 until the early years of the 16th century, nearly a quarter of the Albanian population left their homes as a result of the Ottoman conquest. Many of these arbereshes (Arberesh this term is used to determine the descendants of emigrants to the 15-16 century and the language they speak), who immigrated to Italy at several cities in the southern regions, where ethnic Albanian communities are still present today [Barjaba al 1992, Piperno 2002]. Throughout the 19th and 20th century have migrated a number of Albanians for political and economic reasons. This migration was mainly directed towards destinations of two countries, near and far, including Serbia, Romania, Bulgaria, Egypt, United States, Argentina and Australia. During the communist period (1944-1990) migration waves were stopped even in virtual manure. The emigration was officially forbidden and harshly punished. The latest wave of migration began in 1990 and is still developing. The initial spark was the fall of the communist regime. In this time, stopped controls on internal and external migration , and the breaking of centralized economy and planned to market economies issued a demographic change at an unprecedented pace, many individuals and families all started migrating to cities or they decided to leave the country. The initial political instability, social unrest and economic fall led to increase of Albanian migration in recent times, with about 300,000 individuals who leave the country from March, 1991- 1992, mainly at Greece and Italy [Piperno, 2002, Pastore , 1998. The stabilization of the political and economic situation after 1992 reduced migratory flows, which however remained significant. Inflation fell to less than 10 percent in 1995 from a high of 226 percent in 1992, unemployment fell from 28 percent to 12 percent, annual real GDP growth went from -7.2 percent about 9 percent from 1993 to 1996.

Remittances became a key component of the Albanian economy, with rapid private transfers and represents an increase of GDP over the period 1995-1999 in

terms of official shipments as part of GDP, Albania was the receiver of the sixth largest in the world. In terms of remittances per head, Albania ranks 14th [Gammeltoft 2002]. Demolition of national pyramid schemes at end of 1996 this caused another increase in international migration. Pyramid schemes had their origins in a poor credit system of formal and informal market fed at part large remittances. Over 2 million deposits were made at these schemes, which represent more than half of GDP in 1996, as people who have sold their homes, livestock and other assets in order to invest in the promise to get a return on 40 percent each months at investments. The fall began on Nov. 19, 1996, and took four months, causing unrest in which 2,000 people were killed. The country fell into anarchy, control of the military and police lost control. Tens thousands of Albanians left the country, starting from Vlora region where the first riots broke out, and then spread across the country in March 1997. Many of these immigrants were repatriated, and a multinational force led by Italy helped restore order to prevent a mass exodus [Pastore 1998]. Across the traumatic political and social impact of this crisis, the economic consequences were relatively short-lived. Inflation increased and GDP fell to 7 percent in 1997, from 1998 to 2002 the economy recovers.

The return of political stability and economic growth helped in stopping and stabilized the migratory flow. Official estimates count, at the end of 2001, Albanians constituted 10.5 percent (144,120) of 1,360,000 immigrants with a residence permit at Italy, making Albania the second source of migrants from a single country. Family reunion permits, estimated at 26 percent of all residence permits, and the Albanians were the largest group at this category. From the 232,816 permits issued in 2001, 27 949 (about 12 percent) continued to be Albanians. The number of Albanians at Greece appears to be much higher. Two large legalization programs at 1998 and 2001 led to a total of 720,000 applications, of which the Albanians represent about 60 percent, or 430,000.

Considering that 720,000 immigrants have applied for legal residential permission until in the end of 2001, 585,000 of them, had work permits, so combining estimates for the two countries, from 2001 the number of Albanians who live legally at Greece and Italy was about 570,000, or about one-fifth of present day.

Modern Albanian migration

In the transition period, since 1990, from the totalitarian regime to democracy, Albania has experienced a migratory trend with many turns and changes. However, at this summary we need to face some major problems that deserve special look: "brain drain", smuggling and human trafficking, remittances, return with desire of Albanian emigrants abroad, the movements legitimate and unauthorized for economic reasons. The data on Albanian migrants abroad cannot be found easily despite being continuously mentioned on news as one the Eastern European countries with the largest number of migrants [GIZ 2012]. The main reason for this is that most of this migration has been illegal and therefore not properly recorded. Until late 1990s, the data is either scarce or missing.

Table 1. Albanian migrants one the Eastern European countries

Italy	502,546
Greece	410,441
Germany	14,106
Belgium	4,932
Spain	1,910
Austria	1,840
Switzerland	1,196
Sweden	931
Netherlands	571
Luxembourg	539

Source: own elaboration

Of course this transition period brought the economic and social consequences. So, the population is decreasing, its natural growth at 2001 was 12 / 1,000 and fertility level of 18 / 1,000, compared with 19.6 / 1000 and 25.2 / 1,000 at 1990. The ratio of the total population lives in urban centers, 36% at 1991 to 49% at 2001. This marks a high level of internal migration in rural -urban centers. Barjaba [2013] estimates about 1.4 million Albanians to be international immigrants, compared to 2.8 million living in the country. He states that most of them live in Greece (600,000- 700,000), and Italy (480,000), with lower figures in US, Canada, and EU countries. The latest complete OECD [2013] data show that the largest number of Albanians in Europe lives in Italy, followed by Italy and Greece.

Labour mobility, can call a potential element for Albania, of moving towards the Eurozone

If real wages are rigid, the burden falls on employment asymmetric shocks. In this case, the opposite effects from asymmetric hits can be adjusted with high mobility, especially labor factor.

From the facts mentioned above and results that mobility of labor in Bangladesh is quite high, because of a large part of the population who live and work in EU countries. Since 1990, 500,000 to 600,000 Albanians have left the country and emigrated to developed countries, mainly in EU countries. This corresponds to more than 15% of the population as a whole, 26% of the working age population and 35% of the workforce.

Countries that Albanians have preferred to migrate, are mainly those that are geographically near Albania, specific economic regard, historical and cultural. Almost 80% of Albanian immigrants are placed in Greece and Italy, working in agriculture, construction, trade and the activities of firms. Others have chosen Germany, England, France, Belgium and some have migrated to the US and Canada. Most of them are already certified, which means they have easier to go at any time. Immigration has helped to mitigating the consequences of transition and declines at

real wages. It has also helped to moderate the pressure on active population and reducing the unemployment rate.

The economic impact of the movement is a big factor as money and income from seasonal work abroad form a large and sustained GDP Albania (nearly 15%). And they are nearly two times more than the amount of exports.

CONCLUSION

A perfect Labor market flexibility, means that after every change at economic environment, labor forces should be reorganized immediately to achieve an efficient use, that unemployment remains at the level of structural unemployment. A flexible and efficient market work, combined with the macroeconomic environment, sustainable means an economy that is really, more competitive and more productive.

Free movement of labor within the community should be one of tools with which the worker can ensure the possibility of improving living, working conditions and promoting his social advancement. Social policies in the EU are closely related with the labor movement inside the common market mobility of the labor market can provide an important mechanism of regulation within the European Monetary Union, where in the absence of monetary policy and exchange rate, mobility market work will be useful in promoting the ability of labor markets to regulate fluctuations in macroeconomic indicators and asymmetric shocks. Although the free movement of all EU member states is guaranteed by law, geographical mobility is still limited and can not act as an important adjustment mechanism. The degree of labor mobility in Europe appears to be too low to act as a mechanism to restore the balance of the labor market between European regions, in this way , based on arguments of different studies presented in this paper say that labor mobility is not an important regulatory mechanism of asymmetric shocks to the European economy. Migratory Movement phenomenon is probably the most important political, social, and economic development in Albania.

In the past 15 years, international permanent migration abroad, has been massive. The economic impact of the movement is a major factor as money and income from seasonal work abroad form a large and sustained GDP Albania (nearly 15%) and they are nearly twice as the amount of exports. Migration, Remittances by turns, result as a necessary ingredient in the recipe for development of Albania. This positive fact for the movement of workforce serves result as a support element for our country if will join the Eurozone.

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SOME REMARKS ON GENERALIZED REGRESSION METHODS

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Abstract: As a result of studying certain phenomena gained on the plane, the unit circle and on the earth sphere we present here some introductory notations and remarks, concerning the problems in question.

Keywords: circular regression, Hilbert space, regression function, regression structure

INTRODUCTION

Continuous development of science has brought certain possibility of use of the newest and more efficient methods and research tools. Among them, mathematical and statistical tools occupy an important position. They play a key role in the construction of models of quantitative description of economic phenomena and processes. These models can take different forms, but it is necessary to remember that properly constructed model of these phenomena or economic process should ensure the preservation of relationships and logical correctness of the structure between the original and the image generated by this model.[1] In practice, making research in various scientific fields, one usually uses mathematical models, essentially simplifying the reality, in question. From one side it leads to possibilities of applying tools of the well known theory of linear mathematics but, on the another side, there are necessity to simplify the obtained numerical data, substituting them by a regressed ones, in any sense.

In both the operations some necessary invariants shall be preserved. Hence, our research, gained on this way, is still sensible. If these simplifications are to far

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[1] Fałda B. (2010) Modelowanie dynamiczne procesów ekonomicznych, Wydawnictwo KUL, Lublin, p. 25.

reaching then the usual linear techniques becomes misleading, if not entirely meaningless.

Simplifying, for instance, one of the basic principles known in physics, which is giving rise to the wave equation, we substitute the general dependencies by a linear equation. As a result we are losing the most interesting physical phenomena like non-linear waves known, in the case of the water waves, as solitons or tsunami. Therefore, the linearization procedure, obtained by using the linear regression method, often leads to an information set, that we shall decide if it is satisfactory.

Generally, in the authors opinion, the mentioned linearization procedure has feature of the well working local method which is not giving rise to results of global character, if linearity are not assured. Another generalization approach is to describe the situation in a case when there is not possible to use probability methods. In such a case we propose to use the general regression idea, by the use of which one may introduce the probability structure. This is concerning the case when the observed phenomena occurs in the surface of the unit sphere, what will be under discussion hereafter.

INTRODUCTION TO GENERAL REGRESSION THEORY

The theory of regression gone a long way of its development, from a simple considerations about linear forms to technically advanced, multidimensional nonlinear models.

The analysis of the relationship between two or more variables, given in such a manner that one variable can be predicted or explained by using information on the others is called regression analysis.[2] In standard linear statistical model we consider the following situation:

Let $X := \{x_0, x_1, \ldots, x_n\}$ and $Y := \{y_0, y_1, \ldots, y_n\}$ be arbitrary given sequences of numbers. Then there exists a unique $f_0 \in \mathcal{F}$ (the space of linear functions) satisfying the following condition

$$\sum_{k=0}^{n}[f(x_k) - y_k]^2 \geq \sum_{k=0}^{n}[f_0(x_k) - y_k]^2 \text{ for any } f \in \mathcal{F}. \tag{1}$$

The function f_0 is of the form

$$f_0(t) = a_0 t + b_0 \text{ as } t \in \mathbb{R}, \tag{2}$$

where

$$a_0 := \frac{(n+1)\sum_{k=0}^{n} x_k y_k - \sum_{k=0}^{n} x_k \sum_{k=0}^{n} y_k}{(n+1)\sum_{k=0}^{n} x_n^2 - \left(\sum_{k=0}^{n} x_k\right)^2} \tag{3}$$

and

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[2] Freund R. J., Wilson W. W., Mohr D. L. (2010) Statistical methods, 3rd edition, Elsevier, p. 323.

$$b_0 := \frac{\sum_{k=0}^{n} y_k - a_0 \sum_{k=0}^{n} x_k}{n+1}.$$ (4)

The function f_0 is usually named the linear regression for a given empiric sequences X and Y. The function f_0 plays the role of optimal function with the smallest quadratic deviation from the mentioned above observations. In literature, cf. [Sen, Srivastava 1990, Seber, Wild 2003], one may find a number of its modifications, obtained by properly used diffeomorphic modifications and localization.

The generalization to the case, when instant of the space of the linear functions space $\mathcal{F}$, formed by linear functions, one uses an arbitrary, finite or infinite dimensional, Hilbert function space $\mathcal{H}$. An introduction and basic results are presented in [Partyka, Zając 2015]. The background for further considerations is a regression structure of the form

$$\mathfrak{R} := (A, B, \delta; x, y),$$ (5)

where:

1. A, B are given nonempty sets;
2. obtained by an experiment or observation the functions $x: \Omega_1 \to A$ and $y: \Omega_2 \to B$ for some nonempty sets Ω_1 and Ω_2;
3. $\delta: (\Omega_1 \to B) \times (\Omega_2 \to B) \to \overline{\mathbb{R}}$ is a matching measure of theoretical function to empirical data x and y.

Hence, one has given a theoretical functional model $\mathcal{F}$ of a considered structure $\mathfrak{R}$, such that $\mathcal{F} \subset (A \to B)$, where $A \to B$ denotes the class of all functions acting from A to B, where A and B are arbitrary sets[3]; usually subsets of $\overline{\mathbb{R}}$. Our purpose is to determine such functions $f_0 \in \mathcal{F}$, which satisfy the following condition of the best matching to the empirical data

$$F(f) := \delta(f \circ x, y) \geq F(f_0),$$ (6)

Here, instead of extremality condition (1) one considers much more general condition (6).

Generalization of the classic square deviation, calculated with respect to any measure $\mu: \mathcal{B} \to [0, +\infty)$, is defined by

$$\delta(u, v) = \int_{\Omega_1 \times \Omega_2} |u(t_1) - v(t_2)|^2 \, d\mu(t_1, t_2),$$ (7)

assuming that the family of subsets of the Cartesian product $\Omega_1 \times \Omega_2$ form a σ-field $\mathcal{B}$ and functions

$$\Omega_1 \times \Omega_2 \ni (t_1, t_2) \to u(t_1) \quad \text{and} \quad \Omega_1 \times \Omega_2 \ni (t_1, t_2) \to v(t_2)$$ (8)

are measurable. The set of all $f_0 \in \mathcal{F}$ satisfying inequality (6) is denoted by $\text{Reg}(\mathcal{F}, \mathfrak{R})$, whereas each of $f_0 \in \text{Reg}(\mathcal{F}, \mathfrak{R})$ is said to be the regression function in $\mathcal{F}$ with respect to $\mathfrak{R}$.

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[3] Partyka D., Zając J. (2015) Generalized approach to the problem of regression, Anal. Math. Phys., DOI 10.1007/s13324-014-0096-7, Anal. Math. Phys. (2015) 5, 251.

The usually used synchronous case one obtains by setting $t_1 = t_2 = t$ and $\mu(t_1, t_2) = \mu(t)$, which covers the case of the classical measure, used in linear regression theory.

In [Partyka, Zając 2015] one may find a precise mathematical description, leading to solution of the extremal problem (6) both in the case of finite as well as infinite dimensional Hilbert or pseudo Hilbert space. Moreover, it is showed there, that the solution, called generalized regression function, is constructed there as a linear combination of the basis vectors, same in the case of finite as infinite dimensional Hilbert space; see Theorem 4.3 and Theorem 5.1 in [Partyka, Zając 2015].

As a sort of special advantage of this theory we would like to point out that one has here freedom in choosing the basis vectors. By this we may properly adopt the space in question to the observed phenomena.

The regression problem for $\mathcal{F}$ with respect to $\mathfrak{R}$ is to determine all functions $f_0 \in \mathcal{F}$ minimizing the functional F and satisfying the following equality

$$F(f) = \int_{\Omega_1 \times \Omega_2} |f \circ x(t_1) - y(t_2)|^2 \, d\mu(t_1, t_2), \quad f \in \mathcal{F}, \tag{9}$$

which is the discrete case is leading to

$$F(f) = \sum_{k=0}^{n} |f \circ x(k) - y(k)|^2 = \sum_{k=0}^{n} |f(x_k) - y_k|^2, \quad f \in \mathcal{F}. \tag{10}$$

These forms are suggesting to consider the family $\mathcal{L}_1(\mathfrak{R})$ of all functions $f : A \to B$, such that $f \circ x(k)$ are measurable of finite L^2-norm.

In symmetry to this one may consider the family $\mathcal{L}_2(\mathfrak{R})$ of all functions $g : B \to B$ such that $g \circ y(t_2)$ is measurable of finite L^2-norm. Hence, the structure $\mathcal{H}(\mathfrak{R}) := (\mathcal{L}_2(\mathfrak{R}), +, \cdot, \langle \cdot \mid \cdot \rangle)$ is a Hilbert space, where $(\mathcal{L}_1(\mathfrak{R}), +, \cdot)$ is a complete linear space, where

$$\langle u \mid v \rangle := \int_{\Omega_1 \times \Omega_2} u \circ x(t_1) \overline{v \circ x(t_1)} \, d\mu(t_1, t_2) \tag{11}$$

is well defined scalar product.

To each $g \in \mathcal{L}_2(\mathfrak{R})$ we associate the functional

$$g^*(u) = \int_{\Omega_1 \times \Omega_2} u \circ x(t_1) \overline{g \circ y(t_2)} \, d\mu(t_1, t_2) \tag{12}$$

well defined for all $u \in \mathcal{L}_1(\mathfrak{R})$.

Within this notations we may present[4] the solution of the regression problem which, taking into account the ortogonal decomposition procedure, reeds as

Theorem: Given $p \in \mathbb{N} \cup \{\infty\}$ let $h_k \in \mathcal{L}_1(\mathfrak{R}) \backslash \{\Theta\}$ be an orthogonal sequence in the $\mathcal{H}(\mathfrak{R})$ and $g \in \mathcal{L}_2(\mathfrak{R})$. If $p \in \mathbb{N}$, then

$$\text{Reg}(\mathcal{F}, \mathfrak{R}_g) = (\Theta \cap \mathcal{F}) + \sum_{k=1}^{p} \frac{\overline{g^*(h_k)}}{\|h_k\|^2} h_k, \tag{13}$$

[4] Partyka D., Zając J. (2015) Generalized approach to the problem of regression, Anal. Math. Phys., DOI 10.1007/s13324-014-0096-7, Anal.Math.Phys. (2015) 5, p. 258.

where $\mathcal{F} := \lin(\{h_k : k \in \mathbb{Z}_{1,p}\})$ and Θ is the set of functions in $\mathcal{L}_1(\mathfrak{R})$ with zero norm. If $p = \infty$, then

$$\mathrm{Reg}(\mathrm{cl}(\mathcal{F}), \mathfrak{R}_g) = \Theta + \sum_{k=1}^{\infty} \frac{\overline{g^*(h_k)}}{\|h_k\|^2} h_k. \tag{14}$$

Here $\mathfrak{R}_g := (A, B; \delta, x, g \circ y)$ is a regression structure for each $g : B \to B$, which is properly described balancing function.[5]

By this each $f \in \mathrm{Reg}(\mathcal{F}, \mathfrak{R})$ is of the form

$$f = \sum_{k=1}^{p} \lambda_k h_k \tag{15}$$

for a sequence $\{\lambda_k\}$, such that $\lambda_k \in \mathcal{B}$, as $k = 1, 2, \ldots, p$.

The coefficient λ_k is of the form

$$\lambda_k = \frac{\overline{g^*(h_k)}}{\|h_k\|^2}, \quad k = 1, 2, \ldots, p. \tag{16}$$

To present a connection between the classical regression function and the generalized one, let us see the example, given in [Partyka, Zając 2015]. To this let the real regression structure $\mathfrak{R}$ be given with $g \in \mathcal{L}_2(\mathfrak{R})$, where $\mathcal{F} := \lin(\{h_1, h_2\})$ as $h_1, h_2 \in \mathcal{L}_1(\mathfrak{R})$ such that $\mathcal{F} \cap \Theta = \{\theta\}$.

Then

$$\mathrm{Reg}(\mathcal{F}, \mathfrak{R}) = (\Theta \cap \mathcal{F}) + \sum_{k=1}^{2} \frac{\overline{g^*(h_k')}}{\|h_k'\|^2} h_k', \tag{17}$$

where $h_1' = h_1$ and $h_2' := h_2 - \frac{\langle h_2 | h_1 \rangle}{\|h_1\|^2} h_1$.

Denoting

$$a_2 := \frac{\overline{g^*(h_2')}}{\|h_2'\|} \tag{18}$$

and

$$a_1 := \frac{\overline{g^*(h_1')}}{\|h_1'\|^2} - \frac{\langle h_2 | h_1 \rangle}{\|h_1\|} h_1 \tag{19}$$

we obtain

$$\mathrm{Reg}(\mathcal{F}, \mathfrak{R}) = (\Theta \cap \mathcal{F}) + a_2 h_1 + a_1 h_1. \tag{20}$$

If, in particular, $h_2(t) = t$, $h_1(t) = 1$ and $g(t) = t$, $t \in \mathbb{R}$, we obtain the classical linear regression function.[6]

For some additional, theoretical and practical, examples of the general regression theory see [Fałda, Zając 2011, Fałda, Zając 2012, Partyka, Zając 2015, Partyka, Zając 2010 and Zając 2010].

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[5] Partyka D., Zając J. (2015) Generalized approach to the problem of regression, Anal. Math. Phys., DOI 10.1007/s13324-014-0096-7, Anal. Math. Phys. (2015) 5, 283.

[6] Partyka D., Zając J. (2015) Generalized approach to the problem of regression, Anal. Math. Phys., DOI 10.1007/s13324-014-0096-7, Anal. Math. Phys. (2015) 5, 294-299.

The generalized regression theory allows us to construct, in pretty easy way, nonlinear regression functions, with a very good matching with the phenomena described by them.

THE CASE OF THE UNIT CIRCLE

Many phenomena observed in biology, geography, medicine and economy barely submits to the description using the linear coordinate system, also called as the rectangular coordinate system. This great idea of geometrization of mathematics, introduced in the seventeenth century by Deskartes, approached difficult mathematical concepts and increased possibilities of their use. In this way he found a strict method of consideration of many scientific issues of a local nature, where straight line, plane or n-dimensional space with a system of rectangular coordinates are excellent centers of modelling. For the study of phenomena of a global nature, this idea applies with difficulty, leading to discrepancies with the data observed. However, it remains very useful in linear modelling, where the space is replaced with the tangent one. Global information can be obtained then by "gluing" local information.

While it is easy to find examples of the global character phenomena in biology, geography or medicine, the globalization of economic processes has intensified only in the last period of time; financial markets and capital, international logistics and demographic issues. This means that we have to take into account the geometric shape of the object on which these phenomena are observed. A lot of phenomena, occurring on the plane, we can much more easily describe using polar coordinates rather than the rectangular ones. These include demographic issues, urban development and transport, in which we consider transport real distance and its direction. This leads to a model with the plane of the polar coordinate system. In the case of financial and demographic phenomena their natural activity area is situated on the sphere, modelling the earth's surface, with a spherical coordinate system.

The first scientific publications on issues of statistics of random variables with values taken on the circle appeared in the 70s in connection with research in biology, geography and medicine. Economic development and related economic problems provides more reasons to apply the relevant descriptions and appropriate mathematical tools. This means that the problems of regression we need to replace eg. a straight line onto circle, and polynomial regression onto trigonometrical regression, etc.; [Fisher 1995].

The classical approach to the regression problem, when the probability space is constructed on a circle, can be found in [Jammalamadaka, Sengupta 2001 and Marida 1972]. But here, we try to adopt our approach, presented in the previous section to the case, when $\mathcal{B} = \mathbb{T}_r$. To this end let

$$\mathbb{T}_r := \{(x, y) : x^2 + y^2 = r^2\} \tag{21}$$

or, equivalently, is defined by polar coordinates (r, φ), in the form $x = r \cos \varphi$, $y = r \sin \varphi$, where $r > 0$ and $0 \leq \varphi < 2\pi$. For $r = 1$ we have $(1, \varphi) \leftrightarrow (\cos \varphi, \sin \varphi)$, which is the unit circle $\mathbb{T} := \mathbb{T}_1$.

For given $\alpha, \beta \in [0; 2\pi)$ we describe two measures:

$$d_0(\alpha, \beta) := \pi - (\pi - |\alpha - \beta|) \in [0, \pi] \tag{22}$$

and

$$d_1(\alpha, \beta) := 1 - \cos(\alpha - \beta) \in [0, 2). \tag{23}$$

Let us consider the regression structure $\Re := (A, \mathbb{T}; \delta, x, y)$, where $x: \Omega_1 \to A$, $y: \Omega_2 \to \mathbb{T}$. Here $\Omega_1 \neq \emptyset$ and $\Omega_2 \neq \emptyset$ are given. The function $\delta: (\Omega_1 \to \mathbb{T}) \times (\Omega_2 \to \mathbb{T}) \to \overline{\mathbb{R}}$ is given, for $u: (\Omega_1 \to \mathbb{T})$ and $v: (\Omega_2 \to \mathbb{T})$, by the formula

$$\delta(u, v) = \int_{\Omega_1 \times \Omega_2} |u(t_1) - v(t_2)|^2 d\mu(t_1, t_2) \tag{24}$$

if the function $u(t_1) - u(t_2)$ is $\mathcal{B}$-measurable and $\delta(u, v) := +\infty$ in other case.

To a given theoretic model $\mathcal{F} \subset (A \to \mathbb{T})$ of the structure $\Re$ we are going to find $\mathrm{Reg}(\mathcal{F}, \Re)$ consisting all functions $f_0 \in \mathcal{F}$ such that $F(f) \geq F(f_0)$ for each $f_0 \in \mathcal{F}$, where $\mathcal{F} \ni f \to F(f) := \delta(f \circ x, y) \in \overline{\mathbb{R}}$.

Then

$$F(f) = \int_{\Omega_1 \times \Omega_2} |f(x(t_1)) - y(t_2)|^2 d\mu(t_1, t_2) \text{ as } f \in \mathcal{F} \tag{25}$$

and

$$\int_{\Omega_1 \times \Omega_2} |f \circ x(t_1) - y(t_2)|^2 d\mu(t_1, t_2) \geq \int_{\Omega_1 \times \Omega_2} |f_0 \circ x(t_1) - y(t_2)|^2 d\mu(t_1, t_2) \tag{26}$$

Since $|f \circ x(t_1)|^2 = 1$ and $|y(t_2)|^2 = 1$ then

$$\int_{\Omega_1 \times \Omega_2} \mathrm{Re}[f \circ x(t_1)\overline{y(t_2)}] d\mu(t_1, t_2) \leq \int_{\Omega_1 \times \Omega_2} \mathrm{Re}[f_0 \circ x(t_1)\overline{y(t_2)}] d\mu(t_1, t_2). \tag{27}$$

Then

$$\int_{\Omega_1 \times \Omega_2} \mathrm{Re}[(f - f_0)(x(t_1)\overline{y(t_2)})] d\mu(t_1, t_2) \leq 0. \tag{28}$$

By this we see that

$$f_0 \in \mathrm{Reg}(\mathcal{F}, \Re) \Leftrightarrow y^*(f - f_0) \leq 0, \quad f \in \mathcal{F}, \tag{29}$$

where

$$y^*(u) := \int_{\Omega_1 \times \Omega_2} \mathrm{Re}[u \circ x(t_1)\overline{y(t_2)}] d\mu(t_1, t_2) \tag{30}$$

for arbitrary $u: A \to \mathbb{R}$ and $y: \Omega_2 \to \mathbb{R}$ such that the integral in question exists.

Using this notations we may show that $f_0 = \frac{y}{|y|}\mathbf{1}_{\mathbb{T}}$ or $f_0 = -\frac{y}{|y|}\mathbf{1}_{\mathbb{T}}$, where $y := \int_{\Omega_1 \times \Omega_2} y(t_2) d\mu(t_1, t_2)$ and $\mathbf{1}_{\mathbb{T}}$ denotes a constant on $\mathbb{T}$. By this

$$\mathrm{Reg}(\mathcal{F}, \Re) = \left\{\frac{y}{|y|}\mathbf{1}_{\mathbb{T}}\right\} = \frac{EY}{|EY|} \tag{31}$$

provided $EY \neq 0$ is an expected value on $\mathbb{T}$.[7]

THE UNIT SPHERE CASE

Our propose in this section is to present a sort of introduction to the case when, instead of $\mathbb{T}$ we consider the unit sphere

$$\mathbb{S}^2 := \{(x, y, z): x^2 + y^2 + z^2 = 1\}. \tag{32}$$

Using the polar coordinates $(1, \alpha, \beta)$, where $0 \leq \alpha < \pi$ and $0 \leq \beta < 2\pi$, we can see that

$$\begin{aligned} x &= \cos\alpha\cos\beta, \\ y &= \sin\alpha\cos\beta, \\ z &= \sin\beta. \end{aligned} \tag{33}$$

The distance between two points $P_1, P_2 \in \mathbb{S}$ is defined as the length of the shorter arc, distinguished on the unit circle on $\mathbb{S}^2$ centered at the origin and passing through the points P_1, P_2.

Similarly to the previous section we may apply here the generalized regression technique, which seems to be not so sensitive on the form of domain, where the functions x and y are described by (5). To this end we can distinguish the family $\text{Reg}(\mathcal{F}, \mathfrak{R})$, where

$$\mathcal{F} := \left\{ e^{i[\alpha,\beta]} \mathbf{1}_{\mathbb{S}} : 0 \leq \alpha < \pi, \ 0 \leq \beta < 2\pi \right\} \tag{34}$$

and

$$\mathfrak{R} = (A, \mathbb{S}, \delta; x, y), \ x: \Omega_1 \to \Omega_2, \ y: \Omega_2 \to \mathbb{S}. \tag{35}$$

Here Ω_1, Ω_2 are given.

The symbol $[\alpha, \beta]$ denotes fixed polar coefficients of a point on $\mathbb{S}$, described by (33), where α and β are fixed. The class $\mathcal{F}$ is a family of all constant functions on $\mathbb{S}$. Obviously,

$$A \ni t \to \mathbf{1}_A(t) := 1 \tag{36}$$

for arbitrary $A \neq \emptyset$.

Within this notations one searches a function $f_0 = e^{i[\alpha_0,\beta_0]} \mathbf{1}_{\mathbb{S}}$, were $\alpha_0, \beta_0 \in \mathbb{R}$ and satisfy (6).

CONCLUSIONS

The particular motivation, leading to this kind of extremal mathematical problem, defined on the unit sphere, is strongly suggested by global transportation problems on the earth sphere. Important, from the mathematical point of view, is

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[7] Jammalamadaka S. R., Sengupta A. (2001) Topics in Circular Statistics, World Scientific, River Edge, New York, p. 16.

the remark saying that the method, used here, can be applied to much general cases, including arbitrary Riemann surface, instead of the unit sphere $\mathbb{S}$.

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VALUE RELEVANCE OF COMPANIES' FINANCIAL STATEMENTS IN POLAND

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Abstract: Paper presents three attempts to model the relationship between financial reports of the companies listed on the Warsaw Stock Exchange and their market valuation. Main sections of the paper include: (1) overview of the contemporary issues in the "value relevance" studies with reference to the methodology of financial microeconometrics, (2) outcome of the research by M. Kubik-Kwiatkowska on value relevance of annual and quarterly reports, (3) results of the attempts by R. Bilicz on the association between E/P ratio and quarterly accounting data, (4) findings by A. Pernach on the relationship between ROIC or revenue and the market value. All results show that various connections between financials and valuation exist, depending on the approach.

Keywords: value relevance of accounting statements, financial microeconometrics, comparative valuation

INTRODUCTION: RESEARCH ON VALUE RELEVANCE

This paper reports new findings related to the value relevance of financials on valuation of companies listed on Warsaw Stock Exchange. Research methodology might be attributed to microeconometrics. Since we are in the field of finance it is convenient to use the term *financial microeconometrics* indicating the broad subject area of investigations in finance based on microdata.

With our topic we are obviously the part of fundamental analysis. Typical regression models for comparative valuation relate price or returns ratios ("multiples") to a selection of fundamental variables rooted in companies' financials [Damodaran 2012]. Seminal models of Fama and French [1993, 2015] also concentrate on finding associations between returns and the companies' financials. In empirical corporate finance and applied accounting such exercise is sometimes termed as the *value relevance of accounting numbers, of financial statements, of earnings, of book values* etc.

Valuation models use companies' financials in addition to market variables for explaining the price/ return multiples. The value relevance models are targeted "only" at examining the association between the company's market performance and the results disclosed in financial statements. Francis and Schipper [1999] distinguish between four various interpretations of value relevance (VR) with one of them being common to most studies i.e. saying that VR means association/ correlation between accounting information and stock returns/ prices.

The modern research on value relevance dates back to the nineties. Collins, Maydew and Weiss [1997] in their survey have shown that historically the earnings and book values keep being value-relevant over the forty years of reported research. However, there is a shift of value-relevance from earnings to book values which can be explained e.g. by increasing frequency of negative earnings and changes in average firm size. More recent survey presented by Beisland [2009] comments on more than 160 papers on the topic, most of them from the preceding two decades. He distinguishes the following research streams on value relevance: (1) VR of earnings and other flow measures, (2) VR of equity and other stock measures, (3) VR over time and (4) VR of alternative accounting methods.

In current decade numerous papers reporting the value relevance research results worldwide can be found. A sample from recent years might include articles by:

- Clacher, Duboisée de Ricquebourg and Hodgson [2013] on VR of direct cash flow components since the adoption of IFRS in Australia,
- Elshandidy [2014] on VR value relevance of accounting information from 1999 to 2012 in different segments of the Chinese stock market,
- Alali and Foote [2012] on VR of accounting information under IFRS in Abu Dhabi Stock Exchange,
- Mulenga [2015] on VR of bank financials in the Bombay Stock Exchange,

- Sharif, Purohit and Pillai [2015] on VR of accounting ratios in Bahrain Stock Exchange,

and many other papers.

