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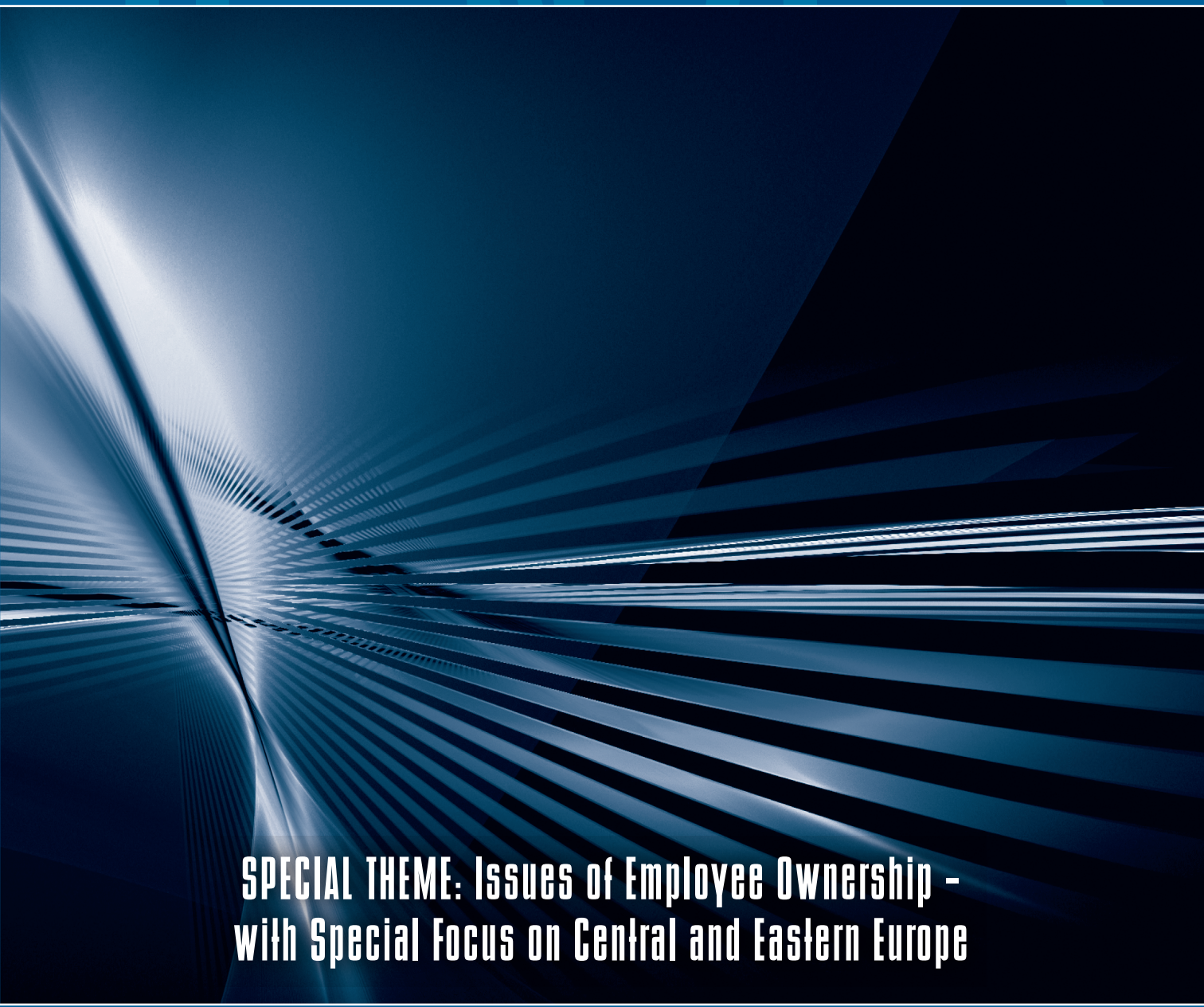

SPECIAL THEME: Issues of Employee Ownership – with Special Focus on Central and Eastern Europe

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Guest Editorial

Dear readers,

in Western economies we have witnessed a constantly growing interest in developing and experimenting with alternative forms of organizing, particularly with different forms of material and immaterial employee participation, and with democratic governance structures. This growing interest is driven by, on the one hand, some rather normative claims arguing for a more solidarity-based economy in general that is capable of avoiding severe economic crises or that is at least more resilient in the face of crises. On the other hand, we face some efficiency claims arguing that employee participation were increasingly becoming a necessity for firms to remain competitive in times of globalization, individualization, self-actualization, and the subsequent changes in working and organizational life. Against this background, the instrument of Employee Share Ownership (ESO) seems to be something like a supreme discipline. At first sight an advanced instrument of material employee participation, ESO has, by closer inspection, the potential to synthesize material and immaterial employee participation even up to the point to democratize corporate governance structures in firms in terms of Employee Owned Companies (EOC).

This special issue aims at encouraging a discussion about the future potential of ESO and EOC in Central and Eastern Europe (CEE) taking explicitly into account both the history of ESO as an instrument of mass privatization during the economic, political, and cultural transformation period and the experiences with "Illyrian" forms of EOC during the socialist period in those countries.

In our view, the academic literature on ESO and EOC is characterized by some notable omissions with regards to the CEE countries.

- First, it remains rather silent about the relationship between ESO and EOC in CEE countries though ESOP has been widely used as an instrument of mass privatization in several CEE countries and has led to majority employee share ownership (ESO) in a large number of firms.
- Second, this first neglect reminds us to the fact that despite some close topical, theoretical, and empirical associations, the phenomena of ESO and EOC have scarcely been discussed together in the academic discourse at all (Dow 2003). Ironically, while the EOC literature stresses some rather negative aspects of this specific employee ownership form, such as the degenerative tendencies and a principally limited viability of EOCs, the ESO literature mainly propagates the positive aspects of ESO, such as the positive effects on identification with the firm or productivity gains.
- Third, the academic discussion about the role of ESO programs and EOCs in the transformation process in CEE countries is rather disconnected from the long standing discourse about ESO and EOCs in the Western world. This statement holds true for both the academic discourse about the potentially emancipatory or positive role of ESO and EOCs in the transformation of the economic system (Backhaus 1979) and the formerly prominent debate about 'labor-managed-firms` in 'labor-managed' or 'mixed' economies, which had a strong theoretical basis in terms of the "Illyrian Firm" (Ward 1958; Vanek 1970; Meade 1972) or the "pure rental firm" (Jensen & Meckling 1979). Though, both discourse streams reflect "some degree of ideological commitment" (Hansmann 1996: 7) during the Cold War, it is rather disconcerting that we can hardly find any references to this body of literature in the transformation literature that advocates ESO as a suitable instrument of mass privatization in the CEE countries (Aghion & Blanchard 1998). Ironically, this means that participatory ways of organizing are utilized by management as a mere vehicle to transform firms towards the normal capitalist firm.
- Fourth, the implications of the rather sharp and fast decline of ESO and EOCs in the CEE countries following privatization have not been systematically reflected in the Western literature yet (Kalmi 2003).

Thus, our current understanding of ESO and EOCs in CEE is not only limited by the lack of coherent empirical data, but also by the lack of connection with the strong theoretical tradition and by the lack of studies comparing the experiences made in CEE with the experiences made in Western countries.

We hope, by the help of this special issue, to contribute to the debate about the future potential of ESO and EOC in CEE and to remind the academic community of the very specific history of those instruments in this particular region. We believe that such a debate can advance our general knowledge on the structures and processes at the individual, organizational, and societal levels that are germane to participatory types of organizations particularly by conducting comparative studies on institutional

conditions for ESO and EOCs and comparative studies on different company forms within the same institutional framework. Though, we also need to note that such a debate should analyze the experiences with ESO and EOCs in the CEE countries more rigorously, thereby, on the one hand, connecting them more strongly with the Western discourse and tradition, while, on the other hand, trying to draw lessons from the CEE experiences for the Western economies.

This special issue comprises several contributions based on papers presented in the stream on "Employee Share Ownership in Central and Eastern Europe before, during, and after transformation: Some implications for participatory ways of organizing?" of the "9th International Conference in Critical Management Studies" at Leicester University from 8-10 July 2015. The stream was commonly chaired by Mihaela Lambru, Claudia Petrescu (both University of Bucharest), and the editors of this special issue.

The first article was invited by Organizacija's General Editor, Prof. Jože Zupančič. In their contribution, *Olaf Kranz, Thomas Steger, and Roland Hartz* deal with the more general Western discourse about ESO and try to connect it with the discourse about ESO related to CEE during the transformation period. The authors demonstrate how the CEE discourse differs from the Western discourse on the surface level while it rather shares defining characteristics at deeper levels.

In the second article, *Ricardo B. Machado* aims at comprehending the determinants of the implementation of economic democracy within different countries of the European Union. For this purpose he operationalizes economic democracy in terms of ESO plans. He then empirically explores the relationship between the incidence rate of such plans with several independent variables that capture political, legal, socio-educational and economic structures of twenty European Union countries. He finds some strong correlations between ESO and the index of economic freedom.

In the third article, *Mitja Sefancic* investigates the performance of different types of Italian banks before and during the recent credit crisis. He is particularly interested in the behavior of cooperative banks. The empirical data reported supports his claim that Italian cooperative banks were less exposed to the shocks of the crisis and showed a better performance, although being disadvantaged by political rescue plans, than Italian commercial banks.

We hope that this special issue will contribute to revive the debate about the future potential of ESO and EOC in CEE that is both aware of the rich history of these instruments in the region and connected to the strong reasoning about those instruments in the West.

Olaf Kranz, Thomas Steger
Guest Editors

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The Employee as the Unknown Actor? A Discourse Analysis of the Employee Share Ownership Debate with Special Emphasis on Central and Eastern Europe[1]

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Background and purpose: Although employee share ownership (ESO) deserves of a long tradition, we still know little about employees' perspectives about ESO. The lack of knowledge about the employees' attitudes towards ESO is discursively filled in the ESO debate. This paper challenges that deficit by carrying out a semantic analysis of the literature with the aim to identify the various actor constructions used implicitly in the ESO discourse.
Design/Methodology/Approach: We conduct a semantic analysis of the ESO discourse. To unfold the order of this discourse we draw on the distinction between surface and underlying structure of communication in the sense of Michel Foucault. We interpret some semantic lead differences, a term coined by Niklas Luhmann, to constitute the underlying structure of communication.
Results: We can identify six different streams on the ESO discourse's surface level each defined by the ends pursued. The discourse's underlying structure is made up of the distinctions production-consumption, capital-labour, and ownership-control that also determine the actor models implicitly in use.
Conclusion: We can identify five different actor models implicit in the ESO discourse. While the CEE discourse differs on the surface level in as far as it is more concerned with questions of political legitimation of the privatisation process than with questions of economic efficiency, thus introducing political distinctions in the discourse rather missing in the west, it shares the underlying semantic lead differences with the Western discourse as well as the actor models anchored in those differences.

Keywords: *Employee Share Ownership, discourse analysis, semantic lead distinctions, actor constructions, CEE countries*

1 The employee as discursive object in the debate about Employee Share Ownership

We have been witnessing an ever growing discourse about *Employee* Share Ownership (ESO) on a worldwide scale over at least the last sixty years. From this discursive attention we can derive a general interest to transform individuals (e.g. Pierce and Rogers, 2004; Liu et al., 2009), companies (e.g. Poutsma, 2001; Mygind, 2002), or whole societies (e.g. Poutsma et al., 2003; Köhler, 2007) with the support of ESO. The very same discourse about ESO has

[1] Invited paper

only recently come to observe and describe a severe lack of knowledge about the attitudes and the behaviour of the employee itself which features as the main actor in the discourse: "(E)mployee attitudes towards employee share ownership (ESO) is not very well researched and most research take a rosy view of these attitudes" (Poutsma and Rondeel, 2006: 22). This claim is substantiated by the fact that (a) empirical studies directly addressing employees' perspectives about ESO are still scarce, (b) the existing studies concentrate on a limited number of companies explored by highly standardised questionnaire surveys (Hofmann et al., 1993; Hardes and Wickert ,2004; Kruse et al., 2008), and (c) several authors prefer to catch the topic by addressing distinctive experts speaking on behalf of employees (e.g. unionists, members of works councils) (Armstrong, 1982; Bispinck and Brehmer, 2008). In consequence, the ESO discourse gives the impression that the voice and perspective of employees is rather unknown or underrepresented and that the employee himself/herself seems to remain the "unknown actor" in the ESO field.

However, since the central topic in the ESO discourse is the transformation of the employee or its instrumentalisation for the transformation of companies or states, and since any ESO program rests on assumptions about employees' attitudes and behaviour toward ESO, the knowledge gap about the employee is discursively filled. In fact, the ESO discourse is rather speaking *about* the employee thereby constructing the employee as an actor. Empirically, the main narrator positions in the ESO discourse are filled by entrepreneurs and employers or their associations, unionists, politicians or legislators, and scientists. Those narrators tell us different narrations about ESO from their different perspectives, thereby constructing different models of 'the employee' as an actor, with each model containing the attribution of different essential characteristics to 'the employee' like values, attitudes, preferences, and behavioural tendencies. Thus, we can state that although there are claims about a knowledge gap about the employees' perspective on ESO, the very same discourse is continuously constructing a rich knowledge about those employees' view at the same time.

The knowledge gap about how employees perceive ESO also exists regarding the former socialist countries of CEE. For several reasons it is of particular interest to address this deficit here: (1) Employees in CEE bear a particular heritage regarding ESO due to the ideological form of common ownership that had existed during socialist times (Steger and Šrein, 2006). Those experiences may also influence their attitudes towards ESO since 1990 (Vickerstaff and Thirkell, 2000; Edwards and Lawrence, 2000). (2) After the fall of the Berlin Wall, CEE constituted a kind of vacuum and a field for experiments. The transfers of Western ideas, concepts and experts have been crucial for the transformation process in almost all CEE countries. Among them various forms of ESO schemes figured prominently but also several ideas and concepts countering employee ownership (Pollert, 1999; Dobák and Steger, 2003) which, taken together, often caused some ambiguous and unintended consequences. (3) Although neo-liberal ideas, concepts and proponents who are usually reluctant against ESO often dominated the transformation processes (Boycko et al., 1996; World Bank, 1996), ESO turned out to be an important political instrument in many CEE countries to get the privatisation process started (Earle and Estrin, 1996; Aghion and Blanchard, 1998). This raises the question about the rationales and constructions standing behind those activities. (4) While ESO played an important role in the early years of privatisation in CEE (Bogetic, 1993) a continuous decline must be witnessed since then (Kalmi, 2003; Mygind, 2012; Vaughan-Whitehead, 2003). Since the ESO programs in CEE ascribed an active role to the employees as actors capable of individual decisions, we certainly need to ask about the reasons for these developments as well as the employees' role. However, given the knowledge gap about the employee in the ESO debate that is bridged by discursively constructed actor models, we should also ask about the underlying logics of the different actor models and their role in the discourse. After all, the factual ESO programs implemented in the CEE context that formed the framework for the employees' individual decisions about share ownership had been influenced by the underlying assumptions about 'the employee' which, in turn, were shaped by the discourse at the same time.

These observations, together with the transformational power attributed to ESO, make the ESO discourse an extraordinarily appropriate object for an inquiry into the matter of how employees in particular and how economic actors in general are constructed in discourses. This paper challenges the described deficit by carrying out a semantic analysis of a substantial portion of respective literature, both from academics and practice, in order to identify and to describe the order of the discourse about ESO in general, and to unravel and reconstruct the construction of the employee as an actor by a discursive knowledge in particular. Because of the knowledge transfer from the West to the East during the transformation period, we treat the debate about ESO in CEE as part of a more general (Western) discourse. Nevertheless, we can identify rather different development paths regarding ESO between the Western industrialized world and the CEE countries (Kalmi, 2003) on the one hand and within the CEE countries on the other hand. While ESO is widespread in Slovenia (Mišić, 1998; Prasnikar and Gregoric, 2002) or the Baltic states (Kalmi, 2003), those models are rare in countries such as the Czech Republic or the former GDR (Steger and Šrein, 2006).

Our reconstruction highlights six main discourse streams about ESO. They will be described and critically discussed hereafter. Through this process different actor

constructions of the employee together with some semantic lead differences become more salient. Specific attention to CEE countries will be paid by illustrating our results, where possible, with some distinctive material concerned with those countries, thereby highlighting the particular characteristics of ESO in CEE countries. The CEE debate regarding ESO, we find, is more concerned with questions of political legitimation of the privatisation process than with questions of economic efficiency, thus introducing political distinctions in the discourse rather missing in the West.

Our paper proceeds as follows: We start by explaining our heuristic framework, the methodology and the overall research design' (section 2). Then, we outline six discourse streams that are determined by their stated ends that also affect which actor models of the employee, which effects and which implementation problems connected with ESO are perceived in the discourse (section 3). A discussion to summarise our main findings will round up the paper (section 4).

2. Conceptual Frame, Methodology and Research Design

To unfold the order of the discourse about ESO we draw on the distinction between surface and underlying structure of communication in the sense of Michel Foucault's earlier work on the birth of the clinic (1973). There, Foucault points out, that while on the surface of the communication intentions etc. may play a role, it is the underlying distinction between 'healthy' and 'ill' that organizes the medical discourse and enables a new way of medical perception.

Accordingly, on the 'surface' of the ESO discourse, a series of *narrations* can be identified. As it will be discussed later, the ESO narratives are mainly defined by the ends that should be achieved with the help of the ESO (see also Pendleton et al., 1995). In each case they conclude a problematic actual situation as well as a target-situation. So, ESO becomes in each case a part of a transformation narration – be it on the level of the society, on the company level or on the level of the individual employee. Some specific actor constructions always go hand in hand with those actual and ought-to-be situations. This means that the employee itself may be considered to be the 'dramatis personae' to be transformed. Otherwise, the employee and his/her behaviour may be perceived a constant variable to be taken into account and to be consciously used for the transformation of nation states or companies through the introduction of ESO.

During our semantic analysis, it will become visible that the heterogeneous actor constructions of the ESO discourse are themselves anchored in some *semantic lead distinctions* (Luhmann 1989) of the economic sphere. According to Luhmann, semantic lead distinctions constitute an underlying communicative structure that enables to limit the spectrum of meanings connectable to the (general) societal communication, thus preventing the meaning from becoming fuzzy. For the economic discourse, for example, important semantic lead distinctions include production-consumption, capital-labour, and ownership-control which can be empirically identified in the field. They relate to some economic actor constructions – producer-consumer, capitalist-labourer (or employer-employee), owner-controller (or shareholder-manager) – that structure the discourse streams. Different discourse streams on the surface may choose from the supply of actor constructions rooted in semantic lead distinctions of the field and, subsequently, connect those actors with a fitting psychic background (e.g., motives, preferences, attitudes, intentions) as well as with the means to realize those intentions.

On balance, the logic of our methodological assumption is as follows: The empirical narrators (employers, politicians, unionists, etc.) pursue different ends by introducing or propagating ESO. Those different ends for ESO function as different narration motives within the discourse. The narration motives provide us with 'differentiae specificae' we can use in the discourse analysis to identify both different 'streams' at the surface level of the discourse and the corresponding actor models used within the streams to project the employee in a partial, yet distinctive way. Since the narration motives as well as the corresponding actor models are rooted in semantic lead distinctions we can draw conclusions from the motives and the actor models for the identification of the semantic lead distinctions and vice versa.

Our main interest lies on the ESO discourse's different constructions about 'the employee' which depend on different semantic lead distinctions and which are represented by different discourse streams more or less implicitly (cf. Figure 1). So, our main data is the discourse about ESO and our main research question regarding this discourse is: *How are employees discursively constructed as economic actors by narration motives in the context of semantic lead distinctions within the ESO debate in general and with respect to the CEE region in particular?*

The analysed text corpus consists of about 300 publications of scientific nature as well as from stakeholders (employers' associations, unions) and political parties. This synopsis of materials is based on the assumption that both the scientific and the public discourse refer to similar narrative elements, actor constructions, and semantic lead distinctions. While using a qualitative and iterative approach, we de-constructed and reconstructed the material in order to identify some distinguishable and intersubjectively valid discourse streams. This process was carried out until a state of saturation of the discourse streams was achieved.

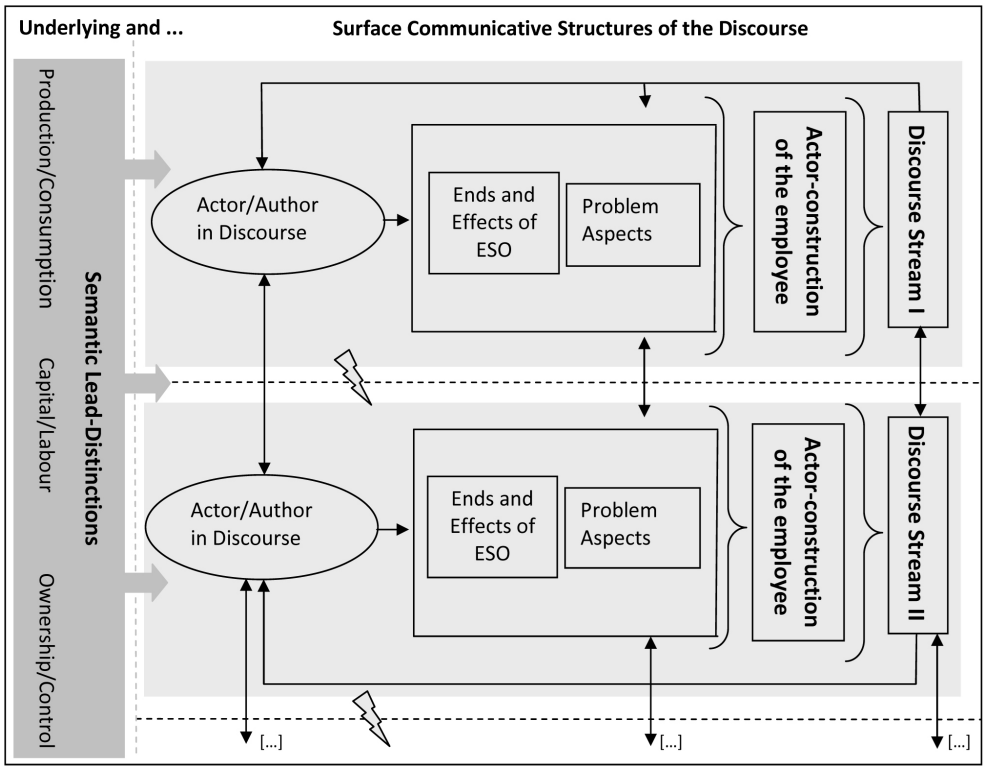

Figure 1: Analytical distinction and structural components of the literature review

This paper is built upon previous work by the authors (Hartz et al., 2009) and is developing further the argument made there with regard to the ESO discourse dedicated to the CEE region. For practical purposes, the data base used for the original analysis has been used for the actual analysis for a second time without making substantial changes to the text corpus. The rationale for this procedure is that the ESO discourse has been imported to the CEE region to a great extent and that the discourse has not been revived since. However, a substantial effort has been made during the interpretation phase of the empirical data for the current paper by focusing particularly on the special circumstances of the introduction of ESO in the CEE region as an instrument for mass privatization during the transformation period. Thus, the current paper is an application of the discourse model developed in the original paper, emphasizing its heuristic usefulness by extending its regional scope. With regard to our discourse model, particularly our idea is novel that semantic lead differences (Luhmann, 1989) substantiate Foucault's claim (1973) that there is a deep structure of communication underlying a discourse at the surface level of communication.