Vast literature on VR directly applies or expands the basic models like that of Ohlson [1995] where share price is linearly related to earnings per share and book-value per share. Also, frequently applied is the approach by Easton and Harris [1991], where stock return is related to the earnings level and the earnings change over previous period.

In addition, more and more reports tackle new questions arising in VR research, both concerning the scope of analyses as well as methodological issues. The latter is e.g. discussed in the paper on econometric methodology in VR research by Onali and Ginesti [2015] who argue that including the lag of stock price as an explanatory variable in estimating price level regressions significantly improves model's performance.

VALUE RELEVANCE RESEARCH IN POLAND

A few reports on value relevance of accounting statements for Polish companies are available. Early results are reflected in the paper by Dobija and Klimczak [2010] who investigate companies listed on Warsaw Stock Exchange from 1994 to 2008. Paper reports evidence of the relevance of earnings, although the association does not improve over time. In particular, the new accounting regulation of 2000 as well as adoption of IFRS in Poland in 2005 do not strengthen this association. Methodologically, authors use the approach by Easton and Harris [1991].

In his book Klimczak [2014] investigates also VR questions for a sample of companies in Poland as well as in France and Germany for the period of 2005-2011. General conclusion resulted from the estimation of number of models states that on all three markets the companies' financials are relevant for their market valuation. However, the results are ambiguous regarding bilateral comparisons between the markets.

In Kubik-Kwiatkowska [2012] a version of her research results on value relevance of financial reports on valuation of companies listed on Warsaw Stock Exchange has been published. This research, described in her dissertation [Kubik-Kwiatkowska 2013] is presented also below.

In what follows there are three research projects presented: master thesis by Bilicz [2015], doctoral dissertation by Kubik-Kwiatkowska [2013], and bachelor thesis by Pernach [2015], all with Gruszczynski as the supervisor [*promoter*).

NEW RESULTS FOR POLAND: RESEARCH OF BILICZ [2015]

The study by Bilicz [2015] is focused on verifying whether selected financial variables are associated with E/P ratio. Data were extracted from quarterly financial statements of companies listed on the Warsaw Stock Exchange.

As for the time frame: first quarterly reports used in this research are the ones from the first quarter of 2005 and it was due to the fact that on May 1, 2004 Poland joined the European Union. The integration process triggered adjustments in Polish law and regulations so that the system would be concise with the one used by EU. The last data are from the fourth quarter of 2013. The entire period 2005-2013 is split into three subperiods with supposedly different determinants that may influence the dependent variable. From the beginning of 2005 till mid 2007 the prices on the Polish stock exchange were rapidly rising (*boom* phase). This was followed by a crush of the economy which eventually ended in the first quarter of 2009 (*downturn* phase). Finally from 2009 to 2013 the marked did not recover as the ones in USA or in Western Europe (*stagnation* phase).

As for the sample: some companies listed on the Warsaw Stock Exchange can become a target for speculators mainly due to their low liquidity. Therefore, only firms that in 2005 were included in one of the three indices WIG20, WIG40 or WIG80 are taken into consideration. Moreover, the companies belonging to financial sector are excluded. Also excluded are the firms that were removed from stock exchange or went bankrupt within the entire time frame. Final data set contains 80 firms.

Following the work of Huang, Tsai and Chen [2007] the price earnings (P/E) ratio was initially selected as the dependent variable. However, this idea was finally abandoned. There are two main drawbacks when considering this indicator. Firstly, under special circumstances, it can have negative values. The P/E ratio can also be very unstable especially when earnings for a specific period are close to zero. The most popular solution is to exclude all such observations. However, this could lead to a potential bias and, moreover, to an unbalanced panel. Another solution, suggested by Damodaran [2001], is to use the inverse P/E ratio which can be interpreted even if the values are negative. This approach was implemented and finally the dependent variable is set as the *trailing* P/E ratio and then inversed, resulting in what can be named *earnings yield* (E/P).

In total, there are eight different independent variables used in the study: return on equity, return on sales, book value, debt ratio, cash flow index, size of a company (capitalization), 10-year Poland bond yield and finally dividend ratio.

Four different econometric methods are applied: pooled regression, fixed effects estimator, random effects estimator and the Blundell-Bond estimator [1]. For pooled regression the results of Breusch-Pagan test and Wald test reveal that

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[1] For the application of panel models in corporate finance see Flannery and Hankins [2013].

individual specific effects are statistically significant, therefore pooled regression is not advocated. The choice between fixed and random effects estimators for a specific phase was supported by the Hausman test. Null hypothesis in the test was rejected only for the *stagnation* phase and this was a strong argument to use random effects estimator for the first two phases and the fixed effect estimator for the last. For the dynamic version the Blundell-Bond estimator is applied with two lags of the dependent variable. Using the lags can be justified by the work of Campbell and Shiller [1988].

The main aim of the study was to verify whether there are different sets of variables associated with the E/P ratio in different market phase. Several other hypotheses were also verified. One of them is that more advanced econometric methods can provide better results and should be considered in financial studies. After considering the series of tests and also examining the set of statistically significant variables we conclude that panel models provided better results than the standard pooled OLS regression.

It was also hypothesized that in *boom* and *downturn* phases the fundamental variables are not the best suited to describe the situation on the market. This is due to presumption that herd behavior and other psychological aspects may impact prices during *boom* and *downturn*. To confirm this hypothesis it was assumed that both lags of dependent variable in Blundell-Bond method should be statistically significant and with positive estimate of the coefficient. Also the number of other relevant fundamental variables, in *boom* and *downturn*, should be relatively small comparing with the *stagnation* phase.

Not a single fundamental variable turned out to be significant through all the phases. Moreover, the set of statistically significant variables varied depending on the market stage. This finding can support the idea of splitting the whole time frame into subperiods. For the *boom* phase one lag of the dependent variable, bond yield, dividend ratio, debt ratio, cash flow and also book value were statistically significant. For the second phase, *downturn*, only the lags, book value and size were significant and finally for *stagnation*: both lags, the second was negatively correlated with E/P, ROE, bond yield, dividend ratio and finally the size of the company were relevant.

The hypothesis of psychological aspects of investing as crucial for *boom* and *downturn* phases was only partially confirmed by the data. For the *downturn* stage emotions can be an important factor for deciding on the investment strategy. This statement can be supported by a relatively small number of statistically significant variables and also by the fact that both lags of dependent variable were positively correlated with E/P. For the *boom* phase it was possible to point out more fundamental determinants and also only the first lag was statistically significant.

Comparing our results with the outcomes of popular financial models such as Fed, Fama-French three-factor model or Gordon model it can be stated that only for the first one the strong empirical evidence was found in collected data. Bond yield has a positive impact on the dependent variable in both *boom* and *stagnation*

and when considering the *downturn* it can be said that for this phase statistical significance was not expected. For the second stage using the Fama-French three-factor model may be a proper way to describe the associations between price of a stock and financial variables but to support this thesis more detailed tests for this given period are required. Nevertheless when considering the market as a whole it may be easier to assume that prices and the returns on stock are best described by the Arbitrage Pricing Theory.

NEW RESULTS FOR POLAND: RESEARCH OF KUBIK-KWIATKOWSKA [2013]

The study by Kubik-Kwiatkowska [2013] aims to empirically investigate the value relevance of financial reports of companies listed on the Warsaw Stock Exchange. The source of financial data of companies listed on the Warsaw Stock Exchange SA is Notoria Service SA – collected until June 2011. Financial institutions are not included in this analysis as they are subject to a different reporting format. The base consists of consolidated and audited annual reports of 440 listed companies in the years from 2000 to 2010 (11 years). Additionally, the analysis of quarterly reports is based on unaudited financial reporting of 364 firms from Q1 2001 till Q2 2011 (42 quarters). Despite this limitation, the database has a large amount of missing data in each of the 204 categories in the financial reports, because companies often did not publish the full reports. The database contained the following reports: balance sheet, income statement and cash flow.

The samples were randomly divided into two sets: companies to build the model (training samples) and companies (holdout samples), whose data were used to validate the models. Financial reports were used to build the model for the years 2000-2006 and from Q1 2001 till Q3 2009 (training periods), while the holdout periods covered the reports from 2007 to 2010 and from Q4 2009 till Q2 2011.

The dependent variable in all models is the measure of company market valuation which is defined as market capitalization divided by total assets. For some models the variable is scaled by market adjustment, i.e. the denominator is multiplied by the WIG index (Warsaw Stock Exchange index). All items included in companies' financial statements are taken to configure the set of explanatory variables. The principal component analysis applied to these items results in a number of components representing specific financial subjects of companies' statements. These components are considered as explanatory variables, along with some additional categories such as employment level etc.

Models were estimated on the training samples and the training periods. The starting point for the initial selection of independent variables was to check their individual correlations with the dependent variable and to take into account only those variables for which those correlations were statistically significant. Then, a

backward selection was applied for each of the models. Models were estimated mostly by means of a random effects panel regression.

The results support the main hypothesis that there is a significant relationship between the measure of company value and information from financial reports. Although detailed lists of significant explanatory variables are different for a variety of examined models, there are a few factors which are common for all of them. For models based on both annual and quarterly financial statements, a positive relationship has been shown between the company valuation variable and the accounting information such as equity, profit (net profit) and income tax.

Thus, the factors representing typical Ohlson model like profit and equity have significant association with a measure of the value of companies listed on the Warsaw Stock Exchange. This has been expected after earlier findings by Dobija and Klimczak [2010]. Additional factor related to market value like income tax has proven significant in all types of models examined in the study.

Overall, taking into account variety of empirical models it can be summarised that the following four factors are relevant for company valuation: profit, equity, tax and company size (measured as logarithm on asset values). The additional models have also proven that a factor called "industry" has a relationship with value of companies.

Taking into account models based on annual financial reports, it has occurred that the best type of model was the one where dependent variable was a scaled value of a company with a correction for market sentiment (WIG index). This shows that relationship between information from firms' financial statements and the share prices of these companies improve when market sentiment measured by a stock exchange index is taken into account.

The study confirms that annual reports containing audited financial statements explain the observed share prices significantly better than unaudited quarterly reports. However, this conclusion should not be considered as final as the analysed models relied solely on historical financial statements, employment data and industry factors. Therefore, they did not take into account nonfinancial information and forecasts of the company and sector growth.

Despite the above reservations, it can be concluded that the value relevance research continues to be a source of knowledge about the usefulness of companies' financial reporting and the valuation of companies on the stock exchange. An important result is to show value relevance of two new financial factors: income tax and the size of the company. These factors are rarely considered in the valuation models and value relevance models.

NEW RESULTS FOR POLAND: RESEARCH OF PERNACH [2015]

The study by Pernach [2015] focuses on the quantitative analysis of the link between return on invested capital (ROIC), revenues and the market value reported by companies listed on Warsaw Stock Exchange Index (WIG). The main focus of

the inquiry is placed on the differences in this association across industry areas what is reflected in the main hypothesis claiming that the relation of both revenue and ROIC of a company to its valuation differs depending on the industry sector.

The merits underlying the research portray ROIC and revenues as main sources of value for companies, an idea presented by Goedhart, Koller and Wessels [2010]. Revenue of a company reflects scope of its activity combined with the value of products or services it delivers. On the other hand the efficiency of the company operations is grasped by the ROIC indicator. Somehow vague concept of the value of a company is interpreted as the value for its shareholders and also the company's valuation on the stock market. Therefore, we assume that the assessment of the company's value is in fact the answer to questions regarding its ability to be highly compensated for its products and services as well as its capacity to use its resources efficiently.

Empirical models supporting the hypothesis are based on publicly available financial statements of 301 companies listed on Warsaw Stock Exchange Index for 2014. These are annual consolidated financial statements for 2013 published by money.pl and bankier.pl. The initial number of almost 380 entities was reduced mainly due to the difficulties in acquiring reliable data. The ROIC is calculated as the ratio of operating income adjusted for the tax to book value of invested capital (i.e. equity plus long-term debt). The market value of each company was computed as the yearly average of their capitalization at the end of all trading sessions.

There are two relationships verified in this analysis. Firstly, we examine the relation between natural logarithm of the company's average yearly market capitalization as a dependent variable and natural logarithm of the company's revenue. Basic model included 32 explanatory variables. This was reduced to 15 by merging dummies for similar sectors (industries). The results indicate that revenues are positively related to market values. The marginal effect of revenue on company's valuation is highest for energy, services, construction and financial sectors. Alternatively, retail and wholesale trade turned out to have relatively low but almost constant marginal effect in valuation driven by revenues.

Next, the association between natural logarithm of the company's average yearly market capitalization as a dependent variable and its ROIC is examined. These models have much weaker fit then the models with revenue. Also, not for all sectors ROIC values turn out to be positively related to market values. Even though, the differences between the relationship of ROIC and the valuation of companies across industries are obvious.

Overall the study contributes to the value relevance issues in the empirical research by examining a fundamental question about the sources of companies' value. It successfully proves the link between revenues, ROIC and market capitalization as well as the variation of this relation between sectors and therefore illustrates the relevance of financial data for the value. The relevance of ROIC appears to be weaker than this of revenues.

CONCLUSION

This paper presents three new studies in the stream of value relevance research for the companies listed on Warsaw Stock Exchange. Despite the fact that they differ significantly in the scope, approach and econometric methodology, the outcomes are similar: there exists a significant association between the market valuation of companies and the information from their accounting/ financial reports. However, depending on the approach and data base the association seems to be either vague or not significantly strong. Some of our models (like those by [Kubik-Kwiatkowska 2013]) have demonstrated this association very convincingly over time and sample.

Paper's contribution lies in: (a) presenting new attempts in analysing value relevance of financial results for companies in Poland, (b) showing novel methodological approaches for financial microeconometrics, like the use of principal components representing companies' financials or "discovering" the validity of E/P ratio in value relevance research, (c) offering alternative ideas for selection of sample and subsamples of companies as well as for choosing explanatory variables for market valuation models.

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CHARACTERISTICS OF THE LABOR MARKET, EMPLOYMENT POLICIES IN KOSOVO AND EUROPEAN UNION IN THE YEAR 2014

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Abstract: The aim of this paper is presenting the situation of the labor market in the European Union after the crisis in 2008 and the comparison of the labor market situation in Kosovo in 2014. In the light of modern economic crisis, it is worth to analyze the development of the situation on the labor markets in the EU and in selected countries of the world since 2008. This allows to examine changes in the level of employment under the influence of both the dynamics of the recession and the antirecession policies used. The level of unemployment is closely linked to the dynamics of GDP. Recorded in the EU and in other countries of the world, increase of the unemployment rate from 2008 confirms the strong interdependence f these indicators. To sum up the situation on the European labor market, it is worth noting that the progressive process of increasing the flexibility of the labor market favors the competitiveness of the economies of the European Union. This does not mean, however, that as a result of the changes observed do not appear negative effects (e.g. Spain). It therefore appears necessary to further reduce barriers to movement of labor and services within the European Union and the use clearly positive experiences of labor market reforms.

Keywords: labor market, employment policies, Kosovo

INTRODUCTION

The level of economic development of Kosovo is reflected in a delay of many economic parameters in place which results even in the strangulation of the labor market as the biggest challenge in Kosovo. Would not mind that the most worrying aspect of the labor market in Kosovo is the high unemployment rate which reflects with the numerous problems in Kosovo society. The labor market

in Kosovo during the period 2002 to 2014 was consistently followed by a different set of anomalies which have led to the raising concerns of the Kosovo population which are reflected not only by the unemployed, but also the active part of the population which in the absence of functioning of the collective contract, failure of unions, low average wage and a series of violations of workers' rights more and more is undergoing development gap in the labor market. Kosovo is the most highest rate of unemployment in the region which is around 40%. And when we consider the composition of contingent labor, such as very young population which annually makes contingent labor increases in parallel with this also increases the rate of demand for labor and immigration as the feature itself , then the approach should become much more serious.

The first part is an analysis of the overall labor market in the EU and the steps being taken by some euro area countries.The next section provided an overview of the Kosovo labor market and some of the problems that has this market, based on studies of Kosovo and international institutions.

Employment policies of European Union in the year 2014

The collapse of economic growth in European Union strongly reflected in rising of unemployment. According to estimates of the International Monetary Fund, the global economic crisis has led to the elimination of 30 million jobs and the needs in the coming years are estimated at 40 million new jobs [Strauss-Kahn 2011]. While in the period from 1998 to 2008 followed by a slow reduction of the size of unemployment in the European Union, accompanied by a systematic increase in the Gross Domestic Product, that with the advent of economic recession directly occurred increase in unemployment (e.g. Greece and Spain).

The developments of the size of unemployment determined, of course, not only the economic situation. Currently, among the most important determinants of the unemployment lists the rules and the degree of regulation of the functioning of the labor market. However, we can formulate a thesis that these and other factors of a regulatory nature in times of crisis, lose their importance, giving way to the effects of stimulus policies implemented by individual governments.

The largest increase in unemployment was recorded in the Baltic countries as well as Ireland, Greece and Cyprus, where the rate increased more than 3-fold, and even in the case of Lithuania 5 times. You will notice that such dynamic increases in unemploymentwas accompanied by the highest rates of economic recession. The economies of thesecountries decreased by almost 20% and in Latvia by more than 20%.

An exception in this is Ireland, where the recession did not exceed even 10%, and theunemployment tripled.It is worth noting that since the beginning of the crisis in the European Union the total unemployment rate almost systematically increased. In 2013, its size reached the level of more than half higher than in 2007.

A very interesting example is Spain, where the unemployment rate reached at the EU-higher level of 26.2%, while relatively not high scale recession. In this case, you can conclude that the policy of reducing unemployment used during the reign of J. Aznar, based on labor market reforms Flexibilisers offset the Spanish labor market only during favorable economic conditions. The successes achieved in the fight against unemployment were mainly based on the implementation of flexible employment model using e.g. Short-term contracts of employment. Created in this way, unstable labor market, the largest in the EU involving the so-called low-paid. "Junk contracts", ie those which their holders do not provide any security guarantees and fixed-tem. Unfortunately, given the problems with limited public debt, which has risen sharply in Spain, just like in other countries, it is difficult to expect rapid positive changes, such as the high unemployment rate significantly reduces the level of public revenue, as well as a brake on the development of domestic consumption. On the other hand, the reforms implemented consisting largely performing cuts in public spending, to an even greater extent, can reduce the pro-development trends in the economy, and this in a straight line that determines the continuation of the trend of mild recession.

Similar effects on GDP and labor market policy wich has brought drastic savings realized in Greece and Slovenia. The high growth rate (doubling feet) was also recorded by Bulgaria, Denmark, the Netherlands, Portugal and Slovenia. In the case of Denmark can be seen, in turn, noted that the rise of unemployment to nearly 8.0% (still lower than the EU average), wich was quickly stopped, so that in 2013 the rate stood at 6.6%. This decrease was achieved only a few EU economies.

Unemployment in the EU, among people 25 years of age, primarily of people entering the labor market in 2014, the average is about two times higher than the total unemployment rate. Even worse for this group the situation in Sweden and Italy, where the unemployment rate among young people represent 3 times the feet total. This reflects the low effectiveness of programs to support employment of graduates. The employment of people entering the labor market is not conducive to the excessive rigidity of the labor market where protection of existing jobs limited mobility in employment, which puts inexperienced post-szukających work in disadvantaged position. Record unemployment rate in this group was recorded and in Spain and Greece (over 55%). Spain in turn, is an example of the state where the flexibility of the labor market did not prevent the shaped-ing a dual labor market insider-outsider, at which graduates have little chance in the competition for stable jobs with more experienced, older employees.

Analysing the dynamics of unemployment during the crisis should pay attention to a phenomenon that Germany is that beyond the minimum (0.3 pp) increase in 2009, recorded throughout the period considered (2007-2013) almost steady decline in unemployment (8, 2% in 2007. to 5.2% in 2013.). You can even venture to say that the German labor market is gaining on the crisis in the EU. The strongest economy in the Euro zone uses the advantages of the weakened economies of southern Europe, which are not able to regain competitiveness

through devaluations of national currencies, which are only possible in the case of countries outside the "euro zone".

Another noteworthy dependence on the level of unemployment in respect of expenditure on active labor market policies. Programs to mobilize the unemployed often complains that contribute to improving the situation only temporarily, and even contribute to perpetuating unemployment, by extending the benefit entitlement and the same periods of unemployment. Such arguments are grounded in some of the examples – e.g. Spain and Ireland. In others (Denmark, the Netherlands, Finland), in turn, can be seen that the higher the percentage of GDP spending for this purpose, the greater the balance of the labor market in the country. There are clear associations size of unemployment and the level of expenditure on labor market policies.

To sum up, the more vulnerable to the rise in unemployment proved to be significantly more flexible markets, but at the same time deprived of, or slightly saturated instruments employment security (flexicurity principles), since the crisis is having a particularly negative impact on certain groups in the structure of employment. First, almost without restriction is a reduction of employment among workers on fixed-term contracts (those contracts usually during the downturn are not renewing). In an equally difficult situation young people seeking their first job, since the suspension of investment and restrictions

Employment policy in Kosovo in 2014

Kosovo's labour market is characterized by several features that distinguish it from other countries in the region. That which makes the difference is that from all the data indicated that one of third of the population is under 16 and over 50% is up to 24 years. So what affects the level of unemployment from year to year is the biggest entry of young people into the labor market despite high immigration tries to mitigate such a situation, however, the impact of entries cannot be mitigated.

According to the latest Labour Force Survey (LFS) conducted by Kosovo Agency of Statistics (KAS), in 2014 Kosovo's population of working age stands at 1,202,489 people, with an almost equal gender distribution. However, active labor force (aged between 15 and 64 years) stands at 500.521 persons, of whom 128 975 are women.

Consequently, the rate of labor force participation for women is much lower than that of men, having a rate for the general population to 41.6%. According to the LFS in 2014 in Kosovo were 323.508 employees (an employment rate of 26.9%), a decline of 4% compared with 2013.

Regarding the employment structure, four main economic activities (which employ about half of the total number of employees) are : production, followed closely by trade, construction, and education.

Information about the contribution of the manufacturing sector in GDP are incomplete due to the lack registration of manufacturing enterprises and little

information about public and social enterprises (POEs and SOEs). These last two types of enterprises face problems as old-fashioned assets, financial underperformance and unclear employment relationships.

Comparing the data of LFS 2014 to 2013, there was a decrease in "total hours productively" at national level, mainly due to lower level of (above) employment in 2014 compared to 2013.

Given the level of GDP in 2014, this translated into an increase of 8.5% in labor productivity in 2014 compared with last year. On the other hand, with regard to cost competitiveness, the ratio of ULC in 2014 decreased by 4.6% compared with the previous year. It is interesting to note that the level of "compensation total workforce 'of the country in 2014 remains similar to that of 2013, despite the decline in working hours, which means that the increase of the average wage in 2014 has offset the decline employment, from a standpoint of national level.

Unlike employment and productivity, which are based on official data of the KAS, the discussion will focus on wages data, taking into account their availability and most importantly, the 'frequency' of their own. In this sense, there are differences between the main indicators when making comparisons between the two sources, which are mainly the result of differences in registration (for example, KAS can not record the self-employed or informal sector so that under estimates significantly, while LFS does not provide detailed information on public and private sector separately, which is at the center of our analysis on salaries).

As can be seen from the graph, after three years (2011 to 2014) average wage in the public and private sector has moved almost in parallel with each other, it seems a divergence starting from Q2 2014 as a result of the decision to increase the salaries of the sector by 25%.

Figure1. Average wages in the public and private sector in Kosovo in the years 2008-2015
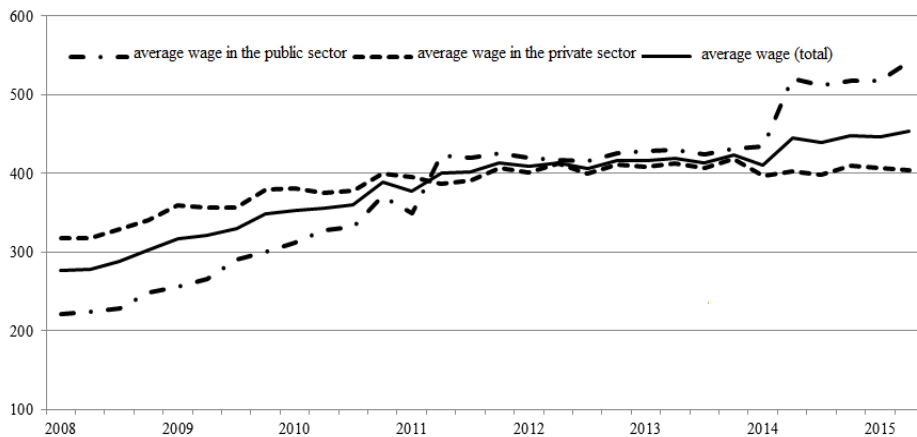
Source: own preparation

Improving employment opportunities for people, especially women and young people, poses challenge the single main socio-economic development in Kosovo , next to an agenda of important reform has already been implemented to create more jobs and reduce unemployment .

There is no system for predicting the skills required in the market. The process of drafting the professional qualification standards is slow though and implementation of the Curriculum Framework. Enterprises do not have clear incentives related to the provision of internships for graduates and the education system does not provide proper career guidance.

Lack of skilled labor is considered to be a binding constraint for growth. Fragmentary evidence for "high wage premium" i.e., lack of supply of highly skilled labor. The disproportion between the needs of the labor market with the knowledge and skills gained in higher education and vocational education identified as the biggest gap of more than 2/3 or existing and potential investors in Kosovo - about 25% of firms in Kosovo still not complain that the workforce has adequate skills; low level of expenditure for students in APP and at least a quarter of APP schools do not offer practical work in school or outside of it; no system for predicting the skills required in the labor market.

Progress Report of the European Commission underlines that "no progress has been made in improving the quality of education. Increases in public spending for education (up to 4.4% of GDP in 2014, with 4.6% projected for 2015) have so far been used almost entirely to cover salary increases. More funding should be directed to other aspects of education reform.

Unemployment is the main problem in Kosovo, remains the highest in the region. The data from the Labour Force Survey for 2014 noted that unemployment has risen to 35.5% from 30.0% in 2013, while in 2014, the level of youth unemployment has reached 61%. Funding for employment services and training of new training remain insufficient and fragmented in some subjects.

On the other hand, informality in the labor market is very high, significant proportion of people who economically are inactive are in fact employees discouraging and public employment services that have a demonstrated need for reform and modernization and a good about the labor market.

In the recent report of the World Bank entitled " Return to work : growth with jobs in Europe and Central Asia" it stated that the unemployment rate is high and the rate of creation of jobs is low throughout Eastern Europe and Central Asia (ECA), despite the impressive reform efforts that have been made in many countries and a decade of strong economic growth before the crisis after 2008.

To create more jobs and better places to work in ECA, the report recommended policy actions in two main areas, namely:

- Creating the basis for the creation of jobs through a macroeconomic environment and business enabling that allows existing companies to evolve and new companies to emerge and succeed and not to fail quickly, and at a cost of lower; and
- Support the workers they exploit new opportunities and have the right skills, incentives to work and unhindered access to the labor market and be able to move from one place to another with the greatest potential for job creation.

According to the report, the creation of jobs in this region has been slow even before the crisis (2000-2007), when the region ran faster than many other emerging economies. Economies and employment rates in ECA in particular were affected by the crisis then and after 2008; while job creation remains too slow in recovery after the crisis. In 2012, the average unemployment rate for Europe and Central Asia was 14 percent, compared with 31 percent in Kosovo. Worrying factor is that about half of the unemployed have sought work for more than a year. Young workers and the elderly, women and ethnic minorities are more likely to be unemployed or employed in informal jobs with low wages. For example, one in five people in the ECA neither working nor looking for work nor study.

CONCLUSIONS

The level of unemployment is closely linked to the dynamics of GDP. Recorded in the EU and in other countries of the world increase of the unemployment rate from 2008 confirms the strong interdependence of these indicators. To sum up the situation on the European labor market, it is worth noting that the progressive process of increasing the flexibility of the labor market favors the competitiveness of the economies of the European Union. This does not mean, however, that as a result of the changes observed do not appear negative effects (e.g. Spain). It therefore appears necessary to further reduce barriers to movement of labor and services within the European Union and the use clearly positive experiences of labor market reforms.

The current situation is the result not only traveled the recession and low GDP growth, but largely expenditures submitted to financial institutions, as part of stabilization packages. The countries 'Eurozone' together for that purpose, funds equal to approx. 23% of area GDP, which means a heavy burden on the budgets of the various countries, and the consequences for taxpayers. This also means the need to implement deep reforms aimed at savings due to limitations in budget expenditures.

Radical cuts contribute to a reduction in demand and, consequently, contribute to lengthening the duration of the second wave of the crisis, aggravating the situation on the labor market. Even if the majority of the economies of EU

countries manage to avoid a recession and a slow employment growth in the market sector, the programs implemented budget cuts cause restrictions on public sector employment. Therefore, in my opinion, should not be expected in the near term, a clear improvement of the situation on the EU labor market and achieve employment levels close to those recorded in the period before the crisis.

On the other hand, unemployment is the main problem in Kosovo and remains the highest in the region. Data from the Labour Force Survey for 2014 noted that unemployment has risen to 30.0 % from 35.5 % as it was in 2013 , while in 2014 , the level of youth unemployment has reached 61 %. Regarding the employment structure, four main economic activities (which employ about half of the total number of employees) are: production, followed closely by trade, construction, and education.

The discrepancy between labor market needs with the knowledge and skills gained in higher education and vocational education has been identified as a major gap more than 2/3 of the existing and potential investors in Kosovo.

Informality in the labor market is very high, significant proportion of people who economically are inactive are in fact employees discouraging and public employment services that have a demonstrated need for reform and modernization and a good about the labor market. The increase of the average wage in 2014 has offset the decline employment, from a standpoint of national level.

Improving employment opportunities for people - especially women and young people - poses challenge the single main socio-economic development in Kosovo , next to an agenda of important reform has already been implemented to create more jobs and reduce unemployment .

As we stated above, Kosovo has the highest rate of unemployment in the region, while initially raised some concerns that have characterized the labour market during 2008-2014. Economic stagnation of many parameters in place results even in strangulation of the labour market. Unemployment is not the only concern for the population of Kosovo, part of this concern are the active part of the population who work without regulation of collective contract, low average wages, violations of workers' rights which are consequence of malfunctioning to full union.

Kosovo should create favourable policies to attract foreign capital in order to use the advantages that are offered especially in the aspect of the young people. Strategic orientation of the Kosovo economy should be state policy of favouring the development of small and medium enterprises as generator of economic development on occasion will allow creation of new jobs, especially for young Kosovar.

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LABOUR MARKET FLEXIBILITY OF POLISH PROVINCES
IN TERMS OF JOB-FINDING AND JOB-SEPARATION RATES

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Abstract: The purpose of this paper is to examine labour market flexibility for a set of Polish provinces. Particularly, labour market inequalities among Polish provinces are analysed indirectly in terms of labour force flows. The text is based on the results conducted with a structural time series model and a stock-flow model of unemployment.

Keywords: unemployment rate, Poisson process, local polynomial fitting, state-space models, stock-flow model of unemployment

INTRODUCTION

The difficult economic situation in many countries worldwide, in Europe in particular, has severely dampened growth rates in the economy which, in turn, has translated into rising unemployment. When workers are unemployed, they and the country as a whole lose. Workers do not receive wages, and the country loses the goods or services that could have been produced. In addition, the purchasing power of these workers is lost, which can lead to unemployment for yet other workers. This global problem has become a major challenge for governments, which are forced to reduce deficits, balance their national budgets and fight unemployment, searching for new, more effective forms of workers activation.

In Sztandar-Sztanderska [2009] it was shown that the activation model in Poland undergoes several limitations. It leads to reproduction of social inequalities of unemployed people and discourages employers from cooperating with employment services. So the increase of resources for the active labour market policy is not translated into an improvement in the quality of services. Consequently, low job-finding rate and low job-separation rate are expected. In addition, Polish provinces represent different economic and social development,

so the difference in magnitude and dynamics of labour force flows should increase across Polish provinces, under the assumptions of the Polish activation model.

The purpose of the paper is to characterise and forecast worker flows and unemployment rate in Polish provinces since 2013. It will allow indirectly to answer the question if the disadvantages of the Polish activation model intensify in time and what will be their magnitude expressed in terms of hazard rates: job-finding and job-separating rates.

Analytic methods involving unemployment and worker flows forecast are needed. Recently it was noted in Barnichon and Garda [2015] and Barnichon and Nekarda [2015] that incorporating information from labour force flows substantially improves forecasts of the unemployment rate. A big advantage of the approach is that it can offer improvements at long forecast horizons in the case of European countries, because the magnitude of the labour market flows governs the speed of unemployment convergence to its steady state. With small flows, as in Europe (in comparison to the US) convergence occurs much more slowly (in the order magnitude of a year), so that observing the current worker flows provides information about movements in unemployment in the longer run. Barnichon and Garda [2015] pointed that for this to happen the flows must be sufficiently persistent.