3. The main streams and the dominant actor constructions of the employee in the ESO discourse

3.1 Beyond the capital-labour divide – ESO as a means to reconcile some antagonistic societal subgroups

A first motive to be identified in the general discourse is the elimination of the conflict between capital and labour. In this context, ESO is propagated as a means to satisfy some different actual and potential needs that result from the capital-labour-conflict on the level of the society as well as on the level of the companies. Although some transformations of the society or the state are usually focused here, the employee as a specific actor construction is addressed too. Seemingly, the elimination of the capital-labour-conflict also requires a transformation of the employee, from a dependent waged labourer in deficit into a (positively connoted) co-owner and shareholder.

Ends and assumed effects

At first the discourse directly addresses the difference between capital and labour which also includes a series of further objectives and outcomes. In order to eliminate this

conflict it is postulated to share the companies' profits with the employees and to improve the employees' influence (e.g., Fiedler-Winter, 2000; Wagner, 2002). It is interesting to note that the capital-labour conflict is perceived to be an 'ideology of the past' (Maier-Mannhart, 1996) that, nevertheless and contradictory, must still be overcome now. This is usually illustrated by numerous success stories of partnership models in companies (e.g. Fiedler-Winter, 2000) that should help to contribute plausibility to the overall narration and even includes some voices from the employee side (e.g. Schuler and Wolff, 2001).

Another important point of reference is the unequal distribution of the national income. In this context ESO is perceived as a means to close or to limit this income divide and, thus, to make a contribution against the split of the society with respect to the capital-labour-conflict. Even the German unions agree on that since the divide of net incomes seems not to be repairable by wage increases alone (Kauls, 2006).

Other authors deal with the lead distinction of capital and labour too, although they stress some different aspects of it. Gaugler (2001) for instance refers to the importance of ESO as a means to guarantee human dignity in the economic context and to stabilise the free economic and social system. Hofmann and Munz (2002) even see the potential to overcome the conflict between insider and outsider since ESO may compensate the insiders for being prudent with respect to wage increases while it increases the employment chances of outsiders. Moreover, other European countries are interested in job security as well as in the integrative potentials provided by agreements between the social partners (Pendleton and Poutsma, 2004). The well known PEPPER program initiative of the European Commission can be considered closely in line with this (Poutsma et al., 1999).

Counter arguments inside the discourse

The idea to reconcile capital and labour is considered problematic from different perspectives. Several authors argue that ESO would neither be a panacea nor a useful instrument to eliminate this conflict since the assumed causality would be too less differentiated and, thus, not robust enough to hold out against critical questions.

Schätzle (1996) considers this idea as merely social romanticism while reality would go straight ahead to become a shareholder society. As a consequence, the rational employees would rather pursue their own private interests far from any reconciliation ideology. Poutsma and de Nijs (2003) mention several conflicts linked with different forms of participation. While financial participation would support diversity and flexibility of remunerations, some indirect forms of participation would foster collectivism, solidarity and justice. Consequently, the idea of 'reconciliation' would need to be connected to immaterial participation too. Gaugler (2001) and Blettner et al. (1995) identify some diverse societal trends, namely increasing hedonism, consumption behaviour, reservations against the economy, that continuously endanger the idea of 'partnership instead of class conflict'.

Hofmann and Munz (2002) state that employees' portfolio is already dominated by human capital. Thus, ESO would imply a double risk and a negative correlation of risk characteristics. This point is also made by union representatives (e.g., Huber, 2006; Kauls, 2006). Moreover, most authors in this discourse stream almost exclusively refer to successful companies (Maier-Mannhart, 1996; Fiedler-Winter, 2000) while the risk of a total loss is widely masked out in the logic of reconciliation.

Collom (2003) generally doubts about the idea to harmonise the interests of capital and labour. Some radical forms of workplace democracy could even revitalise some traditional class conflicts since those forms are appreciated for different reasons by management and employees. Furthermore, active labourers who usually prefer some far reaching forms of workplace democracy would hardly be satisfied by the kind of democracy that management is ready to grant them.

Finally, Priewe (2007: 683f.) points to the lack of adequate analyses about the correlation between the introduction of ESO and the distribution of the net income. He criticises that "a re-distribution of the national income through profit sharing will be realistic only if the latter was granted on top, i.e. in addition. But exactly this is not the intention of the protagonists of profit sharing".

Peculiarities regarding CEE

Due to historical reasons the motive of mediation of the capital-labour-conflict can hardly be found in the CEE debate. It rather asked how to re-introduce the distinction between capital and labour into a context characterised by public ownership and by an ideology that presumes all citizens to be representatives of the labour side in an ongoing historical-political fight with the capital side.

Gurdon (1991) refers to the transforming countries of CEE to point out that ESO affects the balance between 'public' and 'private'. Accordingly, the privatisation experiences make clear that the acceptance of ESO would be dependent on societal values and attitudes, for instance towards private ownership or profit orientation. Thus, the mediation motive makes part of the CEE debate as well, however in a more indirect way. The implementation of private ownership has to pay attention to some wide spread beliefs among citizens about justice and legitimacy regarding economic participation that have been shaped during the socialist times.

In order to minimize „socio-political resistance" (Bogetic, 1993: 463) against the transformation of ownership structures, it was decided in many countries to grant each citizen (or at least a large fraction of them) the right to become a shareholder. Thus, the question

whether one becomes a capitalist or rather remains on the labour side was transformed into a decision on the level of individuals (e.g. Bogetic, 1993; Jones and Mygind, 1999). Since the difference between capital and labour can be ascribed to deliberative individual decisions, the probability that future conflicts of interests between foreign investors and domestic workers are perceived as capital-labour conflicts may be reduced right from the beginning. This concept also highlights that the focus of the ESO debate in CEE lies on the level of society rather than on the level of companies or individuals.

3.2 From co-worker to co-owner – ESO as a means to activate the employee as an entrepreneur

The actor construction of the entrepreneur as well as the ethos of entrepreneurship takes an important role in the second discourse stream. Linking ESO to entrepreneurship does not only secure the communicative connectedness with the dominant economic-political discourse but also relates ESO to some (positively connoted) emancipation values such as autonomy, self-actualisation and self-determined labour (Bröckling, 2007). This implies the postulate for a transformation of the employee from an assumingly passive subordinate into an active contributor.

Ends and assumed effects

First of all, ESO is intended to initiate a kind of entrepreneurial habitus among the participating employees – „from co-worker to co-entrepreneur“ (Maier-Mannhart, 1996). This should be achieved by linking some material sharing of profit or capital to „the needed freedom for the activities of a co-entrepreneur“ (Schneider, 1996: 112). So, ESO should include orientation both for accomplishment and for profit.

The entrepreneurial habitus also implies the idea of the entrepreneurial risk: “The greater the risk for the single employee the more sustainable is his/her change of behaviour” (Lezius, 2004: 24). A further aspect to be promoted by ESO is the idea of ‘empowerment’, i.e. “a change of thinking of the participants” (Pfüller, 2003: 28) leading to an increase of entrepreneurial engagement.

Moreover, the entrepreneurial habitus should be connected with a series of ‘entrepreneurial virtues’ that all together will result in some positive effects regarding productivity and competitiveness of the companies. Most prominently, the idea of ‘psychological ownership’ should lead to an improved organisational commitment as well as to a change of behavioural patterns such as diligence, loyalty or control and, in the end, to a positive impact on company performance (Pierce and Rodgers, 2004; Höge, 2006). Obviously, most authors perceive the ‘entrepreneurial virtues’ as a kind of secondary virtues that do not include questions about the control of the entrepreneurial processes. So, the employee remains on the side of ‘labour’.

Counter arguments inside the discourse

Several authors question whether a change of behaviour in the sense of entrepreneurial habitus is realistic at all. Most often the share of capital on the employee side is very limited in relation to the total capital (Pendleton et al., 1998) and, consequently, the potential for control and participation in decision making does hardly exist (Blettner et al., 1995). Hammer and Stern (1980) found that the employees usually keep on regarding the management as the ‘real’ owners of the company and that they do not take any activity to change the internal power balance (similar Steger and Hartz, 2008). Van Dyne and Pearce (2004: 439) identified some positive effects of ESO on organisational commitment and pride, however their results „fail to show an incremental value of psychological ownership in predicting employee performance“.

This opens the question about intervening and intermediary variables. Bartkus (1997) identifies only a limited readiness to take on responsibility among US workers. Possible reasons may lie in wrong integration strategies, anxiety about job loss or even in differing interpretations regarding the co-owner role. Poutsma et al. (2006) take into question whether ESO is necessary at all to transform employees’ attitudes and behaviour. They assume that in countries where works councils secure a high level of participation rights and commitment ESO may be in vain.

If ESO is expected to provide some positive impacts on company productivity some further measures seem to be necessary. Nerdinger and Martins (2006: 16) argue that “employees with a financial participation also need to be actively involved in the entrepreneurial processes”. According to Kaarsemaker and Poutsma (2006: 679) the positive influence of ESO on performance is mainly dependent of a stringent workforce philosophy in which various HRM practices are interconnected and concluded as a whole in order to „consistently send the message that employees deserve to be owners and that they are taken seriously as such“.

This said, the management may also use ESO as a functional substitute for various other forms of participation in order to keep co-operation and commitment high and to secure its freedom in decision-making (Kalmi et al., 2005). Furthermore, ESO can be implemented to weaken existing systems of worker representation or even used as an alternative to them (Ackers et al., 2006).

Peculiarities regarding CEE

The motive to use ESO to encourage entrepreneurial virtues among employees in order to get greater productivity is reflected in the CEE discussion as well,

however once again in a more indirect way. First of all, a transformation of ownership structures is intended and not a transformation of the employee. But the longer a significant fraction of employees do not sell their shares the more the question occurs whether or not ESO could also lead to higher productivity of firms (Jones and Mygind, 1999, 2000, 2002; Kalmi, 2003). Goic (1999) noted, that to the extent in which ESO can be established as a non-transitional element of the new economic system it will have a sustaining effect on roles, relationships and behaviour of all participants. Other authors, though, rather see a symbolic character of ESO, for instance vis-à-vis of foreign investors (Kalmi et al., 2005; Poutsma et al., 2005).

3.3 On the way to the firm community – ESO as a means to develop a sense of community

Another discourse stream focuses on the idea that ESO mainly impacts on the development and fostering of the firm community. While the first discourse stream aimed at resolving some societal problems, this one clearly concentrates on the company level. Herein, a transformation of the employee seems particularly needed – he/she ought to change from a reluctant, selfishly oriented individual into a co-worker who acknowledges the company objectives and subordinates his/her own interests to them. Moreover, it is assumed that the firm community will even thrive on the individual interests and strengths.

Ends and assumed effects

The aim of the firm community can be found in various forms in the literature. It may be explicitly integrated in concepts such as 'identification', 'partnership' or 'commitment'. The firm community seldom occurs as objective per se but it is mostly considered to positively impact on the fulfilment of the company objectives. Blettner et al. (1995: 12) for instance mention that "the employees need to be better integrated in the company through co-operation in partnership". Voß (2006) points to the opportunity to broaden the fundamental consensus and to strengthen the firm cohesion through ESO. This improved identification would then also lead to a higher sense of responsibility and engagement, a higher work satisfaction, a better cost awareness and, finally, to a higher working time and working cost flexibility (Eyer, 2001; Schuler and Wolff, 2001).

Indeed those forms of participation do only make sense if integrated in a participation-friendly organizational culture. This means: what is to be achieved must already exist, in minimum partly (Maier-Mannhart, 1996). Gollan et al. (2006) postulate a complementarity of forms of financial participation with forms of direct participation. Thus, ESO should help to develop, via the self concept, a sense of ownership among the employees involved (Rousseau and Shperling, 2003; Pierce and Rodgers, 2004). Schuler and Wolff (2001) also consider this to be an adequate instrument to limit the potential of resistance against entrepreneurial decisions. Moreover, it constitutes an opportunity for social exclusion: "Firm community should provide all participants with a maximum of self-fulfilment and, through different forms of involvement and co-determination with co-responsibility, should counter heteronomy" (AGP 2001: §3).

Counter arguments inside the discourse

Here too, the key problem is that ESO obviously does not imply any simple causality. Even some different long-term studies found no significant correlation between ESO, work satisfaction and commitment (Long, 1978, 1982; Keef, 1998). Kuvaas (2003: 205) sums up: "[T]he idea that ownership in itself, should either automatically or directly generate commitment, seems overly behaviouristic and naïve" (similar Hardwig and Jäger, 1991).

According to those authors there are different reasons for this lack of causality: First, the organisational and societal context of ESO introduction often thwarts the original targets of ESO (Keef, 1998). Furthermore, the motives of employees to buy company shares seem to be based on individual profit calculations (Blettner et al., 1995). Moreover, Long (1978) assumes that the development of a sense of community had to be accompanied by some different forms of immaterial participation. Last but not least, Kuvaas (2003) points to the importance of perceived fairness, particularly regarding the procedural justice of ESO programs.

Peculiarities regarding CEE

The firm community motive is virtually non-existent in the debate concerned with ESO in the CEE countries. This may be due to the fact that ESO was predominantly considered to be a means to transform the economic order on the (macro-)institutional level (Steger and Šrein, 2006). When taken into account on the company level, ESO was not perceived as an instrumental tool but rather as an indicator of a still existing communitarian spirit among the workforce. This sense of community is traceable in the notion that employees sold their shares to the company management sooner or later (rather than to external investors) which resulted in a widespread "managerial entrenchment" against outsiders (Filatotchev et al., 1999).

3.4 From employee to co-manager – ESO as a means to balance power inequalities

This discourse stream discusses the potentials and limits to

promote the idea of 'having part' in the decision-making process of the company, connected with the topics of co-determination and participation. Thus, ESO stands for the opportunity to deliberatively enlarge co-determination or to take into question and to substitute various classic forms of co-determination. Consequently, the focus lies on transformations on the company level. In a second step, though, the employees' transformation, in direction of a 'zoon politicon' with respect to the organisational micropolitics, is also addressed.

Ends and assumed effects

If the idea of 'economic participation' through ESO becomes connected with participation in the entrepreneurial process, this also raises several questions about power (distribution) in the company (Steger and Hartz, 2008). Pendleton and Poutsma (2004) point to the fact, that ESO could be interesting from the unions' perspective since it possesses some potential to increase industrial democracy. Buchko (1993) argues that the opportunity to influence and control company decisions would constitute an important variable to model the relationship between ownership and behaviour (similar Russell et al. 1979). Kauls (2006) even postulates that participation in the company capital must be connected with a higher influence on the company politics – not at last in order to enable the productivity effects expected by the employers (similar FitzRoy and Kraft, 1995). This could also imply the organisation and mobilisation of the employee shareholders (Wheeler, 2008).

Counter arguments inside the discourse

Several authors argue that ESO would not automatically lead to the modification of the company power balance (Hammer and Stern, 1980; Bartkus, 1997). Steger and Hartz (2008), based on case study evidence, demonstrated that traditional hierarchies usually tend to remain in place. ESO could even bring along a limitation of the classic participatory rights (Pendleton and Poutsma, 2004). Gollan et al. (2006) see ESO to be strongest with respect to productivity and other targets when connected with forms of direct participation. However, this may raise the danger that unions and other forms of indirect participation could be considered obsolete (similar Ackers et al., 2006). Moreover, conflicts were found to arise between (external, non-involved) unionists and (internal, involved) works council members regarding how to interpret ESO (Guski and Schneider, 1983; Steger and Hartz, 2008).

Peculiarities regarding CEE

The problem of redistribution of organisational power is also reflected in the debate about privatisation in CEE. Many authors initially expected that the employees would rapidly sell their shares to foreign investors in order to fulfil short-term needs of consumption (Aghion and Blanchard, 1998). It was found, indeed, that employees usually did not retain their shares with the hope to receive higher influence on management decisions (Buck et al. 1998). However, most often employees sold their shares to their own managers (Vaughan-Whitehead, 2003) who merely considered ESO as a vehicle to transform state ownership into management control (Kalmi, 2003). Obviously, the employees do not seem to intend to put the existing distribution of organisational power into question. They rather try to preserve their employment and to secure long-term prospects of regular income by means of a pact with the management.

From a more radical perspective ESO was also considered an attempt to realise some Marxist ideals that had been rather theoretical in the past by transferring the companies into employees' hands (Mygind, 2002). Käppler (1995) for instance discusses these opportunities as a kind of antithesis in contrast to the privatisation policy in the former GDR. Such attempts, however, were massively countered by a widespread de-valuation of all kinds of concepts and ideas assumed to reflect socialist ideology ('no more socialism!') (Steger and Šrein, 2006). Consequently, the re-distribution of organizational power in favour of employees often occurs as ex-post statements in discussions about missed chances in the transformation process.

3.5 The employee as a final rescue – ESO as a means to privatise and run the company

Another discourse stream discusses ESO on the background of large-scale societal changes and crisis conditions. ESO, on the one hand, is intended to guarantee a smooth transition from public to private ownership. On the other hand, it takes the role of an instrument to safe struggling companies from bankruptcy, unfriendly take-overs or other crisis-scenarios. In contrast to the other discourse streams the employees appear as an important vehicle for the transformation of the society and/or the overcoming of company crises.

Ends and assumed effects

Even in the context of Western (OECD member) states, ESO is considered a vehicle to transfer state ownership into private property (Pendleton et al., 1998; Cin et al., 2003). However, in the middle and long run employees are expected not to undergo a transformation themselves but rather to sell their shares, as soon as a good offer of outsiders exists, and thus contribute to the transformation of companies (i.e. restructuring according to common efficiency standards) and markets (i.e. development/ strengthening of both a market for shares and for corporate control) (Mygind, 2002).

With the help of ESO some further financial targets should be achieved such as a transition to flexible wages (Blasi et al., 1994) or the reduction of tax burdens (Bartkus, 1997; Eyer, 2001). On the company level, the employees may also contribute to overcome some liquidity problems and to safe jobs, particularly in times of crisis (Brinck, 2002). Furthermore, ESO can effectuate an increase of equity capital in order to improve the conditions for necessary investments or to enable them at all (Poutsma et al., 2003; Priewe, 2001). Here, the employees take the role of investors with a long-term perspective entitled to replace unwilling banks or short-term oriented external investors.

One further aspect of this discourse stream is the idea to use ESO as a means to create some strategic ownership in employees' hands. This should help to defend the company against unwelcome external investors ('poison pill') who threat to reduce or to transfer jobs (Dunn, 1989; Leitsmüller and Naderer, 2007). Last but not least, ESO could help to facilitate succession planning, for instance through the option of an employee-buy-out (Buchko, 1993; Eyer, 2001).

Counter arguments inside the discourse

Critical scholars have challenged the arguments of this discourse stream referring to several problem aspects. Most prominently, it was argued that employees may not behave as expected and may sell their shares to the 'wrong investors', thus consolidating insider ownership (Vaughan-Whitehead, 2003). Particularly during and after the privatisation process the authority of the company management to direct their workforce should not be underestimated. Moreover, some authors also point to the fact that the postulated employee behaviour is hardly rationale. Priewe (2007) for instance questions why it should be reasonable for employees to take a financial risk that is, in the same time, assessed by the market or by bank experts to be too dangerous.

Peculiarities regarding CEE

Not surprisingly, this discourse stream is the most widespread to be found in CEE countries. Not only for the transformation of companies but also for the transformation of the state as a whole, the employees are considered a stopgap (Aghion and Blanchard, 1998) who should help "to transfer the outcomes of the socialist accumulation into capitalism" (Fülberth, 2006: 289). ESO should secure the legitimacy of this transformation through a broad distribution of ownership (Bogetic, 1993). Moreover, ESO is intended to carefully introduce the employees to the mechanisms of the market economy, to safeguard jobs and, thus, to soften the negative consequences of the transformation (Briam et al., 1997; Pfüller, 2003).

The crucial point of this discourse stream is the particular expectations about employees' long-term behaviour. According to neo-classic prescriptions reported by several Western and domestic experts (Boycko et al., 1996; World Bank, 1996), the employees should sell their shares to (international) investors as soon as they enter the market. The traditional employees' suspicion, it was assumed, would support this behaviour. However, this counter-indicated use of an 'alternative' Western instrument to establish neo-classic structures did not meet the high expectations. On the one hand, ESO did not just constitute a temporary state but was much more widespread and persistent than initially expected (Prasnikar and Gregoric, 2002; Kalmi, 2003). On the other hand, employees behave in a particular neo-classic manner (consumer orientation, job preservation) and usually sold their shares to the company management. Obviously, for the employees in CEE 'a bird in the hand is worth two in the bush' (Aghion and Blanchard, 1998) while the managers have profited from their privileged position during the process of change of ownership structures (Filatotchev et al., 1999).

3.6 The employee as utility maximiser – ESO as means to foster corporate governance and control

The final discourse stream includes a rather different actor construction of the employee compared to the previous ones. On the basis of the assumption of an ahistorical, anthropological consistency of human behaviour the employee is perceived as a rational maximiser of personal utility in line with the economic principal. This implies that the employees optimise several variables in parallel – they maximise job security and the accumulation of capital while minimising the necessary input needed. A transformation is predominantly intended at the company level as ESO should help fostering the company's corporate governance and human resource management.

Ends and assumed effects

First of all, the motive of the maximiser of interests can be found in relation with the employees' individual capital accumulation (Blettner et al., 1995; Keef, 1998). In this context ESO can be considered an instrument among others that is purposefully chosen by the employee to improve his/her capital resources in the short or in the long run (Landesregierung Bayern, 2007). The objective to promote the capital accumulation is also included in the company regulations for the introduction of ESO (Havighorst and Müller, 2003) while the idea to complement the existing pensions is seldom mentioned (Hollender and Scholand, 2002). Unlike the logic of 'having part' the starting point is not a deficit in justice but the calculation of individual interests. Accordingly there also occur some explicit promises about a (luring) return of investment (e.g., Ministerium für Arbeit und Soziales NRW, 2001).

Well connectable to this discourse stream is the construction of the employee as a shareholder. "Investors and employees alike would gain if companies turned employees into corporate partners by granting stock options to most of the workforce" (Blasi et al. 2003: xi). The calculation of private interests on the side of the employee is also used whenever ESO is addressed as a means to control the performance of workers and to make them perform better (Hübler, 1995). Gollan et al. (2006) point to the opportunity to increase both group pressure and performance pressure with the help of ESO. Pendleton (2006) also considers ESO an adequate reward instrument in combination with pay-for-performance wherever the costs to control individual performance are too high.

If ESO makes part of a modern reward system granting an extra bonus, it can also be considered an important instrument in the 'war for talents' or to secure the long-term commitment of the highly qualified workforce (Eyer, 2001; Bellmann and Leber, 2007). Moreover, the maximisation of influence on entrepreneurial decisions makes also part of this discourse stream. It is assumed that the employees bear an interest in maximising both job security as a source of a calculable income and participation in the sense of a co-operatively led company (Kaarsemaker and Poutsma, 2006). In this context, the employee is considered to be able to maximise some conflicting interests at the same time.

Counter arguments inside the discourse

Several authors seriously question whether ESO is a feasible means for the individual capital accumulation. Hollender and Scholand (2002) point to the complex calculation of risk in the context of the envisaged pensions. Others warn about the double risk of losing both job and funds at the same time (Kauls, 2006; SPD, 2007). Ehrhart (2007) adds that the attraction of ESO would be limited by the marketability of the shares, the increased costs of a job change and the potentially increased reward insecurity. Furthermore, the potential of ESO to enable employees' participation in the increase of capital incomes is questioned – given the various alternative instruments (Bundestagsfraktion Bündnis 90/Die Grünen, 2006).