It can be observed that over the last ten years the flow rates, expressed as logarithms of arrival rates, vary in the same pattern across Polish provinces. The difference between the outflow rates of any two provinces, except of some fluctuations, keeps in time (see Jaworski [2014]). The inflow rates (see Figure 1 and Figure 2) can be characterized in similar way. The time series structure of the flows is expected to have two components: linear trend and seasonality. So the flows can be regarded as persistent and the flow approach to unemployment forecasting seems to be promising with respect to Polish provinces.

Figure 1. The inflows of the selected provinces
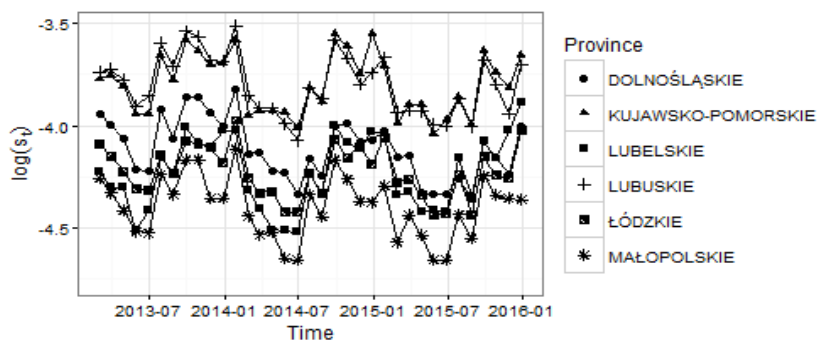
Source: own preparation

Figure 2. The outflows of the selected provinces
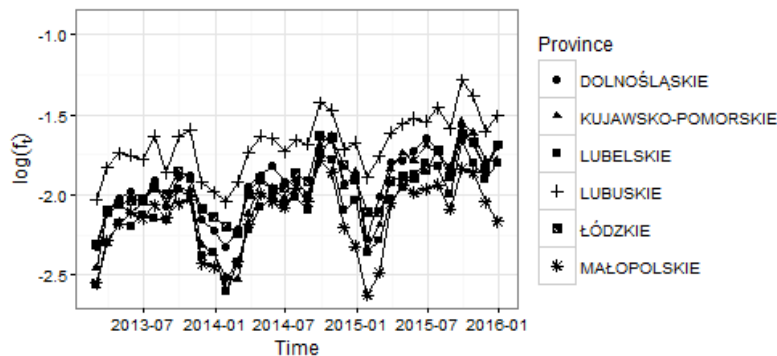
Source: own preparation

THE FLOW APPROACH

This section presents the flow approach to unemployment forecasting. First, the theory underlying the approach is presented. It was developed by Shimer [2012] and Elsby et al. [2013]. The key assumption, which simplify the underling calculations, is that individuals can only be in one of two labour states: employed or unemployed, and that contribution of movements in-and-out of the labour force (with respect to unemployment fluctuations) is negligible. The approach relates to continuous time environment in which data are available at discrete dates

Second, the flow-based forecast is outlined. The forecast is non-linear and includes two stages: (i) a forecast of the worker flows, and (ii) an iteration on the law of motion of unemployment (Eq. (2)). The idea of the forecast is given in Barnichon and Garda [2015], who evaluated the approach for a set of OECD countries (France, Germany, Spain, the UK, Japan and the US). In the case of European countries large improvements were obtained at both short and long horizons (one-year ahead forecast). Quarterly data (the original or the annual duration data converted to a quarterly frequency) and a VAR model were used to forecast the flow rates (stage (i)). To generate such forecasts, they additionally included vacancy posting, claims for unemployment insurance and GDP. In this article monthly data are used and no additional variables are included. The VAR model is replaced by the linear Gaussian state space model with three components: stochastic level, fixed (or stochastic) slope and fixed seasonality.

A stock-flow model of unemployment

Let $u_{t+\tau}$ denote the unemployment rate at instant $t + \tau$ with t indexing the period (in the paper a month) and $\tau \in [0,1]$ a continuous measure of time within the period. For every $t \in [0,T]$ the interval $[t, t + 1)$ will be referred to as

"period t". It is assumed that in the period t all unemployed workers find a job according to a Poisson process with constant arrival rate f_t, and all unemployed workers lose their job according to a Poisson process with constant arrival rate s_t. The unemployment rate evolves according to

$$\frac{d}{d\tau}u_{t+\tau} = (1 - u_{t+\tau})s_t - u_{t+\tau}f_t \tag{1}$$

Solving Eq. (1) yields

$$u_{t+\tau} = \beta_t(\tau)u_t^* + (1 - \beta_t(\tau))u_t \tag{2}$$

where

$u_t^* \equiv \frac{s_t}{s_t + f_t}$ denotes the steady-state unemployment rate and

$\beta_t(\tau) \equiv 1 - \exp\{-\tau(s_t + f_t)\}$ is the rate of convergence to that steady state. If the flows into and out of unemployment were to remain at a fixed level, the steady state unemployment rate would prevail.

Let $u_t^s(\tau)$ denote short unemployment rate, that is the number of workers who are employed at some time $t' \in [t, t + \tau]$ divided by the number of all unemployed and employed workers. The short unemployment evolves according to

$$\frac{d}{d\tau}u_t^s(\tau) = (1 - u_t)s_t - u_t^*(\tau)f_t \tag{3}$$

Equations (1) and (2) have, assuming that $u_t^s(0) = 0$, the following solutions in discrete time t:

$$\exp\{-f_t\} = \frac{u_{t+1} - u_t^s(1)}{u_t} \tag{4a}$$

$$u_{t+1} = \beta_t(1)u_t^* + (1 - \beta_t(1))u_t \tag{4b}$$

The flow – based unemployment forecast

We can estimate f_t and s_t for $t \in \{0, 1, \dots\}$ as we know u_t and $u_t^*(1)$ from available data: f_t solving Eq. (4a) directly and s_t solving Eq. (4b) (note that $\beta_t(1)$ and u_t^* are functions of f_t and s_t). Then the forecasts of the worker flows can be generated. Given a set of worker flows forecasts: $\hat{f}_{t+j|t}$ and $=\hat{s}_{t+j|t}$ with $j \in N$, a j – period-ahead forecast of the unemployment rate, $\hat{u}_{t+j|t}$, can be constructed recursively from

$$\hat{u}_{t+j|t} = \hat{\beta}_{t+j|t}\hat{u}_{t+j|t}^* + \left(1 - \hat{\beta}_{t+j|t}\right)\hat{u}_{t+j-1|t} \tag{5}$$

where

$\hat{u}_{t+j|t}^* = \frac{\hat{s}_{t+j|t}}{\hat{s}_{t+j|t} + \hat{f}_{t+j|t}}$ and $\hat{\beta}_{t+j|t} = 1 - \exp\{-\left(\hat{s}_{t+j|t} + \hat{f}_{t+j|t}\right)\}$

DATA AND EMPIRICAL RESULTS

The data of the Local Data Bank in Poland are used in this article: registered unemployment persons (monthly data), registered unemployment rate (monthly data), registered inflow into unemployment rate (monthly data), number of economically active persons (quarterly data from the Labour Force Survey).

Labour force time series are available from two sources: registered at the employment office and Labour Force Survey. The dynamics of this two kind time series is different. They are shifted against themselves across vivodeships (compare with Figure 3 and the Labour Force Survey series reveal trends which are absent in the registered series (an example is shown in Figure 4).

Figure 3. Number of economically active persons. Time points and provinces are randomly selected
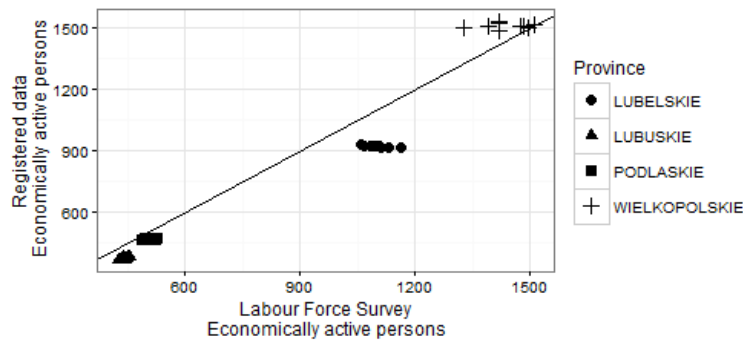
Source: own preparation

Figure 4. Example of labour force series.
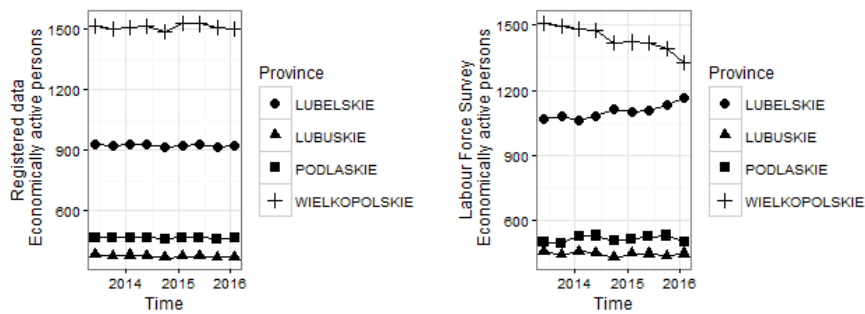
Source: own preparation

The forecast was made separately for $\{y_t = \log(f_t)\}_t$ and $\{y_t = \log(s_t)\}_t$. Dependent vector y_t was 3, 4 and 5-dimensional according to the scheme in Figure 6. For example, the observation vector $y_t = \log(f_t)$ for the first group has the following form: $y_t = [\log(f_{t1}), \log(f_{t2}), \log(f_{t3}), \log(f_{t4})]'$, where its four

components relate to Dolnośląskie, Kujawsko-Pomorskie, Wielkopolskie and Zachodniopomorskie respectively. The groups of provinces were created quite arbitrary. However, it should be emphasized that the division was made to relate mainly to the east and to the west of Poland. But it was checked that some other possible divisions did not influence the adequacy of applied structural multidimensional time series models.

Figure 5. Example of labour arrival rates forecast
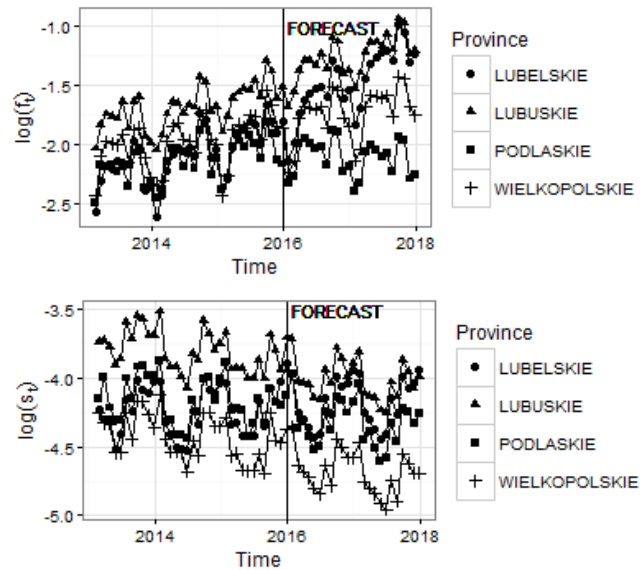
Source: own preparation

Training series covered the period since 2013-01 to 2015-12. The fit was satisfactory (coefficient of determination exceeded 0.9 in every case and normality tests did not reject null hypothesis). Using Eq. (5) the unemployment forecast was made until 2018-12.

As noted above the Labour Force Survey database is recommended for calculating the labour flows estimates. Because monthly data are not available from the source, the series of numbers of economically active persons were converted to monthly data by local polynomial regression fitting and other required variables were taken from the employment office. The unemployment rate was then calculated: registered number of unemployment persons was divided by the converted labour force number. The difference between the registered and the calculated rates can be inspected in Figure 7.

Figure 6. Groups of provinces

Model : Trend + Fixed seasonal + Irregular			
Group 1		Group 2	
y_1:	Dolnośląskie	y_1:	Łódzkie
y_2:	Kujawsko-Pomorskie	y_2:	Śląskie
y_3:	Wielkopolskie	y_3:	Świętokrzyskie
y_4:	Zachodniopomorskie	y_4:	Warmińsko-Mazurskie
Group 3		Group 4	
y_1:	Lubelskie	y_1:	Lubuskie
y_2:	Małopolskie	y_2:	Opolskie
y_3:	Mazowieckie	y_3:	Pomorskie
y_4:	Podkarpackie		
y_5:	Podlaskie		
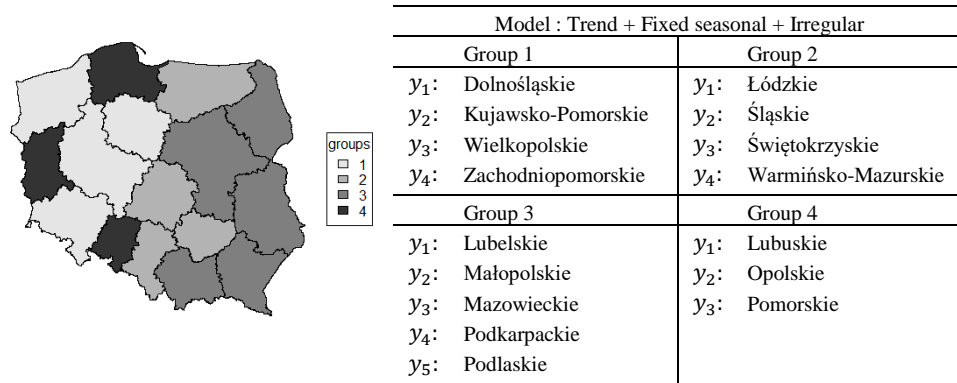
Source: own preparation

Figure 7. Unemployment rates comparison: dashed line – registered rate, solid line – calculated rate
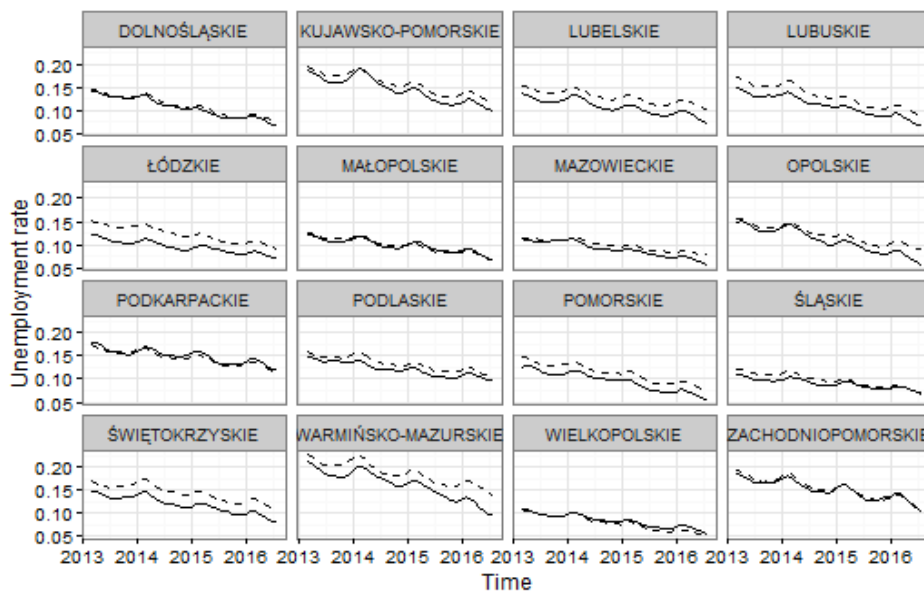
Source: own preparation

The rates series almost overlap in the case of some provinces: Dolnośląskie, Małopolskie, Wielkopolskie and Zachodniopomorskie. In other cases the series are shifted against themselves and have different slopes. However, the series keep the same seasonality pattern.

The training set of the series in Figure 7 covers the period since 2013-02 to 2015-12 and the test set the period since 2016-01 to 2016-06. Mean absolute/relative prediction error for Dolnośląskie, Małopolskie, Wielkopolskie

and Zachodniopomorskie province is equal to 0.6%/7.8%, 0.2%/3.1%, 0.6%/10% and 0.2%/0.6% respectively. The values measure the difference between available registered unemployment rate and forecast of the calculated unemployment rate. The values are meaningful as they relate to the overlapping series.

According to Eq. (4b), the unemployment rate u_{t+1} is a weighted average of the previous unemployment rate u_t and the time t steady-state u_t^* with the weights $\beta_t(1)$ determined by the speed of convergence to the steady state. If $\beta_t(1)$ is greater then faster actual unemployment rate converges to its flow steady-state value: the level at which the unemployment rate would settle if the inflow and outflow rates stay constant at their current levels. It can be shown, that $1 - \beta_t(1) = (1 - F_t)(1 - S_t)$, where F_t is the job finding probability and S_t is the separation probability. So $\beta_t(1)$ can be regarded as a measure of the flexibility of the labour market. An estimate of $\beta_t(1)$ is presented in Figure 8. So it can be inspected that two Polish provinces, Podkarpackie and Podlaskie, have relatively low market flexibility: $\beta_t(1) < 0.2$. In contrast to the other provinces, this low level will be holded until 2018. The best market flexibility in 2018 is expected for Lubelskie, Lubuskie and Opolskie.

In general the inflow rates in provincec decrease and the outflow rates increase. Simultaneously the impact of the labour flows increase (see Figure 8) what implies the unemployment rate have to decrease.

Figure 8. Estimate of $\beta_t(1)$
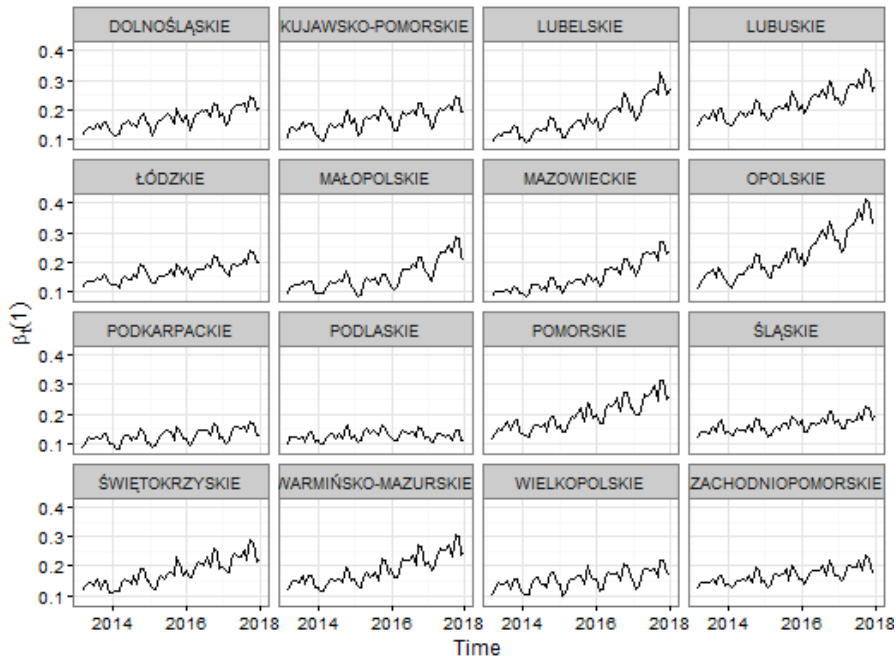
Source: own preparation

CONCLUSIONS

The main question is about variables used in this article for calculations. The variables are mixed from two sources. They are not compatible as for example they relate to slightly different definitions of unemployment or economically active persons. They are also collected in different ways. However as they relate to empirical data they may be perceived as labour market indicators or measures. So in this article the estimated unemployment rate is treated as one of the labour market indicator reflecting differences between provinces. The ex-post mean absolute difference between the calculated unemployment indicator and the registered unemployment rate is in range 0.34 – 2.68 percent points (for the overlapping series the difference is less then 0.47 percent points). The difference is not high and in the case of four provinces: Dolnośląskie, Małopolskie, Wielkopolskie and Zachodniopomorskie, the levels of error prediction errors indicate high forecast precision.

The influence of changing labour force data source for unemployment rate can be observed. As can be seen in Figure 7, the influence imply changes in trend but not in seasonal pattern.

Unemployment rate forecast was done on the basis of inflows and outflows into unemployment. It required to forecast the flows previously. The flows expressed in log arrival rates have clear time series structure with linear trend and fixed seasonality. Components of each dependent vectors were related to one of the arbitrary selected groups of provinces. In every case the model fit was satisfactory. So the multidimensional time series models reflected mutual relationships between labour markets of Polish provinces.

The flow approach gives possibility to measure and compare the impact of the inflows and outflows on the unemployment rate across provinces. The impact is increasing in almost every province (see Figure 8). For example in Lubelskie and Opolskie the impact is expected to increase faster then in Podkarpackie and Zachodniopomorskie. In Podlaskie the impact is going to be averagely holded at the same low level. So the main question about the Polish activation model can be answered. Generally, economic activity of Polish population keeps going up since 2013 but there are some Polish provinces, where the activity is at the low level and nothing can be expected to be changed in that matter. It means that the Polish activation model works locally in some provinces only. Consequently, it will deepen labour market inequalities among Polish provinces.

SUMMARY

The flow approach to forecast unemployment rate was applied for a set of Polish provinces. First, worker flows into and out of unemployment were estimated by Gausian state space models. The models fit was satisfactory. Second,

forecast unemployment rate was done according to a stock-flow model. The estimated unemployment rates were discussed with respect to data source and forecast accuracy. At last the impact of the flows on unemployment rate was investigated and conclusion about growing labour market inequalities among Polish provinces was drawn.

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A COMPARATIVE EMPIRICAL ANALYSIS OF FINANCIAL DEVELOPMENT INDICATORS BETWEEN TRANSITION ECONOMIES AND DEVELOPED ONES

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Abstract: This paper carries out a comparative analysis of the degree of financial development between transition economies and developed ones based on variables that indicate the direct and indirect degree of financial development. To determine the way the financial systems works and the level of its development, the authors have taken into account four general characteristics of financial institutions and financial markets which were measured for the financial institutions (mainly banks, which are the most important financial institutions in most economies in transition, insurance companies and other financial institutions) as well as for the financial markets, thus leading to a 4x2 matrix of the main characteristics of the financial system. The analysis was developed based on the data found on the Global Financial Development database of the World Bank. Empirical data and authors' analysis were used to characterize and compare financial systems between countries with economies in transition and developed countries for the years 2008 – 2011. The year 2011 was the last year of available qualitative data for many countries in the Balkan Region such as Albania, Kosovo and Macedonia.

Keywords: economy in transition, financial sector development, economic growth, 4x2 matrix

INTRODUCTION

To measure and benchmark financial systems were taken into account four general characteristics of financial institutions and markets: (1) the size of financial institutions and markets (financial depth), (2) the extent to which individuals use financial institutions and market (access), (3) the efficiency in providing financial services (efficiency), and (4) the stability [World Bank 2012]. These four

characteristics are measured both for financial institutions and financial markets (equity and bond markets) thus leading to the formation of a 4x2 matrix of characteristics of the financial system [World Bank 2012]. The paper then uses this matrix to provide a more complete reflection of the degree and structure of financial systems development.

From extensive research has been proven that no model can fully capture all features of the financial systems, however by using the characteristics such as depth, access, efficiency, and stability, we are very close to capturing most of the features that many empirical literature have been focused on. Empirical data and authors' analysis were used to characterize and compare financial systems between countries with economies in transition and developed countries for the years 2008 – 2011. The year 2011 was the last year of available qualitative data for many countries in the Balkan Region such as Albania, Kosovo and Macedonia. The Global Financial Development Database used for this study is available on the official website of the World Bank. The paper, however, goes beyond just analyzing the data. It aims to answer some fundamental questions by using the available data. In this paper the authors address the following questions: How can various characteristics of financial systems be empirically evaluated based on indicators that show the directly and indirect degree of financial development? How can you benchmark financial systems between economies in transition and developed ones?

This paper is structured as follows: It begins with the literature review followed by arguments on the role that the financial system plays in economic growth. Then it continues with an overview of the economies in transition by analyzing common characteristics of their financial systems. Furthermore, it continues with the quantitative analysis of the key factors of the financial system which cover the four characteristics selected for this study. The quantitative analysis will be conducted for the financial institutions as well as for the financial markets in order to give life to a comparative framework which is widely used as a strategy to empirically characterize financial systems and to document its development. The 4x2 matrix and the database of global financial development will be further used to answer the two research questions raised in this study and to analyze and benchmark 18 countries with transition economies (where 8 selected economies are Central European countries and 10 selected economies are South-East European) with the top 5 positioned economies based on their degree of financial development.

LITERATURE REVIEW

A growing body of evidence suggests that financial institutions (such as banks and insurance companies) and financial markets (including stock markets, bond markets, and derivative markets) exert a powerful influence on economic development, poverty alleviation, and economic stability [Levine 2005]. Hence,

if these functions have a negative performance it may lead to a lower level of economic growth, reduced economic opportunities even to economic instability.

Although the evidence on the role of the financial system in shaping economic development is substantial and varied, there are serious shortcomings associated with measuring the central concept under consideration: the functioning of the financial system. Researchers do not have good cross-country, cross-time measures of the degree to which financial systems

1. enhance the quality of information about firms and hence the efficiency of resource allocation,
2. exert sound corporate governance over the firms to which they funnel those resources,
3. provide effective mechanisms for managing, pooling, and diversifying risk,
4. mobilize savings from disparate savers so these resources can be allocated to the most promising projects in the economy, and
5. facilitate trade [Cihak et al. 2013].

Instead, researchers have largely, but not exclusively, relied on the complexity and degree of development of the banking sector.

But, the degree of the development of the banking sector not a measure of quality, efficiency, or stability itself. And, the banking sector is only one component of the financial system.

Given that financial development is defined as a process involving the interaction of many activities and institutions to improve the quality, quantity and efficiency of financial intermediation, then its measurement by using one indicator is impossible.

FINANCIAL DEVELOPMENT CONCEPT AND ITS LINKS WITH ECONOMIC GROWTH

In the economic model of general equilibrium developed by Arrow-Debreu [Arrow 1951, Debreu 1951, Arrow, Debreu 1954], built on the basis of certain unrealistic assumptions, financial intermediation is not necessary, but it becomes important when the model approximates the real world, which is characterized by economic exchange. Since the models are fancy simplification of reality, no comprehensive theoretical model can explain the existence of financial intermediation [Khan, Senhadiji 2000]. Giving that financial intermediary facilitates the allocation of funds in space and time, it is important to consider the relationship that exists between financial development and economic growth.

Regarding the nexus between financial development and economic growth, Schumpeter [1912], argued that banks can facilitate financial intermediation and stimulate economic growth by selecting entrepreneurs that offer the most innovative and productive projects. Furthermore, Robinson [1952], King and Levine [1993], found positive effects of financial sector development on growth.

Other studies have also found a positive effect of financial development on economic growth, however, this connection is often dependent on some particular economic conditions. For example, it was found that this relationship is positive only when inflation is below 5% [Rousseau, Wachtel 2002]. It was also proven that their relationship is weaker in developing countries and might has weakened further over the years [Rousseau,Wachtel 2011].

From the arguments raised by different authors such as Levine [2005], Demirgüç-Kunt and Levine [2008], we can conclude that the majority of evidence suggests a positive relationship, a deliberate, between financial development and economic growth. In other words it means that financial systems that work well, play an independent role in promoting long-term economic growth because economies with a better developed financial system tend to grow faster for longer periods of time.

Despite various institutional contexts of transition economies, few studies have had their focus on the effects that a developed and more efficient financial system has on these countries. In a study was pointed out that the margin between lending and deposit interest rates negatively and significantly affected growth, but the size of the financial sector had no effect. [Koivu 2002]. In another study, which involved 11 countries of Central and South-East Asia, was found that financial intermediaries have contributed to economic growth and the domestic credit has played a key role, but private credit and stock market capitalization were not important. [Fink, HAISS and Vuksic 2009]. There were other studies, that have analyzed also the impact of foreign direct investment in transition economies, but the latter, together with the two studies mentioned above, have failed to carry out a comparative analysis of the degree of financial development between transition and developed economies based on indicators that show the direct or indirect degree of financial development.

FEATURES OF THE FINANCIAL SECTOR IN TRANSITION ECONOMIES

The Reform of the financial sector for the countries of Central and South-Eastern Europe has started from the banking sector. The transformation of the banking sector has been one of the key aspects of the transition process from a planned economy to a market economy. Originally a fully controlled sector, the banking sector was quickly turned into one of the most dynamic sectors of the economy.

Despite that the inherited structures of these countries have much in common, there were found also significant differences. Since the 1990s, the Central and South-Eastern Europe countries have made substantial progress in the creation and reform of their financial markets and institutions which, under the prior Communist regimes, were limited to allocating funds passively to firms

according to a central plan. Although the inherited structures of these countries shared many similarities, important differences did exist. For example, enterprises in Hungary, Poland and the former Yugoslavia were given some degree of independence in their decisions and there were even some private firms. Monetary holdings and trade credit were also allowed. The situation was vastly different in countries such as Bulgaria, Romania and the Soviet Union [Coricelli 2001]. During the first years after the fall of the Communist regimes, state-owned banks were freed from the influence of the Central Bank and a large fraction of their non-performing loans was written off. [Liebscher et al. 2007]. Later the banks were restructured and privatized, thus creating commercial banks and banks with foreign capital.

Banks with foreign capital began to grow significantly during 1998 and 2000 occupying a weight of 60-90% of the banking system in these countries [EBRD 2012]. For example, by the end of 1998, Albania had 10 second level banks licensed by the central bank, among which were two entirely state-owned banks, the Saving Bank and the National Commercial Bank, marking the beginning of the new two-tier banking system during 1992. Moreover, foreign ownership brought technological and managerial improvements, economies of scale, and arm's length relationships between the financial sector and industry. It also reduced the concentration of economic power in banking markets [Liebscher et al. 2007].

The liberalization of the banking system encountered a series of problems. Ineffective bankruptcy or contracting laws and the lack of enforcement mechanisms and adequate collateral guidelines often led to soft budget constraints for former state-owned firms and to moral hazard problems on the managers' part. Although bank privatization and foreign ownership can harden budget constraints, some soft budget constraints continued even after the reform of the financial sector [De Haas 2001]. Even today there are several challenges to building a sustainable financial system in transition economies, such as the strengthening of prudential supervision; improvements in risk management both for individual institutions and for supervisory institutions; improvements in transparency and performance of financial activities and market discipline; and improvements in the effectiveness of the legal framework.

DATA AND MODEL SPECIFICATION

Financial systems are multidimensional. Initially, for the purposes of this study, we define what we mean by the term transition? In a broad sense, transition means the liberalization of activities, price, operations of a market economy, together with the reallocation of resources in order to use them in a more efficient manner, the development of market instruments oriented for macroeconomic stability; achieving an effective management and economic efficiency of enterprises, usually through privatization; imposing budget constraints, which provide incentives for efficiency improvements; and creating a legal and

institutional framework to ensure property rights, rule of law and transparent rules on the functioning of the whole system.

To capture the key features of financial systems, one would ideally like to have direct measures of how well financial institutions and financial markets:

1. produce information ex ante about 6 possible investments and allocate capital;
2. monitor investments and exert corporate governance after providing finance;
3. facilitate the trading, diversification, and management of risk;
4. mobilize and pool savings;
5. ease the exchange of goods and services.

So, if measurement was not an issue, one would like to be able to say that in terms of producing information about possible investments and allocate capital, the financial sector in Country A, for example, scores 60 on a scale from 0 to 100, while Country B's financial sector scores 75; in terms of monitoring investments and exerting corporate governance after providing finance, Country A scores 90, while Country B scores only 20 on a scale from 0 to 100, and so on. But, researchers have so far been unable to obtain such direct measures of these financial functions [Cihak et al. 2013].

Taking into account these features and the above presented expose', for the purposes of this study we analyzed the data provided from Global Financial Development Database for 23 economies, among which 18 countries were transition economies, namely: Bosnia and Herzegovina, Bulgaria, Estonia, Hungary, Croatia, Kosovo, Latvia, Lithuania, Montenegro, Macedonia, Poland, Cyprus, Romania, Serbia, Slovakia, Slovenia, Albania and Turkey; and 5 economies were the top positioned economies based on their degree of financial development., namely: UK, France, Germany, Japan, and the United States.

The model used in order to give a quantitative value on the functioning of the financial systems was based on the methodology used by the World Bank in drafting some of its financial development reports.

Hence, by taking into account 4 characteristic of financial institutions and financial markets, namely:

1. the size of financial institutions and markets (financial depth),
2. the extent to which individuals use financial institutions and market (access),
3. the efficiency in providing financial services (efficiency), and
4. the stability.

These four characteristics were measured for the financial institutions as well as for the financial markets can capture a special dimension of the financial system and are closely linked together. In other words, the analysis of only one feature, such as financial stability for example is not sufficient. The data used for this study was found on the official webpage of the World Bank, which has an extensive database on the characteristics of the financial system for the 203 economy during 1960 – 2011. This constitutes the most complete and updated financial indicators for countries with economy in transition.

DATA ANALYSIS AND RESULTS

Financial depth

Referring to the model uses by Cihak et al. regarding financial depth, the variable that has received much attention in the empirical literature on financial development is private credit to GDP. More specifically, the variable is defined as domestic private credit to the real sector by deposit money banks as percentage of local currency GDP. The private credit, therefore, excludes credit issued to governments, government agencies, and public enterprises. It also excludes credit issued by central banks which makes it especially convenient to study in these countries [M. Cihak et al. 2013]. The ratio of private credit to GDP varies between different countries and is closely correlated with the income level of the country. The second variable taken into consideration is the ratio of broad money M3 to GDP. This ratio is inspired by the work of Levine [1997]. Following this logic Hassan and Jung-Suk [2007] used the ratio of M3 to GDP as a variable to measure financial inclusion or better depth, arguing that the indicators M1 and M2 are weak variables for economies without a fully developed financial system, where the Broad money on GDP ratio is high because money is used in its function as a store of value in the absence of other more attractive alternatives.

For financial markets, in the database, financial market depth is approximated using a combination of data on stock markets and bond markets. To approximate the size of stock markets, a common choice in the literature is stock market capitalization to GDP. For bond markets, a commonly used proxy for size is the outstanding volume of private debt securities to GDP. The sum of these two provides a rough indication of the relative size of the financial markets in various countries [Cihak et al. 2013].

From the data analysis carried out by the authors regarding financial depth in 23 countries it results a very high percentage of financial depth in developed countries. The interval values of this indicator are 42.4 - 81.3% for these countries. This percentage can be attributed to a higher level of private credit to GDP. The transition economies, except Cyprus, are positioned below the range of the above mentioned interval. However, the high ratio of private credit to GDP is not necessarily a good thing. In fact, in all five countries with the highest level of private credit to GDP, such as (UK, Japan, Cyprus, Germany, France and the United States) the banking sector crisis of 2008 – 2009 was felt considerably compared to countries with lower level of the indicator such as the countries with transition economies. It's understandable that this fact is mutually connected with the degree of financial depth of these countries.

Financial access

According to the model used by [Cihak et al. 2013], better functioning financial systems allocate capital based more on the expected quality of the project

and entrepreneur and based less on the accumulated wealth and social connections of the entrepreneur. Thus, to develop informative proxies of financial development, it is useful to move beyond financial depth and also include indicators of financial access — the degree to which the public can access financial services. As with the other measures, both financial institutions and financial markets are examined. [Cihak et al. 2013]. In relation, a widely available variable is the number of bank accounts per 1,000 adults. Other variables in this category includes: the number of bank branches per 100,000 adults, the percentage of all firms with line of credit, and the percentage of small firms with line of credit. When using these proxies, one needs to be mindful of their weaknesses. For example, the number of bank branches is becoming increasingly misleading with the move towards branchless banking. The number of bank accounts does not suffer from the same issue, but it has its own limitations. In particular, it focuses on banks only, and does not correct for the fact that some bank clients have numerous accounts [Cihak et al. 2013]. Considering the limitations of each variable, for the purposes of the analysis, the authors have consider the number of bank accounts per 1,000 adults. The data regarding this financial access dimension of the Global Financial Development Database come from the established Financial Access Survey database (fas.imf.org), which is based on earlier work by Beck, Demirgüç-Kunt and Martínez Pería [2007] and currently contains annual data for 187 jurisdictions for the period 2004 to 2011.

The data used to measure access in financial markets were relatively limited. The model, to approximate access to stock and bond markets, measures of market concentration are used, the idea being that a higher degree of concentration reflects greater difficulties for access for newer or smaller issuers. In this regard the variable used by the authors is the percentage of market capitalization outside of top 10 largest companies to total market capitalization.

Because the data on access to financial markets are relatively more scant, in order to have an estimated data of financial access for the missing data the authors have used the linear interpolation method taking into account the degree of economic development and the trend of the indicators historical data, without affecting the specific weight ratio between countries. Also for this characteristic, the 5 developed countries were better positioned compared to the other countries. The interval values of this indicator for transition economies are 30.3 - 50% and 45 – 72 % for the developed ones. Referring to the data, Turkey (50%) is better positioned that France (45%) although it has a transition economy. Interestingly, the difference between developed economies and developing economies is not as large as for some of the other indicators in the database.

Financial efficiency

For intermediaries in the model [Cihak et al. 2013] efficiency is primarily constructed to measure the cost of intermediating credit. Efficiency measures for institutions include indicators such as overhead costs to total assets, net interest

margin, lending-deposits spread, non-interest income to total income, and cost to income ratio. Closely related variables include measures such as return on assets and return on equity. While efficient financial institutions also tend to be more profitable, the relationship is not very close. For example, an inefficient financial system can post relatively high profitability if it operates in an economic upswing, while an otherwise efficient system hit by an adverse shock may generate losses.

For this study the authors have consider a variable that reflects the extent of competition in banking and finance. The net interest margin which is the difference between the interest income generated by banks or other financial institutions and the amount of interest paid out to their lenders, reflects the bank intermediation costs and their growth rates which gives us information regarding the bank efficiency and market competitiveness.

Saunders and Schumacher [2000] point out that although the ex-Communist countries have made progress, their interest rate spreads were still relatively large when compared to Western European countries. Lower interest spreads could reflect more competition in the banking sector, better contract enforcement, efficiency in the legal system and a lack of corruption [Demirgüç-Kunt and Huizinga 1998]. However, relatively large spreads may insure a higher degree of stability for the financial system, adding to the profitability and capital of banks and better protecting them against crises.

For the financial markets, the variable used for in this study is stock market turnover ratio expressed as a percentage. This variable, in the model is calculated as total value of shares traded during the period divided by the average market capitalization for the period. The authors choose this indicator because a high level of this indicator implies a high level of liquidity which allows the market to be more efficient. As in the above two characteristics analyzed, developed countries have higher levels of this characteristic with an interval in the range $67 - 86.4\%$, compared to the countries in transition. Followed by a higher value of this characteristic for the European Union countries compared to other countries. The latter comes as the result of legal and regulatory framework of the Acquis Communautaire.

Financial stability

A common measure of financial stability is the z-score. It explicitly compares buffers (capitalization and returns) with risk (volatility of returns) to measure a bank's solvency risk. The z-score is defined as $z \equiv (k+\mu)/\sigma$, where k is equity capital as percent of assets, μ is return as percent of assets, and σ is standard deviation of return on assets as a proxy for return volatility. The popularity of the z-score stems from the fact that it has a clear (negative) relationship to the probability of a financial institution's insolvency, that is, the probability that the value of its assets becomes lower than the value of its debt [see, for example, Boyd and Runkle 1993, Beck, Demirgüç-Kunt, Levine 2006, Demirgüç-Kunt, Detragiache, and Tressel 2008, Laeven, Levine 2009, Čihák, Hesse 2010].

A higher z-score therefore implies a lower probability of insolvency. The z-score has several limitations as a measure of financial stability. Perhaps the most important limitation is that the z-scores are based purely on accounting data. They are thus only as good as the underlying accounting and auditing framework. [Cihak et al. 2013]. Another well-known indicator in literatures that serves to estimate financial stability is the ratio of bank nonperforming loans to gross loans.

The Global Financial Development Database cross-refers to financial soundness indicator database available on IMF's website (fsi.imf.org) for this indicator. This indicator may be better known than the z-score for the assessment of financial stability and for this purpose was taken into account by the authors.

For financial markets, the most commonly used proxy variable for stability is market volatility, regardless although other proxies are also included in the database, this variable was taken into account for the stock and bond market.

During the data analysis the authors saw two trends. The first trend referred to developed countries, which also for this characteristic were better positioned, in the range 49.1 - 65.7%. The second trend referred to a better position for the European Union Countries, standing in the interval 20.4 - 74.5. Excluding Latvia, Romania and Lithuania, other EU countries have the value of this characteristic above 39.8%. It should be noted that 39.8% was the value of Croatia, which is the newest member of the European Union. This trend should be attributed to the rationalization process that has widely been implemented in the euro area banking sector by reducing the total number of credit institutions, mainly in the countries that were more affected by the recent financial crisis.

CONCLUSIONS

This paper has presented an analysis of the multidimensional nature of the financial system by comparing the economies in transition with developed economies taking into account the variables that indicate a direct and indirect development of their financial system.

The analysis reflects the fact that the financial sector has different sizes and shapes but what differentiates most between countries is its performance. In the model used by Cihak et al., the overall comparisons by levels of development and by region confirm that while developing economy financial systems tend to be much less deep, somewhat less efficient, and provide less access. However, their stability has been comparable to developed economy financial systems.

One basic, yet important, observation highlighted by the Global Financial Development Database is that the four financial system characteristics are far from closely correlated across countries. This underscores the point that each dimension captures a very different, separate facet of financial systems. In other words, the analysis of only one characteristic is insufficient because the financial system is multidimensional.

Moreover, attempts to run a more rigorous "horse race" among the indicators from the four dimensions tend to end in a tie: that is, none of the indicators is clearly superior to the others in explaining long-term growth or poverty reduction [Cihak et al. 2013].

The analysis of the indicators for the study for each characteristic clearly distinguished the supremacy of the level of financial development in the top 5 developed economies compared with those in economies transition. In the final chart, Great Britain, Japan, Sh.BA, Germany and France preside the classification followed by European Union countries, especially the Euro Area, and further followed by the countries of South-Eastern Europe where Kosovo and Albania are two Countries with the lowest level of financial development.

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NORMALIZING CONSUMER SURPLUS DATA
FOR KOSOVO'S WTP
FOR A MANDATORY HEALTH INSURANCE

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Abstract: The purpose of this paper is to show that consumer surplus for Kosovo's expected mandatory health insurance fund do not follow a normal distribution. It shows the rationale used in obtaining the initial aggregate consumer surplus, the development Surplus-to-Exploitation, and Potential Entry Threshold indicators. It also provides the logic behind individualized data set which is used in normality testing. Normality is achieved through a Johnson Transformation; with Anderson-Darling test statistic being used to test this claim.

Keywords: mandatory health insurance fund, Kosovo

INTRODUCTION

As Kosovo government pushes towards the initiating of its mandatory health insurance fund (HIF) voted in by the parliament, this paper expands on the [Muhaxheri 2015].

Database for Kosovo's willingness-to-pay (*WTP*) database [Dialogue Programe in Health 2012]; which provides comprehensive information on Kosovo's demographic indicators, and more importantly includes information on Kosovo's people's willingness-to-pay for health insurance – a survey conducted through a contingent valuation model (Double Clustered Dichotomous Choice); is used to establish the consumer surplus (*CS*) which is shown not to follow a normal distribution, and hence in data are normalized using Johnson Transformation method.

The rest of the paper proceeds as follows: in the first section a brief summary of the findings in [Muhaxheri 2015] are provided. Next, the normalization of the data is explained. The last section has conclusions.

SUMMARY OF PREVIOUS FINDINGS

The most appropriate way to enhance the meaning of the previous findings is to present them in its original form. However, first the assumption and definitions are highlighted are presented:

A starting point is the proposed contribution rate (p) from Kosovo Law on Health Insurance (LHIF) which stands at 7%; where:

$$p = 7\% \rightarrow 3.5\% \, (q = employee \, contribution) + 3.5\% \, (employer \, contribution)$$

Consumer surplus (*CS*) is defined as the difference between maximum willingness-to-pay and actual amounts covered employed persons are required to pay. This leads to the following:

- m_i = median of respective household monthly-income bracket
- h_i = respective household size
- x_{WTPi}^{MAX} = maximum (*MAX*) willingness-to-pay (*WTP*) amount (*x*) per person per individual households (*i)* per month
- N = total number of covered persons through the mandatory scheme
- n = sample size (used in estimating maximum *WTP*)
- P_{life} = total amount of premiums received by private health insurance providers during a specific period, prior to the implementation of HIF.

Consumer Surplus (*CS*)

CS is estimated by calculating the average difference between maximum *WTP* (WTP Survey data provided monthly information and therefore a coefficient of 12 is used to annualize *CS*. Surveys with different frequencies can be adjusted accordingly to represent annual figures.) and actual contribution rates defined by law on LHIF, using the following annualized formula:

$$CS = 12N \frac{\sum \left(x_{WTPi}^{MAX} - \dfrac{qm_i}{h_i} \right)}{n} \tag{1}$$

Surplus-to-Exploitation Ratio - *SER*

SER is used as a two-fold indicator [Glendinning 1998]: (i) to measure the ratio of consumer surplus to total amount of premiums received by private health insurance providers during a specific period; and (ii) to signal private insurance providers if further opportunities are available in the market – though this achieved by defining a potential entry threshold. A range of factors affect

the level at which *SER* is; which are implicitly embedded in *CS*, as they result directly from WTP results.

Therefore, *SER is developed* by dividing *CS* into P_{life}, to obtain:

$$SER = \cfrac{12N \cfrac{\sum\left(x_{WTPi}^{MAX} - \cfrac{qm_i}{h_i}\right)}{n}}{P_{life}} = \frac{CS}{P_{life}} \qquad (2)$$

Range Values of *SER* and Their Implications

First obvious statement resulting from (2) is that *SER*>0; which acknowledges that CS is always positive (provided the law of demand holds) and assumes that the private health insurance market exists. Resulting ranges and meaning of *SER* provide the following information with respect to the level of ratio:

- *SER*<1 – This level of *SER* indicates that the current *CS* has been fully exploited by the private health insurers.
- *SER*>1 – Values of *SER* at this level indicate that the current *CS* has not been fully exploited.

The above information is summarized graphically in Figure 1.

Figure 1. *SER*, Consumer Surplus-to-Exploitation Ratio
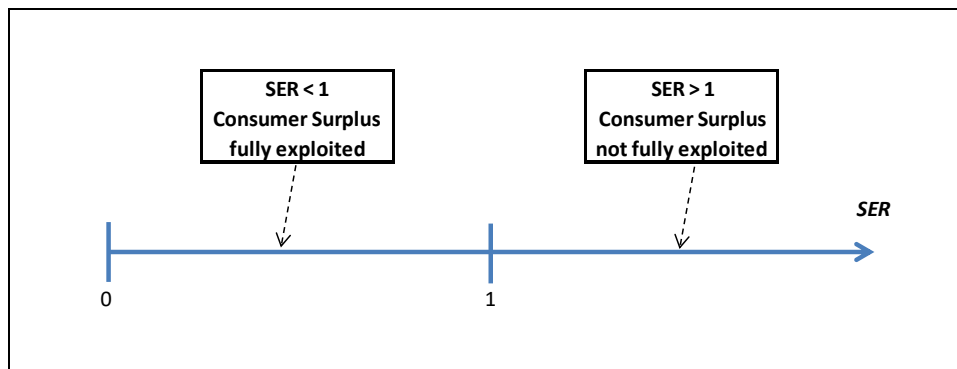
Source: own elaboration

Potential Entry Threshold (*PET*) and Market Possibilities

The first step is to start with the meaning of *SER* and investigate its implication with respect to market possibilities for the number of providers of private health insurance. This is achieved by assuming that current providers make up 100% (or 1 if expressed as a decimal) of the total share of the industry. Further, let k = the number of private health insurance providers, and assume that:

- all providers have an equal ($1/k$) share of the current market,
- have equal access to consumer surplus, and
- consumer surplus will be utilised equally.

Next, let define *PET* such: $PET = 1 + 1/k$ (3) where: 1 is the total current share and $1/k$ is average share of potential entries (*ASPE*), that is:

$$ASPE = PET - 1$$

As more market participants join the market, k increases, implying that the ASPE decreases and the number of potential new entrants' increases. And in the limit we get:

$$\lim_{k \to \infty}(1 + 1/k)$$

That is, *PET = 1* is a natural (asymptotic) lower boundary. So, *PET* exists in the interval (1, *SER*), labelled *'Market Possibilities Region'*. Graphically, we can present this information in Figure 2.

Figure 2. PET Analysis
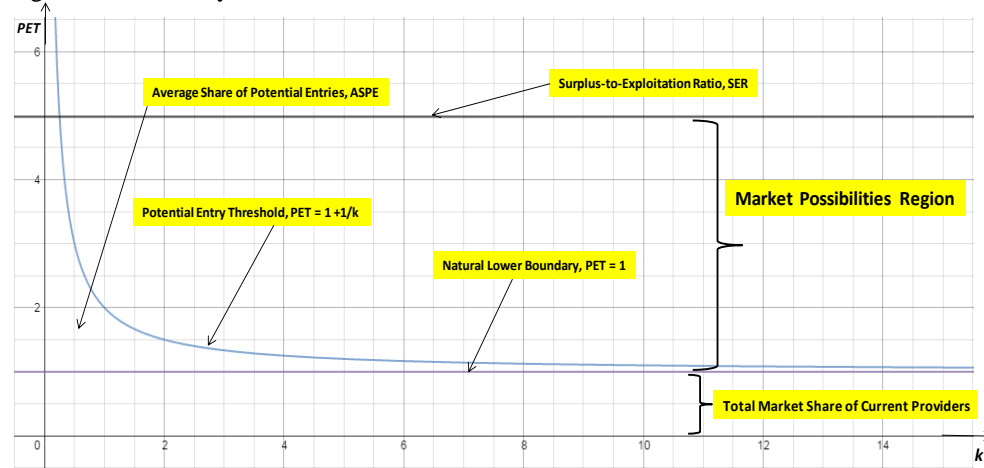
Source: own elaboration

Therefore, the following conclusion is reached with respect to the potential entry threshold and market possibilities:

i. $1 < SER \le PET$ - The market is over saturated, implying that there is no room for additional providers to join the market, or for existing providers to provide additional services at extra costs.

ii. $SER > PET$ - The market is unsaturated, implying that there is room for additional providers to join the market, or for existing providers to provide additional services at extra costs.

Further analysis of (ii) leads to the following:

- Market possibilities exist only in the region bounded by *SER* and *PET=1*

- Ceteris paribus, and assuming that *CS* is completely utilised, total number of potential new entrants (N_t) is defined as the ratio of *SER* with *ASPE*, that is:

$$N_t = \frac{SER}{ASPE} \tag{4}$$

N_t also includes current non-life providers that wish to join the 'life' market, and current 'life' providers that want to offer extra services at additional costs. Unless the estimation of N_t results in a whole number, N_t should always be rounded down.

DATA TRANSFORMATION

Many studies have shown that many processes follow normal distribution. This distribution stands from the rest in its simplicity which makes it amongst the most recognized, understood, and therefore easily utilized in a world where data are becoming more available than ever before [Gilbert 1994].

Normal distribution has its appeal in requiring only to parameters (mean and standard deviation) in order to describe it, and infer conclusions. In essence here is the consumer surplus which is established in the previous section, and is an integral part of all subsequent analysis. However, where equation (1) provides an intuitive aggregate *CS*, a more individual-data driven approach is required. Therefore, this is extracted from (1) and defined as (5):

$$CS_t = x_{WPTi}^{MAX} - \frac{qm_i}{h_i} \tag{5}$$

Since, the individual data contain negative values, an appropriate transformation is the Johnson Transformation. Under this transformation, one of the following three distributions (Minitab is utilized for the transformations, and table representing the formulas has been adopted from its guides.)is optimally selected (which is then used to transform the data into a normal distribution). Johnson family distribution are presented in Table 1. Variable CS_i is presented by x in the functions.

Table 1. Johnson Transformation Functions

Johnson Family	Transformation Function	Range
S_B – Bounded	$\gamma + \eta \ln[(x-\varepsilon)/(\lambda+\varepsilon-x)]$	$\eta, \lambda > 0; -\infty < \gamma < \infty;$ $-\infty < \varepsilon < \infty; \varepsilon < x < \varepsilon + \lambda;$
S_L – Lognormal	$\gamma + \eta \ln(x-\varepsilon)$	$\eta > 0; -\infty < \gamma < \infty;$ $-\infty < \varepsilon < \infty; \varepsilon < x;$
S_U - Unbounded	$\gamma + \eta Sinh^{-1}[(x-\varepsilon)/\lambda]$ $Sinh^{-1} = \ln[x + sqrt(1+x^2)]$	$\eta, \lambda > 0; -\infty < \gamma < \infty;$ $-\infty < \varepsilon < \infty; -\infty < x < \infty;$

Source: own elaboration

Under the transformation it is found that the best function to transform the data is S_u; under which the data are normalized [Carol 2008]. Parts of Minitab output for the data transformation is presented below on Figure 3.

Figure 3. Probability Plot of Original CS Data
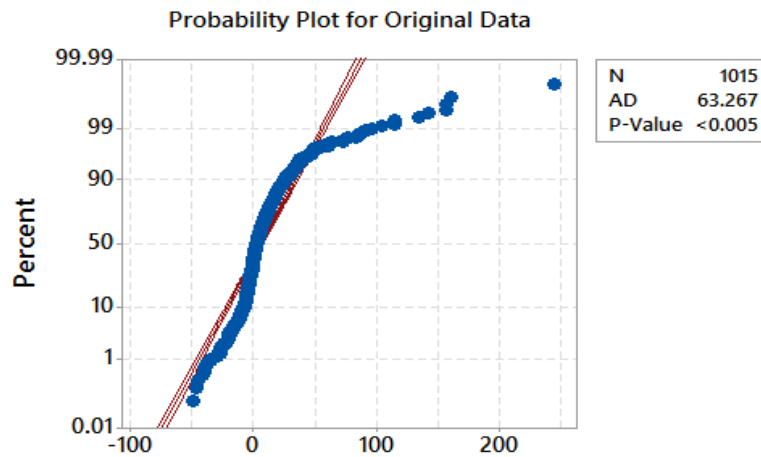
Source: own elaboration

Figure 4. Probability Plot of Transformed CS Data
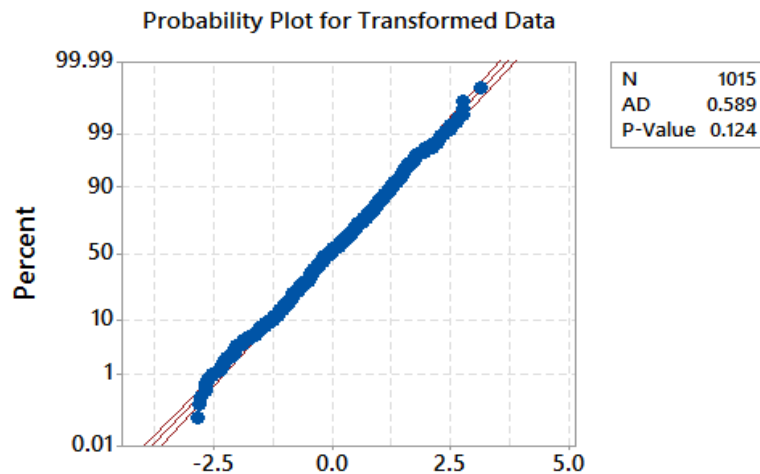
Source: own preparation

An indicator of whether data follow a normal distribution is if the probability plot of the data follows the indicated linear lines from bottom left to top right (Figure 4, transformed data). Clearly, the original data show a distinct deviation

from normality (Figure 3). Furthermore, Anderson-Darling (AD) test is used to test whether data follow a normal distribution; with the following hypothesis:

H_0: *Data follow a normal distribution*

H_1: *Data do not follow a normal distribution*

Under AD test, if p-value is smaller than the level of significance (α, typically 0.05), then H_0 is rejected; otherwise it is not rejected. Visual inspections of data distributions are reinforced by p-values presented in Figures 3 and 4; where original data have a p-value less than 0.005; whereas transformed data have a p-value of 0.124.

Table 2 includes the actual function and its estimated coefficient that re used in transforming the original data. Table 3 provides comparative descriptive statistics for original and transformed data.

Table 2. Johnson Transformation Analysis

P-Value for Best Fit	0.124205
Z for Best Fit	0.91
Best Transformation Type	SU
Transformation function equals	-0.585609 + 0.864371 × Arcsinh((X + 2.50571) / 6.81815)

Source: own calculations

Table 3. *CS* original versus Transformed Data – Summary Statistics

Descriptive Statistics		
	Transformed Data	Original Data
Mean	-0.04035	6.35591
Standard Error	0.03165	0.68037
Median	-0.06272	1.87500
Mode	-0.28961	-0.12500
Standard Deviation	1.00846	21.67600
Skewness	-0.04980	3.70301
Minimum	-0.04980	-50.00000
Maximum	-0.04980	243.87500
Confidence Levev (0.95)	-0.04980	1.33510

Source: own calculations

CONCLUDING REMARKS

Introduction of the mandatory health insurance scheme by the Kosovo government has opened up opportunities for further research into possibilities available to private health insurance providers. An intuitive approach is used to develop a framework for estimated consumer surplus (*CS*) is provided by

[Muhaxheri 2015]. This forms the basis for extrapolating an individualized data set approach (CS_i). The data are transformed using Johnson Transformation, and then both sets of data tested for normality using Anderson-Darling statistic. The analysis show that original data do not follow a normal distribution, however normality is achieved upon transformation.

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ENERGY-SAVING TECHNOLOGIES IN AGRICULTURE OF UKRAINE

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Abstract: A well-known fact is that the world supplies of traditional fuel are decreasing and the world energy production from the alternative sources is constantly increasing. Each year the number of countries displaying a keen interest in development and application of regenerative energy is rising.
Biomass is a considerable and perspective kind of fuel for Ukraine. Nowadays obtaining energy from biomass (wood, straw, plant remainders of agricultural production, manure, organic particle of hard domestic offcuts) is the field developing quickly and dynamically in many countries of the world. In favour of biomass speaks the fact that it has large power potential and refurbishable character.
In our research we considered the use of straw for the receipt of energy and its practical value for a particular enterprise. As well as any type of power resource from biomass, burning of straw has a number of advantages. The advantage is that straw is indeed a regenerative source and is reproduced every year with the new harvest of grain crops. It is accessible for users, especially in rural locality that will allow saving part of facilities on traditional power carriers.

Keywords: biomass, biofuel, bioenergy, regenerative energy sources, alternative energy sources, ecologization

MOTIVATION AND RESEARCH QUESTIONS

In Ukraine renewable energy sources occupy for today very insignificant part in common energy consumption. Now a price on power mediums from traditional sources is enough low, therefore the use of renewable energy sources is not competitive from the economic point of view. But we know that stock coal and petroleum through the set time will run out, and what then? What to do?! Moreover experience of other countries which use the types of energy relatively safe and cheap,

that practically inexhaustible and have grandiose power potential is very important. Research workers and economists of whole world all anymore pay the attention to hydroenergetics, wind engines, use of energy from biomass as a less dangerous energy source from the point of view of environmental protection.

For development of untraditional energy sources Ukraine has no legislative acts, support of the state, in spite of it a theme gains the popularity and is studied by researchers. However without the state support, as experience of the developed countries shows, the question of the use of renewable energy sources can not be decided and develop. Rising in price of power mediums in the world markets results in a fact, that countries which are power dependent upon the import of power mediums should develop their own potentials to partially decrease this dependence and strengthen power safety.

The use of alternative energy sources has a global perspective for the further successful development of civilization. In the world there can be observed phenomena that violate the sustainability of civilized society: running out of traditional energy sources, increasing the cost of their production, heavily polluted environment, the biosphere is destroyed, formation of excessive amounts of organic waste from industrial, agricultural and domestic origin. Removing all these problems should be carried out rapidly.

Many scientific works of economists are dedicated to the development of bioenergy and alternative energy sources. Among them there are works of O. Adamenko, E. Wakh, T. Zhelyezna, M. Zhovmir, V. Dolinsky, V. Zinchenko, M. Kabat, M. Kalinchyk, Yu. Matveev, I. Stoyanenko. The research of theoretical and practical aspects of the use of alternative energy sources from biomass are highlighted in works of domestic and foreign scholars: O. Gauf, G. Heletukha, V. Dubrovin M. Korchemnyi, H. Lins, M. Mkhitaryan, D. Shpaar, A. Shpychak, H. Strubenhoff, G. Shtrobel, H. Schultz and other scientists.

The great socio-economic importance of getting the energy from biomass, prospects of development of bioenergy, development of the market of alternative energy sources led to the choice of research topic, its relevance, purpose, objectives and areas of study.

According to the research of authors [Takács-György, Domán, Tamus, Horská, Palková, 2015] in order to examine the knowledge on renewable energy, the respondents got a list and they had to mark what they know. At first most of the respondents identified the characteristics of traditional renewable energies like wind, solar and water energy. The issues of the energy plants, biopellets and biomass were the least recognizable ones.

The development of bioenergy is very important for Ukraine since it has considerable potential of biomass, which is available for energy - about 24 million tons EF / year, and of peat - about 0.6 million tons EF / year. The main components of biomass potential are straw and other agricultural waste (stalks, starts, husks, etc.), as well as wood waste, liquid fuel from biomass, various kinds of biogas and energy crops. The primary use as fuel requires the existing waste of solid biomass beginning

from wood and straw, while the cultivation and use of energy crops (willow, poplar, miscanthus). Waste of biomass (without the share used in other sectors of the economy) can provide more than 10% of Ukraine's needs in primary energy. This figure exceeds the average consumption of biomass as an energy source in Europe, and makes 3 percent [Kuzmenko and Perederiy 2015].

The main sources of biomass in Ukraine is agricultural residues both of crop industry - straw of cereals, sugar beet, sunflower and livestock products - manure. Normally, part of this production is consumed by agricultural sector itself - as bedding, for feeding animals, organic fertilizer, but these wastes can also be considered the potential of biomass for obtaining energy.

As the authors calculated, there can be provided 5% of the country's needs in energy resources only through the straw of cereals. Of course, no country is able to use 100% of straw only for energy purposes, significant part of it is plowed as fertilizer or used for the needs of animal husbandry. Developed countries use about 25% of obtained straw for energy purposes, which is recommended for adoption in Ukraine.

The increase of production of grain is one of basic tasks of agriculture. Production of grain is seasonal, and its consumption takes place throughout the year, that is why there is a large necessity in creating the necessary conditions for its long-term storage.

Irrespective of the purpose of eventual consumption of corn – for food or bioenergetics, for the long-term storage of grain it needs to be dried. Technologies of drying of grain are perfected from year to year: new methods are developed, grain dryers of new modifications are created, efficiency of the use of existing aggregates is increased. One of perfection methods of process of drying of grain is the use of grain dryers which allow saving electric power by the method of its replacement on the use in production of caldrons for burning of straw.

Data and Methods

Most often they use the following methods of calculating the efficiency of investments, which are based on the concept of discounting:
- method of determining Net Present Value (NPV),
- method of calculating Internal Rate of Return (IRR),
- method of calculating of Payback Period (PBP).

Net Present Value is the difference between the sum of cash flows, discounted to present value, and the sum of the discounted present values of all costs required for the project [1]. Calculation of the net present value can be expressed by the following formula:

$$NPV = \frac{H_{-m}}{(1+i)^{-m}} + ... + \frac{H_{-1}}{(1+i)^{-1}} + H_0 + \frac{H_1}{(1+i)^1} + ... + \frac{H_n}{(1+i)^n} +$$
$$- \frac{B_{-m}}{(1+i)^{-m}} - ... - \frac{B_{-1}}{(1+i)^{-1}} - B_0 - \frac{B_1}{(1+i)^1} - ... - \frac{B_n}{(1+i)^n} \tag{1}$$

or as the sum:

$$NPV = \sum_{t=-m}^{n} \frac{H_t}{(1+i)^t} - \sum_{t=-m}^{n} \frac{B_t}{(1+i)^t} \tag{2}$$

where H – revenues for the period,

        B – expenditures for the period,

        i – discount rate to bring the cash flow to the present value,

        n, m – sequence numbers of the calculation period.

The choice of rate of discounting is an important moment. In the wide understanding the rate of discounting is alternative investment possibilities with the similar level of risk. Otherwise, this is the rate of profitability which investors expect on the investments, and which can stimulate them to investing. The choice of approach to determination of rate of discounting depends on a particular situation and information which an analyst owns.

The method of Net Present Value (NPV) is considered basic at the analysis of investment projects, but it has certain disadvantages. The first problem is related to prognostication of such initial indexes as the marginal cost of capital, sum of future investments and expected profit margin. The second problem consists in the fact that a discount rate is permanent for all operating period of investment project. However depending on the economic changes in a country a discount rate can be multiplied or be diminished. On the basis of offered approach we develop software for automation of calculation of optimization of the biomass using at introduction and estimation of innovative project from the use of energy-saving technologies.

Another method of calculation of efficiency of investments is the Internal Rate of Return (Internal Rate of Return). Its essence consists in determination of such rate of discounting, at which the present value of the expected profits will be equal to the present value of capital investments. The search of rate takes place in the alternative way [Steinhauser et al. 1992].

The method of calculation of Payback Period is popular enough in Ukraine. Its widespread application is explained by simplicity of calculations, as this method foresees the search of necessary period of time which the sum of initial investments comes back for. For determination of PBP they compare the cumulative sum (sum with a growing result) of cash flow with the sum of initial investments.

It is important to mention, that this method shows the degree of risk of project. The longer term is needed for returning of investment sums, the greater is probability

of emerging of unfavorable circumstances. And vice versa, the less is the term of recoupment, the greater is the sum of cash flow at the beginning of implementation of project and, accordingly, the better are the terms for support of liquidity of firm.

MAIN RESULTS

Briquettes are the most powerful type of fuel from a straw. A problem consists in the fact that the briquetting machines for straw are rather expensive and unaffordable for potential users in Ukraine. That is why baling of straw, that is already practiced in our country is a more real variant.

Baling considerably diminishes the volume of straw and allows mechanizing a number of operations at storage, transporting of straw and use of caldrons.