Moreover, there also occurs a certain collision between the objectives of an individual capital accumulation on the one hand and of an entrepreneurial employee on the other, for instance regarding the question about wage sacrifices. The rationally calculable security of pensions runs counter to the performance incentives of ESO that are connected with an individually attributable risk.

Peculiarities regarding CEE

In the debate about ESO in CEE employees are regularly perceived as maximisers of capital for more or less long-term consumption needs making rational calculations about financial gains, income losses and the transaction costs of job changes (Aghion and Blanchard, 1998). However, some particular potential conflicts do also occur. On the one hand, actor constructions as the utility maximisers run counter to some widely propagated 'good citizen'-expectations (cf. section 3.5). Also from the perspective of business ethics, it is questioned whether ESO in this respect may promote a learning process that results in a 'mass-production' of 'neo-classic-style capitalists'. The most recent global financial crisis has highlighted the downsides of such a development.

3.7 The dominant actor constructions of the employee in the ESO discourse

Against the background of the six discourse streams we are able to reconstruct the various actor models of the employee that implicitly exist in the narrations about ESO. From a formal perspective, the employee becomes a shareholder through ESO. Thus, ESO introduces a social innovation into the economic realm that, on the one hand, the ESO discourse has tried to describe and comprehend using the vocabulary of means-end relations with reference to causes, subsequent effects and associated problems. In order to account for the missing knowledge about the employees' preferences and attitudes towards ESO, the ESO discourse, on the other hand, resorts to already familiar categories of typical economic actors rooted in some semantic lead differences, namely production-consumption, capital-labour, and ownership-control.

Beside this, to provide the employees of a company with company shares provokes a kind of before-after or target-performance comparison respectively on different levels, be it the society, the company or the employee. In most of the ESO discourse a transformation of the employee is intended and, consequently, the *target-images* about the employee holding company shares prevail. Those target-images are based on different kinds of pictures of the entrepreneur or the shareholder respectively. A naïve observer might expect that a transition of the employee will take place in the narrations, moving from a state that has to be overcome to an aspiring target state. This would imply that the employee undergoes a transition from one value of the underlying semantic lead distinctions to the opposite value within this distinction, e.g. from proletarian to capitalist in the form of either an entrepreneur, co-owner, or shareholder etc. However, such a transition would confront the discourse with the general problem to consider the employee simultaneously as a worker and a capitalist, an employee and a shareholder, or a worker and a manager. This semantic reshaping of the employee includes coming to terms with the very contradictions that are unavoidably connected to those hybrids when measured against traditional notions of the conflict between capital and labor or ownership and control. Our finding is that, contrary to this naïve expectation, the discourse streams

usually avoid such a transition of the employee in order to avoid obvious contradictions and paradoxes. The different discourse streams handle this problem – to conceal a paradox – rather differently.

If ESO appears as a vehicle to reconcile some societal subgroups (discourse stream 1) the employee becomes a worker-shareholder who has to be grateful for having received a share of capital and who is, therefore, ready to remain a worker, to enjoy the advantages of his/her shares and to renounce on using his/her new position as a means to initiate conflicts or to enlarge co-determination. If ESO is intended first of all to support the firm community (discourse stream 3) the employee appears as an actor who gratefully reacts to the paternalistic inputs of the company management, too. Though, in this case there is a more individualistic touch to the employee insofar as he/she is expected not only to renounce on adversarial actions against the management but also to provide some active (creative, innovative) extra-contributions in favour of the company. In the discussion about the entrepreneurial activation of the employee (discourse stream 2) the contradiction of the worker-capitalist is mitigated by two restrictions. First, he/she is considered to be a co-entrepreneur only in the narrow confines of his/her workplace. Second, no one in the discourse usually expects an average small shareholder to become an entrepreneur. The concept of the employee as a workplace-entrepreneur appears to be a management concept prescribing entrepreneurship with homeopathic dosage. The idea of the worker-shareholder (discourse stream 4) is somewhat contradictory, too. Here, the contradiction resides in the fact that some controlled workers, through ESO, may control the same managers who are entitled to control them. Therefore, the ESO is rather thought as a management tool to control the employees more subtly and more efficiently.

The target-concepts of the employee that we have discussed up to now have to be understood against the background of *images of the actual state of the employees* that has to be overcome. Although these images are hardly mentioned the metaphor of the employee as a stopgap (discourse stream 5) renders one image rather obvious. For example, the precondition for the employee to become a multi-functional 'sheet anchor' in the transformation process of the CEE countries is that he/she perceives the economy from the standpoint of a consumer with stable preferences that can be realised with the help of ESO. In all the narrations of the employee as a stopgap (employees holding ESO as a 'poison pill', as capital provider in times of crisis, or as supporters of privatisation in OECD and CEE states) a transformation of the employees through ESO was not intended at all.

To sum up, we can identify at least five actor models within the ESO discourse:

1) the employee who identifies with the enterprise goals, remaining bound to workplace and hence under management-control but who is more or less activated by better prospects of consumption (discourse streams 1 to 3);
2) the employee with extended possibilities for representative participation in order to better secure interests in participation in consumption (discourse stream 4);
3) the consumption-oriented jobholder with short as well as long-term preferences (discourse stream 5);
4) the jobholder who is at the same time a consumption-oriented hobby equity-holder optimizing his/her portfolio (discourse stream 6);
5) the entrepreneurially activated employee-shareholder who unifies ownership and control (the "self-managed, self-employed" employee of the high performance work system literature) (discourse streams 2 and 4).

Table 1 summarises the key characteristics of the six discourse streams.

4. Discussion

In our paper, we challenged the knowledge deficit regarding the employees' perspectives on ESO by carrying out a semantic analysis of a substantial portion of respective literature with in order to identify the various actor constructions used implicitly in the ESO discourse.

Let us sum up our findings with respect to the link between the surface of the ESO discourse and its underlying semantic structure. Whereas on the surface of the ESO discourse one can identify at least six streams defined by the purposes for which an ESO is used for, at the level of the underlying structure we can also identify three semantic lead distinctions organizing the discourse and providing connectivity to the contributions and positions within it. The organizing power of the semantic lead distinctions can be highlighted in two ways. First, we accounted for the link between the purposes of an ESO, the actor models for the employee, and the underlying semantic lead distinctions. Second, we provided evidence for the fact that the discourse's dynamic is co-determined by the necessity to avoid some obvious paradoxes that occur because the shareholding employee is often portrayed as a social role that combines some defining characteristics considered to be contradictory in the light of those semantic lead distinctions. More concretely, we could identify in minimum five actor models of the employee communicatively constructed in the discourse. Interestingly, in most of the discourse streams the shareholding employee is implicitly pictured as a consumer with stable preferences, despite the fact that on formal grounds the same discourse streams explicitly maintain that the shareholding employee may become an entrepreneur, co-owner or controller of management.

Table 1: Key characteristics of the six discourse streams

	Means and ends	Problems	Transitions
Out of capital and labour (3.1)	• Reconciliation of antagonistic societal groups • Fairer distribution of national income	• Reconciliation as a mere social romanticism • Double risk for employee-owners • Income substitution instead of increase in wealth	• Primarily state level • Secondary individual level
From employee to co-owner **(3.2)**	• Activating the employee • Promotion of entrepreneurial habitus and entrepreneurial virtues	• Very limited share of total equity capital • Limited entrepreneurial experience • ESO as a means to abduct employees from the unions' influence	• Primarily individual level • Secondary enterprise level
On the way to the firm community (3.3)	• Developing a sense of community • Promotion of responsibility and engagement	• Idea of ownership automatically generating of commitment rather naïve • Reverse causality? • Individual motives of employees?	• Primarily individual level • Secondary enterprise level
From employee to co-manager **(3.4)**	• Redistribution of power • Promotion of organizational democracy • Promotion of a solidary economy	• Lack of causality • Substitution of existing co-determination	• Primarily enterprise level • Secondary individual level
The employee as a final rescue (3.5)	• Supporting a smooth transition from public to private ownership • Coping with company financial crises	• Resilience of ‚insider ownership' • Risk-averse behaviour • Authority of the company management during/after privatisation	• Primarily enterprise level • Partly also state level
The employee as maximiser of private interest (3.6)	• Fostering corporate governance and human resource management • Improving employees' individual wealth	• Complex calculation of risk (regarding retirement provision) • Individual vs. company wealth maximization	• Enterprise level

Thus, the implied actor models rather remain on the side of labour within the capital-labour-distinction. In other words, the discourse streams usually avoid picturing a radical transformation of the shareholding employee who becomes a capitalist while still remaining a worker.

Regarding CEE, we can conclude our findings in three points: *First*, the ESO discourse in CEE differ significantly from the Western mainstream on the 'surface order', most probably due to some very different starting conditions in those countries in 1989 (e.g., low level of private ownership, specific capital-labour distinction). This resulted in some rather differing accentuations of discourse streams (e.g., very strong discourse stream 5, weak 2, 3). Moreover, some obvious re-interpretations of Western experiences occur – while ESO is traditionally considered an effective means to avoid external investors, it was employed in the CEE context to facilitate them, while ESO is traditionally perceived as an alternative to overcome capitalism towards socialism, it was comprehended in the CEE context as a second best means to overcome socialism towards capitalism.

Second, the ESO discourse in CEE is much more politicised compared to Western experiences. Transformation(s) on the state level and the concept of the 'good citizen' dominate in the debate. Obviously, questions about the political legitimation of the privatisation process are much more important than aspects of economic efficiency.

Third, unlike the 'surface order', where the employee is explicitly addressed as zoon politicon and state citizen for reasons of political legitimacy of the transformation process, the 'underlying order' of the ESO discourse in CEE is fairly in line with the Western mainstream. It uses the same lead distinctions and concludes the same

actor models as those described above, thus stressing the consumer orientation of the Eastern employees.

Some *limitations* of our paper (and implications for future research) need to be mentioned: First, our discourse analysis about CEE is somewhat limited as the native language literature was excluded. It can be assumed that some specific aspects that are not discussed here may arise there. Nevertheless, it is interesting, also for the political and economic actors in CEE to see how the ESO debate in CEE is constructed on an international level. Second, some cross-national comparative studies could examine the role of different discourse streams and actor constructions in different capitalist orders and how they are interrelated with different (historical) paths. This may help to overcome national bias and to detect some further types of discourse streams, actor constructions, or lead distinctions beyond our findings. Third, we focused on discourses and narrations and not on the concrete decisions made by individuals, companies, governments, or institutions etc. So, the discourse may reflect practice but is not equal with practice. Further work is needed to clarify this difference. Fourth, researchers may distinctively explore the correlations between different empirical narrator positions, i.e. authors of the discourse, with different discourse streams and different constructions of the employee. This would enable us to distinguish the political character of the discourse in more detail. Fifth, our analysis demonstrates that 'the' employee as a clearly identifiable entity does not seem to exist, apart from its construction. The re-construction of those processes by which images of the shareholding employee are constructed takes place under the same conditions as these processes themselves. Consequently, any attempts to look behind the curtain of the discourse and to detect the 'real' employee must be treated with great care.

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Zaposleni kot neznani akter? Analiza lastništva zaposlenih s posebnim poudarkom na srednji in vzhodni Evropi

Ozadje in namen. Čeprav ima lastništvo zaposlenih dolgoletno tradicijo, še vedno ne vemo veliko o pogledih samih zaposlenih na to obliko lastništva. Pomanjkanje znanja o odnosu zaposlenih do lastništva zaposlenih spodbuja nadaljnjo razpravo. S tem člankom želimo prispevati k temu, da zapolnimo omenjeni primanjkljaj tako, da smo izvedli semantično analizo literature z namenom, da prepoznamo različne strukture akterjev, ki se posredno pojavljajo v tem diskurzu.
Zasnova / metodologija / pristop. Izvedli smo semantično analizo diskurza o lastništvu zaposlenih. Z namenom sistematične analize smo potegnili ločnico med površinsko in poglobljeno strukturo komunikacije v smislu Michela Foucaulta. Interpretiramo nekatere vodilne semantične razlike - izraz, ki ga skoval Niklas Luhmann - da bi predstavili osnovno strukturo komunikacije.
Rezultati. Lahko identificiramo šest različnih tokov na površju diskurza o lastništvu zaposlenih; vsak od njih je opredeljen z nameni, ki jim sledi. Temeljno strukturo diskurza tvori razlikovanje med proizvodnjo-potrošnjo, kapitalom-delom in lastništvom-nadzorom, kar tudi določa katere modele akterji implicitno uporabljajo.
Zaključek. Implicitno lahko v diskurzu identificiramo pet različnih modelov akterjev. Diskurz v državah srednje in vhodne Evrope se razlikuje na površinski ravni, saj je bolj usmerjen v vprašanja politične legitimacije procesa privatizacije kot v vprašanja ekonomske učinkovitosti, s čimer uvaja politično razlikovanje v diskurz, kar se običajno ne kaže na zahodu. Skupna pa je semantična interpretacija razlik kot tudi modeli akterjev, ki izhajajo iz v teh razlik.

Ključne besede: *kapitalska udeležba, lastništvo zaposlenih analiza diskurza, semantične razlike, struktura akterjev, države srednje in vzhodne Evrope*

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The Determinants of Employee Ownership Plan Implementation in EU Countries – the Quest for Economic Democracy: a First Look at the Evidence

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Background and purpose: Kelso's quest to identify the economic counterpart of political democracy and, as a corollary, his concern about the nature of the economic system's organisation needed to support the institutions of a politically free society, contributed two important terms: economic power and democracy. Following Kelso's reasoning, my research study aims to understand the determinants of the implementation of economic democracy, measured by the incidence of employee share ownership plans, within European Union countries.
Methodology: Setting out with the theory of one of the founding fathers of employee stock ownership plans, I perform a cross-country analysis spanning five years (2008–2012) to explain the incidence level of employee ownership by independent variables operationalizing the political, legal, socio-educational and economic structures of twenty European Union countries. Using secondary data from the European Federation of Employee Share Ownership, I explain the determinants' pertinence, while accounting for severe data limitations.
Results: I report a strong correlation between employee ownership incidence and the index of economic freedom. However, the labour market's freedom, the trustworthiness of and confidence in financial markets and the quality of secondary and tertiary education do not deliver clear-cut results.
Conclusion: Further research should comprehensively scrutinise country-specific factors regarding corporate governance issues and cross-cultural controls. Employee ownership researchers should consider this field of research to understand why countries that are so-called employee ownership champions are experiencing widening income inequality.

Keywords: *employee ownership, economic democracy, free markets, economic freedom, equity markets*

1. Introduction

Considering the famous assertion by Winston Churchill that democracy is the worst form of government system, with the exception of all other forms, it can be said that democracy gives people the fundamental right to control their own destiny through representatives. Political democracy provides us always with alternative options to the status quo. From the neoliberal radical standpoint to the Deweyan perceived shallowness of the concept in everyday economic life, through democracy, there can be a way for nations, and a fortiori, citizens, to become more independent from financial markets' constricting forces resulting in income accumulation in the hands of a small percentage of owners. However, where is the limit to the morbid nature of excess income? Kelso and Kelso (1991) put it straightforwardly, saying that morbid capital is a capital holding which produces income above the amount its proprietor needs to cover his/her living standards – in other words, it is capital above individual or household consumption needs.

I propose adding another requirement to recognise the above-advocated non-morbid capital boundary: … and put

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capital to work in productive investments. This amendment is in line with one of Terrell's (2005) harsh criticisms of Kelso's and binary economists' theories[1]; to be precise, binary economists fail to identify 'the importance of labor and innovation in the development of capital', going far beyond producing only consumer goods (Terrell, 2005, p. 34).

Nevertheless, the assertion fully depicts the limitations on ownership rights in common law, subsumed in the indisputable principles of the owner. When exerting property rights, (1) the owner should neither injure the property of his/her neighbour nor (2) the public interest. Following Kelso and Kelso (1991), this is precisely what morbid capital does because:

Without benefiting its owners, it beggars others by depriving them the adequate economic opportunity [violation of common law limitation on private property] (...) [and] is contrary to the public interest because it results in strife and suffering and is economically undemocratic [violation of the public interest and welfare common law limitation]. (p. 168)

The urge to diminish income inequality throughout the world is the basis for the seminal employee ownership theory put forward by Louis O. Kelso and Mortimer Adler in the then-revolutionary book The Capitalist Manifesto (Kelso and Adler, 1958). In 1958, Kelso and Adler posed two fundamental questions. The first related to the quest for the economic counterpart of political democracy, while the second, as a corollary, was concerned with the nature of the economic organisation needed to support the institutions of a politically free society. They emphatically gave the answer 'economic democracy' – a system that grants people's right to participate in 'the power to produce goods and services and to receive the income so earned'.

Six decades later, Blasi, Freeman, and Kruse (2014) – three of world's most preeminent academic experts on employee ownership – postulated with firmness and conviction that major diffusion of employee ownership is the most effective device for coping with the world's deepening wealth distribution inequality. Thus, they coined the solution of broad-based capitalism, stating that:

A Google search for 'economic inequality' finds millions of entries from politicians, policy analysis, business and labor leaders, and citizens with widely divergent perspectives and ideological persuasions. In a world in which the distribution of national income has shifted from labor to capital, in which ownership of financial assets and access to income form capital is highly concentrated, and in which a small number of high earners have pulled away from the rest of the society, a person does not have to be paranoid to be alarmed about the dangers that continual widening of income and wealth distribution poses for the wellbeing of the economy and society (Blasi et al., 2014, p. x).

The acknowledgement of the widening income inequality fifty-six years after the emergence of the capitalist (revolutionary) manifesto represents a harsh reality. Still, as Freeman (2014) posited:

Unless workers earn income from capital as well as from labor, the trend toward a more unequal income distribution is likely to continue, and the world will increasingly turn into a new form of economic feudalism. We have to widen the ownership of business capital if we hope to prevent such a polarization of our economies (pp. 7–8).

The basic idea is that the actual tendency which favours excessive capital accumulation will soon hinder economic growth, since it creates a diminishing purchasing power amongst the majority of citizens. Thus, the capital latency instigated by economic inequality will counteract an economy's wealth creation, resulting in economic stagnation. Conversely, as noted by Ashford (2011), none of the well-known and acknowledged theorists of economic growth recognise the potentialities of capital acquisition distribution to citizens in relation to the sustainable development of economies.

Yet, what about 'economic democracy'? Is the rationale behind that concept clear? If so, is it measurable? In a straightforward explanation, Kelso and Kelso (1991) explain it by means of the employees' right to share a firm's income, not only through their workforce participation, but also as owner, entitled to a stake in wealth accumulation.

Since the 1950s, a growing body of evidence about the benefits and/or the widespread usage of employee ownership schemes have emerged, predominantly in the form of employee stock ownership plans. This primarily occurred in the United States, well ahead of Europe. In the latter region, it was boosted by European Union institutions and bodies in mid-1970s and experienced a definite take-off with the publication of the first PEPPER[2] report (Uvalic, 1991).

2. Methodology

I consider the broader motives for the implementation of employee share ownership schemes reported in five major categories, as follows:[3] (1) firm performance studies (using economic and financial performance measures of profitability and productivity within a varied set of methodological frameworks); (2) studies focused on workers'

[1] For a comprehensive literature review of the theories of Kelso and Binary Economics, see, for instance, Ashford (1994), Kurland (2001) or Zundel (2000).

[2] Acronym for Promotion of Employee Participation in Profits and Enterprise Results.

[3] For more details about the studies included in each category and major European Union initiatives towards employee financial participation plans, see Machado (2011).

(individual) attitudinal effects (motivation, commitment, or employee job satisfaction); (3) deriving from (2), studies focussed on researching the organisational impact of workers' psychological ownership (the feeling or perception of ownership) rather than formal ownership, defined as

That state [of mind] in which individuals feel as though the target of ownership (material or immaterial in nature) or a piece of it is 'theirs' (…). The core of psychological ownership is the feeling of possessiveness and of being psychologically tied to an object (Pierce et al., 2001, p. 299);

(4) employee ownership plans as a compensation vehicle used as an anti-takeover defence; and (5) research studies which examine the impact of employee ownership on trade unions (density and influence level) and collective bargaining.[4]

Given the positive effects demonstrated by the studies whose categories are listed above, studies are missed that investigate the factors that determine the implementation of employee ownership at the level of societies. It is time to break through to another kind of employee ownership research in order to open up a view on foundational causes that might also be able to account for the discrepancies in employee ownership plan dissemination throughout the European Union. Actually, some European practitioners, regulators and promoters of employee ownership keep asking about the nature and extent of factors that might impede the further implementation of broad based employee ownership schemes in the EU, particularly since the big push created by the publication of the PEPPER II report (European Commission, 1996), followed by the 2002 Commission's recommendation (European Commission, 2002).[5] Considering this, researchers should pose the following question: Which country-specific factors determine the employee ownership incidence level throughout the EU?

2.1 Background

As Poutsma (2001) points out, for a better understanding of uneven and widespread financial participation schemes, researchers must concentrate their efforts on the implementation process and drawbacks according to countries' political, economic, legal and social environments, which influence the approach of doing business. Far from assuming a cultural deterministic theory to draw conclusions related to the stated differences, the growing group of employee ownership promoters must understand how the potential to introduce broad-based share ownership plans can boost citizens' economic participation as owners. For instance, Pendleton, Poutsma, van Ommeren, and Brewster (2001, 2003) also focus on specific factors in EU member states that explain plans' implementation determinants, concluding that 'nationality' is the key factor explaining the incidence of broad-based employee ownership plans.

McCartney (2004) highlights the national-level policies and country-specific factors as the driving factors for the development of employee ownership plans. To be exact, considering countries' cultural differences, he emphasises the need to change tax policies to include tax benefits and allowances for both parties, as with labour laws, financial markets supervision rules and corporate governance standards. He stresses the necessity of training practices engaged in explaining the plans' complexities to workers. Economic and financial (or business) literacy appears to play a major role in employee ownership plan diffusion at both the national and company levels, which has been recognised by several studies that did not focus on this issue exclusively, but instead considered it as a corollary of workers' education level or literacy as a whole (e.g. Black and Lynch, 2001; Ichniowski et al., 1997; Pendleton et al., 2001, 2003). However, empirical evidence on this subject is still lacking (Kaarsemaker et al., 2010).

Beyond community policies and recommendations providing the major guidelines for plan implementation at a national level, Poutsma and Nijs (2003) stress that there are fundamental country-specific factors which are shaped by their own institutional environment – this is the nation's breeding ground. Here, national institutions and citizens play a major role in setting up distinctive social models – specifically, sociocultural patterns which affect how companies are run and organised – that are critical for employee ownership plan diffusion and determine their configuration. Therefore, the differences in the prevalence of those plans in different states should be highlighted in relation to four fundamental dimensions, as follows: (a) labour relations, (b) capital markets, (c) governance and (d) corporate governance.

In order to cope with country-specific factors and to test the incidence level in European Union members, I consider economic policy–related issues, regulation of labour markets, the development of capital markets and financial literacy.

[4] For another comprehensive literature review with a somewhat different classification, see Hashi and Hashani (2013).