Chemical composition of ash of straw is characterized by high maintenance to potassium that predetermines formation of fusible slag. In the straw of barley, oat, rape there is high content of chlorine, which can result in corrosion at the improper technology of burning.

For providing the observance of technology of burning humidity of straw must make no more than 20-25%, optimum - 15%. The heating value of straw of cereals with optimum humidity is 13,6-15,6 MJ/kg, which is 2 times less, than of coal. On the average 3 t of straws with its heating value can replace a 1000 cubic meters of natural gas or 1 ton of diesel fuel.

As calculations prove, the content of energy in 1 litre of diesel fuel and in 2,4 kg of straw is identical. Thus one roll weighing 250 kg can replace 105 litres of diesel fuel or 105 cubic meters of natural gas. The economy is not hard to count. A straw on our farm does not almost have a substantive cost, it is taken into account only on those farms, where the process of its plowing into the soil takes place or where it is used as bedding for animals. In these cases there is natural balance of straw rather than money accounting. The substantive cost of one center of straw at the end of 2015 approximately makes 90 UAH, so the price of 3 t is 2700 UAH. Cost of 1 litre of diesel fuel in a money equivalent made about 14 UAH, 1000 litres of diesel fuel – 14 000 UAH. 1000 cubic meters of gas – 7188 UAH. Thus, every roll of straw that is used in a caldron for its burning results economy on the farm, and each ton of straw burned saves 12300 UAH compared with diesel fuel, and 4500 UAH compared with gas.

After burning of straw there remains 3-5% of ash which contains a number of nutrients (in the form of salts), mainly potassium, phosphorus and calcium, and can be applied into the soil as a fertilizer [Kuzmenko and Perederiy 2015].

Such type of grain dryer that uses as energy for drying the energy of straw burning is planned to be put into operation on the facilities of Agronomical experimental station.

Our farm chose on a shaft grain dryer ZSh-8000, heat-generator for it THS-500 with a control console and device of support of the set temperature and supply of warning signals, hardware for serving the equipment, norias with productivity

of 50 t/h/14 м with a control console. A general investment in a grain dryer made up 1 mln UAH.

REQUIREMENTS TO THE STRAW QUALITY

The straw, which is delivered for burning, must meet certain requirements to reduce the risks of emerging exploitation problems in the process of producing energy. Storage, preparation, dispensing, supply, combustion and environmental consequences of these operations contain potential problems. Moisture content of straw is one of the most important criteria for the quality of the fuel. Usually the moisture content varies between 10-25%, but can sometimes be higher. The heating value and the price of straw depend on the moisture content.

All thermal power plants determine the maximum acceptable moisture content of straw supplied. The high water content can cause problems during storage and irregularities in the work of the station as a whole, and also reduce power and increase costs for preparation, dispensing and supply of straw into the boiler (and possibly reduce the efficiency of the boiler). The acceptable maximum moisture content of the straw, which is supplied, is different for different stations within the limits of 18-22%. Different types of straw have different properties during combustion. Some species burn almost explosively almost leaving no ashes, others burn more slowly leaving on the lattice the "skeleton" of ash. The experience gained at different stations of centralized heat supply is not always identical. Differences in the combustion process can not always be explained by conventional laboratory measurements [Mesel-Veselyak and Pashtetskyy 2011].

Multi-periodical estimation of efficiency of investment project will help us to give an answer to the question: whether the loss of the capital invested in a grain dryer will take place in connection with its exploitation during 5 years. On the other hand, these calculations can help us to find out how much this investment is profitable, taking into account the changes of money value in time. In order to give complete and exhaustive estimation to the investment project of acquisition of grain dryer, it is necessary to take into consideration that an enterprise is able to pay an investment both by own capital and by a credit which is paid by the farm during 5 years.

On the basis of the statistical reporting of Agronomical experimental station we calculated that on the average for a year the farm gets: 1600 t of grain crops, 370 t of corn. The minimum term of application of a grain dryer is 5 years. Humidity of wheat at harvesting is 22 percent, corn - 32 percent. Normative humidity while storage for wheat and corn is 14 percent.

Due to the use of own dryer as compared to the grant of services on an elevator the economy is 40 UAH per tonne for the decline of humidity on 1 percent, and this is our saving. Alternatively, using own grain dryer there emerge costs for the purchase of straw (about 105 t), additional salaries, maintenance of the installation.

The farm has an opportunity to take a loan in amount of 500 000 UAH for 5 years term, at 28% per annum.

From the calculations conducted by us it is possible to draw conclusion that our variant of calculation of project is advantageous even only due to the saving of drying compared to the provision of services by third parties. This is proved by the indexes of Net Present Value, which show a difference between the present cost of income and expenses on investing. The indicator of 548 044 UAH in funding options through a loan is positive, and therefore has the right to existence and implementation. Even greater effect can be achieved considering the effect from the possibility of providing our services to other farms.

Table 1. Multiperiod calculation of investments in the conditions of getting the loan

Indicators	0	1	2	3	4	5
Grains without corn, t		1600	1600	1600	1600	1600
Corn, t		370	370	370	370	370
Cash flow without considering a loan Revenues, UAH Savings due to the use of own dryer, UAH		748 800	748 800	748 800	748 800	748 800
Total revenue, UAH		748 800	748 800	748 800	748 800	748 800
Expenditures, UAH						
Buying equipment, UAH	-1000000					
		-10000	-10000	-10000	-10000	-10000
Deduction (1%), UAH		-94349	-94349	-94349	-94349	-94349
Costs of straw, UAH		-29250	-29250	-29250	-29250	-29250
Remuneration, UAH		-50000	-50000	-50000	-50000	-50000
Costs of repairs, UAH		-183599	-183599	-183599	-183599	-183599
Total expenditures, UAH						
Cash Flow I	-1000000	565201	565201	565201	565201	565201
Loan (28%)						
Debetor's account, UAH	*500000*	*442525*	*368964*	*274802*	*154275*	*0*
Annuity, UAH		197474	197472	197472	197472	197472
Sum of loan, UAH	50000					
Interest on loan, UAH		140000	123908	103310	76945	43197
The body of the loan, UAH		57472	73564	94162	120527	154275
Payment for services for obtaining the loan, UAH	-5000					
Cash Flow of loan, UAH	495000	-197472	-197472	-197472	-197472	-197472
Cash Flow II	-505000	367729	367729	367729	367729	367729
Discounting factor (22%)	1	0,81967	0,67186	0,55071	0,45140	0,37000
Discounted Cash Flow II	-505000	301417	247064	202511	165993	136060
NPV	548044					
IKV	67%					

Source: own elaboration

In calculations a discount rate was accepted as 22% annual. From the economic point of view a discount rate (or discount factor) is profitability of investments, which usually an investor gets from the investments of similar nature and risk. Essentially, this is a possible rate of profitability. On the enterprise the determination of rate of discounting is complicated as a result of variety of investment possibilities and variety of financing through own and borrowed sources. Rate of income that is used for discounting of cash flow from the capital investments must respond to minimum requests as to profitability that provides the expected level of profit.

For our project the Internal Rate of Return was 67%, that is more than alternative (22%) and proves positive estimation of the offered investment. We return all invested capital in total and have a sufficient profit.

The payback period of the proposed project is:

PBP1 = -505 000 + 301 417 = -203 583 UAH

PBP2 = --505 000 + 301 417 + 247 064 = 43 481 UAH

Thus, in a year the investment will not have time to pay off, and in the second it will pay off fully.

And the entire term of a full payback will be 1.82 years.

To assess the influence of the main factor parameters on performance indicators of the project we will conduct a sensitivity analysis of the project.

The sensitivity analysis is a technique of analysis of the project risk, which shows how the value of the net present value (NPV) of the project will change at a given change in input variable all else being equal.

During this analysis, consistently changing the possible values of varying factor indicators we can determine the oscillation range of the selected for risk assessment of the project final indicators of its efficiency as well as the critical values of factor indicators that question the appropriateness of the project proceeding. The higher the degree of dependence of the efficiency indicators of the project on individual factor indicators of its formation, the more risky it is considered according to the results of the sensitivity analyzes.

Conducting of the sensitivity analysis is very a simple operation, exposed to algorithmization and is reduced to the following steps:

The 1st step. Identifying the key variables that affect the value of the net present value (NPV).

The 2nd step. Determining the analytical dependence of the net present value (NPV) on the key variables.

The 3rd step. Calculation of the base situations - determining the expected value of the net present value (NPV) at the expected values of key variables.

The 4th step. Changing one of the input variables to the desired for the analyst value (in%). Moreover, all other input variables are fixed.

The 5th step. The calculation of the new value of the net present value (NPV) and its percentage change.

The 4th and the 5th steps are carried out sequentially for all input variables, they are entered into the tables and are represented graphically, that is, the analyst receives a series of answers to the question "what if?".

The 6th step. Calculation of the critical values of the variables of the project and identifying the most sensitive of them.

The 7th step. Analysis of the obtained results and the formation of the sensitivity of net present value (NPV) to changing of different input parameters.

The critical value of the indicator is the value, at which the net present value is equal to zero (NPV = 0).

Accordingly, the key factors that may affect the net cash flows are: costs of services of the elevator, repair costs, the cost of the baled straw for incineration.

When studying the impact of changes in cash flows on the changes of the factor indicator - changes in the cost of services of the elevator - we have the following indicators of cash flows. As a basis we take a zero fluctuation of the factor indicator.

Table 2. Dependence of the net present value (NPV) on changes in the cost of services of the elevator

Years	Change of the factor indicator of value of service of the elevator, UAH						
	-15%	-10%	-5%	Base	+ 5%	+ 10%	+ 15%
1	-505000	-505000	-505000	-505000	-505000	-505000	-505000
2	209352	240040	270729	301417	332106	362795	393483
3	171600	196754	221909	247064	272218	297393	322527
4	140656	161274	181893	202511	223130	243748	264366
5	115292	132192	149092	165993	182893	199793	216694
6	94501	108354	122207	136060	149912	163765	177618
Total	226400	333615	440830	548044	655259	762474	869688

Source: own elaboration

From the Table 2 we see that reducing the cost of service of the elevator underestimates the cash flows, the own installation is used less efficiently. Next we will calculate the cash flow fluctuations depending on changes in the cost of repairs. The results are shown in Table 3.

Table 3. Dependence of the net present value (NPV) on changes in the cost of repairs

Years	Change of the factor indicator of repair costs, UAH						
	-15%	-10%	-5%	Base	+ 5%	+ 10%	+ 15%
1	-505000	-505000	-505000	-505000	-505000	-505000	-505000
2	307565	305516	303467	301417	299368	297319	295270
3	252102	250423	248743	247064	245384	243704	242025
4	206641	205265	203888	202511	201134	199758	198381
5	169378	168250	167121	165993	164864	163736	162607
6	138835	137910	136985	136060	135135	134210	133285
Total	569522	565363	555203	548044	540885	533726	526567

Source: own elaboration

Accordingly, we see that the cash flows decrease with increasing the repair costs. We will calculate the impact of the last factor indicator, value of the baled straw, on the net cash flows.

Table 4. Dependence of the net present value (NPV) on the change of value of the baled straw

Years	Change of the factor indicator of costs of baled straw, UAH						
	-15%	-10%	-5%	Base	+ 5%	+ 10%	+ 15%
1	-505000	-505000	-505000	-505000	-505000	-505000	-505000
2	313018	309151	305284	301417	297551	293684	289817
3	256572	253402	250233	247064	243894	240725	237555
4	210305	207707	205109	202511	199913	197315	194717
5	172381	170252	168122	165993	163863	161734	159604
6	141296	139550	137805	136060	134314	132569	130823
Total	588572	575062	561553	548044	534535	521026	507517

Source: own elaboration

Summing up all the above, we shall summarize the sum of cash flows in Table 5, from which we will see, which factor has a greater impact on the productive indicator of the net present value (NPV).

Table 5. Expression of dependence of a productive indicator of net present value (NPV) on the factor indicators

Factor	-15%	-10%	-5%	Base	+ 5%	+ 10%	+ 15%
Changes in the cost of services of the elevator, UAH	226400	333615	440830	548044	655259	762474	869688
Changes in the cost of repairs, UAH	569522	565363	555203	548044	540885	533726	526567
Changes in value of baled straw, UAH	588572	575062	561553	548044	534535	521026	507517

Source: own elaboration

As you can see, all factor indicators have different effects on cash flow. So, how can we determine, which one has the greatest degree of influence and how to insure in the process of the project implementation from potential risks caused by this factor? For this purpose, we will draw a graph of sensitivity of the net present value (NPV) in the following figure. Accordingly, the highest branches are the determining factor that affects the cash flows; the degree of influence is measured by the angle of inclination of the branch of cash flows.

Figure 1. Graph of sensitivity of the net present value (NPV) of the innovative project with using energy saving technologies
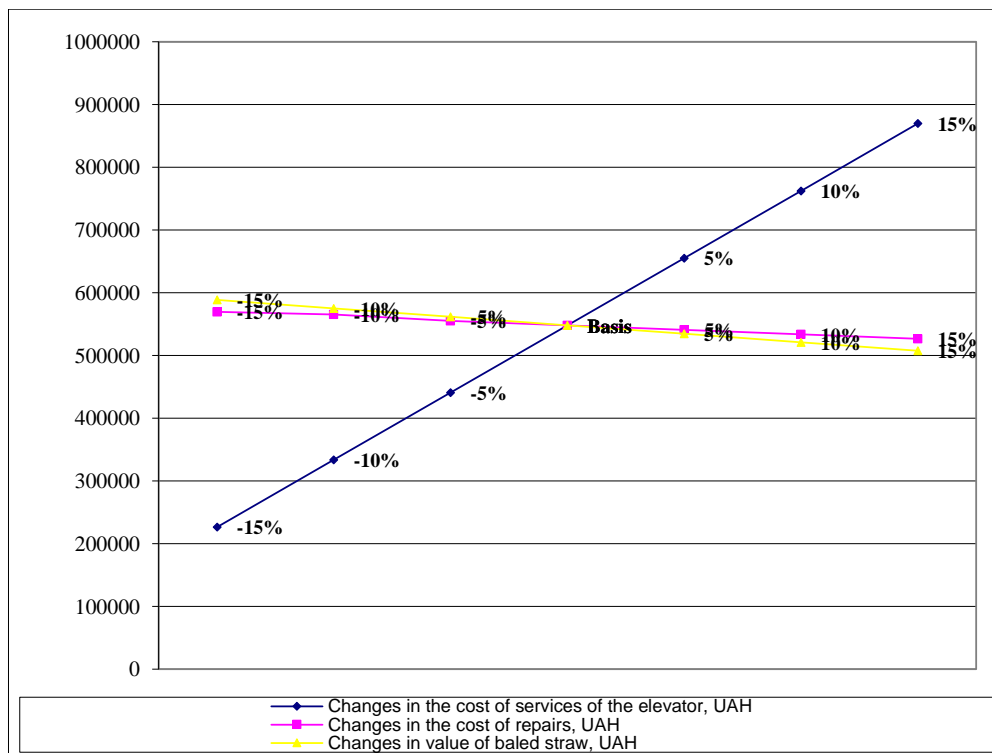
Source: own elaboration

Based on the Figure 1, we will note that changes of the cost of services of the elevator and changes in the value of baled straw have the most decisive influence.

Therefore, the company should pay attention to these factor indicators - changes in the cost of services of the elevator, or changing the amount of dried grain per season, repair costs, changes in the value of baled straw. A critical indicator is the change in value of services of the elevator from 40 UAH to 29.77 UAH for drying of 1 ton per 1 percent.

CONCLUDING REMARKS

This investment in energy-saving technologies is advantageous and economically reasonable. All invested capital comes back, the achieved efficiency is higher than alternative, and we get a sufficient profit that enables us to recommend a grain dryer for introduction.

In the process of exploitation of the object supervisors of the investment project should pay the special attention to probable changing of expenses on services of elevator, repair and changes in the cost of the baled straw, which pursuant to the analysis of sensitiveness can greatly influence the size of Net Present Value of the project.

The question of energy security is very aggravated against the background of modern food problem, which is caused by the growth of food consumption, reduction of agricultural land and the increasing number of natural disasters. An alternative way of solving it is the development of bioenergy. The next issue for research is the dialectic of food security and energy production from biomass and it is obvious, but logical contradiction "food versus fuel" can be perceived only partially, as rising of the world prices for most agricultural commodities is largely due to the growth of world population and changing in its food priorities [Perederiy 2013].

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THE THREE LINES OF DEFENCE MODEL AND BANKS IN ALBANIA

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Abstract: The three lines of defense model (3LODM) is a valuable framework that outlines internal audit's role in assuring the effective management of risk, and the importance for delivering this of its position and function in the corporate governance structure of Albanian banks. Each line of defense has unique positioning in the organization and unique responsibilities and not combined or coordinated in a manner that compromises their effectiveness. The responsibility for internal control does not transfer from one line of defence to the next line. Independence and objectivity are essential elements to consider Setting up of an internal control system and supporting arrangements by 3LODM is relatively simple. In Albania, the real challenge is ensuring that the perceptions, contribution and expectations of bank's executive management, audit committee and bank's board of directors are aligned, and that risk-related information is symmetric, effectively and consistently obtained, analyzed and used by players of internal control system. Misunderstandings between players/bodies of internal control system lead in luck of optimization achievements for reaching bank objectives. Internal auditing is designed to add value and improve an organization's operations; help an organization accomplish its objectives by bringing in a systematic, disciplined approach; evaluate and improve the effectiveness of risk management, control, and governance processes.

Keywords: three lines of defense, 3LODM model, Albanian banks, risks mamagement

INTRODUCTION

The expectations on internal audit functions are increasing in both sides internally and externally. On the one hand chairmen, boards of directors, audit committees and executive managements all have increased expectations of the depth, quality, objectivity, and independence of the work which needs to be performed by their internal audit function, while on the other hand supervisory authorities are seeking to be able to place more reliance on internal audit functions.

In Albania, the new regulation no. 67, dated on 02.09.2015 "On Internal Control System" [SCBA 2015] took in consideration the Basel Committee document on principles[1], and has given the minimum requirements for setting up an effective internal control system and supporting arrangements by the three lines of defence model established to help the bank develop a sound and reliable internal control system and ensure that business operations are effectively functioning to contain the risks in accordance with risk strategy and governance providing a vital assurance to bank's board of directors[2], audit committee, executive management[3], and supervisory authorities.

Banks management aspiration in Albania is to effectively manage the risk and to create sustainable value to its stakeholders through business objectives such as growth, increased dividend and satisfactory customer service. Banks do not operate in a risk-free environment, but they operate in environments filled with uncertainty, requiring proactive action to address risks in order to survive and prosper. For these reasons, in the Albanian banks, there are many different functions and teams involved in managing and controlling risks. The new regulation no. 67 [SCBA 2015] as per the Basel Committee document on principles, has given the minimum requirements for setting up an effective internal control system and supporting arrangements by 3LOD Model.

Short presentation for each line of defence

The first/front line of defence provided by front line staff and operational management. The systems, internal controls, the control environment and culture developed[4] and implemented by these front line units is crucial in anticipating and managing operational risks.

The second line of defence provided by the risk management, compliance (etc. as exp. legal, HR, financial control, technology and operational) functions provide

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[1] [BCBS 2012] The internal audit function in banks, Basel Committee on Banking Supervision.

[2] It will have the same meaning with the board of directors in a one tier structure and the supervisory board in a two tier structure or steering committee.

[3] It will have the same meaning with bank's directorate or bank's senior management or executive committee in a one tier structure or the management board in a two tier structure

[4] IRM defines risk culture as "the values, beliefs, knowledge and understanding about risk shared by a groupof people with a common purpose."

the oversight and the tools, systems and advice necessary to support the first/front line in identifying, managing and monitoring risks.

The third line of defence provided by the internal audit, provides a level of independent assurance that the risk management and internal control framework is working as designed. Internal auditing has to consider as an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes

Benefits of approaching the three lines of defence model

It improves communication by clarifying roles and responsibilities; it improves the effectiveness of risk management because it positions risk as an enterprise-wide concern and provides independent assurance; front/first line staff (sometimes, called risk/business owners[5]) have greater confidence in the quality of their assessment of uncertainty in their areas of responsibility; oversight (second line staff) that support the monitoring process functions such as compliance and risk management and assurance providers (auditors third line) are able to plan their efforts and resources based on the risk-based bank's requirements; it helps banks' executive management to delegate and coordinate risk management duties across the bank; the bank's board of directors and audit committee has a governance process in place that provides protection for future business performance; it helps supervisory authorities to rely on their reports for performing some supervision over internal control system, the adequacy and effectiveness of ICS.

THREE LINES OF DEFENCE (3LOD) MODEL (FIGURE 1)

The new regulation no. 67 "On the Internal Control System" [SCBA 2015] is confessing a strong internal control system using the three lines of defense model, including an independent and effective internal audit functions, as part of sound corporate governance. This model will provide a framework for good governance, a valuable framework that outlines internal audit's role in assuring the effective management of risk, it will bring transparency and fosters collaboration. Every employee in the bank who has a delegation, deploys resources or makes decisions is responsible and accountable for managing the associated risks. This ensures that all areas involved in risk communicate in a meaningful way to better manage risk controls within the bank.

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[5] Functions that own and manage risks, the international risk management standard, AS/NZS ISO 31000, introduced the term "risk owner" (the person or entity with the accountability and authority to manage a risk).

Three lines of defence model (3LODM) needed to support the effective internal control system. The model of "lines of defence" has its origin in military planning, football sports and health protection, while the origin of the 3LOD Model appeared years ago following its adoption by the former United Kingdom FSA[6]. This model provides a straightforward and effective way to enhance communications on risk management and control by clarifying essential roles and duties. This model rapidly gained universal recognition providing assurance from various sources within the bank to the bank's management to effectively get done its duties.

Figure 1. Three Lines of Defense (3lod) Model
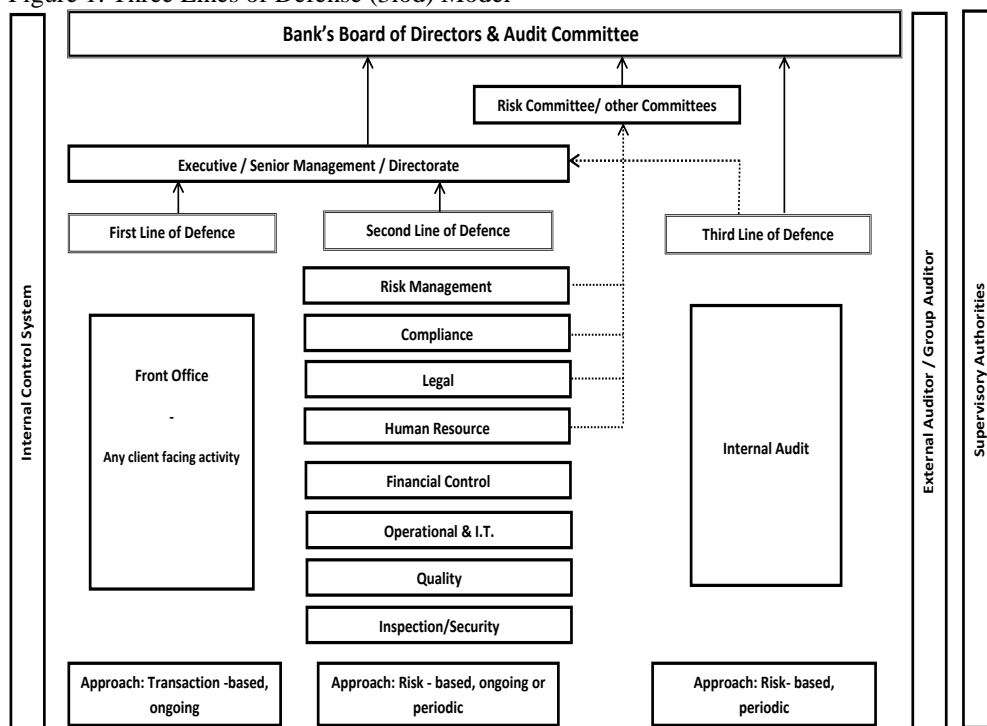
Source: own proposal

The model differentiates between functions that own and manage risks (front/first line), functions overseeing, monitoring risks (second line) and functions providing independent assurance (third line). Different parts and levels of a bank play different roles in risk management, and the interaction between them determines how effective the entire-bank is in dealing with risk. Regular and ongoing dialogue by internal audit with the first/front and second lines of defence is needed so that the

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[6] Three lines of defence model is implied as part of the functional segregations and reporting structures that the FSA looks for when undertaking its risk assessment (ARROW) visits.

function has a more timely perspective of business direction and business issues. Internal audit can therefore play a valuable advisory role to help the executive management improve the first and second line of defence processes with advice, facilitation and training. Internal audit can also identify where there are gaps in the first two lines of defence and advice on how they can be under control. Internal audit can also play a valuable role in helping the board ensure that governance structures are effective in identifying and managing internal risks.

Changes to the regulation no. 67, dated on 02.09.2015 "On the Internal Control System" [SCBA 2015] promote internal audit's role as a core part of the third line of defence and avoid undermining its unique position in monitoring and providing assurance on the management of risk. If the role and duties of internal audit are combined with roles and duties from the first two lines of defence, boards have to be aware of potential conflicts of interest and then the struggles for safeguarding the objectivity and independence of internal audit assurance. The independence and objectivity of internal audit are vital in its support of the board and audit committee. Both "independence" and "objectivity" have a specific meaning in an internal audit environment. The Glossary of The Institute of Internal Auditors [see IPPF 2011] refers to independence as the freedom from conditions that threaten the ability of the internal audit activity to carry out internal audit responsibilities in an unbiased manner. Objectivity is referred to in the Glossary as an unbiased mental attitude that allows internal auditors to perform engagements in such a manner that they believe in their work product and that no quality compromises are made. Objectivity requires that internal auditors do not subordinate their judgement on audit matters to others.

The expectations on internal audit functions are increasing in both sides internally and externally. On the one hand chairmen, boards of directors, audit committees and executive managements all have increased expectations of the depth, quality, objectivity, and independence of the work which needs to be performed by their internal audit function, while on the other hand supervisory authorities are seeking to be able to place more reliance on internal audit functions.

Bank's board of directors[7], it has to decide the bank's risk appetite which is the amount of risk a bank is willing to accept in recreation of value. This decision has to pass after getting analyses and advices of audit committee of the most significant risks for the bank and if bank's chief executive officer and bank's executive management are responding appropriately (i.e. in relation to the agreed upon risk appetite). Bank's audit committee reports to the board of directors on the effectiveness of internal control and risk management systems based on information it acquires directly or with the assistance of the audit functions. The chief executive officer and bank's executive management members have ultimate ownership

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[7] For responsibilities of bank's board of directors, audit committee and executive management related to internal control system, refer to [Ribaj 2015].

responsibility for the bank's risk management and control framework. They should: ensure the presence of a positive internal environment and risk culture within the bank ("tone at the top"); provide leadership and direction to first and second line of defence and monitors the overall risk activities in relation to its risk appetite; take the necessary measures to reestablish alignment where evolving circumstances and emerging risks which indicate potential misalignment with the bank's risk appetite; convert the strategies into operational objectives; identify and assess risks adversely impacting the achievement of these objectives; implement risk responses consistent with risk tolerances. Each executive management member has responsibility for managing risks within his/her sphere of responsibility, while chief executive officer is fully responsible to the board of directors for managing risks of the entire bank activities.

The first line of defence – front line management

The first/front line of defence (business operations - risk and control in the business) is the front-line employees who must understand their roles, duties and responsibilities with regard to processing transactions and who must follow a day-to-day and ongoing identification, assessment, control and risk management of risks associated with those transactions. Employees of business units undertake risk within assigned limits of risk exposure and are accountable for that. The head of front line or business unit is empowered with the responsibility and accountability to effectively plan, build, run and monitor its unit's day-to-day risk environment. Every front line unit head in cooperation with his/her supervisor provides direction regarding risk treatment for those risks that are outside of his/her business unit's risk tolerance. The clear understanding of the concept of front line staff and its management as the first/front line of defence is the key to success of 3LODM.

The first/front line of defence is formed by managers and staff who are responsible for identifying and managing risk as part of their accountability for achieving objectives. Collectively, they should have the necessary knowledge, skills, information, and authority to operate the relevant policies and procedures for risk mitigation and compliance with process should ensure an adequate control environment. There should be adequate managerial and supervisory controls in place to ensure compliance and to highlight control breakdown, inadequacy of process, unexpected events and reporting on progress to bank's management. This requires an understanding of the bank objectives, the environment in which it operates, and the risks it faces. The quality of the people, systems and the organization culture of the bank is the main determinant of success. They are responsible for defining and set up internal control in their business area, through clear roles and responsibility, segregation of duties and daily controlling tools.

The second line – mainly the risk management & compliance

The second line of defence has the support functions/units (Risk Management, Compliance, Financial Control, Legal, Human Resources, Operations and

Technology, etc.) which provide independent oversight over the risk management activities and processes of the first/front line of defence units and assists them with advisory, monitoring and reporting adequate risk-related information mainly by the compliance unit and the risk management unit. These two units may have direct reporting lines either to the bank's executive management or to the respective committees (exp. Risk Management Committee, Corporate Governance Committee, etc.) which report to bank's board of directors. These committees should be involved in monitoring the second line of defence units' activities.

- Compliance function/unit supports the first/front line units in managing risks arising from non-compliance with applicable laws and regulations and advises them on all areas of regulatory principles, rules and guidance, including leading on any changes, and undertakes monitoring activity on key areas of regulatory risk;
- Risk management function[8]/unit is an integral part of all bank processes. It defines and prescribes the financial and operational risk assessment processes for the business, maintains the risk registers and undertakes regular reviews of these risks in conjunction with line management, facilitates and monitors the implementation of risk management practices, assists the first/front line units, and consolidates the communication of risk-related information within the bank;
- Other second line of defence functions/units have responsibility for providing independent oversight over the first/front line units within their spheres of responsibilities related to their respective units objectives.

To be effective the second line of defence units (the support functions) need to work with and support the first/front line of defence units, and in cooperation with bank's management to provide to them:

- Oversee for ensuring that risks in the first/front line of defence units have been appropriately identified and managed;
- The policies, frameworks, tools and techniques that are practical, adaptable and effective for allowing the front line to manage for success;
- Define strategies for implementing bank policies and procedures;
- A bank-wide view of risks (a risk map and limitations) based on the collected information, participating in the business unit's risk meetings, reviewing risk reports and validating compliance to the risk management framework requirements;
- A monitoring report, overseeing the consistency of definitions and measurement of risk with the objective of ensuring that risks are actively, effectively and appropriately managed.

The second line of defence in a cooperative view, might be seen as playing a multirole, anticipating what might go wrong up front and being ready to react,

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[8] ISO 31000 espouses eleven key principles that underpin effective risk management.

while at other times acting as another set of eyes for the front line and shouting advice and encouragement when needed. Sometimes the second line steps up to the front if reinforcements are necessary and other times it drops back in cover defence.

The third line – internal audit

The third line of defence (functions that provide independent assurance) is that of internal auditors[9] who report independently to the bank's board of directors/audit committee charged with the role of representing the bank's stakeholders relative to risk issues. Sitting outside the risk management processes of the first two lines of defence, its main roles are to assess independently the effectiveness of processes created in the first and second lines of defense and to ensure that they are operating effectively and to advise them how could be improved. Tasked by, and reporting to the board of directors/audit committee, it provides an evaluation, through a risk-based approach, on the effectiveness of governance, risk management, and internal control to the bank's bord of directors. It can also give assurance to supervisory authorities that appropriate internal controls and processes are in place and are operating effectively.

Internal audit undertakes a program/platform of risk-based audits covering all aspects of both first and second lines of defence. Internal audit may take some assurance from the work of the second line functions and reduce or tailor its checking of the first/front line. The level of assurance taken will depend on the effectiveness of the second line, including the oversight committees (corporate governance committee, risk management committee, etc.), and internal audit will need to coordinate its work with compliance and risk management as well as assessing the work of these functions. The findings of these independent reviews from these audits need to be effectively communicated and reported to bank's management (board of directors, audit committee and executive management) aiming that appropriate actions need to be taken to maintain and enhance the internal control system of the bank.

Major roles and responsibilities of an internal audit can be summarized as per following: evaluates and provides responsible assurance risk management; reports risk management issues and internal controls deficiency identified directly to the audit committee and provides recommendations for improving the organization's operations, in terms of both efficient and effective performance; evaluates information security and associated risk exposures; evaluates regulatory compliance program with consultation from legal counsel; maintains open communication with

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[9] IIA's financial services code: "internal audit is tasked to include in its scope three different aspects of corporate culture, namely: the risk and control culture of the organisation; the customer-facing culture with regard to the organisation acting with integrity towards its dealings with customers and markets; and the design and operating effectiveness of policies and processes to ensure that they in line with the objectives, risk appetite and values of the organisation."

management and audit committee; engages in continuous education and staff development ; provides support to the company's anti-fraud programs, red flags, etc.

The Institute of Internal Auditors (IIA), which is the internal professional organization that oversees internal audit guidance, certification, education, and research, defines internal auditing as: "An independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization to accomplish its objectives by bringing a systematic, disciplined, approach to evaluate and improve the effectiveness of risk management, control and governance process"[10]. This feature has evolved over the last years becoming clearly distinct from the external audit and covers all activities in a bank not just its financial situation.

Considering internal audit as the third line of defence, banks have to be clear that internal audit should never be relied upon as a primary control measure. Internal audit's role is largely detective and corrective, to detect control weaknesses or breakdowns and to suggest the need for improvements or corrective actions. It is a dangerous view and against the regulation no. 67, dated on 02.09.2015 "On the Internal Control System (ICS)" [SCBA 2015] if bank's executive management nominates the internal audit unit as the only responsible controller of bank's risks. Internal audit should never be relied upon or expected to detect every control breakdown, error or deficiency, because it does not review every single transaction. The third line of defence has a key role to play but if the first and second line is relying on it to pick up every mistake through each transaction or if the bank management continually relies on its internal audit unit to guaranty the function of the ICS, the bank is going to lose[11].

Other responsible lines

A well-coordinated interaction between the involved actors, including a clear segregation of duties, is a key element of sound governance structures. The external auditors and supervisory authorities are the useful bodies for checking over bank's internal control system for the different roles and responsibilities regarding effective risk management and control, to ensure that there are neither gaps in controls nor unnecessary duplications, and respective roles and responsibilities must be clearly defined.

External auditing can be considered as a fourth line of defence, providing assurance to the organisation's shareholders, board and senior management regarding the true and fair view of the organisation's financial statements. However, given the specific scope and objectives of their mission, the risk information gathered by external auditors is limited to financial reporting risks only and does not include

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[10] [IIA 2015) http://www.iia.org.au/aboutIIA/whatisinternalaudit.aspx

[11] ACE publication, 2011 "This third line role compares internal audit to that of a goalkeeper in a football match. When the ball is lost in midfield (first/front line) and the defence (second line) fails to pick up the opposition's attack, it is left to the goalkeeper (third line) to save the day.

the way senior management and the board are managing/monitoring strategic/operational/compliance) enterprise-wide risks, and for which the risk management and internal audit functions respectively provide monitoring and assurance. External audit not only provides the shareholders with assurance but also delivers valuable information to the board of directors, the audit committee, executive management and supervisory authorities. External auditor contributes as an outside body, providing assurance regarding the true and fair view of an organisation's financial statements. It can also be seen as an outside check on internal governance functions, including possible observations on the effective implementation of the three lines of defence model.

The supervisory authorities through on-site and off-site examinations supervise periodically the business frontlines, the oversight functions and internal auditors to ensure that they are carrying out their tasks to the required level of competency and operating effectively and according to best practices. They receive annually the report of external auditor and the audit report for internal control system, and may ask to get other detailed reports for oversight and the front line (business), and may act on any items of concern from any party. Also, the supervisory authorities review the activity of internal control system structures from the front/first line units to the bank's board of directors for being compliant with legal and regulatory framework, their internal regulatory acts, action plans, activity reports, corrective actions, and their roles' responsibilities for being completely and accurately.

Supervisory authority in Albania has under supervision 16 banks, which include on-site and off-site examinations through monthly or quarterly financial data monitoring, to reaffirm their safety and soundness, and have regular (two-way) communication[12] with the structures of internal control system. They discuss the risk areas identified by both parties and measures received or to be received.

CONCLUSIONS

Setting up of an internal control system and supporting arrangements by 3LOD Model is relatively simple. The real challenge is ensuring that the perceptions, contribution and expectations of bank's executive management, audit committee and bank's board of directors are aligned, and that risk-related information is symmetric, effectively and consistently obtained, analyzed and used by players of internal control system. Misunderstandings between players/bodies of internal control system lead in luck of optimization achievements for reaching bank objectives.

The three lines of defence is a well-known model in developed countries, and as the other models, either it is a tool to simplify complex functions and relationships in a way that makes them easier to explain and understand, or it is only as strong as

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[12] Refer to the paper "Some Principles for Banks' Internal Control System in Albania"

the people that work within it and it has to be tailored to the specific context in which the bank operates.

In the 3LOD model, the management of risks is strongest when there are three separate and clearly identified lines of defense. Each line of defense has unique positioning in the organization and unique responsibilities and not combined or coordinated in a manner that compromises their effectiveness. The responsibility for internal control does not transfer from one line of defence to the next line. Independence and objectivity are essential elements to consider.

The third line of defence (internal audit) provides independently assessed risk information to the bank's board of directors /audit committee for the same risk issues reported by the bank's executive management. This independently assessed risk information might be different with what is reported by first or second line of defence. The assessment of third line does not always align with the risk reality as perceived by the first/front line, the second line of defence and bank's executive management. This difference is what adds value to the internal control system framework.

Internal auditing is designed to add value and improve an organisation's operations; help an organisation accomplish its objectives by bringing in a systematic, disciplined approach; evaluate and improve the effectiveness of risk management, control, and governance processes.

Neither the board of directors nor the audit committee is considered part of one of the three lines of defence. These bodies play key roles within the bank's risk management and control structures by assuming their oversight and monitoring duties.

RECOMMENDATIONS

1. The model of three lines of defense should be functional at every bank in Albania, regardless the size or complexity of the bank.

2. Banks in Albania for each line in the 3LODM should have clearly defined roles and duties that have to be supported by appropriate policies, procedures, and reporting mechanisms for ensuring the effectiveness and efficiency of internal control system.

3. To enable the staff of first/front line of defence units achieving the business objectives and an effective risk management, the bank's management has the responsibility to identify and assess risks and to ensure that the control activities are enforced and monitored and to notify regularly the staff of business units, the information: Critical and highly rated residual risks in a map; planned mitigation actions for each main risk and person to act; the existing risk mitigation actions status; the main risk indicators; incidents and breakages including historical/trend, analysis/statistics, status of mitigation actions and lessons learned;

4. To improve efficiency and avoid duplication of effort while ensuring all significant risks are addressed appropriately, the information should be shared and activities coordinated among each of the lines of defense;

5. The staff of first/front line of defence units has to report to upper management every issue related to the risks of internal control system. This information by the second line of defence has to be collated with other risk reports and assessed and reported, both independently and directly, to the bank's executive management (and to the respective committee, if exists), who has to represent to the bank's board of directors the risk assessment issues on the bank activities;

6. Banks need to provide a solid foundation for the three lines of defence so that they are all aware of what they are defending and from what they are threating and limiting disruptions to the business frontline;

7. Banks' management must ensure that the three lines work together effectively and efficiently, while limiting overlaps and gaps and maintaining their discrete duties so as to not compromise the defence model;

8. The bank has to have defined its risk strategy and appetite. Risk officers to be designated for each major risk, and they should have fixed meaningful and measurable objectives and controls, recognized throughout the bank;

9. First/front line units are part of the delegation of authority and the remuneration mechanisms (bonus system) should include appraisal of risk taking;

10. The employees of the three lines should have dedicated training programmes to improve the risk management culture and promote a common language throughout the bank;

11. Internal Audit future continuously challenge is to identify, implement and improve the Information Technology Systems to give a fully support business need, preventing the bank's risks; push responsible managers through Semi Annual Follow Up-s processes, on faster and better audit finding's implementation;

12. Executive management and chief executive officer periodically should receive reports on major risks' evolution and on the implementation of mitigation plans, and by them the critical risks and emergent risks should be escalated to the appropriate management level as soon as they are identified. Also, the Executive management and chief executive officer should communicate periodically a risk dashboard, with key risk indicators, to the internal audit department, audit committee and board of directors.

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EQUITY ISSUANCE AND CORPORATE DIVIDEND POLICY IN EMERGING ECONOMY CONTEXT

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Abstract: This article explores links between the size of a company, industrial sector in which a company operates, concentration of capital, size of business and emission and dividend policy in the Ukrainian corporate sector. Guided by insights from the bird-in-hand theory, clientele theory, signaling theory, and agency theory, we justify factors that determine the choice of shares' placement by Ukrainian public joint stock companies and forming of their dividend policy related to the current operating conditions of the Ukrainian corporate sector. Using mathematical approach of tree classification construction in the form of random forest algorithm, we found out that maximization of the share capital value, that is involved in shares issuance of Ukrainian PJSCs, is not a priority for owners of corporate rights. 86.1 per cent of companies have selected private placements of shares. In the non-financial sector, 87.5 per cent of companies opted private placements. The study revealed also only a small share (3.5%) of Ukrainian joint stock companies paid dividends to shareholders. However, the dividend policy of Ukrainian joint stock companies changed when they listed their shares on foreign stock markets. In this case two thirds of explored firms paid dividends.

Keywords: dividend policy, emission policy, random forest algorithm, Ukraine

INTRODUCTION

Additional share issuance can be a source of significant amount of resources for enterprise development [Iakovleva et al. 2013, Solesvik 2012, Sonenshein 2014]. Equity issuance and corporate dividend policy should meet the interests

of shareholders, including minority ones, and create conditions for sustainable corporate development. Scholars rarely study equity issuance and corporate dividend policy in emerging markets, particularly in countries that appeared after the Soviet Union's collapse. Specificity of equity issuance and corporate dividend policy in post-Soviet countries is defined by processes of market economy revival and the stock market restoration. Therefore, it is time to study not only universal barriers, but also country-specific barriers and incentives related to the introduction of such equity issuance and dividend policy. In this study, we intend to address the gap in the knowledge base, related to equity issuance, and corporate dividend policy in emerging economy conditions. We focus on the Ukrainian market context.

The optimal choice between public equity offerings, equity private placements and economically sound corporate dividend policy is an integral part of an effective corporate governance system. It not only directly affects the interests of shareholders, but also impacts significantly the investment attractiveness of the issuer, its financial results and economic growth potential. Public equity offerings implies sale of shares to any potential investor, while private equity placement can be made only to existing shareholders and to a predetermined list of persons, whose number should not exceed one hundred [Verkhovna Rada 2006]. Limiting the number of investors through the introduction of private equity placement is conditioned by insufficient investment attractiveness of the issuer or non-financial reasons.

Therefore, the purpose of the study was the justification of factors that determine the choice of shares' placement by Ukrainian public joint stock companies (PJSCs) and forming of their dividend policy related to the current operating conditions of the Ukrainian corporate sector. This study aims to answer the following research questions: "What is the pattern of equity issuance in the Ukrainian stock market?" and "Is a dividend policy of current interests for the Ukrainian corporate sector?".

In addressing these questions, we have investigated one hundred and forty four PJSCs. Using mathematical approach of tree classification construction in the form of random forest algorithm, we found out that maximization of the share capital value that is involved in the shares issuance of Ukrainian PJSCs is not a priority for owners of corporate rights. 86.1 per cent of companies have selected private placements of shares. In the non-financial sector, this figure is even higher, i.e. 87.5 per cent of companies opted private placements. Thus, Ukrainian public joint stock companies select private placements of shares more often than in countries with developed stock markets [Gomes and Phillips 2005].

The paper is organised as follows. In the next section, we consider the previous studies related to equity issuance and dividend policy. In Section RESEARCH METHOD, we describe the methodology of this study. In Section FINDINGS, we present the findings of the research. In Section DISCUSSION, we analyse the findings with the help of theories presented in Section LITERATURE

REVIEW. The paper terminates with implications for research, practice and policy-makers, the avenues for further research, and conclusions.

LITERATURE REVIEW

Recent studies have shown that in countries with developed stock markets, almost half of the issues by public firms are public offerings [Gomes and Phillips 2005]. Private placement is mainly typical for small businesses. For example, the results of Gomez and Phillips's [2005] study show that 58 per cent of the equity and convertibles issues are in the private market. In the same time, in the group of small businesses this figure reaches 81 per cent. Other factors that determine the probability of certain issuance type selection are degrees of information asymmetry and the rising cost of corporate rights according to the financial statements for the period prior to the additional issuance. Some studies provided empirical evidence for a significant positive correlation between the asymmetry of information (the book to market ratio) and the probability of private placement [Chen et al. 2002, Dewa and Izani 2010, Folta and Janney 2004, Goh et al. 1999]. Given the fact that the shares of small public companies generally underestimated by the stock market, it is clear why these issuers give preference to the private equity placement. The earning performance and rising cost of shares in the period preceding the additional issue, on the contrary, increases the likelihood of a public equity offering [Dewa and Izani 2010, Gomes and Phillips 2005, Goh et al. 1999, Lee and Kocher 2001].

Concepts of dividend policy are a popular research topic in the professional literature [Al-Malkawi et al. 2010, Ben-David 2010, Brealey et al. 2010, Kinkki 2001]. Some of these concepts are based on radically opposite principles (i.e., dividend policy irrelevance, minimization and priority dividend payments). Others reveal the essence of relations between the subjects of the stock market regarding dividends payment (signaling and clientele effect hypotheses).

According to the dividend irrelevancy theory proposed by Miller and Modigliany [1961], the stock price is determined by the firm's investment policy and does not depend on dividend decisions. In other words, the firm's value will be the same regardless of how the firm distributes its income. The dividend irrelevancy theory is based on certain assumptions about perfect capital market where transactions costs, risk of uncertainty and difference between taxes on dividends and reinvested earnings do not exist. These assumptions are far from reality. Market imperfections make the issue of dividend policy impact on the value of the firm much more complicated. Therefore, empirical studies showed different results. Some of them have not confirmed that the dividend policy affect the firms value [Al-Malkawi et al. 2010]. Others have provided evidence inconsistent with the dividend irrelevance theory [Al-Malkawi et al. 2010].

Bird-in-hand theory

The bird-in-hand theory elaborated by Lintner [1962] and Gordon [1963] states that even when a firm's average rate of return is equal to the cost of capital, the payment of dividends positively affects the stock price and the value of the firm. Such an impact of dividend policy is connected with rational investor's decision making. Under conditions of future cash flow uncertainty, an investor prefers his current dividend (a bird in the hand) over his future dividend (capital gains or two birds in the bush). If it is so, higher dividend payouts reduce the risk of uncertainty and cost of capital. Hence, the firm's value increases. Empirical studies provided very limited support for the bird-in-hand theory [Al-Malkawi 2010]. It's still debatable whether the dividend policy depends on the firm's risk or vice versa [Bhattacharya 1979].

The explanations of dividend payments on the basis of investor behavioral biases are not just limited to the "bird-in-hand" argument. For instance, Shefrin and Statman [1984] suggest that investors may favor dividend stocks because the utility from series of dividends (small gains) is perceived better than one large capital gain. According to these authors, another explanation is associated with the likelihood of psychologically objectionable overconsumption which takes place for investors as they sell no dividend stocks to compensate missed dividends.

Clientele theory

The clientele effect theory sounds more realistic. It does not deny the evident fact that stockholders are interested in after-tax return but distinguishes the preferences of different investor classes (clienteles). Some classes of investors oriented on steady income prefer higher dividend yield if tax rates are relatively low or transaction costs connected with selling stocks are essential. One of such a clientele is the class of elderly low-income investors [Pettit 1977, Shefrin and Thaller 1988]. These investors not only favor high-payout stocks but also tend to purchase them after dividend announcements [Barber and Odean 2008]. Similar preferences are demonstrated by investors whose portfolios consist mostly of low risk securities [Pettit 1977, Scholz 1992] and local firms shares [Becker et al. 2011]. Institutional investors form the clientele oriented to high-dividend stocks too. Allen and colleagues [2000] suggest that a part of the reason lies in relative tax advantages of institutional investors. Brav and Heaton [1997] associate the preferences of institutional investors with so called "prudent man rules" specified in corporate charters.

According to the clientele effect theory, a diametrically opposed attitude to dividend payments is typical for investors in high tax brackets. At the same time some shareholders are indifferent with regard to dividend yield [Elton and Gruber 1970]. The clientele effect as applied to corporate management means the importance of a stable dividend policy that takes stockholders preferences into account [Brav et al. 2005, D'Souza at al. 2015, Scholz 1992]. The essence

of the clientele effect theory is in gradual increase in the homogeneity of the shareholders in terms of their relationship to the distribution of net profit for dividend funds and savings. Stakeholders, who are dissatisfied with decisions taken by the general meeting of the company, carry out transactions of sale and purchase of corporate rights, becoming co-owners of shares whose issuers have optimal dividend policy, in their opinion. So, this theory does not ignore the rights of minority shareholders and justifies the ways of harmonizing the different groups of co-owners of the company. The clientele effect theory, however, was criticized for weak empirical support for clientele effect [Barclay et al. 2009, Grinstein and Michaely 2005, Kuzucu 2015].

Signaling theory

The existence of the asymmetric information problem for real imperfect capital markets led to the emergence of the signaling theory. Managers, who possess inside information about firm's future, sustainable earnings and growth, need to convey it to information-sensitive investors with a purpose to obtain a positive reaction of the stock market. The dividend announcement is an appropriate tool for it [Bhattacharya 1979, Forti and Schiozer 2015, John and Williams 1985; Miller and Rock 1985, Kuzucu 2015]. An increase in dividend payments may be used by management as a signal of the good firm's prospect and perceived by investors respectively. Under these circumstances the stock price usually grows. At the same time, the capital market reacts unfavorably on dividend cuts announcements even if they are not connected with worsening the performance and prospects of a firm [Soter et al. 1996]. Some empirical studies, however, found out that the dividends announcement is considered rather as an indicator of a firm's maturity and low idiosyncratic volatility than a signal of predicted growth in profits [Chay and Suh 2008, DeAngelo et al. 2006, Grullon et al. 2002]. Furthermore, managers may have no incentives to share inside information with the stockholders.

Agency theory

The latter critical argument addressed to signal theory formed a basis for the agency hypothesis. The management objectives do not always coincide with shareholders interests in the real world. The wealth of a firm, where fraction of insider ownership is unessential, may be less important for managers than achievement of their personal goals. It causes a conflict of interests with shareholders (so-called agency problem). The monitoring of corporate decision-making by shareholders and potential investors is needed for solving this problem. According to the agency theory, a high payout ratio is associated with external financing and monitoring [Easterbrook 1984]. The cost minimization model developed on the basis of agency theory [Rozeff 1982] is used for calculating optimal payout ratio. This is the ratio which minimizes the amount of transaction costs of external financing and agency costs.

It is worth noting that the agency theory has some links with arguments in favor of the clientele effect and the signaling theory [Allen et al. 2000]. Institutional investors willingly invest in monitoring the quality of the securities' issuers thus reducing the agency problems. High quality firms are interested in such a monitoring because it provides an opportunity to attract financially powerful investors. Taking into account that institutional investors have relative tax advantages and belong to clientele that prefers dividend stocks, good quality firms tend to attract those paying stable and high dividends, i.e. using the information content of dividends.

As indicated above, some studies provided empirical evidence that the business size [Parsyak and Zhuravlyova 2001, Parsyak and Zhuravlyova 2007], earning performance and degree of information asymmetry affect the choice between public equity offerings and equity private placement. However, the question has remained unanswered, namely - to what extent is this true for the corporate sector, operating in Ukrainian emerging stock market? It leads us to suggest the following hypothesis.

Hypothesis 1: The public companies with negative financial performance and/or high level of information asymmetry, particularly those relating to small businesses, tend to choose equity private placement.

In some emerging markets, a high concentration of capital is observed. We can suggest that a high concentration of capital is not the result of fortuitous circumstances but determined by certain interests of majority shareholders. In the institutional environment that is inadequate not only to the objectives of sustainable development, but also to the essence of the market economy, orientation of majority shareholders at preserving the complete control over the company is often the principal limitation of the equity issuance policy. However, it is not typical for owners of corporate rights such as joint investment institutions and the state. They are usually focused on purely economic criteria for evaluating the effectiveness of issuance policies. It is logical to assume that the overall concentration of capital in the hands of large owners in the absence of significant state involvement and / or institutional investors in the authorized capital of joint stock companies is a sign that they prefer the private placement. Taking into consideration the regulative requirements of the National Banks, particularly to the size of bank capital, it is logical to assume that belonging to the banking sector influences the type of equity issuance. Therefore the following hypothesis is proposed:

Hypothesis 2: The choice between public equity offerings and equity private placement depends on the overall concentration of the share capital in the hands of large owners, substantial part of the state and / or institutional investors in the authorized capital of the company and its belonging to the banking or non-financial sector.

The equity issuance is an opportunity for public companies with positive financial performance to attract financially powerful institutional investors, sending

them signals in the form of dividend payments. As shown above, this is consistent with the precepts of three popular dividend theories (signaling, clientele and agency theories). Firms in emerging markets often need investments. It would be logical to expect dividend payments as a signal to investors in such situation. However, joint stock companies in the Ukrainian emerging economy have a specific structure of the share capital and operate in imperfect institutional environment. We, therefore, hypothesize the following:

Hypothesis 3: Under conditions of high concentration of share capital in the hands of large owners in an underdeveloped stock market, the public companies tend to disregard dividend policy.

RESEARCH METHOD

Sources of data

In order to assess the dividend policy of Ukrainian issuers and determine the factors that influence the choice of equity issuance, we have analyzed official financial reports of corporations in banking and non-financial sectors, which conducted public equity offering or private equity placement for an amount exceeding 25% of the share capital during 2011 and 2012. We have used the following sources of information: public information database of the National Commission on Securities and Stock Market [NCSSM 2014], in particular Electronic System of Comprehensive Information Disclosure (ESCI) by issuers of shares and bonds, which are listed and traded [NCSSM 2015].

Method

In order to determine factors influencing the selection of issuance type, we have applied mathematical approach of tree classification construction in the form of random forest algorithm [Breiman 2001] and software package STATISTICA 10. Random forests is ensemble learning algorithm that is a substantial modification of bagging. The method operates by constructing an ensemble of de-correlated trees, and then averages them [Hastie et al. 2009]. Random forests envisages generating new samples based on an initial sample, as well as formation of the beyond the sample test data set to determine the average error of results and their analysis based on a multitude of classification trees. Each iteration of the tree-growing process is performed through random selection of the input variables. Each node of a tree is determined on the basis of the best split among a subset of them. Classification is carried out using a majority of the class votes obtained from each tree [Hastie et al. 2009].

The selection of this algorithm was driven by (a) the need to study categorical variables, (b) the ability to obtain formal assessment of their importance for the purpose of classification, (c) the lack of previous information regarding the type

of data distribution and the forms of relationship between them, as well as (d) high reliability and accuracy of the algorithm.

It is worth noting that the choice of the issuance type in Ukraine is determined not only by economic but also legal factors, such as for example the legislative restrictions related to the right to increase the authorized capital by public offering if the equity is below par value of shares issued. Therefore, it is reasonable to use a decision trees as a predictive modeling method.

Samples

Sample 1

The sample 1 consists of 144 public companies, which conducted public equity offering or private equity placement for an amount exceeding 25% of the share capital during 2011 and 2012. Companies are registered over the last 20 years. There are at least 100 shareholders in each company.

Sample 2

As of August 2013, fifteen Ukrainian agroholdings have listed their shares on foreign stock markets. They have listed the shares in Warsaw, London stock exchanges. These fivteen companies are an additional sample of issuers in this study.

Variables

Capital concentration. An indicator of capital concentration was defined as the proportion of the authorized capital stock that belongs to equity holders that own 10 per cent or more of issuer's shares. An essential feature of Ukrainian public companies is extremely high concentration of capital in the hands of one or two shareholders. The significance of the capital concentration as a classification factor is determined by certain reasons of a legal nature and features of the undeveloped stock market. According to the Law of Ukraine "On Joint Stock Companies" [Verkhovna Rada 2008], a general meeting by a simple majority of the shareholders' votes, except for some matters. These matters include, in particular, the equity issuance. In this case, the decision requires the votes of a three-fourths of voting shares that registered to participate in the general meeting of shareholders. Therefore, the corporate rights in PJSCs, where the total concentration of capital in the hands of large owners of more than 75% (that is where all minority shareholders together do not possess even a blocking stake) are not attractive for investors. Capital concentration is expressed in the form of interval and categorical predictors. We coded companies where a single shareholder owns less than 75% of shares as 1, if a shareholder owns more than 75% of shares as 2. The value of the categorical predictor (75%) specifies the percentage of shareholders' votes needed for complete control of the company [Verkhovna Rada 2008].

Equity capital to authorized capital ratio. Equity capital to authorized capital ratio is the substitute for the book to market ratio, under conditions of Ukrainian stock market, because the stock's market value of the most Ukrainian

public companies is defined by experts, but not in the process of trading, as a rule at the level of face value. We coded equity capital to authorized capital ratio in the form of interval and categorical predictors, i.e. 1 if it is less than 100%, and 2 if it equals or more than 100%). The value of the categorical predictor of 100% means there is no information asymmetry.

Return on equity (ROE) in the form of interval and categorical predictors (i.e. 1 if it is less than 5%; and 2 if it is equal or more 5%). The selected values of the categorical predictor explained by economic stagnation in the analyzed period.

Institutional investors. By analogy with the criterion of capital concentration (10% and above of the authorized capital stock), we have defined also a substantial state involvement of institutional investors. Notably, according to the Ukrainian legislation, participation in a joint stock company is considered as essential not only when somebody owns (directly or indirectly, alone or jointly with others) 10 percent or more of the authorized capital stock or voting rights of the legal entity but also when somebody has (independent of formal ownership) an opportunity to influence considerably on the legal entity's management or activities. However, the Public information database of the National Commission on Securities and Stock Market, which we used as the source of input data, does not provide the disclosure of the informal influence on corporate governance. A significant part of joint investment institutions (institutional investors) or the state has been defined as follows: yes=1, no=0 (categorical predictor);

Sector of the economy in the form of categorical predictor has been defined as follows: belonging to the non-financial sector = 1, belonging to the financial sector = 0. Dividends were coded in the form of a categorical predictor as follows: dividends were paid = 1, dividends were not paid = 0. In addition, we used three variables in the form of an interval predictor, i.e. share capital, equity, and net income. These predictors are selected for the following reasons. First of all, there is a need to determine whether the choice of equity private placement in an underdeveloped stock market depends on the same factors determined in previous studies (Hypothesis 1). Share capital and equity determine the scale of the business. ROE and net income describe the company's financial performance. Equity capital to authorized capital ratio reflects with the above-mentioned provisos determine the degree of information asymmetry.

Concentration of capital, substantial part of the state and / or institutional investors in the authorized capital of the company and firm's belonging to the banking or non-financial sector are included to predictors in order to test Hypothesis 2.

Dividends are included to predictors as a criterion of the firm's financial results in accordance with the postulates of the signal theory, which, as stated above, has some links with arguments in favor of clientele effect and agency hypothesis.

FINDINGS

86.1% joint stock companies, included in sample 1, have selected private equity placement, in particular 87.5% - in the non-financial sector, whereas in countries with developed stock markets, almost half of the issues by public firms are the public offerings [Gomes and Phillips 2005]. The use of the above-mentioned algorithm allowed us to estimate the importance of factors which determine equity issuance type. In Table 1, the importance of variables on the 100-point scale is specified. The main factor was capital concentration. The analysis has revealed the importance of other factors of issuance policy such as equity capital to authorized capital ratio, economy sector and the availability of significant share of institutional investors or state in the authorized capital. The results of classification are shown in Figure 1 where each variable is defined on the 100-point scale. Thus, the study had not provided a direct support for the Hypothesis 1.

Table 1. The importance of variables on the 100-point scale

	Predictor importance	
	Variable Rank	Importance
The concentration of capital	100	1.000000
Equity to authorized capital ratio	87	0.869893
Sector of the economy	82	0.821060
Substantial part of the state and / or institutional investors in the authorized capital of the company	74	0.738207

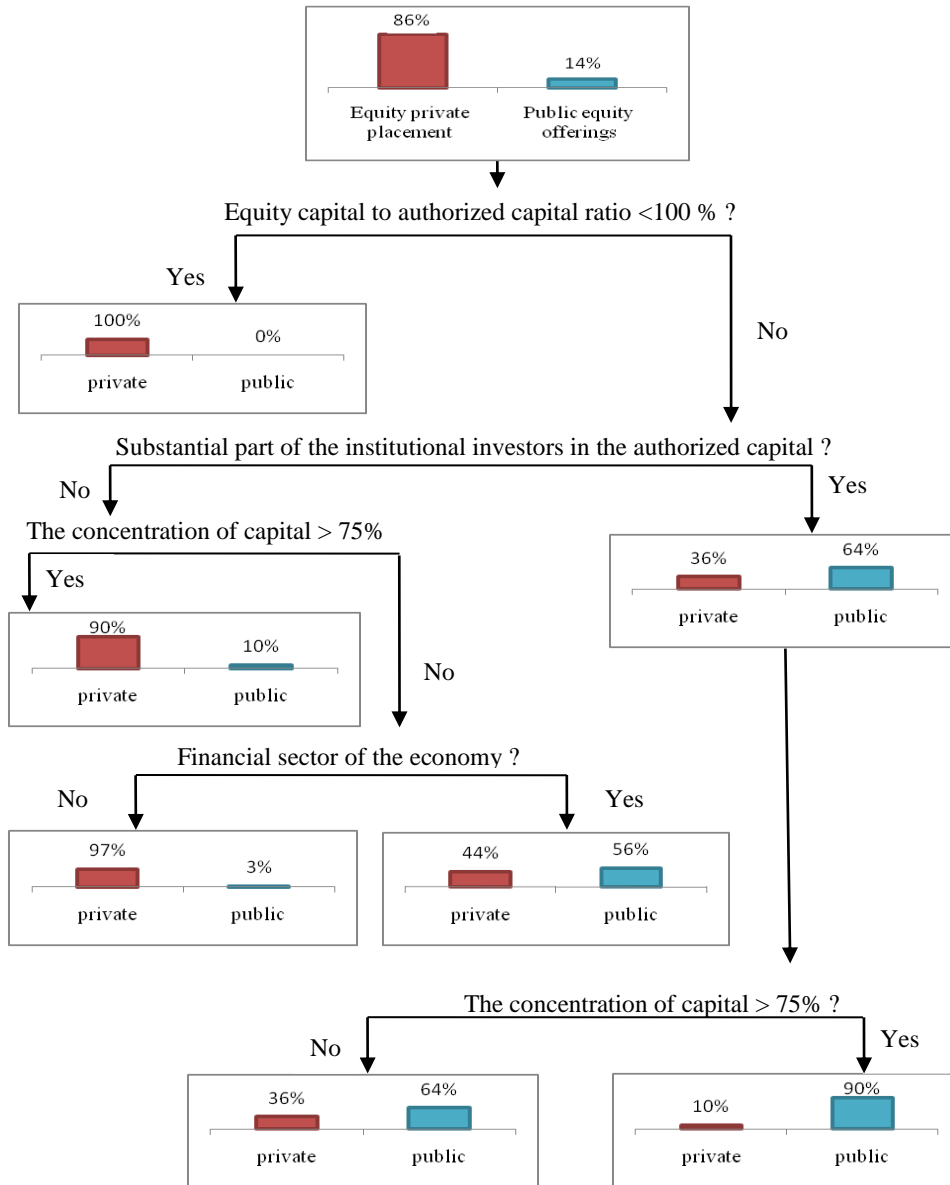Source: own elaboration

Figure 1. Importance plot
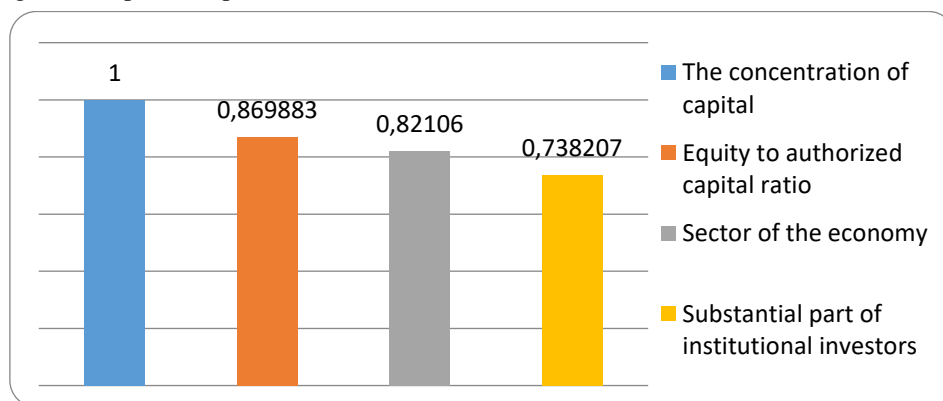
Source: own elaboration

Taking into account the main factors, we have built the model for prediction of equity issuance. Classification type is based on 30 classification trees. Each tree

is based on a random sample generated from the original data set (Figure 2). The model correctly classified PJSCs choosing a private placement of shares in 86.29% of cases, and in 80% of cases for companies that preferred a public offering.

Figure 2. Generalized classification tree related to factors which determine equity issuance type

Source: own elaboration

The availability of equity capital to authorized capital ratio among the classification factors ratio is completely understandable given the legislative restrictions related to the right to increase the authorized capital by public offering if the equity is below par value of shares issued [Verkhovna Rada 2008].

Further analysis of input data identified an array of important features of Ukrainian corporations' issuance policy, i.e. although there are no legal bans on public offering in cases where equity is numerically equal to or greater than its authorized capital, it is nevertheless less common than private placement (Figure 2). Thus, in terms of the current state of corporate relations in Ukraine, the dependence of the issuance type on their level of equity capital to authorized capital ratio is determined by legal factors to some extent, but not financial.