[5] As an example, Norbert Kuhn (2015) – head of Corporate Finance at Deutsches Aktieninstitut, an association of companies, investors, banks, stock exchanges and other bodies which deal or operate in capital markets – noted that in fifteen years, the number of German citizens who are simultaneously employee shareholders decreased dramatically from 1.6 million in 1999 to 800 000 in 2014. This is one of the latest arguments demanding measures for a wider implementation of employee ownership. In this case, Kuhn exhorts German governmental authorities to take specific actions to overcome barriers and exploit the full potential of those broader-based plans.

2.2 Hypothesis development and variable description

My model is set by including country-specific factors, derived at by the literature review that might explain the EU level of usage of employee ownership plans, whatever their form. For instance, Mathieu (2015, p. 9) reports the major forms of employee ownership plans in Europe as a percentage of total employees (Table 1):

My search for country specific determinants is rather inductive, since cross-national studies are currently scarce (compared to the study typology which I refer to in the previous subchapter); furthermore, there are no longitudinal studies establishing a direct relationship between employee ownership and a nation's or region's cultural, political, legal, economic and social contributing factors.

The study by Festing et al. (1999) is one of the few that tries to recognise these determinants. Despite the authors' recognition of the methodological limitations of the model, they conclude that the determinants of employee ownership incidence are placed in a cultural, legal and institutional perspective. At the same time, those contextual environmental factors influence and are influenced by company-specific factors that operate on the domestic markets. Following the latest developments in global markets and the collapse of the socialist economies of Eastern Europe, it is not possible to understand institutional developments (their origin, influence on performance and adaptation to the operational environment) without understanding the political forces which have caused them (Djankov et al., 2003). Furthermore, Djankov et al. (2003) emphasise that this is precisely there where the most critical institutional differences between countries are set, that is, the type of governance determines the order factors, including the greater or lesser degree of intervention in market regulation in the judicial branch (which could damage the rule of law) and the greater or lesser extent of resources and property concentration.

Another concern is whether the predominant free-market policies in Western economies can encompass the Kelsonian concept of 'economic democracy' described above. Kelso and Adler (1958) advocated an evolution towards a combination of free-market principles with the democratisation of economic power and capital ownership.

However, there is no clear-cut evidence of a setting in which employee ownership arrangements can flourish.

The above-described 'nationality effect' is predicted to play a major role in the dissemination of employee ownership plans throughout the European Union member states, explained by legislative differences (Pendleton et al., 2001) and by the degree of support measures set by governments' macroeconomic policy (Poutsma et al., 2003). Furthermore, several European Union institutions encourage Member States to introduce policy and legislative mechanisms for the dissemination of employee ownership instruments, chiefly through tax incentives (European Commission, 1996, 2002; Lowitzsch and Hashi, 2014).

Accordingly, for an economic background perspective, I use the 'Index of Economic Freedom' (IEF) produced by the Center for Trade and Economics of the Heritage Foundation. The index comprises ten features within the four following dimensions: (1) rule of law (property rights and freedom from corruption), (2) the intrusiveness and size of government (fiscal freedom and government spending), (3) regulatory efficiency (business, labour and monetary freedom) and (4) the openness of markets (trade, investment and financial freedom). In 2015 report, the IEF promoters continue to show a very strong correlation between countries in the highest-ranking positions and some dimensions of human development, namely lower poverty intensity; higher income per capita; higher levels of life expectancy, literacy, education and the standard of living; and higher per capita economic growth, which results in entrepreneurship growth, job creation and innovation (Miller and Kim, 2015).

Table 1: Summary of EFES report statistics, 2008–2012

	2012	2011	2010	2009	2008
Employee owners (thousand people)	8967	9119	8876	8538	8276
Employees' share in the ownership structure	2.8%	2.9%	2.9%	2.9%	2.8%
Capitalisation held by employees (billion €)	200	237	198	164	239
Percentage of European companies with:					
– Employee ownership	91.2%	90.3%	89.4%	88.9%	84.1%
– Broad-based plans	50.9%	50.0%	49.1%	48.4%	47.0%
– Stock option plans	62.0%	61.2%	60.4%	59.8%	58.4%

Source: Author's construction based on Mathieu (2015, p. 9).
Observations: The above figures encompass, for each year, 31 European countries – the EU-28 plus Iceland, Norway and Switzerland; listed companies and non-listed companies are pooled.

In sum, I propose to test whether the degree of state intervention in an economy is related to the incidence level of employee ownership, as measured by the IEF. The positivity of the relationship hypothesised below is uncertain.

Hypothesis 1: There is a positive relationship between economic freedom and the incidence level of employee ownership in the EU-20.

The link between labour market regulations and the diffusion of employee ownership plans is an understudied field of research in the European Union context. So far, the vast majority of studies have explored US labour market particularities. However, the latter is structurally different from the EU – such as in the legal mechanisms for workers' protection and, as a result, in the degree of flexibility of the workforce. Moreover, labour markets are affected by the government's role in the use of the core functions of national welfare policies (Blekesaune and Quadagno, 2003).

In order to compete in the large global market and to cope with the demand for greater flexibility, companies have had to assume high levels of cooperation and participation between managers or executives and workers' teams (Poutsma and Huijgen, 1999). By comparing employee participation forms amongst EU and US firms, Gill and Krieger (2000) suggest that the European model of participation is somewhat less flexible and competitive, generating high unemployment rates. In addition, the authors highlight that the EU model of participation has a greater degree of job protection – with the strong influence of labour protection measures from the welfare state. Furthermore, those outcomes are strongly influenced by trade unions, where collective bargaining and tripartite regulation prevail. Bryson et al. (2013) find that the extent of labour market regulation is negatively correlated with the dissemination of incentive pay schemes (which include employee ownership plans).

To account for labour markets' regulatory practices, I elect the 'labour market regulation' index published by the Fraser Institute. In the 2015 report of The Economic Freedom of the World, Gwartney et al. (2015) state that labour market overregulation reduces the power of employees and employers to negotiate their contracts freely, thus reducing economic freedom. This aggregate indicator includes measures of (1) hiring regulations and minimum wage, (2) hiring and firing regulations, (3) centralised collective bargaining, (4) regulation of working hours, (5) mandated cost of worker dismissal and (6) the use of conscription. A free labour market will rank highly in this indicator.

Hypothesis 2: There is a positive relationship between labour market freedom and the incidence level of employee ownership in the EU-20.

Another branch of unexplored research on widespread employee ownership is its relationship with financial literacy. There is a bulk of economic empirical research linking economic growth with citizens' financial knowledge. Lusardi and Mitchell (2014) note that since welfare after retirement regulations have been loosened from centralised governmental intermediation through social security or employers' defined contribution plans, retirees have to make crucial financial decisions. An apparently simple dichotomous financial decision like saving versus consuming does not fit in a world where financial products are increasing in number, sophistication and complexity. In circumstances where individuals have to face the risk to avoid losing his/her entire life savings, an individual needs to reason about the opportunity cost of his/her decision.

This shift from defined benefit pensions to defined contribution schemes stresses the importance of financial knowledge to avoid asset decumulation (Lusardi and Mitchell, 2014, p. 6) – that is, lessening value. This reasoning can easily be extended to other voluntary, broad-based, asset accumulating defined contributions plans such as employee stock ownership plans (ESOPs). Christelis et al. (2010) observe that individuals' cognitive abilities, such as numeracy, verbal fluency and memory, are positively related with stock market participation by citizens. Rosen et al. (2005) note that financial literacy is crucial for participatory democracy at the workplace through ownership, enabling workers to act like owners by understanding the major variables that affect their businesses. Pendleton (2010) highlights the need for employee education on risk and investment implications, and for awareness about employee ownership plans' financial features. For Kaarsemaker and Poutsma (2006), financial literacy is beneficial for employee ownership success.

Following the Global Competitiveness Index (GCI) of the World Economic Forum (WEF) (Schwab, 2014), there are the following proxies for financial literacy: (1) quantity of education, which is an aggregate measure of (a) secondary education enrolment rate and (b) tertiary education enrolment rate (both based on hard data); and (2) quality of education, which aggregates four indicators – (a) the quality of the education system, (b) the quality of math and science education, (c) the quality of management schools and (d) internet access in schools (all based on survey data; e.g. the 2014 report was based on the opinion of 14,000 business leaders worldwide – Executive Opinion Survey).[6]

Following Christelis et al.'s (2010) findings related to cognitive abilities, it seems reasonable to select the second indicator according to the qualitative nature of education.

[6] The complete dataset is available on a dedicated WEF website: http://www.weforum.org/reports/.

Hypothesis 3: There is a positive relationship between financial literacy and the incidence level of employee ownership in the EU-20.

The development of financial markets plays a major role in widespread employee ownership. As discussed earlier in this chapter, the dynamics of such development result in the widespread participation of small investors and/or families. Cross-countries studies have proved that this is a determinant concerning the level and extent of usage of employee financial participation schemes, mainly of stock ownership plans (Bryson et al., 2013; McCartney, 2004; Poutsma and Nijs, 2003).

Through the above-mentioned GCI (Schwab, 2014), I draw two proxies for financial market development, as follows: (1) (financial market) efficiency, which is an aggregate measure of (a) the availability of financial services, (b) the affordability of financial services, (c) financing (level) through the local equity market, (d) ease of access to loans and (e) venture capital availability (all based on the WEF Executive Opinion Survey); and (2) trustworthiness and confidence, which integrates (a) the soundness of banks, (b) the regulation of securities exchanges (both based on survey data) and (c) the legal rights index (secondary source, based on the index computed by the Wold Bank by its subsidiary the International Finance Corporation).

Analysing both indicators, which are strongly correlated at 0.802, and to avoid collinearity, I drop the first, since the second is seemingly more concerned with a rationale for citizens to opt for stock plans.

Hypothesis 4: There is a positive relationship between financial market development and the incidence level of employee ownership in the EU-20.

2.3 Sample selection and analytical methods

An employee ownership researcher will inevitably encounter a lack of data to carry out his/her research project. At the European level, there are some data references usually included in the European Company Surveys (ECS) or in the European Working Conditions Surveys (ECWS), both carried out by the European Foundation for the Improvement of Living and Working Conditions (Eurofound), with the ECS performed every four years (since 2004) and the ECWS every five years (since 2005). Therefore, longitudinal data studies testing the incidence level were initially almost impossible to perform, since researchers could only rely on postal surveys Eurofound had designed. However, in 2006, the European Federation of Employee Share Ownership (EFES) first published the Annual Economic Survey of Employee Ownership in European Countries, comprising 2006/2007 data. This year, the EFES publishes the seventh consecutive report, which contains 2014 data – a major breakthrough for the ownership research community committed to evaluating European financial participation issues and their developments.

The EFES annual reports include European countries' aggregated data on all large European listed companies (which I label as the 'thorough sample subset' due to its representativeness) and a vast majority of the biggest European non-listed employee-owned companies, chiefly constituted by workers' cooperatives (where the representativeness is disputable). For the 2014 EFES report, Mathieu (2015) compiled information about 2509 European companies,[7] 2225 of which represent the European listed companies whose market capitalisation is 200 million euros or more. Although they make up just one-quarter of all European listed companies, they are responsible for 98% of the total market capitalisation and for 94% of the employment within this realm (Mathieu, 2015, p. 10).

In terms of stock trade companies in the 28 European Union member states (EU-28), the EFES database poses many challenges to researchers in that it raises the market capitalisation bar to the amount referred. The depiction of countries' employee owners in the sample depends on how developed stock markets are; this is measured through their liquidity, the number of listed firms and their market capitalisation related to countries' internal productivity measures (e.g. the gross domestic product [GDP]) , among other indicators. Moreover, companies' ownership structure – whether it is more or less concentrated and held by institutional investors or predominantly by small investors – plays a big part in capital markets' development. A higher number of listed companies with a large majority of small investors enables the use of stock ownership plans. This explains, for instance, the great expansion of these plans in the UK (Poutsma and Nijs, 2003, p. 889) even before the Nuttall Review (Nuttall, 2012), which supported the British government's agenda to boost employee ownership.

Due to the thoroughness of the above-mentioned list (through the EFES methodological capitalisation floor threshold) and the unclear representativeness of report's second subset (non-listed employee-owned companies), my dependent variable, which I label 'Employee Ownership', consists of 'employee owners as a percentage of all employees in listed companies' (; equation 1). Thus, the dependent variable is my own construction based on published data by the EFES, because Mathieu (2015) does not report it directly. Nevertheless, my formulation can be confused with the described 'democratisation rate of employee ownership' (calculated by dividing the total number of employee owners by the total number of employees). Actually, for listed companies, there is only the indicator

[7] The report comprises data from 31 European countries – the 28 European Union member states plus Switzerland, Norway and Iceland.

'Employee owners in % of all employees in listed companies having employee share plans', which excludes the number of employees of listed companies with no employee shareholders from the ratio (see, for instance, Mathieu, 2015, p. 137, column 204 for 2012 results).

$$eo_{it} = \frac{te_{it} - teo_{it}}{tenl_{it} - teonl_{it}},$$

where te_{it} is the total number of employees, stands for the total number of employee owners, $tenl_{it}$ represents the total number of employees in non-listed companies and $teonl_{it}$ is the total number of employee owners in non-listed companies for country *i* and year *t*. The time variable *t* spans all years from 2008 and 2012, notwithstanding the availability of 2013 and 2014 data for the dependent variable, as well as for the vast majority of the proposed explanatory variables. This is because 'market capitalisation of listed companies (% of GDP)' from World Bank's (WB's) World Development Indicators (WDI) ends at 2012.[8] Furthermore, to fully integrate the EU's 2007 enlargement, I limit the time series start point to 2008.

As explained above, despite the major improvement brought about by the publication of EFES reports and database construction, some shortcomings must be offset. Based on the 2014 EFES report (Mathieu, 2015), the country choice criteria for sample inclusion followed certain research conditions, as follows:

Condition 1: Available data for computing Equation 1 – any country with missing data is rejected;

Condition 2: Market capitalisation (of listed companies) to GDP: at least two years above the first quartile for the respective year; otherwise, the country is excluded (WDI statistics);

Condition 3: Number of listed companies included in the 2014 EFES report above the first quartile for 2008–2012 or the number of listed companies below the first quartile for the global average of 2008–2012 (WDI statistics, except for Spain, due to the unreliable figure computed – reported, for instance, by Machado (2011) – where data were collected from the CNMV, the Spanish securities market commission; Comisión Nacional de Mercado de Valores, 2008, 2010, 2012).

Following these criteria, I excluded the following countries from the analysis: (1) Bulgaria, Cyprus, Estonia, Latvia, Romania, and Slovak Republic, which violate the latter two conditions; (2) Lithuania, which infringes on the second condition; and (3) Croatia, which violates the third condition.

Overall, regarding the 25th percentile in Table 2, my calculations constructed a panel dataset which includes observations for five years from twenty EU member states, with a hundred computed observations (henceforth referred to as 'EU-20').

Table 3 summarises all of the independent variables which will explain the employee ownership incidence in country i at the year t – the author-constructed .

Analysing Table 4, there are no strong correlations between the variables. Thus, the possibility of multicollinearity is remote, since there are no highly correlated predictor variables to include in the regression model.[9]

Table 2: Summary statistics for panel ID (country) variable selection

Measures	2008	2009	2010	2011	2012	Listed (EFES)	Listed (WB)	EFES/WB (%)
Mean	31.53	43.29	45.92	35.89	41.67	70.6	306.4	31.05
Maximum	120.91	210.52	193.94	114.70	124.95	490	2200	72.71
75th percentile	41.73	57.28	68.25	52.50	66.41	89	324	45.21
Median	25.86	25.93	29.46	25.78	32.94	32	123	29.16
25th percentile	**16.69**	**15.03**	**17.94**	**11.82**	**13.01**	**8**	**47**	**17.12**
Minimum	4.78	5.27	4.66	3.78	3.93	3	16	0.78

Source: Author's calculation based on World Bank, WDI, available at http://databank.worldbank.org/data/reports.aspx?-source=world-development-indicators, for 27 countries, and on CNMV (2008, 2010, 2012) for Spain.
Observations: 2008 to 2012 refers to average market capitalisation (of listed companies) to the GDP for those years; Listed (EFES) refers to number of listed companies included in the 2014 EFES report (see Mathieu, 2015); Listed (WB) refers to the average for 2008 to 2012 number of listed companies reported in World Bank's WDI; EFES/WB (%) refers to the percentage of EFES listed companies in relation to WB listed companies.

[8] On a final commentary including cross-sectional time metadata, the World Bank WDI team states that the 'series stock market data were last updated April 2013. Standard & Poor's has discontinued the "Global Stock Markets Factbook" and database.

[9] I address the multicollinearity problem below by running the variance inflation indicators and tolerance levels for the independent variables; this confirms the presence of low multicollinearity effects.

Table 3: Independent (and control) variables description

Variable name	Description	Measure	Source	Expected effect
Index of economic freedom (ief)	(Measures the extent of) absolute right of property ownership; full freedom of movement for labour, capital, and goods; and an absolute absence of coercion or constraint of economic activity beyond that which is necessary for the protection and maintenance of liberty itself	0 to 100, higher values relate to a better index	Heritage Found.	+
Labour market freedom (labourmkt)	(Measures the extent of) labour markets' regulations restraining employee–employer relations in determining wages, hiring/firing and the use of conscription	0 to 10, higher rates relate to better labour market freedom	The Fraser Institute	+
Quality of education (qualedu)	Quality of education as evaluated by business leaders	1-7, from poor to excellent	WEF	+
Financial markets trustworthiness and confidence (fmtrust)	Sophistication of financial markets which can make capital available for private-sector investment from such sources as loans from a sound banking sector, well-regulated securities exchanges, venture capital and other financial products	1-7, from poor to excellent	WEF	+

Table 4: Correlation matrix

	1	2	3	4	5
1. EO	1.000				
2. IEF	0.010	1.000			
3. LABOURMKT	0.016	0.386	1.000		
4. QUALEDU	0.439	0.610	0.284	1.000	
5. FMTRUST	0.371	0.543	0.146	0.581	1.000

The regression equation to test the effect of the variables 2 to 5 (see Table 3) on the incidence level of employee ownership in the EU-20, by the classical linear regression model, is as follows:

$$eo_{it} = \beta_0 + \beta_1.ief_{it} + \beta_2.labourmkt_{it} + \beta_3.qualedu_{it} + \beta_4.fmtrust_{it} + \mu_{it}.$$

However, I assume that there are no behavioural similarities between countries.[10] Accordingly, the incidence level of employee ownership is affected by unobserved heterogeneity amongst the EU-20 Member States. In that case, a fixed-effect model is the most consistent solution.

In order to control for fixed effects, I regress:

$$eo_{it} = \beta_1.ief_{it} + \beta_2.labourmkt_{it} + \beta_3.qualedu_{it} + \beta_4.fmtrust_{it} + \alpha_i + \mu_{it}.$$

Where represents the unknown intercept for each country.

In order to report country intercepts, I introduce the control dummy variables for the countries (panel variables):

$$eo_{it} = \beta_0 + \beta_1.ief_{it} + (\dots) + \beta_4.fmtrust_{it} + \delta_1.be_t + \delta_2.cz_t + (\dots) + \beta\delta_3.uk_t + \mu_{it}.$$

There are 19 country dummies, since the Austria country dummy was dropped (and is used as the reference country) to avoid perfect multicollinearity. Here, stand for Belgium, the Czech Republic and the United Kingdom dummies, respectively.

[10] These expected effects for all the EU Member States were reported after a thorough examination of all PEPPER reports results, which I have been conducting over the last fifteen years of research on employee ownership issues; see, for instance, Machado (2013) and the related (and most recent) studies of Hashi and Hashani (2013) and Lowitzsch and Hashi (2014).

3. Empirical results

With the aim of testing the stated hypothesis that independent variables (see Table 3) relate to the incidence level of employee ownership, I perform a linear regression (equations 2 to 4).

For the first regression, despite the goodness of fit demonstrated by the F test, when I perform the F test of the joint significance of the fixed effects intercepts, the null hypothesis is not rejected (H_0: All of intercepts of each group's fixed effect are zero, i.e. heterogeneity of each group is observed). If the null hypothesis is rejected, then the pooled OLS model must be rejected.[11]

The random effects model, including the dummy variables for the countries, produces the same results as the least squares dummy variable (LSDV). Performing the Breusch and Pagan Lagrangian multiplier test for random effects, the random effects model is not rejected. Again, according to my model specifications, I conclude that the pooled OLS model does not represent the best estimates to predict the incidence level of employee ownership in the EU-20.

Finally, I test whether the unique root of errors (represented above by) is uncorrelated with the independent variables by using the Hausman Test. The test returns a chi-square of 559.92 with a p-value less than .000, therefore clearly rejecting the hypothesis of random effects.

In accordance with the previous tests, I perform the following regressions:

The first model (equation 3) controls for fixed effects but produces an incorrect F score for the model test, as with the adjusted R^2. Nevertheless, that could be determined by regressing Model 2 (equation 4).

The second model (equation 4), controlling for the country, would necessarily produce the same estimates. This model also facilitates the interpretation of the effects on independent variables despite the heterogeneity of the 'countries' (fixed effects). The estimates produced for the dummies are statistically significant, even for high p-values, except for Austria, Germany, Greece and the United Kingdom, with the Finland and Poland dummies intercepts statistically significant for an alpha of .1 (see Appendix 1 for all country dummies).

Observing the correlations of the estimated coefficients, there are no high correlations between pairs of coefficients, thus indicating that there is no tendency to discover collinearity. In addition, using Ender's Collinearity Diagnostics[12] tools for STATA, this tendency is not identifiable. Computing the variance inflation factors (VIFs), knowing that a high VIF is normally above 10.0 (see, for

Table 5: Model regressions: equations 3 and 4 – fixed effects models

Variables	Model 1	Model 2
ief	0.483806*	0.483806*
	(0.203503)	(0.184639)
labourmkt	1.022869	1.022869
	(0.711437)	(1.238206)
qualedu	-0.5718	-0.5718
	(1.767228)	(1.482906)
fmtrust	0.5947682	0.594768
	(0.708666)	(0.872341)
intercept	-23.4974	-19.3234
	(14.93833)	(17.95385)
F test		F(23,76)=130.57***
R^2		0.9753
Adj. R^2		0.9678
N	100	100

Observations: * p<.05; ** p<.01; *** p<.001 (standard errors for equation 3 and robust standard errors for equation 4 are in parentheses); dependent variable: eo; intercept in equation 4 refers to Austria [see Annex 1 for country dummy intercepts]

[11] Running the fixed effects model or performing the Wald test (*F* test) for the dummy variables after running the LSDV regression accounts for the heterogeneity within groups.

[12] Collinearity Diagnostics tools developed for Stata by Philip B. Ender.

instance, Hair et al., 2009; Kennedy, 2003; Kutner et al., 2004), or its reciprocal – the tolerance level – is below 0.1, none of the variables of the fixed-effect regression presents values over and under those thresholds, with an overall mean VIF of 1.36. Therefore, I can assert that the correlation between the independent variables does not produce unreliable estimates of regression coefficients.

According to the results produced by the fixed-effect models above (see Table 5), with the overall goodness of fit measures performing very well (both the adjusted R^2 and F test), there is compelling evidence that the extent of economic freedom, as measured by the Index of Economic Freedom, relates positively with employee ownership prevalence, which is statistically significant for an alpha of .05 in the LSDV model. That is, for a 1-point increase in this variable, employee ownership is expected to increase by .48 percentage points, which supports Hypothesis 1 (robust estimation, actual p-value of .011). This result encompasses the setting formulated by Kelso and Adler (1958, 1961) and Kelso and Kelso (1991).