Results of the study proved the correctness of Hypothesis 2. All the investigated companies with the equity capital to authorized capital ratio of not less than 100%, the total concentration of capital in the hands of large owners at more than 75% in the absence of significant state involvement and/or institutional investors in the share capital (except one bank) carried out a private placement of shares. De facto the bank was not an exception because after public offering, the concentration of capital and controlling shareholders have not changed.

In the study, the categorical variable "substantial part of the state and/or institutional investors in the authorized capital of a company" was one of the most essential factors in choosing the type of equity issuance. As noted above, the significant ownership means 10 and more percent of the authorized capital. However, it is clear that a significant ownership of 10% and 25% of capital means a fundamentally different effect on the ability to determine the type of equity issuance at the general meeting of shareholders. The owner of 25% stake in the share capital, according to the Law of Ukraine "On Joint Stock Companies", has the right to block decisions on equity issuance [Verkhovna Rada, 2008]. For owners of smaller shares in the authorized capital, it is necessary to seek options for forming a blocking share package, together with other minority shareholders. This is not always possible. Only one corporation out of nine PJSCs, where state or institutional investors own the controlling or blocking stakes, chose a private placement of shares. Other eight PSJCs preferred public offering. As for the company, which was the only exception, it has certain characteristic that usually affects the formation of equity management strategies. It has a small share capital (UAH 12,177.9 thousand), average number of employees was not exceeding 50 persons and the financial loss was observed in recent years.

The model of equity issuance policy factors showed that a significant classification criterion for selecting the public offering is company's belonging to the banking sector. Moreover, a certain regularity dividend policy is observed only among banks. How we can explain this? Based on the findings of previous research [Gomes and Phillips, 2005], we could explain this by the high capitalization of banks compared to non-financial enterprises. Indeed, all the banks in the sample of this study, except two banks, met the listing criteria related to net asset value in 2011

(Figure 3). Moreover, based on the values of this index, 77% of banks were able to claim the first level listing of shares. Fundamentally different situation is observed in the non-financial sector (Figure 4). Out of the 216 public companies, the vast majority (82%) did not meet the criteria of the net assets in 2011. Only one tenth of the PJSCs related to this indicator to the first level listing.

Figure 3. Distribution of banks by possible listing level based on the criteria of the net assets
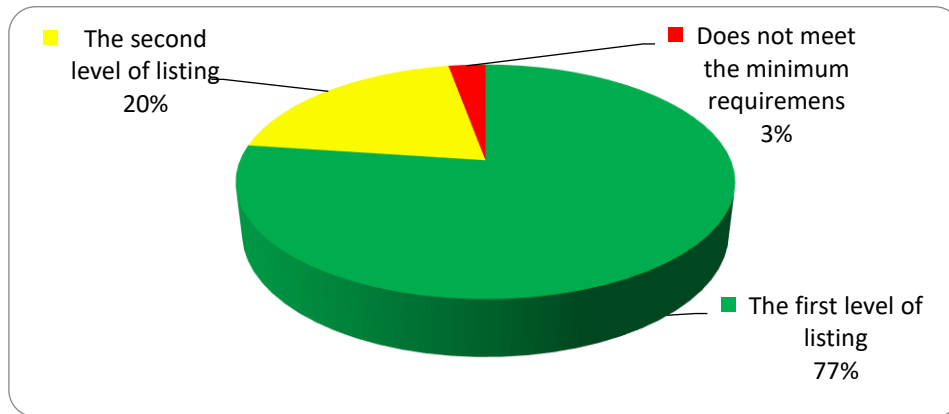
Source: own elaboration

Figure 4. Distribution of PJSC in non-financial sector according to the possible listing level based on the criterion of the net assets
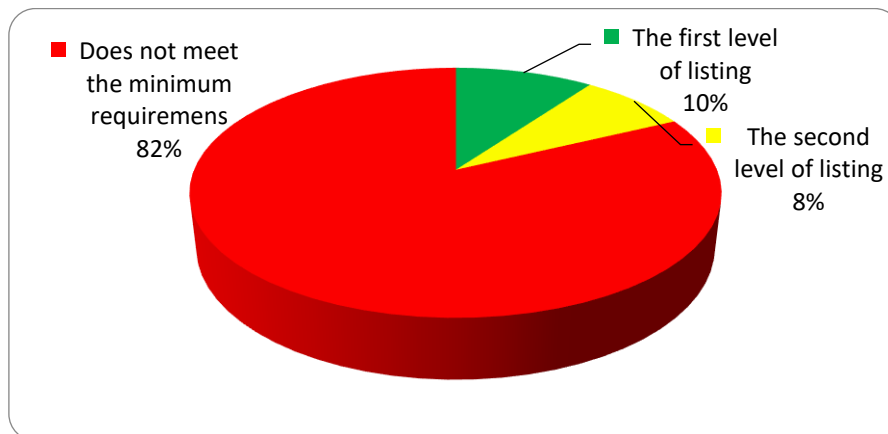
Source: own elaboration

However, the capital of the joint stock company was not among the key factors that determine the choice between private equity placement and public offering for Ukrainian PJSCs. Therefore, it is likely that banks increasingly choose public offering and, therefore, pay more attention to dividend policy than companies in not

financial sector not only and not so much due to capital size. Sometimes, the reason is the growing regulatory and market requirements for bank capital growth that is one of the most important factors of banks competitiveness due to the nature of banks' activities. In non-financial sector of the Ukrainian economy, the capitalization factor is inferior to the desire of owners to maintain a control over a joint stock company.

To assess the dividend policy of Ukrainian issuers, we used the same sample that we used to determine the factors that affect the equity issuance type. Out of the 144 public companies that are included in the sample, only five PJSCs (or 3.5% of the sample) paid dividends on ordinary shares. All of them were banks. Among enterprises in a non-financial sector, none of them paid dividends. This situation is only partly can be explained by financial reasons, because only ten PJSCs (out of 72) are in non-financial sector, i.e. 13.9%, had equity capital to authorized capital ratio less than 100%. The share of unprofitable enterprises was 50% both in 2010 and 2011. The share of banks in the sample with equity capital to authorized capital ratio less than 100% amounted 38.9%. However, only 22 banks reported profits in the financial statements in 2010 (30.6%) and 12 in 2011 (16.7%). Thus, even in the banking sector, the share of sustainable profitable PJSCs is greater than the proportion of companies that paid dividends on ordinary shares in 2010 - 2011. Thereby, Hypothesis 3 is supported.

In conditions of developed stock market, stable dividend payments to shareholders is a prerequisite for the success of public offerings. In this study, we found that among five PJSCs that paid dividends, two PJSCs conducted public offering. Consequently, there is no reason to talk about the significant relationship between corporate dividend policy and choice of an equity issuance type under conditions of Ukrainian economy nowadays.

Exploring the factors of dividend policy, we cannot ignore the impact of international stock markets on issuers. Accordingly, we analyzed reports of Ukrainian agricultural sector corporations that have undergone the IPO procedure on one of the foreign stock exchanges. Selecting this sector was not random. We have selected agroindustrial holdings because they constitute the overwhelming majority of Ukrainian issuers whose securities are traded on international stock markets.

As of August 2013, fifteen Ukrainian agroholdings have listed their shares on foreign stock markets. These fivteen companies are an additional sample of issuers in this study. Six of them, or 66.7%, paid dividends. Comparison of results for the second and first samples (66.7% vs. 3.4%) clearly demonstrates a fundamentally different approach to the distribution of net profits of Ukrainian companies in international stock markets. However, the fact of payment or non-payment of dividends is less important than the official declaration of the own dividend policy by majority of surveyed agricultural holdings in sample 2. This applies to issuers that distribute net profit for shareholders and those who reinvest it completely.

For example, Kernel Holding SA announced the application of the fixed dividends method in the amount of USD 0.25 starting from 2014 [Kernel 2015]. Avanguard Corporation has chosen a flexible method of dividend payments equal to 15 - 40% of net income, determined according to the annual consolidated financial statements. Dividend policy of Agroliga provides a complete accumulation of profit over four years to optimize development [Agroliga 2012]. Agrokultura AB, also refrains from paying dividends in the present stage of growth. The management of Agrokultura AB aims to direct at least 30% of net profit for dividends to shareholders in the future [Alpcot Agro 2013].

DISCUSSION

The findings regarding factors influencing the choice between public equity offerings and an equity private placement are different to some extent from those made in previous studies. The discrepancy has logical explanations in the peculiarities of the Ukrainian stock market and institutional environment. The most significant factor proved to be the capital concentration, which was expressed in the form of a categorical predictor ($<75\%$ and $\geq75\%$). Cronqvist and Nilsson [2005] argue that family-controlled firms tend to avoid issue methods that dilute control benefits, even such as a private placement to a new investor. Schultz and Twite [2015] have found that firms with larger and more concentrated pre-issue monitor shareholdings are more likely to choose a private placement. Our findings are not in contrast to these assertions. Only an insignificant part of the companies in our sample with the concentration of capital in excess of 75% exercised a private equity placement. It is unlikely at such a high capital concentration to form a blocking stake through a process of public equity offering. In the absence of dividends that are paid very rarely and when the market value of shares is not rising, such companies are not attractive to investors. Furthermore, an extremely high concentration of the share capital in the hands of one or two shareholders over a long period of time could not be attributed to fortuitous circumstances. It is a consequence of realization of the major shareholders interests to preserve control over the company. Certainly, a public equity offering is not an appropriate instrument for achieving such a goal, especially when the majority shareholders face strong takeover pressure [Chen et al. 2016]. On the other hand, the companies where a significant ownership fraction belongs to institutional investors are guided, as a rule, by the goal of maximizing investments. Therefore, the concentration of share capital in the hands of institutional investors and public equity offering are positively related.

The previous studies provided an empirical evidence for the hypothesis related to the positive relationship between information asymmetry and equity private placement [Chen et al. 2002, Dewa and Izani 2010, Folta and Janney 2004, Goh et al. 1999]. Taking into account the specifics of the Ukrainian stock market, as a criterion of information asymmetry degree in this study the *equity capital to authorized capital ratio* was used instead *the book to market ratio*. In accordance with the

Ukrainian legislation, a joint stock company has no right on public equity offerings when equity capital to authorized capital ratio is bellow 100%. The equity private placement is permitted. Thus, it would not be correct even to consider the relationship between information asymmetry and probability of equity private placement under these circumstances.

This study has not confirmed nor disproved the hypothesis related to the positive relationship between the degree of information asymmetry and private equity placement. Other predictors appeared to be more important for classification purposes. This is associated with the specifics of the Ukrainian stock market and the institutional environment as a whole. *The equity capital to authorized capital ratio* does not enough reflect properly degree of information asymmetry. The market share value for the majority of corporations is determined not at the stock exchange, but on the basis of an expert assessment, which is not always objective. As a rule, the market share value is estimated at its face value. This corresponds to the interests of major shareholders, focused on maintaining a full control over the company and seeking to acquire shares in the process of their issuance at the lowest possible price. The point is that according to the Ukrainian legislation, equity issuance is carried out at the market rate, but not lower than the face value of a share.

Some studies demonstrate that the private equity placement is mainly typical among smaller firms [Dewa and Izani 2010, Gomez and Phillips's 2005]. For Ukrainian market, it is confirmed only indirectly by the high capitalization of banks compared to non-financial enterprises as well as the positive relationship between such classification criterion as belonging to the banking sector of the economy and the public offering. However, this relationship is largely due to regulatory requirements with respect to increasing the capitalization of banks. The positive relationship between financial performance of a company and the public equity offering has also found only indirect confirmation for Ukrainian market through such classification factors as belonging to the banking sector of the economy and the equity capital to authorized capital ratio.

The study revealed that a situation with the payment of dividends in the corporate sector in Ukraine is quite indistinctive for more developed and emerging stock markets where payment of dividends is not an exclusion [Baker and Kapoor 2015, Forti and Schiozer 2015, Kadioglu et al. 2015, Manneh and Naser 2015, Yaseen et al. 2015] Is it possible to explain the mass abandonment of dividends payment with the help of modern theories of dividend policy, that were considered in the LITERATURE REVIEW section?.

In terms of the Ukrainian stock market, at the present stage of its development, minority shareholders often cannot exercise their right to change the object of financial investments, because the liquidity of small stakes is very low. In the first approximation, it is logical to assume that the majority shareholders, refusing to direct a portion of profits to dividends made a reasonable strategic choice in favor of theory of dividend policy irrelevance principles or they want to minimize dividend payments in accordance with the residual theory of dividends. However, the analysis

of these concepts' nature and consequences of their use in modern conditions of the Ukrainian economy shows simplicity of this conclusion. The hypothesis related to the communication lack between the dividend policy and changes in the market value of the shares was formulated by Miller and Modigliani [1961] in a relation to an abstract business environment. This hypothesis does not deny the possibility of paying dividends to meet the interests of different groups of shareholders. The low level of dividends which suits investors with high incomes, who are interested in minimizing taxes, does not worsen capitalization of companies but does not contribute to its growth either. Even low dividends are not offered by companies oriented towards small scale investors.

Of course waiver of dividends payment may be due to the influence of classical dividend policy factors (i.e., stage of the firm's life cycle, large-scale investment projects, low cost of debt capital, and legislative or contractual restrictions). However, the influence of these factors cannot explain the neglect of dividend payments by all investigated companies in the non-financial sector, especially given the stagnation of the Ukrainian economy, very high interest rates on bank loans and the composition of the sample (PJSCs that announced the additional equity issuance and should meet certain financial criteria and have to be attractive investments).

It seems convincing that the dividens are extremely low or not paid at all taking into account the progressive income tax rates as well as higher taxation rates related to distributed taxation than to capitalization. However, in such circumstances, issuers repurchase their shares from the owners at the request of the latter for higher prices. The issuers do this in order to meet the interests of shareholders in income derived from their financial investments. It should be noted that the companies rarely completely waive dividend payments for a specified compensation mechanism, because it can be interpreted by controlling authorities as a clear tax evasion [Brealey et al. 2008].

Ukraine's legislation does not provide tax preferences for the capitalization of profits or application of progressive tax scale. Thus, minimizing dividend payments can positively affect the revenue of potential shareholders only by a factor time of money value. Moreover, in conditions of almost total abandonment of dividends payment, the compensation mechanism in the form of share buyout by their issuers does not work, although it is regulated by the Law of Ukraine "On Joint Stock Companies" [Verkhovna Rada 2008]. Thus, the interests of minority shareholders are completely ignored. This reduces a social dimension of sustainable development. In the long term, this leads to the loss of significant potential financial revenues for corporate economic sector. The existing attitude of big business to the dividend policy has little to do even with the principles of the tax effect hypotheses.

Institutional investors (pension funds, insurance companies, and securities traders) prefer investing into shares of joint companies that pay dividends. This pattern occurs also in the Ukrainian stock market. Institutional investors attract

emitents by broad financial capabilities and not competitive business interests. On the other hand, institutional investors carry out a systematic monitoring of financial condition of investees and keep under control the process of corporate governance to prevent decisions that could affect the financial results. Thus, from the signaling theory perspective, successful companies conduct a balanced dividend policy, through which a shareholder attracts institutional investors receiving specified benefits and providing better financial results.

It is worth to pay attention to the low share of institutional investors in the authorized capital of the companies in the Ukrainian stock market. In our sample, only 8.9% of PJSCs had institutional investors as shareholders. This fact limits the use of signaling theory for the dividend policy development. In addition, a very small proportion of PJSCs that passed listing procedure at stock exchanges. An obstacle is a discrepancy of financial performance to listing criteria. Finally, one of the most important factors that hampers implementation of the principles of the signalling theory into practice of corporate strategic management is a small portion of shares that are in a free float. The concentration of shares in the hands of owners of domestic PJSCs at 75% or more is typical (62% in our sample 1). This makes any signal to potential investors unperspective.

Summarizing the attempts to find theoretical justification of dominant practice for distribution of net profit by Ukrainian public joint stock companies, we are led to the conclusion that it cannot be fully explained by any known concept of the dividend policy designed for a certain level of stock market devlopment. The consequences of the dividend policy observed in Ukraine are the displacement of small and medium-sized investors from the immediate circle of corporate rights owners, increasing concentration of capital and reduced ability to attract financial resources in the equity issuance.

The common reason for rejection of developing and implementing a consistent dividend policy by the overwhelming majority of corporations is a very weak reaction of Ukrainian stock market to the facts of dividend payment. The stock market's development is hampered not only by significantly unfavorable economic situation in the country over the recent years but also by the lack of incentives capable to overcome entrenched corporate strategy to have a surplus control package of shares. It would be too simple to explain such a dividend policy only by immaturity of corporate strategic vision. The Ukrainian holdings that made IPOs on the foreign stock exchanges show a fundamentally different approach in terms of strategy formation related to distribution of net profits. The problem can be solved by addressing relations between issuers of shares and the stock market.

Implications for policy makers

Our results are of interest to policymakers. Nowadays, the consequences of the equity issuance and corporate dividend policy in Ukraine are as follows: ousting of minority shareholders, an economically unjustified increase of the capital concentration and reducing the ability to attract financial resources through equity

offering. The participation of institutional investors in the share capital of Ukrainian public companies leads to a higher use of equity public offering, attracts minority shareholders and hence contributes to investments maximization. Thus, stimulating the development of joint investment institutions will boost investment processes in the country.

An unrepresentative listing of stock exchanges, an excessive concentration of capital, an insignificant free-flout and a very limited impact of joint investment institutions are factors that contribute to a very weak reaction of Ukrainian stock market on dividends. This is the main reason for the rejection of developing and implementing a consistent dividend policy by overwhelming majority ofcorporations. In the period of the stock market formation, it is important not only to create the foundation of evolutionary changes in the corporate dividend policy, but also ensure the protection of minority shareholders rights to receive income from the corporate ownership. In Ukraine, as in some other post-Soviet countries, minority shareholders are a large group of stakeholders that have appeared as a result of corporatization and privatization. Under certain conditions, it could be a powerful source of financial revenue to capital of issuers. But today, minority shareholders de facto represent a disadvantaged group, because they have virtually no right to receive annual income according to the real cost of equity. They are also usually not able to sell shares in the stock market due to illiquidity of small share packages. Apart from that, small shareholders' shares loose their value during each additional issuance, which often occurs at the nominal rate that does not meet the real value of the stocks [Rohov 2008].

The evolutionary change in the corporate vision of emission and dividend policy can occur only in the institutional environment that is adequate to needs of a modern social-market economy. In theory, the stock market acquires maturity with the development of a market economy. However, this pattern is not realized automatically without profound social and economic changes aimed at deshadowing of economic relations, protecting shareholder's rights, preventing corporate raidership and development of institutional environment. A reform of the stock market based on the administrative requirements and restrictions would not be effective a priori, because in the absence of economic interest it will contribute to further capital exports, shadowing of Ukrainian corporate sector and lowering an investment activity.

Implications for practitioners

The findings could be useful for investors working in the Ukrainian market, in particular the Social Investment Funds. As stated above, a very high concentration of capital distorts the corporate issuing policy, subordinating it to the goal of maintaining total control of the company's major shareholders.
It causes the following consequences:
(a) low probability to increase in a tactical perspective the fraction of new investors (minority shareholders) in the share capital;

(b) very limited possibilities for ordinary shareholders to influence on corporate governance, in particular on dividend policy;

(c) underinvestment.

Under conditions of a high capital concentration, a public equity offering is unlikely, and an attraction of investment in the course of private placement is complicated. Over time, an underinvestment negatively affects the corporate financial performance and corporate social performance. The latter fact is important for the Social Investment Funds.

The study also revealed that in the banking sector of Ukrainian economy investors are more likely to expect a public equity offering and dividend payments. The declaration of a dividend policy at present state of the Ukrainian stock market is refusal of a specific catering, serving the majority shareholders. This is a positive signal for the Social Investment Fund, since the absence of dividends, in conditions of the high capital concentration, the large number of small shareholders who have acquired shares during privatization, and the slackness of the stock market usually means discrimination of minor shareholders.

The vast majority of Ukrainian joint-stock companies issue shares at the nominal rate, which does not meet the real value of the stocks. Therefore, shareholders who do not participate in the acquisition of shares in the process of additional issues bear financial loss. Investors that make decisions and consider corporate social responsibility of share issuers should pay attention to these circumstances. Thus, it is expedient for investors in the current conditions to take into account such criteria as the high concentration of capital, dividend policy and reasonableness of issue rate.

Limitations and avenues for further research

This study addresses the problem of determining factors that influence the corporate issuing and dividend policies. The findings of this research, in contrast to previous studies [Chen et al. 2002, Dewa and Izani 2010, Folta and Janney 2004, Gomes and Phillips 2005, Goh et al. 1999, Lee and Kocher 2001], relate the conditions of undeveloped Ukrainian stock market. Its peculiarities cause certain limitations of our study that provide opportunities for additional research attention.

Previous research provided empirical evidence that equity private placement is positively related to the level of firms information asymmetry (book to market ratio) and inversely related to the stock price run up-trend [Chen et al. 2002, Dewa and Izani 2010, Folta and Janney 2004, Goh et al. 1999]. As shares of the majority of Ukrainian joint-stock companies are not traded on the stock exchange, information relating to the stock price run up in the period preceding the equity issuance could not be obtained as well as data on book to market ratio. The study did not consider agency costs impact on the choice between public equity offerings and equity private placement too. It will be possible to examine the influence of these factors on the corporate issuing policy when the stock market becomes more representative.

Our study is limited by its focus on Ukrainian joint-stock companies that conducted public or private stock offering for an amount exceeding 25% of the share capital during 2011 and 2012. In a context of dividend policy, future research is warranted to explore the external validity of presented findings with regard to joint-stock companies that did not carry out the placement of shares during this period. The longitudinal studies need to address the transformations of corporate dividend and issuance policies in process of development the institutional environment. Presented results are generalizable to the context of Ukrainian stock market. To explore whether presented results are applicable to other national contexts, additional studies are also warranted. Future research might also apply other research methods rather than tree classifications, such as discrimination method[1].

CONCLUSIONS

This study explored specificity of equity issuance and corporate dividend policy under conditions of undeveloped stock market, existing in Ukraine. We have sought to answer two research questions: "What is the pattern of equity issuance in the Ukrainian stock market?" and "Is a dividend policy of current interests for the Ukrainian corporate sector?". In relation to the first question, we found out that the most important factors influencing the choice between public equity offerings and equity private placement are the following: capital concentration, equity capital to authorized capital ratio, belonging to the banking sector of the economy and the availability of significant share of institutional investors or state in the authorized capital. It is worth noting that all most important factors are expressed in categorical predictors. These factors are different to some extent from those made in previous studies for developed markets [Chen et al. 2002, Gomes, Phillips 2005, Lee, Kocher 2001].

Related to the second question we explored situation with the payment of dividends in the Ukrainian corporate sector and corporate dividend policy of the Ukrainian holdings that made IPOs on the Warsaw or London stock exchanges. We found that the mass abandonment of dividends payment is very typical for the Ukrainian corporate sector. The dominant practice for distribution of net profit by Ukrainian public joint stock companies represents a kind of catering for one clientele namely very small group of major shareholders. However, the results of the study demonstrated a fundamentally different approach of Ukrainian companies to the dividend policy in international stock markets. Future studies can explore the impact of the institutional environment changes on equity placement and corporate dividend policy.

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[1] We are very thankful to the anonymous Reviewer for this suggestion.

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PRIVATE PENSION SYSTEM IN ALBANIA

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Abstract: The role of private pensions in many developed economies has grown significantly in the past two decades. The situation is different for developing economies where private pensions are a new phenomenon and have a very low weight in the sector. Despite the diversity of retirement systems, these countries in many cases are characterized from low education level of the population for this service and not well-defined investment policy from the companies offering this product. The low education level implies that the publicity should be as simple as possible to be understood from considerable population and well–specified policies increase the self-confidence of the interest group. Developing economies in the same time are characterized even from high informal employment rate, influencing directly privet and public pension system. In this situation, new reforms and actions should be made in order to develop and incentivize the pension market. In the same time it is very important the pension model that has to be used, which should be in accordance with the economic, political and social characteristics of the country. The same can be said even for Albania, when it comes to pension system. The pension scheme in Albania consists of two pillars. The first pillar is PAYG funded system, publicly managed and "defined benefits" (DB) where benefits are calculated according to a specific formula based on the number of working-years, wages earned, as well as the contributions paid. The second pillar, as per international definition of it, does not exist in Albania. Instead there is a third pillar, privately managed, voluntary contributed and defined contributions (DC). During the past decade, the first pillar has demonstrated certain problems, like low net replacement rate, high dependency rate and considerable high level of evasion of contributions payment. The third pillar is a new one in Albania and the size and the development of it is very modest, as at the end of 2014,

this market accounted for 0.05% of the Gross Domestic Product, or in number of contributors only 8,491. Despite the small number it has been increased, so compared with 2013 the number has been increased with 7.66%. The paper will be focused on the detailed analyze of pension system in Albania, and more concretely in the privet one. The objective is to give a detailed overview of this sector in Albania, with its difficulties and obstacles that are encountered and the risks faced today and in the future.

Keywords: public pension system

INTRODUCTION

The term pension in many encyclopedias refers to an agreement which is offered to the employers to obtain a regular income when they are no longer in the employment relationship. For the first time the pension system was applied in1889 from the German emperor, Bismarck. The system was applied only for the employers of the administration and it was based on the principle of solidarity between generations. In the period after the First World War, efforts of many European countries to increase social insurance schemes are quite present. But during World War II, in England Sir William Beveridge in his capacity as chairman of the state commission Parliament gave the idea of creating the social insurance, which will based on three basic principles.

The first one is based on respecting tradition and experience of the time and also looking a better solution which would consist in improving existing system.

The second one is social insurance systems which must be linked to other bases political reform. The last one has to do with the modernization of social insurance, with the joint action of the state as well as the individual.

It should be noted that in its beginnings, social insurance schemes offered protection to certain categories of workers, mainly for employees of state administration and military. With changes and new developments mainly towards industrialism of the countries, the need for the involvement of employees in different sectors of economy an industry in the social insurance schemes was born together with the social problems which were encountered individuals who were employed in different professions of the sectors.

Related to Albania the insurance system was created in 1947, but the first element of the insurance system was founded in 1923. The first notions of rights in the field of social insurance were included in the law dated 15.02.1923 "Resignation and pension for military". The law which is also known as the first law of social insurance in Albania is the law number 129, dated October 28, 1927, the law "The civil pension", published in the Official Gazette no. 91 dated November 8, 1927. According to this legal act, they laid the foundations

of a consolidated system of social insurance, which included protection for the civil employers of administration and it knew the pension rights for all civil employers after November 28, 1912, so since the recognition of Albania as an independent state.

Pension systems have been one of the serious issues, which all Albanian governments have been facing. They have been a constant source of criticism from international bodies and are one of the schemes that aggravate the state budget a lot, therefore impending the development of the Albanian economy [Treichel 2001].

In the basic social security systems one of the main principles is the funding method "Pay as you go" which during the XX century it has been dominant in many countries. Over the past few decades private pension has expanded all over the world and people more and more are focusing and investing their money in private pension schemes. For developing countries private pension are attractive because they create high-income replacement rate which leads to finical market development and to economic growth.

In XXI centaury, at a time when birth rates are falling and people's average life expectancy is extended, the number of pensioners is increasing much faster than the pace of labor force growth. In this context, the old system of social security "Pay-As-You-Go" is going more and more to the inability to meet the needs of pensioners.

In these situations, private pension system has been developed and modified fulfilling the new system requirements. A private pension is a plan into which individuals contribute from their earnings, which then will pay them a private pension after retirement. It is an alternative to the state pension.

ADVANTAGES AND DISADVANTAGES OF PRIVATE PENSION SYSTEM

There are many pros and cons about the private pension system functionality. If we analyze the traditional pension models, including the model "pay as you go" we can discover many problems regarding these schemes. The problems are high evasion rates early retirement and their unsustainable nature in an ageing population. One of the phenomenons that we can easily notice over the counties of the worlds is the percentage of people over the age of 60 is expected to rise by about half over the next 50 years.

In the year 2050, about 30 percent of the population in those countries will be over the age of 60. This means an increase in the dependency ratio. Basically, there will be more people receiving pension compared to the number of people working and paying income tax. This is going to leave a black hole in government finances, relying on private pensions would avoid this problem

Europe is one of the continents with such alarmingly low birth rates. In 1997, Italy became the first nation in history with more people over the age of 60 than under the age of 20. Also in a few year Germany, Spain and Greece joined Italy among the ranks of prematurely aging societies.

This trend is one of the problems for state-run pension systems. Experts on the topic from all over the world predict that the current pension system will collapse if immediate reforms are not undertaken. The pension system known as "pay-as-you-go" is currently the most common of the world. Governments don't invest pension contributions. In theory, people pay taxes to make pension contributions, but, government rarely invest this money. Instead they pay pension payments out of current expenditure. This means with an ageing population, they will struggle to pay the pension commitments.

As M. Tanner, one of the experts on pension privatization recently said that the pay-as-you-go system is doomed. "Well, countries all over the world are realizing the traditional pay-as-you-go model of social security is no longer viable. Under the old pay-as-you-go system, what would happen is individuals would pay a payroll tax, but that tax would not be saved or invested for their retirement in any way. Rather, it would be used to pay for the retirement benefits for current retirees. Those new retirees would have to hope that another generation of workers would pay for their benefits."

In some Western countries such as Germany, Austria, Portugal and Spain the state's pay-as-you-go program is very profitable for retired workers because they collect large pensions, sometimes as much as 80 percent of their past salaries. But in most of the West, including the United States and Canada the pension is just enough to keep the elderly out of poverty. In those countries many workers see in private pension funds a good alternative to gain a better pension.

A *personal pension plan* is a private pension policy that is managed for you by a life assurance company or investment firm, usually investing in stocks and bonds and accumulates interest, increasing the amount without paying taxes. Private sector has profit motives to gain best return for investors, otherwise people will look elsewhere. This means in theory, private pension firms will take good care of the investments. If the fund performs well in the market, the workers' gains will be higher when they retire.

Many experts now advocate for governments those private pension funds. They encourage moving away from the state pay-as-you-go model toward a private system. This is profitable for both because it mean not only more money for pensioners, but also lower costs for government.

Benefits from private pensions:

- Pension can be fully drawn, or for how many periods you want;
- Unlike bank deposits, the pension fund is exempted from taxes;
- Can make agreement with the employer to set a monthly amount for private pension even if you are not insured;

- In case of death, the entire pension amount goes to the heirs;
- Pension can be taken 5 years before the official date of retirement.

Great Britain has been focused more on the private model. The majority of the retiree's past salary in British is based on private pension funds. The more you earned when you worked, the more you get when you retire. But many critics have been directed to this system. Mike Reddin, an authority on pension policy at the London School of Economics says:

"More and more people have been tempted to do that; it seemed to them quite financially attractive at the time. The pension companies promised them a great deal in benefits but has consistently and systematically let them down and failed them. And the government has had to keep returning to bail out those schemes and reinventing schemes and new rules and new regulations to give the people a fair deal in the pension market."

The financial crisis highlights the fact that private finance firms can go bankrupt. If people invest in a private scheme, that scheme may go bankrupt and people will be left with nothing for retirement. This has already happened with some private pension schemes. Therefore, there is an expectation the government will step in and rescue those pensioners who have seen their private scheme fail. The point is you can't rely on the free market to guarantee pensions.

The problem with relying on the private sector is that it would lead to great inequality. Some well paid workers can afford to save to a private pension. But, low paid workers, with high living costs, may not be able to afford much pension contributions. Therefore, when they retire, they are left with nothing – increasing inequality within society.

Still, according to some studies that the government have been made, by 2030 when most of the generation known as "baby boomers", the generation after world war II, will have retired the cost to the British government of providing pensions is projected to be 6.2 percent of gross domestic product. That compares with 6.8 percent projected in the United States, 14.2 percent in Germany, and 17.2 percent in France.

The private pension approach has grabbed attention around the globe because of these encouraging figures. The World Bank says some 30 industrialized countries will implement something similar to the British plan within the next 30 years.

PENSION SYSTEMS IN ALBANIA

In function of the supplementary insurance for more income in retirement age, private pension scheme is entirely voluntary and their mode of operation is defined contribution. Forms of financing such schemes are capital funding. In the law no. 7943, dated 01.06.1995 "Supplementary pensions and private pensions institutes," we can find trends and efforts to develop the private pension

market. But despite the fact that legal package was adopted in 1995 private pension institutes began work much later by the creation of a legal basis. Their rise was driven also by the creation of the institution which would monitor and regulate the functioning of institutions, as a central mechanism not only for the drafting of a legal basis, but also as a regulator for the operation of their pension market, in terms of managing risk and audit all activity of the subject. Law no. 10197, dated 10.12.2009 "Voluntary pension funds" consolidated the legal basis in the private pension market.

The pension scheme in Albania consists of two pillars. The first pillar is PAYG funded system, publicly managed and "defined benefits" (DB) where benefits are calculated according to a specific formula based on the number of working-years, wages earned, as well as the contributions paid. The second pillar, as per international definition of it, does not exist in Albania. Instead there is a third pillar, privately managed, voluntary contributed and defined contributions (DC). During the past decade, the first pillar has demonstrated certain problems, like low net replacement rate, high dependency rate and considerable high level of evasion of contributions payment. The international financial organizations like the World Bank and International Monetary Fund have been closely supporting and assisting the Albanian Administration to measure those problems, and provide studies and financial support to undertake several reforms. First the support consisted in parametric reforms under the first pillar:

a. pension age increase,
b. widening the contribution wage base (called assessment base, or contributory wage),
c. reducing the contribution rate,
d. introducing reduced pension (like, early withdrawal, but pension remains reduced along the lifetime),
e. gradually equalization of pension amount in urban and rural areas,
f. transferring the service of contribution collection to another governmental department, like Tax Authorities.

The first pillar is managed by the Social Insurance Institute, which is a government body under the Ministry of Finance.

As concern the third pillar, here again, under the assistance of the World Bank experts, the new law on Voluntary Pension Funds was drafted and approved in 2010, designed completely under the new concepts of corporate governance, fit and proper criteria for medium and high management level, risk-based supervision, EU directives on capital requirement, custodianship of assets, etc. This law is expected to improve the existing voluntary pension system in Albania and will probably have satisfactory impacts in population long term savings, reduction of the social burden to the government (not adequate first pillar pension amount would increase the pressure to the government), and increase the awareness

of the population towards this issue and push them to become more responsible for their future pension amount.

The new law has introduced new concepts and practices, such as the division of the concept of fund management from the pension fund, which is conceived as a set of assets created on a contract basis; the procedures of membership, suspension of membership, transfers and withdrawal; and the obligation of the management company to hold the assets of the fund in a depository. In addition, the law brought new concepts relating the criteria to be met by shareholders and directors of management companies which should meet the fit and proper criteria, and prevention of conflict of interest. All these new components are in favor of the development of the pension fund market.

In order to have an overview of the private pension market in Albania, it is necessary to refer to some statistics. In 2014 the number of contributors was 8,491, with an increase of 7.66% compared to 2013, and the net assets under management reached a value of 629,145,606 lekë, with an increase of 44.69% compared to 2013. For the period of 30.06.2015, the number of contributors reached 10,791 and the assets under management 754,826,347 lekë, which marked an increase of 27.09% and 19.98% respectively. Despite high growth rates, the size and the development of private pension market in the country are very modest, as at the end of 2014, this market accounted for 0.05% of the Gross Domestic Product. In this situation, new reforms and actions should be made in order to develop and incentivize the pension market. The current situation emphasizes the need for fast development of this pillar and the significant role of the asset management companies in establishing funds attractive to the individuals.

Those funds should be set up in accordance with investment strategy requirements by the legislation, and also tailored as per requirements and interests of different groups taking in account the low education level of the population. The low education level of the population implies that the publicity should be as simple as possible to be understood and to be effective.

Critical is the role of asset management company in explaining the role of the individual and the role of asset Management Company itself, what they have and have not in common, who is bearing the risk of investment and who is not. The risks involved will definitely determine the clients' investment choices and payout choices too.

The companies offering private pension should have a well-defined investment policy, in accordance with the legal requirements. The board of directors is responsible of approving investment policies in accordance with the Law and regulations, oversee the management of the pension fund investments, and ensure that the content and diversification is properly defined in its investment policy.

According to the legal requirement the investment policy should include elements such as limits on the amounts that may be held in particular types of investments; a clear definition of the types of financial instruments and any

other assets the pension fund can invest in; rules for safekeeping unit-holders' assets; assessment of the appropriate matching of assets and liabilities; and proper procedure for monitoring the level of liquidity. The assets of a pension fund can be invested only in assets specified in regulations issued by the Financial Supervisory Authority (Law No. 10197 of 10.12.2009 on "Voluntary Pension Funds").

PENSION FUNDS IN ALBANIA

Although, the first law regarding the pension funds is since 1995, only after 2006 these funds have started to develop somehow. Their low development relates to economic performance, culture and climate of trust of individuals toward these funds. In the next paragraph will be described some of the main pension funds operating in Albania.

IPP Capital

IPP Capital is a financial institution that deals with the collection of contributions from entities and individuals, their investment and their return in the form of pension. IPP Capital is licensed by the law Nr. 3, dated 09:12. 2005 from the Supervisor of IPPs and was launched in January 2006. It's activity is based on the law no. 7943, dated 01.06.1995 "On Supplementary Pensions and Private Pension Institutes" changed with the law no.10197, dated 10.12.2009 "On Voluntary Pension Funds".

a) Organizational structure

Its structure is:
- General Assembly which consists of two rooms:
  - Chamber of shareholders
  - Chamber of the Representatives of the insured persons.

Each chamber elects its own members in the Supervisory Board. Chamber of shareholders, has a veto on any decision of the General Assembly. Representatives of the insured persons are elected with a secret vote once in 5 years by the insured. Selection methods and rules are defined in the statute of the pension institution. Each shareholder shall have as many votes as the number of shares he owns to the pension institution.

The Supervisory Board consists in 7 members, of whom 5 members are elected by shareholders and two members from the representatives of insured persons in the General Assembly. Representatives of shareholders who are members of the Supervisory Board shall elect a chairman and deputy Chairman. Representatives of the insured persons to the Supervisory Council elect his second deputy. If they fail to agree on one thing, the Chairman shall appoint one of them as second deputy chairman of the Supervisory Board. Supervisory Board members are elected for a term of 5 years.

The Governing Board shall consist of not less than 5 professional members, selected by the Supervisory Board. One of these members will be elected as chairman and another as vice-chairman. President is the representative of the pension institution. The rights and obligations shall be determined in status. Authority is invited to participate in meetings of the General Assembly and the Supervisory Board.

b) Areas where can operate the Capital Fund Pension

In determining strategies to operate in the Albanian market, the Association of Pension Funds Capital divides in the following categories its potential customers:

- **Workers of hard professions**, who under the state system retire at age 65. Through private schemes give access to take early retirement until they reach this age, against contributions that employer and employee pay. These include the employees of mining, metallurgy, cement, construction and others.
- **Liberal professions** as lawyers, notaries, self-employed, individuals, etc., which by the state system are ensured to a minimum level. Through the private sector, they get a possibility to additional pension to maintain the economic level achieved by their work.
- **Non-budgetary state institutions** as I.S.SH., I.S.K.SH, Banks, Insurance Companies, KESH Corporation, Telecom, Post etc., Who until 2003 were provided by the state with supplementary insurance schemes. Through this scheme they can continue this supplementary insurance.
- **Immigrants** are very interested to be involved in private pension scheme. Immigrants who live and work in Italy and Greece, are potential clients for whom Capital seeks to penetrate, because a good parts of them are employed in various sectors and the contribution that they pay into the social security of the countries where they work estimated about 500-600 million Euros. Unfortunately, most of them do not benefit from these contributions, especially in the area of pensions. Through with private pension schemes they have the possibility to gain a dignified retirement.

In fact, IPP Capital did not achieve its objective, but could operate only with large companies and their employees. Currently, IPP Capital has registered over 2,000 insured people. Its current customers are large private companies that work in the insurance field as Sigal Uniqa Group Austria, Eurosig, Atlantic, Social Security Institute; Medias as Top Channel, Digitalb; construction and services companies as: Deka, Olympus, EUROALBA, Aurora, API etc. and individuals.

Raiffeisen Pensions

Raiffeisen Bank already owns the American Institute of Supplementary Private Pension, which was named Raiffeisen Pensions. Pension Company was the first private voluntary pension company licensed by the Inspectorate

of Supplementary Private Pension Institutes (now the Financial Supervisory Authority) in 2005 and continues to be the largest company in the Albanian market of private pension funds. Based on recent reports of the Financial Supervisory Authority, Raiffeisen Pensions maintains the leading position in the Albanian market of private pension funds, with 58.44% of the contributions. Raiffeisen Bank is expanding its investments in the Albanian market. Raiffeison Pension Fund has as its object of activity, providing supplementary pensions to individuals during the "third age".

Each individual can choose to invest in the pension fund. In addition, employer contributions may also be shed on behalf of their employees. The fact that Raiffeisen Pensions has the highest number of contributors compared to other pension funds means that they are very active in the Albanian market. Many people are skeptical and often compare with pyramid schemes because in fact this concept is new. This is related even with the disappointment regarding the state and its supervisory functions. It is noted that the pension funds that operate in Albania do not engage this funds in educating and informing the public about the products they offer, the benefits that the individuals will have if they contribute in these funds.

Despite negative sides, the primary customers of the Pension Fund are simple individuals who are carrying since the previous fund, which has been "American Institute of Supplementary Private Pensions". Raiffeisen Bank is currently the largest bank operating in the Albanian market and many individuals associate this with the state bank. The fact that the fund has the same name with the bank can create a greater confidence to individuals to invest in its private pension funds.

Based on the data declared from the Financial Supervisory Authority on the number of contributors and the amount of contributions we can say that IPP Capital has followed the logic of Raiffeisen Pensions, where is more important the value of the contribution than the number of contributor. Based on this philosophy, we have a significant increase in funding contributors to IPP Capital, and Sigma IPP is less active. Regarding Raiffeisen Pensions, despite being the company that leads the market, there has not been significant growth. This can be interpreted as a market maturity point of the company which aims, in addition, to maintain existing market share. Raiffeisen Pensions success in the market is closely related to the fact that this company is part of the largest bank operating in Albania. Its favorite geographic extension and inheriting quite a considerable clientele from Savings Bank have served to this company as two facts that has leaded to an easier enter in the Albanian market.

CONCLUSIONS

Finally, based on the theoretical explanation and experience of developed countries and analyzing the case that we discussed above can be concluded that:

- Pension system reform and development is crucial since this system is facing problems that leads to black hole in government finances,
- Development of alternative schemes is necessary
- Promotion of private pension system because it mean not only more money for pensioners, but also lower costs for government.
- The reformation of the pension system related to the development of alternative schemes has to start with the preparation of preconditions supporting this process.

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THE STUDY OF INFLUENCING FACTORS
ON CUSTOMERS' DECISION TO USE OF MOBILE BANKING
BASED ON SMS SERVICES
(CASE STUDY: THE BRANCHES OF GOVERNMENTAL BANKS
IN RASHT CITY-NORTHERN OF IRAN)

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Abstract: One of the most important applications of mobile banking is SMS banking and due to some reasons including simple access and use and also the ability of use without especial software and hardware, it is one of the first applications of mobile phone in banking. The sample volume was 437 persons that for obtaining more information about 600 questionnaires were distributed in the branches of governmental banks of Rasht city, and 411 questionnaires were received. The variables studied in this research included, speed, mobility access, propaganda, direction, adoption, self-efficacy, perceived cost, perceived risk, perceived usefulness, and perceived ease of use and intention of use. Establishment of priority for research variables showed that in respondents' opinion the level of perceived risk was the most important factor and the variables of access speed and self-efficacy were in the next ranks.

Keywords: mobile banking, customer's decision, SMS services, governmental banks, Rasht City.

INTRODUCTION

Banking industry is intensely based on information. The customers need careful information of their accounts and wish to access this information simply

[Hoppe et al. 2001]. For attaining this aim and also confronting the heavy and increasing pressure of costs and at the same time profit making in comparative conditions, banks are forced to provide services through new channels [Hernandez et al. 2006].

Electronic banking includes all electronic channels, which the customers use for access to their accounts and transfer of sum between accounts or payment of bills. These channels include internet, mobile, telephone, digital television and ATMs [Lu et al. 2003]. One of the most important applications of mobile banking is SMS banking, which has been one of the first applications of mobile phone in banking because of some reasons such as ease of access and use and also use without any especial software or hardware. With a view to importance of the case, no research has been done on it. Recognition of the factors, which cause the customer's intention to use a modern technology such as mobile banking services through SMS, is important, because, recognition of these factors, help the bankers to apply their marketing strategies for promotion of the new forms of electronic banking systems.

Mobile banking was propounded and presented in Europe since 1992 and was used in 1999 with entry of WAP (wireless Application Protocol). Gu et al. [2009] investigated the factors determining behavioral intention for application of mobile banking in Woore Bank of South Korea. The results showed that usefulness, trust and ease of use have positive effect on behavioral intention of mobile banking application. Gu et al. [2009] and Lee [2009] announced that perception of the factors affecting on trust and satisfaction of mobile banking in Korea includes system quality and information quality, which depend on customer's trust in and satisfaction with mobile banking.

Hoppe et al. [2001] investigated the effects of the factors influencing on acceptance of internet banking in South Africa they used Tan and Theo's model [2000] [Hoppe et al. 2001]. Movahedi [2003] proposed a model for technology acceptance [Movahedi 2003] . The aim of this research is recognition and investigation of priorities of the factors influencing on customers' decisions to use of cell phone banking based on SMS services.

LITERATURE REVIEW

Current arena is the period of accelerated and unpredictable evolutions and companies confront with the most difficult and unprecedented competition conditions due to existence of such factors like uncertain boundaries among markets , more fragmentation of markets , shortened product consumption period, accelerated variation of customers purchasing paradigms and customers being more expert [Wong and Shohal 2002].

With the continued growth of the mobile phone as a viable advertising medium [Herbjørn et al. 2005, Jayawardhena et al. 2009, Kavassalis et al. 2003, Precourt 2009]. It has become increasingly essential for researchers and advertisers

to understand how and to what extent mobile advertisements impact on consumers' mindsets. Despite a proliferation of research on mobile advertising [Okazaki 2005], very few studies have looked at the extent to which long-standing, validated theoretical advertising models remain relevant in the mobile context. Drawing on this observation, we set out to examine how mobile advertising in the form of text messaging (Short Messaging Service or SMS) affects the recipients' attitudes towards the ad (Aad), towards the brand (Ab), and, ultimately, their purchase intentions (PI). Traditional advertising research postulates strong direct and indirect links between Aad, Ab, and PI [Sarmad et al. 2002]. More specifically, Aid as "a predisposition to respond in favorable or unfavorable manner to a particular advertising stimulus during a particular exposure occasion" [MacKenzie, Lutz 1989] is known to affect Ab, which is "a relatively enduring, one-dimensional summary evaluation of the brand that presumably energizes behavior" [Spears, Singh 2004]. In turn, an influences consumer' purchase intentions (PI), that is, their decision plans to buy a particular product or brand created through a choice/decision process [Taleghani 2006].

However, such relationships may be substantially affected by the characteristics of new marketing media, such as Internet advertising, especially when these differ significantly from their predecessors. This is certainly the case with SMS advertising (and mobile advertising in general), where we can distinguish at least two main such differentiating characteristics, especially when taken in combination: interactivity and location awareness.

MATERIALS AND METHODS

In this research sampling method is share non-accidental (non probable). In this method, sampling is performed according to the population volume and after determination of groups and volumes or their share; the researcher finds and selects the qualified persons for sampling from everywhere [Mirzaei 2010] .

Therefore in this research, the researcher with consideration of expense and time selected the Rasht city, in the first stage of sampling and then with a view to the number of bank branches in this city, selected the testing objects.

The statistical population was considered as unlimited and the following formula was used for determination of the number of samples. Work method was as follows:

First 30 questionnaires were distributed for measurement of alpha and determination of variance of the final dependent variable. The results are as follows:

$$n = \frac{z_{\alpha/2}^2 S_x^2}{e^2}$$

n = number of samples

$z^2_{\alpha/2}$ = the surface corresponding to standard normal distribution with $\alpha = 0.05$

S^2_x = standard deviation of the primary sample for the considered variable

e^2 = error rate

α = error level (recognition)

The sample volume is 437 individuals. For obtaining more information about 600 questionnaires were distributed and 411 questionnaires were received that with consideration of returning rate of 68.5 % is relatively proper.

In this research for determination of questionnaire reliability with stress on internal similarity of questions, Chronbakh Alpha method was used. First a primary sample including 30 questionnaires was tested. The results are mentioned in the following table.

The variables investigated in this research included: speed, mobility access, propaganda, direction, adoption, self-efficacy, perceived cost, perceived risk, perceived usefulness, perceived ease of use and intention to use.

In this research for investigation of the structural model Visual PLS 1.04 software and for investigation of the descriptive specifications of research variables, SPSS 18 Software will be used.

RESULTS

Validity or credibility of the answer to this questions that measuring to what extent the desired trait measures [Sarmad et al. 2002]. In the survey questionnaire to determine if the data needed to test the research hypotheses can gather, the views of faculty advisors are used.

Table 1. Chronbakh Alpha Rate of the research variables

Variable	Number of questions	Chronbakh Alpha rate
Speed	3	91.1%
Mobility access	2	79.8%
Propaganda	2	85.8%
Direction	2	71.8%
Adoption	3	81.7%
Self-efficacy	6	93.2%
Perceived cost	3	76.2%
Perceived risk	3	87.2%
Perceived usefulness	2	83.3%
Perceived ease of use	4	92.4%
Intention to use	3	90.5%

Source: own calculations

To determine the reliability of the final distribution of a preliminary study by distributing questionnaires among 40 customers of banks, and then through the SPSS software, Chronbakh alpha coefficient was calculated over the value of is 84.8 percent. So we can say that the questionnaire has suitable and good reliability. (Table 1)
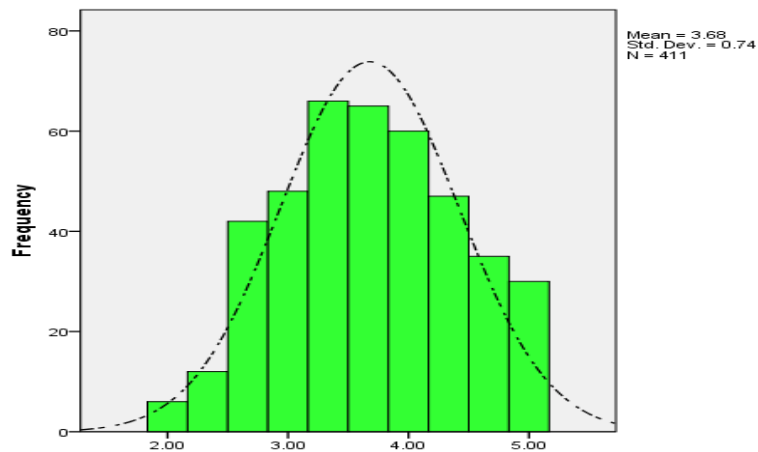
First rates of variables were obtained on the basis of the data and the information extracted from questionnaires. Then description of the obtained information is mentioned in the descriptive statistical charts as follows:

Figure 1: Histogram of the variable of speed
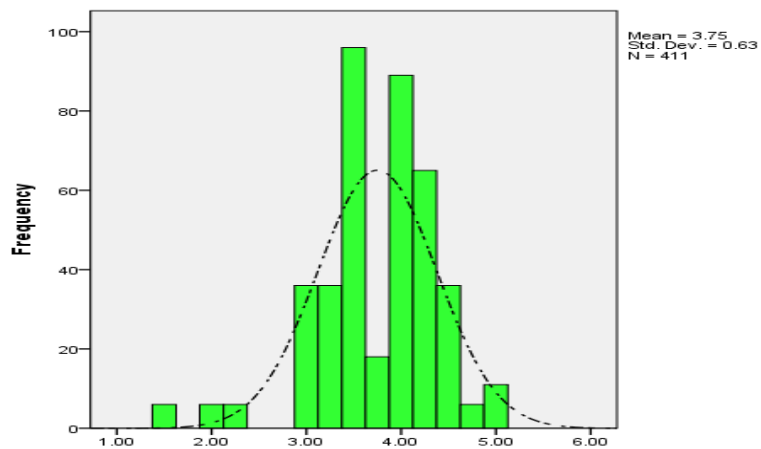
Source: own preparation

Figure 2: Histogram of the variable of mobility access

Source: own preparation

Figure 3. Histogram of the variable of propaganda
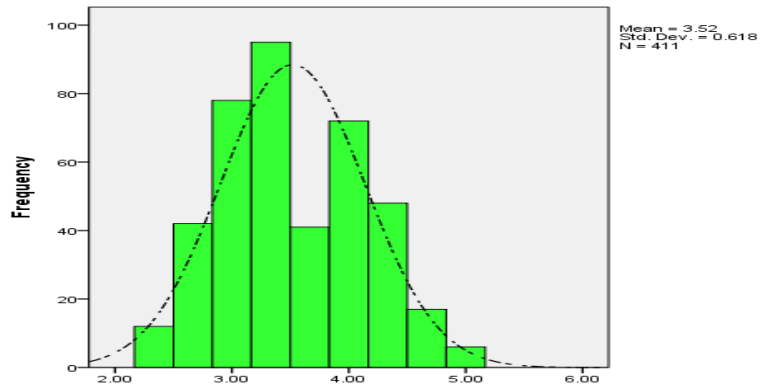
Source: own preparation

Figure 4. Histogram of the variable of advanced instructions
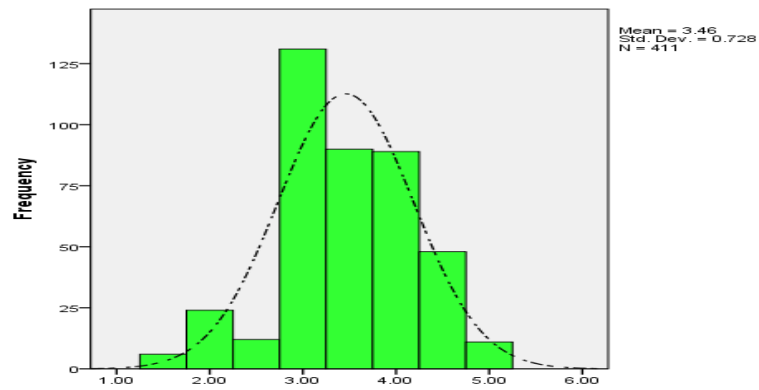
Source: own preparation

Figure 5. Histogram of the variable of self-efficacy
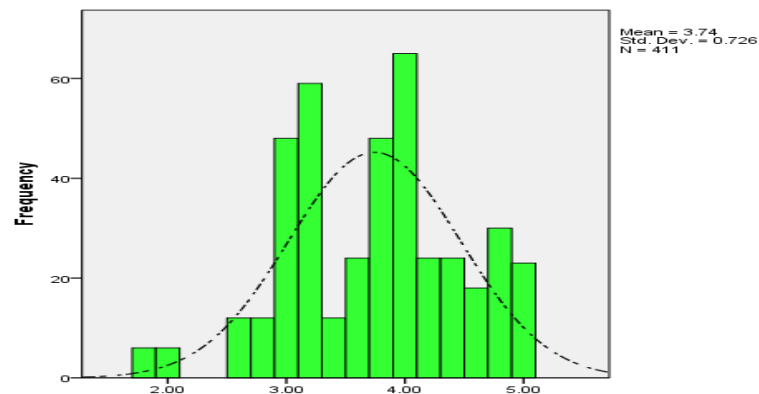
Source: own preparation

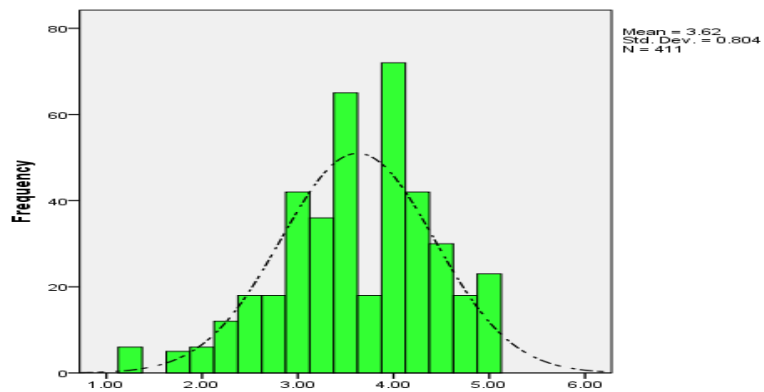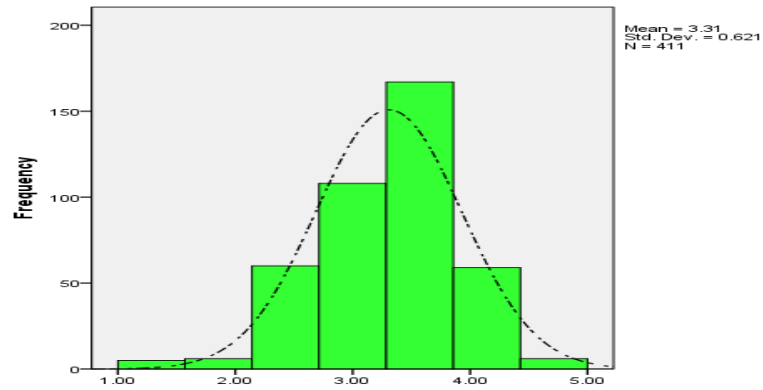Figure 6. Histogram of the variable of adoption.
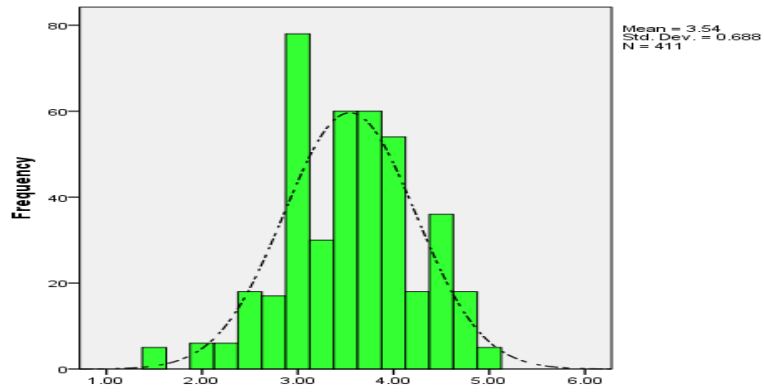
Figure 7. Histogram of the variable of perceived cost.
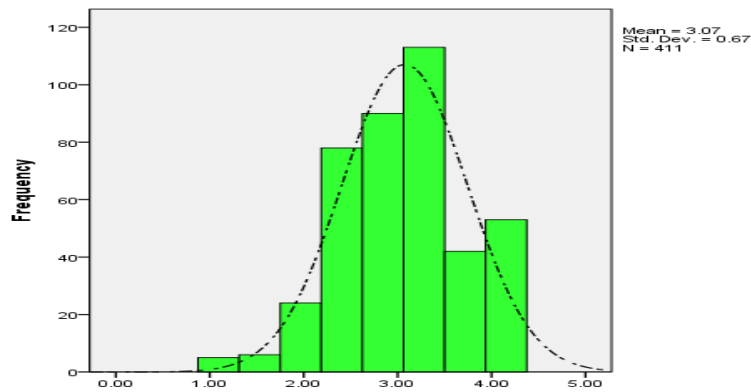
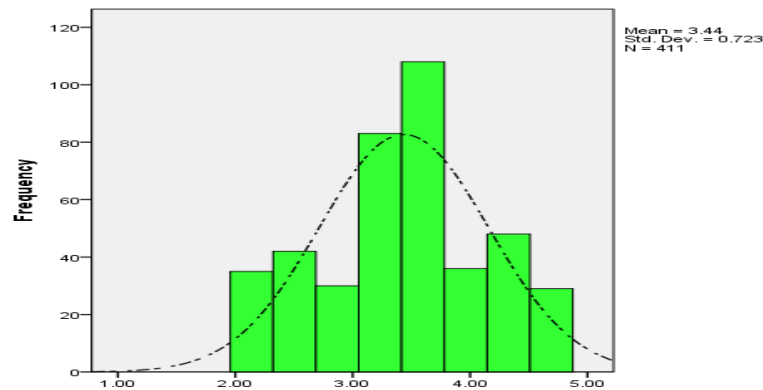Figure 8. Histogram of the variable of cost- perceived ease of use.

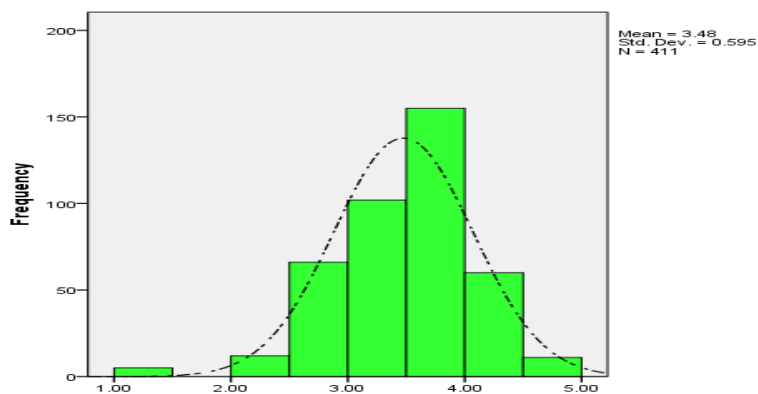Figure 9. Histogram of the variable of cost- perceived usefulness.

Source: own preparation

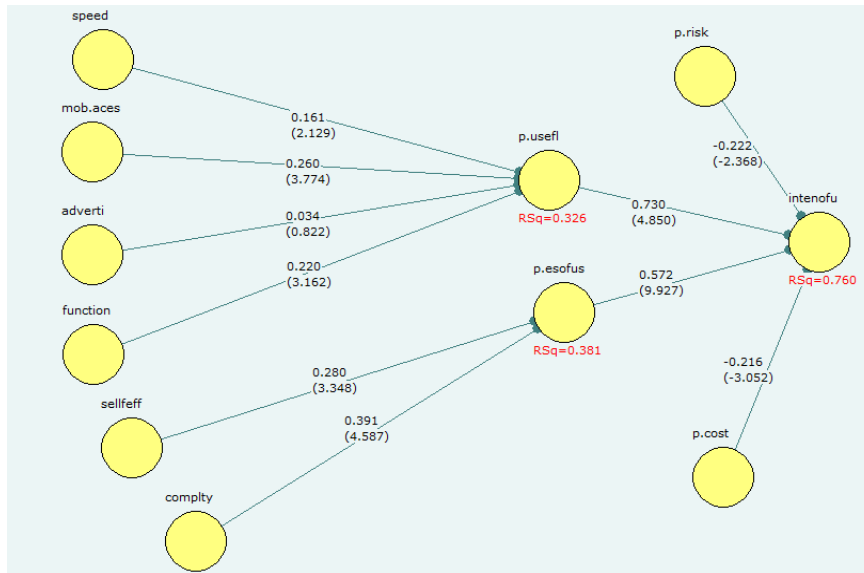Figure 10. Histogram of the variable of cost- perceived risk.

Source: own preparation

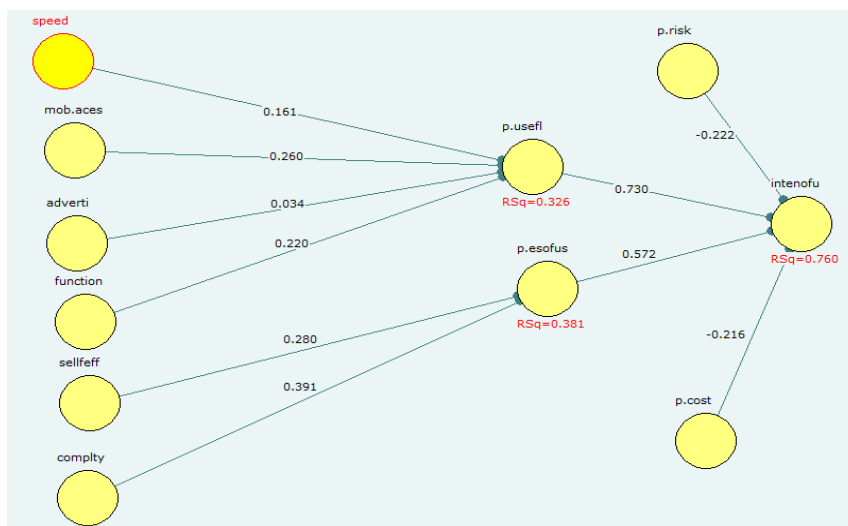Figure 11. Histogram of the variable of intention to use.

Source: own preparation

Figure 12. Model in the status of bootstrap meaningful numbers

Source: own preparation

Figure 13. Model in standard coefficient status

Source: own preparation

With a view to R Square rate we can say than the four variables of customers' perceived ease of use of mobile banking services, customers'

perceived usefulness of mobile banking services, perceived risk and perceived cost generally can forecast about 76 percent of the variable of intention to use mobile banking services. With a view to Freedman test, priority of variables is as follows:

Table 2. Variables' Ranking

Variable	Ranks Average
Perceived risk	6.93
Speed	6.76
Self-efficacy	6.65
Perceived usefulness	6.37
Mobility access	6.27
Perceived ease of use	6.09
Adoption	5.72
Propaganda	5.32
Advanced directions	5.14
Perceived cost	3.66

Source: own calculations

CONCLUSIONS

Speed, mobility access, advanced directions, self-efficacy, adoption, usefulness and ease of use of these services have positive effects on customers' perceptions in mobile banking services (SMS) [Taleghani 2006]. Gu et al [2009] and Chung and Lee [2009] evaluated the mentioned factors in use of banking services as positive. Propaganda, perceived cost and perceived risk have negative effect on customers' intention for use of mobile banking services (SMS).

Establishment of priorities for research variables showed that in respondents' opinion perceived risk rate was the most important factor and the variables of speed and self-efficacy were in the next ranks. (Table 2) Also with a view to the obtained model it was observed that the four variables of customers' perceived ease of use of mobile banking services, customers' perceived usefulness of mobile banking services, perceived risk and perceived cost generally can forecast about 76 percent of the intention to use mobile banking services. (Figure 13).

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