However, statistically significant relations were not found between the employee ownership usage and the labour market freedom or the financial markets trustworthiness variables. Despite the stated positive effects, the data yield high p-values and robust standard errors for both variables, meaning that the stated hypotheses 2 and 4 cannot be accepted or rejected.

Furthermore, quality of education is statistically insignificant, rendering even larger p-values and robust standard errors, revealing an unexpected signal. Thus, Hypothesis 3 failed to be confirmed.

4. Discussion and conclusions

According to my research hypotheses, there is a linkage between economic democracy, measured through the employee ownership level of usage, and economic freedom. That result can underline Kelso and Adler's (1958, 1961), and Kelso and Kelso's (1991) reasoning that a free-market economy is needed as framework to develop employee ownership arrangements.

In order to overcome limitations of the current study it is necessary to carry out cross-country- (or cross-region)-based studies, deepening our understanding about the factors that promote the implementation of employee ownership in the EU. We need also more profound knowledge about the factors that impede the employee ownership harmonisation at the EU level.[13] To this end, corporate governance mechanisms, practices, and cross-cultural controls should be taken into account to better understand in more detail how businesses run employee ownership arrangements as Festing et al. (1999) have shown.

Following Lowitzsch and Hashi (2014) and several EU bodies recommendations, employee ownership is a powerful political, economic and social instrument that can cope with the excessive (and challenging) capital accumulation in the EU. In fact, employee ownership may actually handle the widening income inequality in the Western world that can also be considered to constitute a threat to the political democracy. As Kelso once stated, referring to the United States of America:

Today we are no longer a democracy. One man, one vote is not democracy; it is only democratic as to political power: we are a political democracy inside an economic plutocracy (Keynote speech at the ESOP Association 1984 meeting; ESOP Association, 1984).

This warning could be extended to Westernised European nations, largely in relation to the enduring aftermath of the world economic crisis since 2007. However, Kelso's and Adler's panacea for preventing an 'economic plutocracy', namely to reduce income inequality by widespread employee ownership, put forward in their ground-breaking book, The Capitalist Manifesto (Kelso and Adler, 1958), has to be taken with a grain of salt, since the linkage is not definitely set. Their straightforward reasoning seems to be affected recently by baffling empirical evidence. For instance, Buchele et al. (2010, p. 352) suggest that broad-based employee stock ownership plans may be not, by itself, sufficient to lessen income inequality, though they spread income to a wider range of society. Actually, the countries which are so-called 'employee ownership champions' (e.g., the United States)[14] are deepening their income inequality.

Presumably, economic democracy does not consist of the simple opposing dichotomy of capital hiring labour versus labour hiring capital. Rather it contains a radical change towards a collaborative economy that is difficult to achieve, and where high barriers to change exist. Gradual and steady steps are required. The shift to a more democratic economy consists of broadening capital ownership to those who participate in producing goods and services, sharing the income earned in this way. But at the same time it must be founded on changing the prevailing capital concentration system to a decentralised, cooperative, sharing economic system within a suitable free-market context.

Finally, some limitations of this study have to be mentioned. With regard to the dependent variable construction, this study should be read carefully, mainly because of severe limitations to data availability on employee ownership plans carried out by European Union countries. In fact, the constructed dependent variable ('eo') relies solely on an EFES dataset. As already noted above, the EFES dataset encompasses only one-quarter of listed European companies, so despite its representativeness when accounting for market capitalisation, the dataset does not account for a major part of the EU economy; to be exact, the

[13] However, as I state above, in a qualitative perspective, country differences were already encountered by most of the PEPPER reports and the latest thorough study at the level of Europe, that of Lowitzsch and Hashi (2014).

[14] See, for instance, Keeley (2015) for the last update of income inequality around the world.

EFES dataset excludes the small and medium-sized enterprises (SMEs).[15] Moreover, as Richter and Schrader (2013) point out, the incidence of employee ownership practices may be larger when SMEs are taken into account, and one should reckon with different employee ownership arrangements in SMEs than in larger companies.

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[15] According to the last available data, in 2014 the SMEs in the EU-28 accounted for 99.8% of all companies in the non-financial business sector, employing about 90 million people (which covered 67% of total employment) and representing 58% of the value added generated in that sector (European Commission, 2015).

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Determinante izvajanja načrta lastništva zaposlenih v državah EU - prizadevanje za ekonomsko demokracijo: prvi pogled na dokaze.

Ozadje in namen: Kelso-vo je prizadevanje za določitev ekonomske vrednosti politične demokracije in, kot posledica, njegova zaskrbljenost o naravi organizacije gospodarskega sistema, ki je potreben za podporo institucij politično svobodne družbe, je utemeljilo dva pomembna pojma: gospodarska moč in demokracija. Izhajajoč iz Kelso-vega razmišljanja, sem si v raziskavi postavil za cilj proučiti dejavnike izvajanja ekonomske demokracije, merjeno z pojavnostjo načrtov lastništva zaposlenih v državah Evropske unije.
Metodologija: Izhajajoč iz teorije enega od ustanoviteljev načrta lastništva zaposlenih, sem analiziral podatke iz več držav za obdobje pet let (2008-2012), z namenom pojasniti stopnjo pojavnosti lastništva zaposlenih z upoštevanjem neodvisnih spremenljivk, ki opisujejo politične, pravne, socialno-izobraževalne in gospodarske strukture v dvajsetih državah Evropske unije. Z uporabo sekundarnih podatkov iz Evropske zveze za lastništvo zaposlenih bom razložil primernost teh determinant, upoštevajoč omejitve glede dosegljivosti podatkov.
Rezultati: V raziskavi ugotavljam, da obstaja jasna povezava med pojavnostjo lastništva zaposlenih in indeksom ekonomske svobode. Nisem pa našel jasne zveze med svobodo trga dela, verodostojnostjo in zaupanjem v finančne trge in kakovostjo sekundarnega in terciarnega izobraževanja in pojavnostjo lastništva zaposlenih.
Zaključek: Nadaljnje raziskave naj bi celovito proučile dejavnike za posamezne države v zvezi z vprašanji o upravljanju podjetij in poiskale medkulturne razlike. Raziskovalci lastništva zaposlenih naj uporabijo rezultate te empirične raziskave, da bi razumeli, zakaj v državah, na katere gledamo kot napredne glede lastništva zaposlenih, kažejo vse večje dohodkovne neenakosti.

Ključne besede: *lastništvo zaposlenih, ekonomska demokracija, prosti trg, ekonomska svoboda, kapitalski trgi*

Appendix

Estimates produced by the LSDV model.

Variables	Equation 4
ief	0.483806*
	(0.184639)
labourmkt	1.022869
	(1.238206)
qualedu	-0.5718
	(1.482906)
fmtrust	0.594768
	(0.872341)
intercept	-19.3234
	(17.95385)
Belgium	-7.004494**
	(2.190297)
Czech Republic	-17.78874***
	(1.848867)
Denmark	-18.68045***
	(2.442227)
Finland	3.278714
	(1.828113)
France	28.06364***
	(2.156251)
Germany	-2.068399
	(1.514879)
Greece	-0.6235071
	(4.072184)
Hungary	-13.08909***
	(1.646275)
Ireland	-14.23009***
	(2.710147)

Variables (cont.)	Equation 4 (cont.)
Italy	-8.473278**
	(2.487798)
Luxembourg	-22.6056***
	(1.379398)
Malta	14.95946***
	(2.202847)
The Netherlands	-6.841851**
	(1.886378)
Poland	-6.550877
	(3.57401)
Portugal	-9.983032***
	(2.558195)
Slovenia	-8.255217***
	(1.880271)
Spain	-11.38902***
	(2.130543)
Sweden	16.89149***
	(0.9646026)
United Kingdom	0.9091525
	(2.972564)

F test	F(23.76)=130.57***	Observations: * p<.05; ** p<.01; *** p<.001 (robust standard errors are in parentheses); dependent variable: eo; intercept refers to Austria [omitted dummy variable in the regression; all country coefficients denote deviations from this intercept]
R^2	0.9753	
Adj. R^2	0.9678	
N	100	

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Are Cooperative Banks Better Equipped to Weather Financial Crisis than their Commercial Counterparts? Evidence from the Italian Banking Sector before and during the Credit Crisis

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Background and Purpose: The aim of this paper is to empirically investigate the performance of different types of Italian banks before and during the recent credit crisis with an emphasis on the behaviour of cooperative banks. It is well established in theory that cooperative banks follow more conservative business strategies and care more for stakeholders in comparison to commercial banks. On this background, the paper tries to show the empirical effects of those characteristics on the cooperative bank's performance during financial distress compared to commercial banks. In fact, the paper can prove that Italian cooperative banks were less exposed to the shocks of the crisis and showed a better performance.
Methodology: In order to assess whether cooperative banks performed differently at all from commercial banks during the 2005–2012 period, return on average assets (ROAA), cost efficiency and loan quality have been investigated by means of a sample of 594 Italian banks, pooled OLS and (when possible) a fixed effects estimator.
Results: Overall, Italian cooperative banks performed better than other Italian banks during the financial crisis. The quality of loans deteriorated less in these banks than in others, while no significant differences have been observed in terms of ROAA and cost efficiency between these and other banks.
Conclusion: My paper provides empirical evidence for a well established theoretically derived hypothesis: Italian cooperative banks operate differently than standard commercial banks which is especially noticeable during times of crisis. The fact empirically demonstrated that different banking models have shown different reactions to the financial crisis and economic downturn has important policy implications. Due to both characteristics of cooperative banks and severe limitations in the financial policies by the Italian government during the credit crisis an ironical pattern has emerged: While Italian cooperative banks were less exposed to the shocks of the crisis, they would have been less able to adjust to them since the financial rescue program was designed primarily for commercial banks.

Keywords: *cooperative banks, bank performance, bank efficiency, bank soundness, credit crisis*

1. Introduction

The aim of this paper is to investigate the performance of Italian banks before and during the recent financial crisis. Specifically, the paper centres on two types of banks: commercial banks, namely privately owned banks that provide services both to the general public and to private firms, and cooperative banks, namely those with a per capita voting mechanism that provide services mainly to cooperative members, households and small enterprises. The last credit crisis reminded us that a sound banking system builds on profitable and well-capitalised banks that

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are able to operate efficiently while successfully managing their risks. Recent scholarly research on commercial banks (Dewatripont and Freixas, 2012; Fahlenbrach et al., 2012; Vallascas and Hagendorff, 2013; Mohsni and Otchere, 2015) and the evidence from the credit crisis suggest that many commercial banks were not satisfying these criteria prior to the crisis. Since they are established with the purpose of maximising profits, commercial banks' primary goal is the creation of profits or, more exactly, the maximisation of shareholder value. This goal, the small share of equity in banks' liabilities, the deposit insurance and the implicit state guarantee due to the systemic role of the banks, may motivate managers in commercial banks to assume larger risks, particularly in cases where they are owned by influential private institutional owners (e.g. Laeven and Levine, 2006).

On the other hand, pre-crisis scholarly research on both Italian and European cooperative banks indicates that cooperative banks are, on average, less profitable in "normal" periods but also more stable due to higher solvency ratios (Hesse and Cihak, 2007; Gutierrez, 2008). As a result of their embeddedness in local economic systems, their institutional legacies and mutualistic values, cooperative banks tend to adopt conservative business strategies and stakeholder value maximisation policies in comparison to commercial banks (Ferri, 2008; Stefancic, 2011; Manetti and Bagnoli, 2013; Chiaramonte et al., 2013). They are customer-oriented, and particularly efficient at maintaining long-lasting relationships with their members and customers. In other words, these banks are particularly strong at relationship banking, a strategy that enables banks to make informed decisions on the provision of loans and financial services as a result of in-depth knowledge of customers' business. Relationship banking generates a number of advantages, such as proximity to customers (Boot, 1999; Boot and Thakor, 2000; Cesarini, 2003; Di Salvo et al., 2004; Oliver Wyman, 2014), which may contribute positively to the quality of these banks' loans. In Italy, cooperative banks can also rely on a well-developed commercial network with important historical roots and market advantages (Angelini and Cetorelli, 2003; Finocchiaro, 2007; Leonardi, 2009), which may help to ease their access to information about customers. These specifics may make cooperative banks less vulnerable to shocks to the system, as was the case in the last credit crisis.

In order to assess whether the behaviour of Italian cooperative banks had differed significantly from that of commercial banks especially during the crisis, a model is estimated in which return on average assets (ROAA), the cost-to-income ratio and a measure of loan quality are regressed on a number of indicator (dummy) variables indicating the bank type (cooperative banks, people's banks, savings banks, commercial banks) and a set of control variables, as suggested in the literature (Ferri et al., 2010). The latter variables aim to account for bank size, asset quality and type of activity (e.g. non-interest income), capital ratios and liquidity. The analysis is based on an unbalanced panel of 594 Italian banks during 2005-2012. The focus is on the differences between the behaviour of cooperative banks and other banks, and on the differential impact of the credit crisis on these banks: here, the concept 'behaviour' is understood as the result of a number of factors including not only the strategy and organizational structure of a bank, but also its fundamental values (for instance mutualism in the case of cooperative banks). Arguably, such differences would suggest that, regardless of the fact that they compete with other banks, cooperative banks can be indeed considered to be a specific type of financial institution. This would necessitate an adjustment in the regulatory rules that apply to banks. The present paper may thus be viewed as a contribution towards a constructive discussion on market regulation policies for banks.

The present analysis focuses on the Italian banking sector. Italy is one of the most important European economies. Indeed, it is the third-largest Euro zone economy after Germany and France. According to a recent assessment by the IMF (2013, p. 9), 'banks account for almost 85% of total financial sector assets. At end-2012, there were 706 banks with total assets of about 220% of GDP, of which 169 were part of 75 banking groups'. Cooperative banks are particularly important as for instance they tend to mitigate credit-rationing to SMEs and specific market segments in Italy (Gutierrez, 2008). In addition to that, the relevance of the present paper is underlined by the fact that Italian cooperative banks are currently subject to important reforms of which the final outcomes are still not so clear (Stefancic, 2014; The Economist, 2015). A focus on Italy is a promising approach since cooperative banks have proved to be essential here for the development of culturally and economically rich local economies that could successfully adapt to the process of globalization.

Although the Italian banking system underwent a process of restructuring and consolidation in the 1990s, cooperative banks still play an important role today. For example, in 1999 there were a total of 580 cooperative banks operating in Italy; these banks employed 70,636 employees in 7,067 branches, and held approximately EUR 287,000 million in assets. By the year 2009, this number had fallen to 459 cooperative banks, employing 62,755 employees in a slightly larger number of branches (7,311). The value of cooperative banks' assets had nearly doubled during the same period (to EUR 512,000 million). For comparison, in 1999 the number of commercial banks (at 296) was much lower than the number of cooperative banks and had increased slightly by 2009 (to 329 banks). Commercial banks are bigger institutions; in 1999, they operated in 20,067 branches, employing 270,675 employees and holding EUR 1,432,994 million in assets.

These numbers are larger than those for the cooperative banks, and increased during the 1999-2009 period (to 26,724 branches, 259,820 employees and EUR 2,942,195 million in assets)[1].

This paper is structured as follows. Section 2 provides a discussion on the specifics of Italian cooperative banks based on the literature review. Building on these specifics and on the existing evidence on bank performance during the last credit crisis, the main hypotheses to be tested in this paper are derived. Section 3 provides an outline of the sample and methodology used for the analysis. The main empirical analysis and results are discussed in Section 4. Section 5 concludes by commenting on the results and deriving implications for financial policy. Results provided in this paper and relevant policy suggestions should be of particular interest to scholars and policy makers focusing on cooperative and mutual banks or on cooperative enterprises more generally.

2. Literature review and hypotheses

Empirical evidence on bank performance in relation to different ownership types, in particular the results for the Italian market, and the European market as a whole, is mixed. Nevertheless, based on the papers surveyed below, it can safely be argued that, in most cases, cooperative banks do not lag behind their commercial counterparts (by way of exception, a few studies show the superiority of commercial over cooperative banks in terms of profitability). To start with, Ianotta et al. (2007) compare the behaviour of large banks from 15 European countries during the 1994-2004 period, and find that mutual and government-owned banks have lower levels of profitability. Nonetheless, they also find that mutual banks better manage their loan portfolios and have lower asset risk than commercial banks. Goddard et al. (2004) focus on the profitability of 665 banks from Denmark, France, Germany, Italy, Spain and the UK. On the basis of their results there appears to be no convincing relationship between ownership type, size and bank performance, except in Germany: German savings banks and cooperative banks appear to have been less profitable than German commercial banks during the 1990s. Ferri et al. (2010) use a panel of more than 300 banks from several European countries to study different types of banks in the period 1994-2008. They find no significant differences in the profitability of different bank types, whereas, in terms of cost efficiency, cooperative banks slightly outperform commercial banks.

Another set of papers focus on Italian banks alone. With reference to the loan-granting process of Italian banks for the period 2000-2006, Mattarocci and Gibilaro (2008) show that, from an operational point of view, small financial intermediaries such as the Italian cooperative credit banks have a better-quality loan-granting process. At the same time, these banks are able to implement more efficient recovery processes. Girardone et al. (2004) investigate the determinants of Italian banks' cost efficiency during the 1993-1996 period. They show that inefficiencies are inversely correlated with capital strength; on the other hand, they are positively related to the level of non-performing loans in the balance sheet. With reference to estimates of the Bank of Italy and some pre-crisis research, Gutierrez (2008) argues that cooperative banks are more cost efficient yet their profitability is lower in comparison to commercial banks despite the fact that they seem to enjoy a higher degree of monopoly power (as showed by the estimated H-statistic for different types of institutions).

Bonanno (2012) evaluates the efficiency of Italian banks by means of a stochastic frontier approach. With reference to a sample for the 2006-2010 period, the study shows that a sharp reduction in bank efficiency occurred in the year 2008. Despite that, cooperative credit banks performed better than non-cooperative counterparts over the 2006-2010 period. Using a similar analytical method, Aiello and Bonanno (2013) evaluate the cost and profit efficiency of Italian banks over the 2006-2011 period. Their results indicate that Italian banks generally perform well in terms of cost efficiency and profitability, and that banks are also quite stable over time. However, they acknowledge high heterogeneity in their results – something that is relevant to our discussion: differences are significant when banks are classified either by size (efficiency tends to decrease with size) or legal type (cooperatives tend to outperform other types of banks). Manetti and Bagnoli (2013) focus on the concept of efficiency in cooperative banks from Tuscany, with reference to the mutuality and sustainability of their business. By re-elaborating indicators such as the Value Added and the Cost to Income ratio, the authors show that the performance of such banks for the years 2009 and 2010 is close to the average performance of standard commercial Italian banks, and that the banche di credito cooperativo are both efficient and mission-oriented.

Consequently, based on the specifics of the cooperative banks' operations and business strategies, the following hypothesis is developed:

H1: To achieve their institutional goal of long-term financial stability and economic development of their reference territory, cooperative banks pursue more conservative policies than commercial banks, resulting in lower riskiness of bank operations, yet also in at least equal levels of profitability.

As argued above, in normal times cooperative banks tend to apply safer business strategies and take on lower risks than commercial banks, and may as a result be less

[1] For an overview of comparable data on European cooperative banks at an aggregate level refer to Groeneveld (2015).

exposed to the effects of a financial crisis. As explicated by H1, this is related to the institutional goals of cooperative credit banks to promote safe investments and sound operations as well as encourage strong relations with members and customers[2]. In line with this theoretical expectation, the European Association of Cooperative Banks (EACB) notes that 'more than 95% of write downs registered worldwide were due to commercial banks and some public banks; the cost in terms of loan loss provisions seems more equally distributed. Recapitalisation (in particular state aid) was also massively directed towards commercial banks and some public banks. Cooperative banks have therefore had little responsibility for the direct costs of the crisis, despite their heavy weight in the economy, with about 20% in terms of market share' (2010, p. 8). The last credit crisis reminded us that a sound banking system builds on profitable and well-capitalised banks that are able to operate efficiently while successfully managing (controlling) their risk exposure. Recent papers on commercial banks and the evidence from the crisis (Dewatripont and Freixas, 2012; Fahlenbrach et al., 2012; Vallascas and Hagendorff, 2013; Mohsni and Otchere, 2015) suggest that many commercial banks under pressure for high profitability, were not satisfying these criteria prior to the crisis[3].

Moreover, the last credit crisis demonstrated the degree of interconnectedness among financial intermediaries worldwide, has been matched by a decrease in trust towards banking intermediaries and among banks themselves. This, in turn, stresses the importance of trustworthy relations between banks and between them and their customers, particularly in the event of shocks such as the last crisis. Since trust is a distinctive feature of many cooperative banks, such banks should have a competitive advantage over commercial and other banks in developing and maintaining long-lasting relationships with their borrowers and, most importantly, their depositors. All of the above should imply that cooperative banks will perform better than other banks during crisis periods. However, cooperative banks are, in a way, "forced" to maintain close relationships with local communities and economic agents, as shown by the association between these banks and the local economy (Gallo et al., 2011), which often prevents them from reaching other markets. A careful review of the arguments developed in the mentioned papers (e.g. Manetti and Bagnoli, 2013) suggests that cooperative banks in Italy are still heavily dependent on the relationship with the local economic systems.

Consequently, while being able to preserve their sources of financing, these banks might be also be inclined to support their customers even when it will reduce their profits in the short run to do so. Moreover, the state aid provided during the crisis was directed primarily at commercial banks and, in some countries, at some large public banks. As in other parts of Europe, cooperative credit banks in Italy were largely excluded from such aid (EACB, 2010). Furthermore, communitarian frameworks aimed at helping banks have been designed with medium-sized and large commercial banks in mind. According to a report by Morgan Stanley Europe (2012), Italian banks benefitted substantially from operations such as the long term refinancing operations (LTRO), but it was mainly commercial banks and large banche popolari that received help. These last few factors imply that—while less exposed to the crisis in the first place—the cooperative banks would have been less able to react to the crisis shock. However, one could expect that this latter effect had a smaller impact on cooperative banks than the former (positive) effect. Consequently, I suggest to state the second and third hypothesis as follows:

H2: The credit crisis led to a significant decrease in profitability, cost efficiency and loan quality in all types of banks – despite some types of banks having been less exposed to the crisis than others.

H3: Given the greater stability of their operations, cooperative banks were less effected by the crisis than commercial banks.

3. Data and methodology

3.1 Data

The empirical analysis in this paper is based on the on-balance-sheet data from a sample of 594 banks operating in Italy during 2005-2012. This sample represents a large share of the entire Italian banking system (more than 80% of all banks). In 2012, for example, a total of 724 banks were operating in the Italian market (Tidona Comunicazione, 2013). The banks included in the sample are of different types, comprising 355 cooperative banks, 49 people's banks, 35 savings banks and 155 commercial

[2] For more information about the institutional goals of cooperative banks, please refer to the Chart of Values of Cooperative Banks (specifically, the 'Carta dei Valori' for Italian banks of this type). See also Stefancic (2011 and 2014).

[3] For example, Fahlenbrach et al. (2012) find that a bank's risk culture influences the outcomes of its operations and business. In particular, commercial banks that performed poorly in the past (i.e. during the 1998 crisis), rely more on short-term funding and had low risk management, appear to have been also less resilient to the recent financial crisis, facing a higher probability of failure. Vallascas and Hagendorff (2013) evaluate risk sensitivity and capital requirements of banks by considering a sample of large international banks for the period 2000-2010. They find that low-risk sensitivity of banks may prevent them from adequately withstanding adverse shocks. A review of the above and other relevant studies is present in Stefancic (2014).

banks. The for-profit banks (commercial and savings banks)[4] represent slightly less than 32% of the sample, while the non-profit banks (cooperative and people's banks) represent the majority of the banks in the sample. Financial information on the banks was obtained from the BankScope database provided by Bureau van Dyke. The data refer to the eight-year period 2005-2012, which includes a period of severe financial distress (particularly the year 2008 onwards), and the Euro crisis of 2011. Thus, the data include periods of severe shocks to the banking system (e.g. Quagliariello, 2008; Bank of England, 2009; Freixas, 2009).

A potential problem in the sample selection relates to the definition of cooperative banks. The definition is not straightforward. Some studies classify all banks with a per capita voting mechanism, for example mutual and rural banks, as cooperative banks (Battistin et al., 2006 and 2012). If taken together, these banks account for approximately 30% of both loans and deposits in the Italian banking system. However, significant differences exist between such categories of banks. In the construction of the database, the classification from the Italian Banking Act (Testo unico delle leggi in materia bancaria e creditizia) and insights from Gutierrez (2008) were followed, differentiating between the cooperative banks (banche di credito cooperativo) and the people's banks (banche popolari).

3.2 Empirical model

The evaluation of the performance of cooperative and other Italian banks is based on three dependent variables: (i) a variable measuring bank profitability, namely the return on average assets (ROAA); (ii) a variable measuring cost efficiency (COST_EFFICIENCY); (iii) a variable measuring the soundness of bank loans (LOAN_PROVISIONS). As noted by Ferri et al. (2010) among others, it is important to consider other measures than profitability in order to account for the distinct objective function cooperative banks have in comparison to other banks. The ROAA is defined as net income divided by total average assets, and is useful for assessing profitability. COST_EFFICIENCY is defined as the ratio of a bank's costs to its total revenues (income), i.e. the cost-to-income ratio, measured in percentage terms. It is commonly used in studies on bank efficiency (Ferri et al., 2010; Manetti and Bagnoli, 2013). LOAN_PROVISIONS stands for a bank's loan loss provisions as a share of the total amount of gross loans. These definitions follow the literature and the definitions suggested by the BankScope database. In relation to bank profitability, other measures could be considered, such as the return on equity (ROE)[5].

The main explanatory variables are dummy variables capturing the type of bank: COOP takes the value 1 for cooperative banks, and 0 otherwise; POP takes the value 1 for popular banks, and 0 otherwise; finally, in selected specifications, SAVING takes the value 1 for savings banks, and 0 otherwise. As an alternative, in robustness checks the variable NON-PROFIT, which denotes both cooperative and people's banks (with commercial and savings banks being the reference group), is used (see Appendices). In order to test H3 which relates to differences in the banks' behaviour during the crisis, the interaction term COOP*CRISIS is introduced, in which the variable CRISIS is a dummy taking the value 1 in years 2009 onwards, and 0 otherwise, with COOP defined as above. The choice of 2009 as the starting year for the crisis period allows for the fact that the US crisis probably hit the Italian market with some delay; this is also supported by the analysis of the time dummy variables, where the first significant declines in bank performance can be seen in the year 2009. For robustness, the main regressions are re-estimated using the year 2008 as the starting year for the crisis period.

The choice of control variables was guided mostly by the existing studies in the field (in particular Ferri et al., 2010) and by data availability. A set of controls is introduced, capturing differences in bank size, asset quality, activity type, capital ratios, etc. Following Ferri et al. (2010) and other studies, bank size is controlled for by means of the logarithm of total bank assets (lnTOTALASSETS). Bank capitalisation is measured by the share of equity in total bank assets (EQUITY_ASSETS) and, alternatively, by a regulatory measure of banks' capitalisation (TOTALCAPITAL_RATIO). To capture different types of bank activity and the structure of bank assets, further control is posed on the share of customer (non-bank) deposits in assets (CUSTOMERDEP_ASSETS), the share of loans in total bank assets (NETLOANS_ASSETS), the share of liquid assets in total assets (LIQUID_ASSETS), and the share of non-interest income in total bank revenues (NONINTEREST). These variables are measured in percentage terms. All of the regressions include time dummies and, when specified, bank fixed effects.

[4] As a result of the banking reforms and consolidation process in Italy, current savings banks operate as commercial banks or very similarly.

[5] While some studies and policy makers adopt this ratio as the most reliable indicator of profitability, others have criticised its use and prefer to rely on other indicators (Karr, 2005; Tumpel-Gugerell, 2005; De Bonis, 2008, pp. 114-116; Ferri et al. 2010), such as the ROA. As observed by Dietrich and Wanzenried (2009, 2011), the ROAA provides a good approximation of bank profitability, and reflects the ability of a bank's management to generate profits from the bank's assets. This measure should be preferred to ROE as the latter does not capture financial leverage and the risks associated with it.

4. Empirical analysis

4.1 Descriptive statistics

First are presented the descriptive statistics across the entire period of analysis, separately for each type of bank. For the purpose of the empirical analysis, outliers were transformed by winsorising the lower and highest 1% of values for the non-dummy variables used in the analysis. Winsorisation is a way of transforming the outliers without discarding them and therefore without losing information[6]. Cooperative banks are much smaller than the commercial banks and even the other types of bank. Size differences between the cooperative and other banks do, of course, pose a problem for the analysis, as small and large banks may differ in many other characteristics that cannot be adequately controlled for in the model.

Differences between banks are observable on the basis of their median values of the selected variables. All of them are expressed as percentages in the above table, except for the total assets, which are in thousands Euros. Most variables have a slightly asymmetric distribution at least for one bank type, therefore median values provide a better measure of central tendency to make comparisons than the mean ones.

The dependent variables are commented first. Cooperative credit banks have the highest return on average assets (0.56%), meaning that they are the most profitable bank type according to this metric, followed by savings banks (0.53%). Commercial banks are the least profitable according to ROAA (0.45%). With regards to loan losses, people's banks are those that perform worse (0.66%), followed by commercial banks (0.61%). Savings banks have lower levels of loan losses, while cooperative credit banks are those that show the best results for the considered period (0.52%). That is to say, they are the best type of banks when the soundness of bank loans is considered. Finally, cooperative credit banks exceed other banks in terms of the cost to income ratio with a median value of 66.67% compared to 62.23% of commercial banks (people's and savings banks are in between).

Next, the discussion centres on differences in the explanatory variables. In terms of total assets, people's banks are those with the highest median value (3,973,550,000 €), and are followed by commercial (2,447,450,000 €) and savings banks (2,427,100,000 €). Cooperative credit banks have the lowest median level of assets (284,300,000 €). Total assets have a very skewed distribution, therefore a logarithmical transformation has been used in the models. With regards to customer deposits, the highest values are registered for savings and people's banks (50.56% and 50.28%, respectively), followed by cooperative banks (49.87%) and, eventually, commercial banks (40.31%). Structural differences are observable also with respect to the share of net loans on total assets: the median values for the four bank types vary between the 76.96% of savings banks and 67.47% of commercial banks, with people's banks (73.27%) and cooperative credit banks (68.72%) in between.

Moving to liquidity, measured as the share of liquid assets on customer and short term funding, it can be observed that commercial banks (14.82%) are the most liquid type, whereas cooperative credit banks (8.51%) are the least liquid. Savings banks (9.16%) and people's banks (11.79%) are in between. With regards to non-interest income as a share of revenues, the share is the highest for commercial banks (35.44%), and the lowest for cooperative credit banks (22.91%) – differences in this respect are clear. Finally, in terms of bank capitalisation, cooperative credit banks are the most capitalised as showed by the highest values for equity as a share of total assets (10.86%), followed by people's banks (9.80%), commercial banks (8.01%) and savings banks (8.07%). Similarly, cooperative credit banks have the highest total capital ratio (15.61%), whereas savings banks are the least capitalised with a total capital ratio of 10.99%.

4.2 Statistical modelling

4.2.1 Methodology

The descriptive statistics presented above provide an idea of the differences between the cooperative and other banks, as well as an indication of how well each of these banks' groups reacted to the crisis in comparison to other banks. Making inferences based on the averages is not appropriate, however, as the differences between the different types of banks may be due to differences in other bank characteristics than bank type, such as size, capitalisation, etc. To address this, an empirical analysis is carried out in which selected measures of bank performance (in terms of profitability, cost efficiency and loan quality) are regressed on an indicator variable for the type of bank (cooperative, savings, people's or commercial) and a set of control variables. The choice of estimator is mainly influenced by the nature of our main explanatory variable, which does not vary over time. Therefore, in most of the cases the study relies on the pooled OLS estimator with standard errors clustered at the level of bank type, or alternatively at the level of the individual bank to correct for serial correlation

[6] In the present case, a 98% winsorisation has been applied, this is, for each variable, data smaller the first percentile have been set at the value of the first percentile and data larger than the 99th percentile have been set at the value of the 99th percentile. Such an approach is common in the finance literature.

Table 1: Descriptive statistics (Source: Author's calculations)

	Commercial banks						***Savings banks***					
variables	*min*	*max*	*std dev*	*median*	*mean*	*nr obsv*	*min*	*max*	*std dev*	*median*	*mean*	*nr obsv*
roaa	-6.7	11.03	1.97	0.45	0.71	1006	-0.361	2.99	0.584	0.53	0.501	261
total assets	16300	1.52e+08	2.74e+07	2447450	1.23e+07	1008	571300	4.00e+07	5762776	2427100	4252343	261
customer deposits	0.118	84.93	26.48	40.31	37.377	917	28.263	74.485	9.609	50.569	50.948	261
liquidity	0.272	92.021	25.373	14.826	24.67	1008	1.29	45.39	8.761	9.164	11.917	261
Non interest income	-34.37	100.16	30.113	35.44	40.187	993	-8.25	55.55	7.732	32.13	31.006	261
cost-to-income ratio	17.88	181.17	28.613	62.23	63.472	983	47.47	96.5	8.317	63.7	64.641	216
loan loss	-0.41	6.568	0.949	0.612	0.882	870	-0.332	4.893	0.606	0.555	0.709	261
tot capital ratio	6.41	87.68	14.407	12.91	18.159	817	7.15	32.39	3.324	10.99	11.845	252
net loans	1.38	97.2	31.189	67.47	59.022	975	49.17	93.22	8.678	76.96	76.427	261
equity	2.049	82.521	15.947	8.017	13.564	1008	3.762	14.62	1.804	8.07	8.281	261
ln assets	9.698	18.838	2.065	14.71	14.619	1008	13.255	17.50	0.924	14.702	14.763	261

	Peoples' banks (banche popolari)						***Cooperative credit banks (banche di credito cooperativo)***					
variables	*min*	*max*	*std dev*	*median*	*mean*	*nr obsv*	*min*	*max*	*std dev*	*median*	*mean*	*nr obsv*
roaa	-2.47	2.76	0.583	0.505	0.449	342	-6.7	11.03	0.641	0.56	0.569	2741
total assets	28671	1.32e+08	2.78e+07	3973550	1.44e+07	342	16300	9367400	552283.7	284300	434771.9	2742
customer deposits	20.748	82.988	11.423	50.287	50.320	342	0.286	84.933	12.044	49.874	51.679	2732
liquidity	0.973	85.23	12.949	11.791	15.197	342	0.712	92.021	11.157	8.514	12.185	2742
Non interest income	6.31	94.86	12.249	32.12	32.60	342	-31.91	99.33	9.017	22.91	22.667	2739
cost-to-income ratio	37.71	129.6	12.061	64.495	65.085	342	20.06	181.17	13.695	66.67	68.353	2738
loan loss	0.041	4.515	0.632	0.66	0.824	339	-0.695	6.568	0.686	0.528	0.688	2716
tot capital ratio	6.41	54.74	6.488	13.08	14.972	330	6.9	87.68	8.019	15.615	17.915	2638
net loans	4.18	96.4	13.733	73.27	70.508	342	1.74	89.61	13.476	68.72	65.941	2733
equity	4.363	28.419	3.279	9.809	10.40	342	3.249	82.521	6.080	10.869	11.92	2742
ln assets	10.263	18.701	1.748	15.195	15.163	342	9.698	16.052	0.999	12.557	12.50	2742

and heteroscedasticity of the error term[7].

Heteroscedasticity issues and serial correlation are dealt with by clustering standard errors at the bank (bank type) level. To address multicollinearity concerns, the correlation coefficients are calculated and reported in Table 2 below. As indicated in the table, none of the coefficients are very high (none are above 0.50 for example, except net loans on assets and non interest income on revenues), which reduces possible concerns over multicollinearity. In addition, the variance inflation factors (VIFs; see Table 3 below) have been calculated to assess whether there is multicollinearity within the data[8]. The values are within the normal range (under 2) and thus indicate that there should be no major concerns over multicollinearity.

The strongest correlations are between liquid assets on customer & short term funding and net loans on assets (-0.72), between non interest income on revenues and equity on assets (0.45) and between non interest income on revenues and liquid assets on customer & short term funding (0.40).

Since VIF value are all below 2, there appears to be no multicollinearity in the data. The only value close to 2 is that of liquid assets on customer short term funding, nonetheless, being lower than 2, it appears to be acceptable.

1.1.1 Regression results

The main results of the empirical analysis are presented

Table 2: Correlation coefficients for the main explanatory variables (Source: Author's calculations)

	correlation matrix					
variables	[1]	[2]	[3]	[4]	[5]	[6]
[1] log total assets	1					
[2] customer deposits on assets	-0.348302	1				
[3] liquid assets on customer s.t. funding	-0.054354	0.03378	1			
[4] non interest income on revenues	0.1646632	-0.05749	0.4006	1		
[5] net loans on assets	0.2214717	-0.24772	-0.7245	-0.35991	1	
[6] equity on assets	-0.352166	-0.0234	0.4581	0.179078	-0.39339	1

Table 3: VIF estimates (Source: Author's calculations)

Variance inflation factors	
variables	*VIF value*
log total assets	1.476995791
customer deposits on assets	1.320341176
liquid assets on customer & short-term funding	1.997004493
non interest income on revenues	1.08075627
net loans on assets	1.703055281
equity on assets	1.710629854
cooperative banks	1.303943469
crisis year	1.020241787
savings banks	1.484342875
popular banks	1.501541947

[7] Unfortunately, the time-invariant nature of the explanatory variable prevents one from using panel data estimators that would allow to better control for reverse causality and, most importantly, the unobserved heterogeneity problem (i.e. endogeneity). In fact, a superior solution would be to rely on the fixed effects linear estimator, i.e. to control for the firm fixed effects in the regressions or, alternatively, to use a dynamic linear panel estimator, which would also account for the dynamic endogeneity of some of our variables (Wintoki et al., 2012). However, while addressing the endogeneity of some of the variables, using firm fixed effects would prevent one from estimating the coefficients for all the time-invariant variables, such as the main variable of interest, the bank type.

[8] The VIF for a covariate is the reciprocal of 1 minus the multiple R-squared for the regression of the covariate on the other covariates. If the *j*th covariate is orthogonal to the other covariates, the multiple R-squared of the regression of the *j*th covariate on the other covariates will be equal to 0 and therefore the VIF will be equal to 1. On the other hand, if there is multicollinearity, the R-squared will be close to 1 and therefore the VIF will be high. In the case of the dummy variable representing bank type, McFadden's pseudo R-squared is used to calculate the VIF.

in Tables 4 – 6 below. To start with, the basic model is discussed, which to some extent follows Ferri et al. (2010). Unlike their sample, the sample in the present study covers only Italian banks and includes the period of the financial crisis, which is defined as the years 2009-2012 (or alternatively as 2008-2012; see robustness section). In model (1), a pooled OLS is estimated using the ROAA, COST_EFFICIENCY and LOAN_PROVISIONS as the dependent variables with the standard errors clustered at the individual bank level. The main explanatory variables are dummies for the different bank types (the commercial banks being the reference group). Model (2) replicates model (1) with the exception that here the standard errors are clustered by bank type. Model (3) replicates model (1) and additionally includes an interaction term (COOP*CRISIS) that aims to capture differences in the eventual effects of the crisis for cooperative banks in comparison to other banks.

Models (4)- (7) are estimated using the fixed effects linear estimator, which means that one controls for any time-invariant unobserved bank characteristics. Due to this, one cannot estimate the coefficient of the main explanatory variable, i.e. the dummy for cooperative banks. Following Lins et al.'s (2013) study on family firms' performance during the crisis, the focus is therefore on the coefficient of the interaction term COOP*CRISIS, which should measure the differences between the cooperative banks' and other banks' crisis performance. Models (4) and (5) differ in relation to the clustering of standard errors (i.e. more conservative clustering by bank type in model (4), and clustering at the bank level in model (5)). Models (6) and (7) replicate models (4) and (5) but here the people's banks are excluded from the sample, with the purpose of comparing cooperative banks with profit-oriented banks only.

With regards to the return on the banks' average assets (ROAA), a higher profitability is observed for the banks with a higher share of non-interest income and for banks with a higher share of equity. Moreover, cooperative banks on average associate with slightly higher return on assets than other banks (28 basis points over the entire period of analysis; see the positive coefficient for COOP in model (1) and model (2)), which is compatible with Hypothesis 1. Other types of banks do not seem to perform any different than commercial banks, which are the reference group of banks in the analysis. Here one must note that—despite controlling for a set of bank-specific characteristics, such as the share of equity and the share of non-interest income— the positive coefficient for cooperative banks should be interpreted with caution. In fact, it is quite likely that this coefficient still captures some unobserved characteristic that are more common in cooperative banks and that also influence bank profitability. Moreover, the superior performance of cooperative banks during the entire period may be primarily due to the (expected) better performance of these banks during the crisis. To account for this, in model (3) an interaction term COOP*CRISIS is introduced and, furthermore, a dummy for the entire crisis period (i.e. after 2009) included at the place of corresponding time dummies. As indicated in the table, the crisis period associates with a significant drop in banks' performance, i.e. the coefficient for the dummy CRISIS is negative and statistically significant, and thus confirms Hypothesis 2. Moreover, the positive coefficient for the interaction term COOP*CRISIS suggests that the effects of the crisis were lower for cooperative banks in comparison to other banks. While this is in line with the Hypothesis 3, the coefficient is not statistically significant across the various specifications (i.e. see model (3) - model (7) in Table 4).

Next, banks' efficiency is accounted for and measured by the cost-to-income ratio (COST_EFFICIENCY) in Table 5 below. The specifications of the various models follow the analysis of ROAA (see above). First, larger banks associate with higher efficiency, i.e. lower costs. The coefficient for total bank assets is negative and statistically significant also when one includes firm fixed effects in models (4)-(7). This result is in line with the expectations, as larger banks are more likely to realize economies of scale, which implies lower costs. On the other hand, a positive relationship between the share of customer deposits and bank costs is observed. This again makes sense as one could expect that the banks, which rely more on depositors as a source of financing, also have a higher number of branches and employees (and consequently, higher operation costs) in order to gain better access to current and new depositors.

As shown in Table 5, cooperative banks associate with lower operating costs (everything else equal, the cost-to-income ratio is about 4.7-4.8 percentage points lower), which is in line with Hypothesis 1 above. Other banks also incurred a significant increase in their costs during the crisis period, i.e. by about 8.7 percentage points on average (see the coefficient for the CRISIS dummy in the fixed effects specification, for example). As for the effect of the crisis on cooperative credit banks specifically, the interaction term between the two dummies, one indicating cooperative credit banks and the other crisis years, is positive in fixed effect models and negative in model (3), but in all cases not significantly different from 0, so it does not fully contradict Hypothesis 3.

A better picture for cooperative credit banks emerges when looking at their loan quality during the entire period and the crisis (LOAN_PROVISIONS). As reported in Table 6, cooperative banks associate with better loan quality, which is captured in this case by the share of loan loss provisions in the value of gross bank loans (0,16-0,19 percentage points lower for cooperative credit banks compared to commercial banks). The other banks' loan quality deteriorated significantly during the crisis period,

Table 4: ROAA and bank organizational form (Source: Author's calculations)

Dependent variable: ROAA	Pooled OLS			Fixed effects model				
							Excluding banche popolari	
Clustering of standard errors	Bank	Bank type	Bank	Bank type	Bank	Bank type	Bank
	Model (1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable	ROAA	ROAA	ROAA	ROAA	ROAA	ROAA	ROAA
log total assets	0.039	0.039**	0.041	-0.120	-0.120	-0.140	-0.140
	[1.539]	[5.486]	[1.601]	[-0.321]	[-0.414]	[-0.350]	[-0.467]
customer deposits on assets	-0.002	-0.002	-0.001	0.000	0.000	-0.000	-0.000
	[-1.042]	[-0.560]	[-0.783]	[0.203]	[0.029]	[-0.171]	[-0.027]
liquid assets on customer s.t. funding	-0.000	-0.000	0.001	-0.003	-0.003	-0.004	-0.004
	[-0.124]	[-0.165]	[0.154]	[-1.171]	[-0.978]	[-1.205]	[-1.031]
non interest income on revenues	0.010***	0.010*	0.010***	0.007	0.007**	0.007	0.007**
	[4.119]	[2.965]	[4.091]	[1.461]	[2.517]	[1.328]	[2.415]
net loans on assets	-0.002	-0.002	-0.001	0.006	0.006**	0.005	0.005*
	[-0.896]	[-0.640]	[-0.570]	[0.939]	[2.188]	[0.754]	[1.839]
equity on assets	0.023**	0.023***	0.024**	0.021**	0.021	0.018**	0.018
	[2.352]	[14.482]	[2.450]	[4.164]	[0.698]	[4.704]	[0.597]
savings banks	0.136	0.136	0.131				
	[1.621]	[1.436]	[1.565]				
people's banks	0.014	0.014	0.008				
	[0.167]	[0.191]	[0.088]				
COOP - cooperative banks dummy	0.283***	0.283**	0.265**				
	[3.057]	[3.351]	[2.565]				
CRISIS			-0.491***	-0.532**	-0.532***	-0.552**	-0.552***
			[-5.625]	[-5.726]	[-7.311]	[-5.252]	[-6.147]
interaction COOP*CRISIS			0.041	0.064	0.064	0.083*	0.083
			[0.516]	[2.121]	[0.748]	[3.752]	[0.779]
Observations	4,240	4,240	4,240	4,240	4,240	3,898	3,898
R-squared	0.196	0.196	0.190	0.207	0.207	0.204	0.204

Note: Robust t-statistics reported in the brackets. *, **, *** denote the 10%, 5% and 1% significance respectively. All regressions include time dummies (for the entire period or up to the CRISIS dummy). Constant not reported.

Table 5: Cost-income ratio (COST_EFFICIENCY) and bank organizational form (Source: Author's calculations)

	Pooled OLS			Fixed effects model			Excluding banche popolari	
Clustering of standard errors	Bank	Bank type	Bank	Bank type	Bank	Bank type	Bank
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)
log total assets	-2.851***	-2.851**	-2.844***	-14.869**	-14.869***	-15.658*	-15.658***
	[-5.659]	[-3.679]	[-5.631]	[-3.566]	[-5.517]	[-3.299]	[-5.522]
customer deposits on assets	0.240***	0.240	0.260***	0.198***	0.198***	0.201**	0.201***
	[6.414]	[2.265]	[6.888]	[6.789]	[3.848]	[5.805]	[3.669]
liquid assets on customer s.t. funding	-0.023	-0.023	0.021	0.081	0.081	0.106**	0.106*
	[-0.364]	[-0.495]	[0.340]	[2.248]	[1.528]	[5.396]	[1.964]
non interest income on revenues	0.064	0.064	0.049	-0.282	-0.282***	-0.287	-0.287***
	[1.288]	[1.076]	[0.993]	[-2.343]	[-5.063]	[-2.182]	[-5.002]
net loans on assets	-0.079	-0.079	-0.030	0.039**	0.039	0.043*	0.043
	[-1.473]	[-1.569]	[-0.586]	[4.196]	[0.784]	[3.130]	[0.879]
equity on assets	0.158	0.158	0.196*	-0.070	-0.070	-0.086	-0.086
	[1.387]	[0.812]	[1.717]	[-0.977]	[-0.273]	[-1.504]	[-0.324]
savings banks	-0.842	-0.842	-1.357				
	[-0.418]	[-0.592]	[-0.674]				
popular banks	-0.122	-0.122	-0.576				
	[-0.052]	[-0.068]	[-0.240]				
COOP - cooperative banks dummy	-4.719**	-4.719	-4.809**				
	[-2.218]	[-1.873]	[-2.322]				
CRISIS			5.275***	8.744**	8.744***	8.731**	8.731***
			[4.106]	[4.754]	[6.401]	[4.898]	[5.475]
interaction COOP*CRISIS			-0.369	0.459	0.459	0.738	0.738
			[-0.298]	[1.597]	[0.389]	[1.911]	[0.517]
Observations	4,233	4,233	4,233	4,233	4,233	3,891	3,891
R-squared	0.238	0.238	0.212	0.163	0.163	0.170	0.170

Note: Robust t-statistics reported in the brackets. *, **, *** denote the 10%, 5% and 1% significance respectively. All regressions include time dummies (for the full period or up to the crisis). Constant not reported.

with loan loss provisions increasing 0.26 to 0.53 percentage points of gross loans. On the other hand, the cooperative credit banks associate with a lower increase in the loan loss provisions during the period of the crisis, which suggests that the quality of their loans did not deteriorate as much as for other banks (see the positive and statistically significant coefficient for the interaction term COOP*CRISIS in the fixed effects models). These results provide support to the hypotheses stated above (Hypothesis 1-3). Moreover, it seems that the loan quality overall positively associates with the soundness of bank operations and, somehow, with more traditional types of bank activities; loan loss provisions are smaller for the banks with a higher share of equity, stronger bank liquidity, a higher share of customer deposits and a smaller share of non-interest income (see the fixed effects results in model (4)-model (7)).

5. Discussion and conclusion

Through a comparative study on profitability, efficiency and lending policies between different types of banks in Italy, this paper shows that Italian cooperative credit banks indeed operate differently than standard commercial banks. The paper has tested the hypothesis that cooperative banks offset their lower profitability with a more efficient asset allocation policy. Specifically, the main hypothesis that has been investigated is whether Italian cooperative banks have more conservative policies and lower riskiness of bank operations than commercial banks. The argument that such banks rely on a specific model of banking is thus confirmed by the present analysis. Stated otherwise, the model developed in this paper shows the importance of taking bank typologies into account when discussing bank's behaviour both in normal times and during periods of distress.

The paper shows that different banking models have reacted differently to the financial crisis and economic downturn. This has important implications for regulation policies in the aftermath of the crisis. The model developed in this paper stresses differences between bank types, an issue that has been often neglected by the mainstream literature in the past. Present results seem to confirm the validity of recent proposals developed by the Italian Government to treat different banks differently with the aim to improve their governance mechanisms, features and institutional characteristics (Stefancic, 2015; Il Sole 24 Ore, 2015; The Economist, 2015; Ferraresi et al., 2016). Everything else equal, cooperative banks in Italy seem to be relatively more efficient than commercial counterparts. Arguably, they tend to enjoy a good market positioning. On the one hand, the above results appear to be aligned with that of Ferri et al. (2010); on the other hand, they tend to depart from the argument stating that mutual and cooperative banks are less efficient than commercial banks (see e.g. Rasmusen 1988). While acknowledging that profitability has decreased in all types of banks as a result of the credit crisis and the economic downturn, the main findings of the paper can be summarised as follows:

- Cooperative credit banks tend to have a more efficient asset allocation policy, as shown by a higher ROAA.
- As to cost-to-income ratios, larger banks show economies of scale, yet cooperative banks show, in some models, a significantly lower cost-to-income ratio (around 4.8 percentage points lower) than comparable commercial banks. This result would suggest that cooperative banks are organizationally more efficient, although further research on the topic is needed before drawing definitive conclusions.
- Customer deposits appear to have an effect on the cost-to-income ratio. This result suggests a critical reassessment of cooperative banks' branch network policy, the optimal density of the network of branches and related (unforeseen) costs.
- With regards to the quality of credit, the crisis has significantly impacted on loan loss provisions as a share of gross loans, with a marked increase for all banks. The deterioration of credit has been, however, less severe for cooperative credit banks, which confirms their more prudent lending policies.

Needless to say, these findings should be of relevance to managers in Italian banks. One should acknowledge the fact that the results are valid for the Italian banking market only, and are limited to the period 2005-2012. Additional research focusing on banks from other European countries is needed in order to capture subsequent developments and extend the suggested policies to the EU level. Nonetheless, substantial business implications can be derived and applied to those EU countries where the cooperative banking sector is not yet fully developed (as for instance in former Yugoslavian countries or some countries in Eastern Europe). Furthermore, based on the results of the present paper, the following suggestions in terms of market regulation can be made:

Table 6: Loan loss provisions (LOAN_PROVISIONS) and bank organizational form (Source: Author's calculations)

	Pooled OLS			Fixed effects model				
							Excluding banche popolari	
Clustering of standard errors	Bank	Bank type	Bank	Bank type	Bank	Bank type	Bank	Bank
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
log total assets	-0.030*	-0.030	-0.032*	-0.040	-0.040	-0.027	-0.027	
	[-1.771]	[-1.879]	[-1.843]	[-1.142]	[-0.498]	[-0.819]	[-0.324]	
customer deposits on assets	-0.003	-0.003**	-0.004**	-0.009	-0.009***	-0.009	-0.009***	
	[-1.565]	[-4.792]	[-2.555]	[-1.406]	[-2.992]	[-1.215]	[-2.832]	
liquid assets on customer s.t. funding	-0.001	-0.001	-0.005**	-0.007*	-0.007***	-0.008	-0.008***	
	[-0.219]	[-0.399]	[-2.128]	[-2.481]	[-3.263]	[-2.200]	[-3.187]	
non interest income on revenues	-0.002	-0.002**	-0.001	0.005	0.005***	0.005	0.005**	
	[-1.279]	[-5.129]	[-0.495]	[1.807]	[2.686]	[1.639]	[2.499]	
net loans on assets	-0.003	-0.003	-0.007***	-0.024**	-0.024***	-0.024	-0.024***	
	[-1.428]	[-0.546]	[-3.735]	[-3.258]	[-9.048]	[-2.833]	[-8.828]	
equity on assets	-0.006	-0.006	-0.010	-0.041	-0.041***	-0.039	-0.039***	
	[-0.878]	[-0.506]	[-1.400]	[-1.881]	[-4.913]	[-1.664]	[-4.763]	
savings banks	-0.072	-0.072*	-0.028					
	[-0.880]	[-2.391]	[-0.343]					
people's banks	0.036	0.036	0.078					
	[0.439]	[1.291]	[0.932]					
COOP - cooperative banks dummy	-0.190**	-0.190**	-0.160**					
	[-2.551]	[-3.478]	[-2.254]					
CRISIS			0.533***	0.259***	0.259***	0.275***	0.275***	
			[12.385]	[9.393]	[6.245]	[13.964]	[5.583]	
interaction COOP*CRISIS			-0.019	-0.108	-0.108**	-0.126	-0.126**	
			[-0.403]	[-2.344]	[-2.307]	[-2.034]	[-2.286]	
Observations	4,154	4,154	4,154	4,154	4,154	3,815	3,815	
R-squared	0.215	0.215	0.129	0.239	0.239	0.236	0.236	

Note: Robust t-statistics reported in the brackets. *, **, *** denote the 10%, 5% and 1% significance respectively. Time dummies (for the full period or up to the crisis) included. Constant not reported.

- Having assessed the differences between bank types, it seems reasonable to treat different bank types differently. Policy should especially avoid applying a regulation tailored to commercial banks that carry a systemic risk to the Euro zone to cooperative banks as well, that are neither as risky as commercial banks, nor similar in their organisation and business practices.
- It can be therefore argued, based on the present results, that the specificity of cooperative banks should be preserved, and that regulation aimed at reducing systemic risk[9] should not necessarily apply to them (at least not in its current format), as their business practices already prevent them from carrying systemic risks.
- Finally, with reference to changes in the regulation particularly at the EU level, it can be suggested that the new regulations carrying increased compliance and personnel costs should be simplified for cooperative banks, or at least the burden of compliance costs should be eased.

It may be advisable for small cooperative banks in Italy (and elsewhere in Europe) to strengthen and thus render more effective the mutual support mechanisms and resolution schemes that are already provided by the cooperative credit network. This argument appears to be aligned with current policies designed by the Italian Government to consolidate the entire cooperative banking system. Conversely, it remains an open question whether these banks should apply for bail-in tools as suggested by the new EU directives (that came into force on January 1st, 2015, with the bail-in system to take effect from January 1st, 2016). Any regulation should account, as much as possible, both for the intended and unintended consequences. Specifically, the risks should be minimised that cooperative banks are forced to limit their ability to support local communities and economic agents, which, in turn, could lead to additional credit rationing, less credit being offered to local firms, and the hampering of new entrepreneurial activities.

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So zadružne banke v primerjavi s poslovnimi bankami bolje opremljene za premoščanje finančne krize? Primer italijanskega bančnega sektorja pred in med krizo

Ozadje in namen: Cilj prispevka je empirično preučiti vedenje različnih tipologij bank pred in finančno krizo v obdobju krize s poudarkom na zadružnih bankah. Teoretska podlaga poudarja konservativne poslovne strategije, ki so značilne za zadružne banke, obenem pa te banke posvečajo večjo pozornost interesnim skupinam kot pa poslovne banke. Na tej osnovi si prispevek prizadeva, da bi osvetlil empirične učinke omenjenih značilnosti na vedenje zadružnih bank med finančno krizo.
Metodologija: Za preverjanje, ali so zadružne banke poslovale različno kot poslovne banke v obdobju 2005-2015, se prispevek osredotoča na donosnost, stroškovno učinkovitost in uspeh pri posojilih v vzorcu 594 italijanskih bank prek OLS metode in (kjer se da) z metodo fiksnih učinkov.
Rezultati: Nasplošno so se med poslovanjem italijanske zadružne banke bolje odrezale kot ostale banke. Kakovost pri izdajanju posojil je bila višja, medtem ko iz rezultatov ni bilo opaziti večjih razlik pri pokazateljih za donosnost in stroškovno učinkovitost.
Zaključek: Prispevek empirično dokazuje s teoretskega vidika že uveljavljeno hipotezo: in sicer, italijanske zadružne banke poslujejo različno od standardnih poslovnih bank, kar je opazno predvsem v obdobjih krize. To empirično podpira ugotovitev, da so se različne tipologije bank različno odzvale na finančno in gospodarsko krizo, kar ima pomembne posledice za tvorce finančne politike. Zaradi specifičnosti zadružnih bank in regulative italijanske vlade med krizo, se je pojavila ironična situacija: čeprav je kriza v manjši meri učinkovala na italijanske zadružne banke, so se slednje slabše prilagodile nanjo kajti reševalni program je bil namenjen predvsem poslovnim bankam.

Ključne besede: *zadružne banke, poslovanje bank, učinkovitost bank, bančna stabilnost, finančna kriza*

Appendix

In this section some additional results are provided in support of the conclusions presented above, to check whether they are influenced by different specifications of the variables. In Table 7, the fixed effects regressions are replicated for the entire sample (this including *banche popolari*) with two modifications: 1) the start of the crisis is now defined as the year 2008, meaning that the crisis dummy now identifies the 2008-2012 period (*CRISIS2008*) and the full set of time dummy variables is showed using year 2005 as the reference year; 2) the cooperative and people's banks are considered together, defined by a new dummy variable *COOPERATIVE*. The models differ with regards to the dependent variable and the method used to cluster our standard errors (either by bank type or at the bank level). Moreover, the last two models in Table 7 use the newly defined dummy for cooperative banks (*COOPERATIVE*). All in all, the results presented in Table 7 re-confirm the conclusions reached in the main analysis. For ROAA, the coefficient of the COOP*CRISIS2008 interaction term (0.077) are very close to the ones of the fixed effects models in the main analysis (0.064 including popular banks and 0.083 excluding them), the coefficient is not significant, therefore one can conclude that cooperative credit banks have not had lower ROAA than commercial banks. No noteworthy differences are observable in the coefficients for the other variables.

For cost-to-income ratio, the results presented in Table 7 show a higher, significant coefficient for the logarithm of total assets, a lower coefficient for customer deposits on total assets, which is significant only when errors are clustered at bank level, a lower and not significant, but still positive, coefficient for liquid assets on customer & short-term funding. Non interest income on revenues has a similar coefficient to the main analysis, but in Table 7 it is significant also when the errors are clustered at the bank type level. The coefficient for net loans on assets changes sign, becoming negative, but remains not significant. The same applies to the COOP*CRISIS2008 interaction term, so it can be concluded that there has been no significant difference between the impact of the crisis on the cost-to-income ratio of commercial and cooperative credit banks regardless of whether one sets the first crisis year to 2008 or 2009.

Merging people's banks into cooperative banks has little or no effect on the estimates. The only noticeable change is in the coefficient of the interaction term COOPERATIVE*CRISIS2008 with regards to cost-to-income ratio, that changes sign and becomes positive again (as in the main analysis). It should be noted, though, that it is still small and not significantly different from zero. Finally, the variable capturing the structure of banks' assets, i.e. the net value of loans in total bank assets (in percentage) is replaced with an alternative measure, namely the gross value of bank loans in the total bank assets. Again, the conclusions related to the main variable of interest remain unchanged. No significant changes in other coefficients can be reported. Gross loans on total assets have a significant negative effect on both cost-to-income ratio and loan quality. The results for fixed effects regression using the *COOP* dummy and new definition of the crisis (*CRISIS2008*) are presented in Table 8.

Table 7: Fixed effects regression for bank performance, cost efficiency and loan quality (Source: Author's calculations)

	Bank type	Bank	Bank type	Bank	Bank type	Bank	Bank type/new definition of cooperative		
VARIABLES	ROAA (v1)		COST_EFFICIENCY (v2)		LOAN_PROVISIONS (v3)		v1	v2	v3
log total assets	-0.080	-0.080	-12.672**	-12.672***	-0.331*	-0.331***	-0.080	-12.656***	-0.331***
	[-0.203]	[-0.265]	[-4.157]	[-4.648]	[-2.396]	[-3.555]	[-0.265]	[-4.641]	[-3.580]
customer deposits on assets	-0.001	-0.001	0.138	0.138***	-0.003	-0.003	-0.001	0.140***	-0.003
	[-0.543]	[-0.158]	[1.858]	[2.629]	[-1.098]	[-1.064]	[-0.133]	[2.670]	[-1.133]
liquid assets on customer s.t. funding	-0.005	-0.005	0.019	0.019	-0.000	-0.000	-0.005	0.018	-0.000
	[-1.577]	[-1.449]	[0.761]	[0.343]	[-0.044]	[-0.057]	[-1.446]	[0.330]	[-0.062]
non interest income on revenues	0.007	0.007**	-0.242*	-0.242***	0.001	0.001	0.007**	-0.243***	0.001
	[1.639]	[2.377]	[-2.411]	[-4.408]	[0.838]	[0.627]	[2.310]	[-4.430]	[0.683]
net loans on assets	0.006	0.006*	-0.081	-0.081	-0.013*	-0.013***	0.006*	-0.081	-0.012***
	[0.786]	[1.916]	[-1.461]	[-1.543]	[-2.890]	[-4.915]	[1.885]	[-1.548]	[-4.872]
equity on assets	0.020**	0.020	-0.072	-0.072	-0.041	-0.041***	0.020	-0.070	-0.040***
	[4.512]	[0.675]	[-1.204]	[-0.287]	[-1.754]	[-4.418]	[0.672]	[-0.279]	[-4.428]
COOP*CRISIS2008	**0.077**	**0.077**	**-0.163**	**-0.163**	**-0.076***	**-0.076***			
	[1.293]	**[0.973]**	**[-0.738]**	**[-0.158]**	**[-2.757]**	**[-1.721]**			
COOPERATIVE*CRISIS2008							**0.102**	**0.148**	**-0.104****
							[1.025]	**[0.117]**	**[-2.021]**
2006	0.182**	0.182***	-4.008*	-4.008***	0.053*	0.053*	0.182***	-4.015***	0.053*
	[4.311]	[6.238]	[-2.900]	[-8.503]	[2.421]	[1.814]	[6.259]	[-8.509]	[1.830]
2007	0.239**	0.239***	-5.657*	-5.657***	0.203**	0.203***	0.238***	-5.667***	0.203***
	[4.933]	[4.155]	[-2.863]	[-8.311]	[5.765]	[6.379]	[4.169]	[-8.318]	[6.401]
2008	-0.007	-0.007	-3.965*	-3.965***	0.434***	0.434***	-0.033	-4.194***	0.462***
	[-0.176]	[-0.084]	[-2.421]	[-3.275]	[7.679]	[8.259]	[-0.319]	[-2.978]	[7.737]
2009	-0.358**	-0.358***	4.041***	4.041***	0.517***	0.517***	-0.383***	3.813**	0.544***
	[-4.849]	[-3.784]	[5.890]	[2.685]	[43.415]	[9.688]	[-3.615]	[2.236]	[9.001]
2010	-0.574***	-0.574***	7.946***	7.946***	0.555***	0.555***	-0.599***	7.717***	0.582***
	[-6.433]	[-5.870]	[9.910]	[5.024]	[20.424]	[9.699]	[-5.525]	[4.346]	[9.156]
2011	-0.566***	-0.566***	5.040**	5.040***	0.625***	0.625***	-0.591***	4.816***	0.652***
	[-12.664]	[-5.620]	[5.382]	[3.359]	[18.162]	[10.511]	[-5.191]	[2.819]	[9.931]
2012	-0.540***	-0.540***	-0.633	-0.633	1.239***	1.239***	-0.564***	-0.853	1.266***
	[-8.281]	[-4.682]	[-0.803]	[-0.375]	[32.463]	[16.421]	[-4.666]	[-0.457]	[15.765]
Observations	4,240	4,240	4,233	4,233	4,154	4,154	4,240	4,233	4,154
R-squared	0.216	0.216	0.198	0.198	0.334	0.334	0.216	0.198	0.334

Note: Robust t-statistics reported in the brackets. *, **, *** denote the 10%, 5% and 1% significance respectively. All regressions include bank fixed effects. Constant not reported.

Table 8: Fixed effects regression for bank performance, cost efficiency and loan quality (Source: Author's calculations)

	bank level clustering			bank type clustering		
Dependent variable	ROAA	COST_EFFICIEN-CY	LOAN_PROVI-SIONS	ROAA	COST_EFFI-CIENCY	LOAN_PROVI-SIONS
log total assets	-0.091	-12.736***	-0.310***	-0.091	-12.736**	-0.310*
	[-0.302]	[-4.643]	[-3.300]	[-0.238]	[-4.038]	[-2.637]
customer deposits on assets	-0.001	0.140***	-0.003	-0.001	0.140	-0.003
	[-0.126]	[2.657]	[-1.087]	[-0.459]	[1.916]	[-1.114]
liquid assets on customer s.t. funding	-0.007**	0.013	0.004*	-0.007	0.013	0.004
	[-2.141]	[0.230]	[1.826]	[-2.294]	[0.516]	[1.401]
non interest income on revenues	0.006**	-0.243***	0.001	0.006	-0.243*	0.001
	[2.295]	[-4.415]	[0.811]	[1.607]	[-2.419]	[0.994]
gross loans on assets	0.001	-0.091*	-0.005*	0.001	-0.091	-0.005
	[0.308]	[-1.864]	[-1.904]	[0.141]	[-1.509]	[-1.573]
equity on assets	0.019	-0.073	-0.040***	0.019**	-0.073	-0.040
	[0.650]	[-0.289]	[-4.320]	[4.669]	[-1.277]	[-1.733]
COOP*CRISIS2008	**0.079**	**-0.181**	**-0.079***	**0.079**	**-0.181**	**-0.079***
	[0.990]	**[-0.175]**	**[-1.772]**	**[1.259]**	**[-0.766]**	**[-2.470]**
2006	0.188***	-3.888***	0.045	0.188**	-3.888*	0.045*
	[6.019]	[-8.023]	[1.543]	[4.761]	[-3.073]	[2.434]
2007	0.250***	-5.515***	0.186***	0.250**	-5.515*	0.186***
	[4.225]	[-7.885]	[5.809]	[5.324]	[-2.989]	[6.829]
2008	0.002	-3.789***	0.420***	0.002	-3.789*	0.420***
	[0.027]	[-3.075]	[8.125]	[0.055]	[-2.584]	[8.347]
2009	-0.349***	4.238***	0.503***	-0.349**	4.238**	0.503***
	[-3.632]	[2.778]	[9.508]	[-4.571]	[5.412]	[29.835]
2010	-0.561***	8.176***	0.536***	-0.561***	8.176***	0.536***
	[-5.653]	[5.105]	[9.352]	[-6.246]	[8.218]	[21.318]
2011	-0.561***	5.295***	0.619***	-0.561***	5.295***	0.619***
	[-5.508]	[3.482]	[10.673]	[-11.431]	[7.261]	[23.168]
2012	-0.557***	-0.375	1.273***	-0.557***	-0.375	1.273***
	[-4.796]	[-0.220]	[16.615]	[-7.647]	[-0.533]	[28.845]
Observations	4,240	4,233	4,154	4,240	4,233	4,154
R-squared	0.214	0.198	0.325	0.214	0.198	0.325

Note: Robust t-statistics reported in the brackets. *, **, *** denote the 10%, 5% and 1% significance respectively. All regressions include bank fixed effects. Constant not reported

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Health Services Utilization in Older Europeans: an Empirical Study

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Background and Purpose: Chronic diseases and associated co-morbidities are highly prevalent among elderly and are associated with an increase in health services utilization which in turn raises health care expenditures throughout industrialized societies. However, health care utilization in elderly is still inadequately understood, particularly regarding the differences among European jurisdictions. In our article, we use dataset of Wave 5 of SHARE survey to study the utilization of health care in older Europeans in 15 European countries.
Design/Methodology/Approach: We investigate relationships between factors such as age, gender, income, education and health variables and the utilization of various types of health services. We apply regression modeling to study the determinants of health utilization (different socioeconomic and health variables) of older people.
Results: We show some significant differences between determinants of health utilization in terms of probability and frequency of usage. We also explore patterns between welfare regimes, taking Eastern European jurisdictions as a reference category. Finally, we show that in a simple causal model the provision of formal and/or informal homecare serves as a complement to utilization of health care services.
Conclusion: Results of our article are important for the management of health care facilities in terms of health care usage by older people, and can be of value to health care providers and policy makers in the field.

Keywords: *health utilization, older people, SHARE, determinants, welfare regimes*

1. Introduction

Chronic diseases and associated co-morbidities are highly prevalent among elderly and are associated with an increase in health services utilization which in turn raises health care expenditures throughout industrialized societies. It has been widely recognized that health care service utilization among elderly depends on many factors. However, it is important to realize that older people in their consumption of health care services are not a homogeneous group as they may be particularly exposed to personal income and social inequalities. To better understand the factors that influence the use of health care resources among the elderly in 15 European countries, we use data from the fifth wave of European research on health, the process of aging and retirement in Europe, SHARE (Survey of Health, Ageing and Retirement in Europe)[1]. The data collected by the SHARE survey are particularly useful due to their multidisciplinary nature since they allow us to get a better insight into determinants of health services utilization of the older people which is – among others – important for future decisions in the field. Furthermore, we

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show that long-term care provision for older people acts as a complement to usage of institutional health care facilities which is important information for policy purposes, as the reforms of long-term and health care are under way in Slovenia and several other European countries.

In our study, we use Andersen's behavioral model of health service utilization (Andersen 1968; 1995; Andersen and Newman 1973) which is "a flexible framework that enables the study and selection of useful determinants of healthcare utilization" (Saeed, Oduro, Ebenezer and Zhao 2012). The model proposes that a sequence of factors influences the use of healthcare services. These determinants are categorized into three broad areas, namely predisposing factors (e.g. age, gender and educational level), enabling factors (e.g. income, settlement and availability of informal providers of long-term care) that influence ability of individuals to utilize services and need factors such a functional restriction and chronic disease that makes it essential to use health service (Willis et al. 2007).

The model we use is an Andersen's "initial" one, originating in the 1960's, not taking into account the possible recursive nature and reverse causality in the model (see Andersen 1995). Its structure is visualized in Figure 1. As stated by Andersen (1995, 1-2): "the model suggests an explanatory process or causal ordering where the predisposing factors might be exogenous (especially the demographic and social structure), some enabling resources are necessary but not sufficient conditions for use, and some need must be defined for use to actually take place". We, therefore, do not establish an explicit causal structure in the sense of causal inference (see e.g. Pearl 2009; Morgan and Winship 2007) but test the interrelationships/correlations in the model.

In their seminal study, Santos-Eggimann et al. (2005) have corroborated the notion that high level of health care utilization is correlated with an old age, the exception being the oldest age group (85+), which has for most part a lower utilization than younger age groups. They have also indicated that "women reported significantly more medical consultations and more medications than men" (Santos-Eggimann et al., 2005, 139) and that "there is a strong relationship between the level of education and several, but not all, indicators of health services utilization in Europe" (Santos-Eggimann et al., 2005, 139). Also, van Doorslaer, Koolman and Jones (2003), present new international comparative evidence on the factors driving inequalities in the use of general practitioner (GP) and specialist services in 12 EU member states. They find little or no evidence of income-related inequity in the probability of a GP visit in these countries. Conditional upon at least one visit, they even find evidence of a "pro-poor" distribution. By contrast, substantial "pro-rich" inequity emerges in virtually every country with respect to the probability of contacting a medical specialist. Despite their lower needs for such care, wealthier and higher educated individuals appear to be much more likely to see a specialist than those individuals who are less well-off.

In our study, we advance the methodology of Santos-Eggimann et al. (2005) by employing regression methods. Based on these methods, we are also able to make

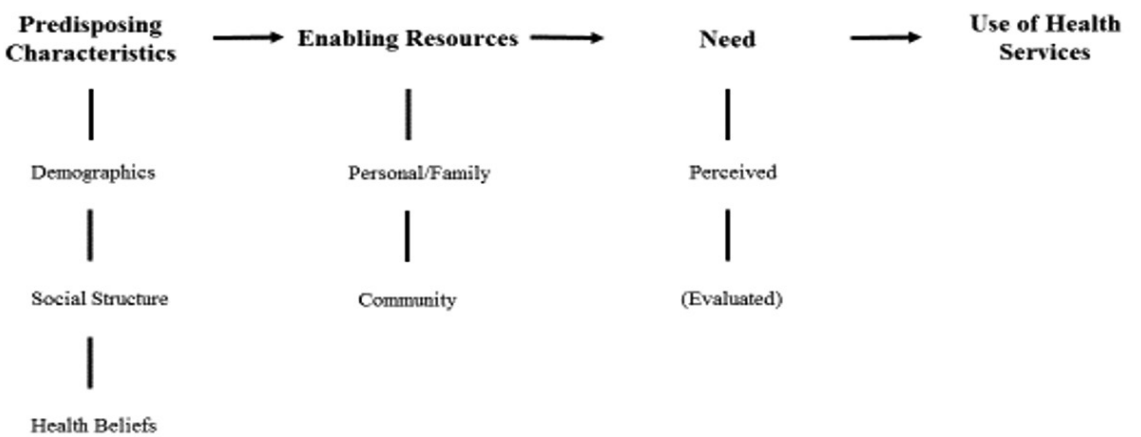

Figure 1: The structure of the Andersen's "initial" behavioral model. Based on: Andersen (1995).

[1] This paper uses data from SHARE Wave 5 (DOI: 10.6103/SHARE.w5.100), see Börsch-Supan et al. (2013) for methodological details. The SHARE data collection has been primarily funded by the European Commission through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812) and FP7 (SHARE-PREP: N°211909, SHARE-LEAP: N°227822, SHARE M4: N°261982). Additional funding from the German Ministry of Education and Research, the U.S. National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064) and from various national funding sources is gratefully acknowledged (see www.share-project.org).

advancement in studying relationship between long-term care of elderly and health care utilization from an economical perspective, studying whether these two important variables complement or substitute each other.

2. Methods

Bivariate and regression analyses are applied to cross-sectional database of Wave 5 of the Survey of Health, Ageing and Retirement in Europe (SHARE) (see Börsch-Supan 2015). We limit the respondents to only those aged 65 years or more[2] (for more details, see Börsch-Supan et al. 2015; Malter and Börsch-Supan 2015; Börsch-Supan et al. 2013). Bivariate tests use t and F statistic to test the statistically significant difference between individual covariates, influencing health care utilization of the older people. The regression methods we use are Poisson for the dependent variables of count nature (nr. of medical visits, nr. of taken medications, nr. of hospitalizations) and probit for the dependent variable of binary nature (probability of hospitalization). We test the models for goodness of fit (deviance and Pearson statistic for Poisson; Hosmer-Lemeshow test for probit) as well as classification and sensitivity (only for probit).

The variables used in the study are summarized in Tables 1 through 3: Table 1 delineates dependent variables and Table 2 independent variables, while Table 3 shows their descriptive statistics. As indicated in Table 3, the average number of medical visits, average number of taken medications, and average number of hospitalizations is 7.75, 2.22 and 2.32, respectively; the average number of years of education is 10.35. There are more females (55%) than males in the study group, more than two thirds live in the urban environment, and about one fourth is living alone in the household. About 60% of the study group has one or more chronic diseases, about a quarter has depression, and one fifth has severe limitations in their daily activities. The highest proportion of persons is coming from the continental welfare regime (42%) according to the Esping-Andersen classification, followed by the Eastern European (23%) and Mediterranean (18%) welfare regimes.

3. Results and Discussion

Results of bivariate analysis are shown in Table 4. It is notable that female gender is significantly correlated with more medical visits and medications taken, but fewer hospitalizations. As expected, older people have significantly more medical visits, taken medications and hospitalizations. Higher level, i.e., more years of education are on the other hand significantly correlated with fewer medical visits, medications taken and hospitalizations as is the income.

More medications are taken – with high statistical significance – by those individuals who live in the urban area. Other strong statistical significances are observed for people living alone and having more medical visits and more hospitalizations and medications. All three health variables (limitations, chronic diseases, depression) are statistically significantly related to more medical visits and hospitalizations and a larger number of taken medications.

Comparison among various welfare regimes reveals that medical visits are the most frequent in mixed regime (Israel), followed by continental and Mediterranean regimes; Eastern European and, in particular, the social-democratic regimes have the fewest visits. For the num-

Table 1: Dependent variables used in the study

Dependent variable	Description
Nr. of medical visits	Number of visits to a medical doctor or qualified nurse about respondents health (excluding dentist visits and hospital stays, but including emergency room or outpatient clinic visits)
Nr. of taken medications	Number of taken medications as a sum of answers to the following question: »Do you currently take drugs at least once a week for problems mentioned*?«
Nr. of hospitalisations	Number of hospitalisations in a hospital overnight during the last twelve months
Probability of hospitalisation	Response to the following question: »During the last twelve months, have you been in a hospital overnight? Please consider stays in medical, surgical, psychiatric or in any other specialised wards.«

* The drugs include the following: 1. Drugs for high blood cholesterol; 2. Drugs for high blood pressure; 3. Drugs for coronary or cerebrovascular diseases; 4. Drugs for other heart diseases; 6. Drugs for diabetes; 7. Drugs for joint pain or for joint inflammation; 8. Drugs for other pain (e.g. headache, back pain, etc.); 9. Drugs for sleep problems; 10. Drugs for anxiety or depression; 11. Drugs for osteoporosis; 13. Drugs for stomach burns; 14. Drugs for chronic bronchitis; 15. Drugs for suppressing inflammation (only glucocorticoids or steroids); 97. Other drugs, not yet mentioned.

[2] Older people are usually defined as people aged 65 years or older. For the definition see e.g. OECD (2010).

Table 2: Independent variables used in the study

Independent variable	Description
Gender	Male or female
Age	Four groups – 65-69 years; 70-74 years; 75-79 years; 80 and more years
EduYears	Years of education
Income	Total household income, classified into tertiles (low, middle, high) by individual country
Settlement	Living in an urban (encompassing: 1. A big city; 2. The suburbs or outskirts of a big city; 3. A large town; 4. A small town) or in a rural (A rural area or village) environment
LivingAlone	Binary variable, having the value of 1 if the respondent lives alone in a household and 0 otherwise
ChildDist	Binary variable, having the value of 1 if the respondent has a child living in the area of 25 km and 0 otherwise
Limited	Binary variable, having the value of 1 if the respondent is severely limited because of a health problem in activities people usually do and 0 otherwise
ChronDis	Binary variable, having the value of 1 if the respondent has 2 or more chronic diseases*; and 0 otherwise
Depression	Binary variable, having the value of 1 if the respondent has a score of 4 or more on the Euro-Depression scale and 0 otherwise
Welfare Regime	Individual countries grouped in the welfare regimes, following Esping-Andersen (1990) and related literature, as 1 – continental (Austria, Germany, Netherlands, France, Switzerland, Belgium, Luxembourg); 2 – social democratic (Sweden, Denmark); 3 – Mediterranean (Spain, Italy); 4 – eastern European (Czech Republic, Slovenia, Estonia); 5 – mixed (Israel)

*The chronic disease include the following: 1. A heart attack including myocardial infarction or coronary thrombosis or any other heart problem including congestive heart failure; 2. High blood pressure or hypertension; 3. High blood cholesterol; 4. A stroke or cerebral vascular disease; 5. Diabetes or high blood sugar; 6. Chronic lung disease such as chronic bronchitis or emphysema; 10. Cancer or malignant tumour, including leukaemia or lymphoma, but excluding minor skin cancers; 11. Stomach or duodenal ulcer, peptic ulcer; 12. Parkinson disease; 13. Cataracts; 14. Hip fracture; 15. Other fractures; 16. Alzheimer's disease, dementia, organic brain syndrome, senility or any other serious memory impairment; 18. Other affective or emotional disorders, including anxiety, nervous or psychiatric problems; 19. Rheumatoid Arthritis; 20. Osteoarthritis, or other rheumatism; 97. Other conditions, not yet mentioned

ber of taken medications the ranking is as follows: mixed, Mediterranean, Eastern, continental, and socialdemocratic regime. Eastern European regime witnesses most hospitalizations, and is followed by the continental, mixed, Mediterranean, and socialdemocratic regimes. For each of the three dependent variables, highly statistically significant differences among the welfare regimes are observed.

Table 5 shows the results of initial regression models, including all covariates, except the long-term care variables. For the number of medical visits, gender has a positive and strong influence (women tend to use medical visits more frequently than men). As for age, the 70-74 and 75-79 groups have more frequent visiting than 65-69 group, while 80+ group uses medical visits less often as compared to 65-69 group, although the relationship is insignificant (this phenomenon has already been observed and partly explained in Hren, Prevolnik Rupel and Srakar (2015). Education is not significantly related to the number of medical visits. When considering income, the highest tertile group tends to have significantly less visits, the relationship is strong in significance. Urban residents tend to have more visits which can be an indication of better access to health care in cities. Those having a child in the proximity of 25 km tend to have significantly more visits (having a child living close could be a reason for being able to visit a doctor more often with help of a child). As for the need (health) variables, the pattern is clear: the worse health, the more visits – all relationships are very strong, which holds for all dependent variables. As for the differences in welfare regimes, compared to Eastern European (reference category), social democratic countries tend to have less visits (which could be an indication of better health among older people in those countries in general, see e.g. Srakar 2015), while other three regimes tend

Table 3: Descriptive statistics of main variables used in the study

	Average	Median
Nr. of medical visits	7.75	5.00
Nr. of taken medications	2.22	2.00
Nr. of hospitalisations	2.32	0.00
EduYears	10.35	10.40
		Percent
Gender	Male	45%
	Female	55%
Age	65-69	31%
	70-74	25%
	75-79	20%
	80+	23%
Settlement	Rural	30%
	Urban	70%
LivingAlone	No	72%
	Yes	28%
ChildDist	No	26%
	Yes	74%
Limited	No	80%
	Yes	20%
ChronDis	No	41%
	Yes	59%
Depression	No	71%
	Yes	29%
Welfare Regime	SocialDem	14%
	Continent	42%
	Mediterr	18%
	Eastern	23%
	Mixed	4%

to have more visits.

For the number of taken medications, gender has again a positive but strong influence, namely women tend to take much more medications than men. As for age, all of the older groups have significantly more frequent taking of medications than the reference, 65-69 group. More educated tend to take fewer medications, as already observed in Table 4. Groups with higher income clearly tend to take fewer medications. Urban residents tend to take slightly more medications, which could again be a sign of better access to health care in cities in general. In the model we do not include the variables of living alone and child distance and we expect they do not have and logical interrelationship to the taking of medications. Again, the health variables have a strong relationship to the dependent variable following the rule: "the worse health, the more medications". As compared to Eastern European (reference category), social democratic countries tend to have less taken medications, while other three regimes tend to have more taken medications, which is fully in line with the model for previous dependent variable.

As for probability of hospitalization, the gender has a *negative* and strong influence: women tend to have lower probability of hospitalization than men. All of the older

Table 4: Results of bivariate tests. The number of asterisks denote the level of significance (*** - 1%; ** - 5%; * - 10%). For abbreviations, see Tables 1 and 2.

		Nr. of medical visits		Nr. of taken medications		Nr. of hospitalisations	
		Average	t/F (Sign.)	Average	t/F (Sign.)	Average	t/F (Sign.)
Gender	Male	7.4896	-4.2***	2.0433	-31.8***	2.4464	2.02**
	Female	7.9562		2.3603		2.2224	
Age	65-69	6.6848	72***	1.8088	435.5***	1.5755	43.99***
	70-74	7.6545		2.1351		2.1751	
	75-79	8.3812		2.4607		2.6158	
	80+	8.7554		2.6503		3.2449	
EduYears	below 11	7.9452	3.95***	2.3636	16.16***	2.4322	2.56***
	11+	7.5205		2.0722		2.1642	
Income	Low	8.1938	16.6***	2.4662	131.2***	2.4182	6.93***
	Middle	7.5556		2.1439		2.0452	
	High	7.1352		1.9698		1.8187	
Settlement	Rural	7.7951	0.58	2.1657	-3.67***	2.4777	1.90**
	Urban	7.7239		2.2392		2.2582	
LivingAlone	No	7.5376	-5.9***	2.1462	-12.1***	2.1186	-5.51***
	Yes	8.2932		2.4038		2.8593	
ChildDist	No	7.6067	-3.0***	2.1004	-7.41***	2.3828	-0.21
	Yes	8.0246		2.2688		2.4098	
Limited	No	6.4687	-34***	1.9398	-54.6***	1.2956	-22.7***
	Yes	13.0527		3.3350		6.4753	
ChronDis	No	5.0998	-44***	1.0810	-130***	1.2165	-18.0***
	Yes	9.6110		3.0128		3.0997	
Depression	No	6.4456	-29***	1.8534	-53.2***	1.4929	-16.6***
	Yes	10.5655		3.0345		4.0071	
Welfare Regime	SocDem	4.9304	136***	1.8979	129.8***	1.3321	21.43***
	Continent	8.4823		2.1277		2.6166	
	Mediterr	8.2869		2.4361		1.8281	
	Eastern	7.2382		2.2871		2.7586	
	Mixed	10.4938		2.9162		2.3555	

age groups have higher probability of hospitalization than 65-69 group, which is fully in accordance with expectations and shows a slight difference between the probability and frequency of hospitalizations and frequency of visiting the doctor where an inverse U-shaped relationship has been observed as explained before. There is no influence of either education, income and/or settlement, while those living alone tend to have a higher probability of hospitalization. Again, the relationship of health variables is positive and very strong. There is no relationship of socialdemocratic regime as compared to Eastern European (reference category), while continental countries tend to have higher and Mediterranean and mixed regime countries a lower probability of hospitalization.

Similar relationships can be observed for the number of hospitalizations: gender has a negative influence, namely

Table 5: Results of regression models (Poisson, probit). The number of asterisks denote the level of significance (*** - 1%; ** - 5%; * - 10%). For abbreviations, see Tables 1 and 2.

	Nr. of medical visits			Nr. of taken medications			Probab. of hospitalisation			Nr. of hospitalisations		
	Coef.	z	P>z	Coef.	z	P>z	Coef.	z	P>z	Coef.	z	P>z
Constant	1.3324	81.13	***	-0.0540	-2.08	**	-1.4286	-21.14	***	-0.3668	-11.43	***
Gender	-0.0284	-4.47	***	0.0560	5.24	***	-0.1402	-5.28	***	-0.2859	-23.78	***
Age70-74	0.0673	8.30	***	0.0722	5.14	***	0.0733	2.16	**	0.2455	14.82	***
Age75-79	0.0785	9.25	***	0.1275	8.77	***	0.0888	2.48	**	0.1558	8.98	***
Age80+	-0.0018	-0.21		0.1112	7.79	***	0.1183	3.37	***	0.2685	16.53	***
EduYears	0.0002	0.28		-0.0035	-2.47	**	-0.0016	-0.46		-0.0054	-3.39	***
IncomeMid	-0.0078	-1.06		-0.0281	-2.45	**	0.0181	0.58		0.0216	1.54	
IncomeHigh	-0.0453	-5.36	***	-0.0573	-4.14	***	0.0202	0.57		-0.0716	-4.34	***
Settlement	0.0223	3.44	***	0.0202	1.82	*	0.0016	0.06		-0.0433	-3.61	***
LivingAlone	0.0055	0.80					0.0638	2.19	**	0.0915	6.93	***
ChildDist	0.0267	4.06	***				0.0263	0.96		0.0628	5.02	***
Limited	0.4515	65.56	***	0.2469	20.78	***	0.5250	17.52	***	1.2190	99.75	***
ChronDis	0.5053	74.27	***	0.8897	70.57	***	0.3738	13.86	***	0.6555	45.29	***
Depression	0.2020	31.08	***	0.2157	19.65	***	0.2066	7.45	***	0.4257	35.20	***
Welfare Regime												
SocialDem	-0.1837	-15.33	***	-0.0401	-2.34	**	0.0325	0.74		-0.1255	-5.62	***
Continent	0.2765	36.15	***	0.0464	3.69	***	0.1520	4.84	***	0.2432	17.83	***
Mediterr	0.2683	27.96	***	0.0941	5.98	***	-0.0854	-2.04	**	-0.1062	-5.48	***
Mixed	0.3008	17.15	***	0.2691	9.73	***	-0.1468	-1.78	*	-0.1512	-4.10	***
Observations	15309			18567			15430			15419		
LR Chi2	20263.4	***		9883.8	***		965.9	***		24158.4	***	
Log Likelihood	-79468			-30018			-6838			-71097		
Pseudo R2	0.1131			0.1414			0.0660			0.1452		

women tend to have less hospitalizations than men. As for age, all of the older groups have more hospitalizations than the reference, 65-69 group. More educated and/or richer people tend to have fewer hospitalizations, while, interestingly, rural areas tend to have more hospitalizations (in line with results from Table 4), which could be explained as a consequence of worse health in those areas. Those living alone and those having a child in proximity of 25 km tend to have more hospitalizations, while the relationships of health variables are again guided by the rule: "the worse health, the more hospitalizations". As compared to Eastern European (reference category), continental countries tend to have more hospitalizations, while other three regimes tend to have less hospitalizations.

One of the main interesting results is shown in Table 6, where we also include the long-term care provision as covariates. Informal care (which is a binary variable, taking the value of 1 for those respondents receiving either informal care within or outside household, and 0 otherwise) and formal care (a binary variable, having value of 1 of the respondent receives any type of formal care, and 0 otherwise) have a positive influence on all dependent variables: people receiving such care tend to have both a higher number of medical visits, number of taken medications, higher probability of hospitalization and higher number of hospitalizations. This shows the complementary relationship

Table 6: Results of regression models, including receiving of formal and/or informal care as predictor. The number of asterisks denote the level of significance (*** - 1%; ** - 5%; * - 10%). For abbreviations, see Tables 1 and 2.

	Nr. of medical visits			Nr. of taken medications			Probab. of hospitalisation			Nr. of hospitalisations		
	Coef.	z	P>z	Coef.	z	P>z	Coef.	z	P>z	Coef.	z	P>z
Constant	1.3230	80.16	***	-0.0505	-1.93	*	-1.4264	-20.85	***	-0.3214	-10.03	***
Gender	-0.0442	-6.96	***	0.0451	4.20	***	-0.1631	-6.09	***	-0.3446	-28.73	***
Age70-74	0.0562	6.93	***	0.0664	4.73	***	0.0579	1.69	*	0.1955	11.78	***
Age75-79	0.0478	5.60	***	0.1114	7.62	***	0.0470	1.30		0.0304	1.74	*
Age80+	-0.0784	-8.98	***	0.0722	4.91	***	0.0108	0.30		0.0035	0.21	
EduYears	-0.0005	-0.64		-0.0038	-2.64	***	-0.0028	-0.80		-0.0080	-5.02	***
IncomeMid	-0.0096	-1.31		-0.0228	-1.98	**	0.0130	0.42		0.0105	0.75	
IncomeHigh	-0.0468	-5.52	***	-0.0531	-3.83	***	0.0168	0.47		-0.0785	-4.74	***
Settlement	0.0269	4.16	***	0.0191	1.72	*	0.0085	0.31		-0.0369	-3.06	***
LivingAlone	-0.0259	-3.73	***				0.0149	0.51		-0.0230	-1.73	*
ChildDist	0.0148	2.25	**				0.0167	0.60		0.0376	3.00	***
Limited	0.3664	51.02	***	0.2080	16.81	***	0.4135	13.24	***	0.9412	73.48	***
ChronDis	0.4784	69.94	***	0.8786	69.44	***	0.3404	12.50	***	0.5597	38.39	***
Depression	0.1694	25.89	***	0.2030	18.38	***	0.1666	5.93	***	0.3332	27.44	***
InfCare	0.2690	40.47	***	0.0794	6.94	***	0.2992	10.59	***	0.6169	49.58	***
FormCare	0.1232	15.56	***	0.1033	7.56	***	0.2503	7.32	***	0.5893	44.60	***
Welfare Regime												
SocialDem	-0.1775	-14.77	***	-0.0432	-2.51	**	0.0290	0.65		-0.1624	-7.24	***
Continent	0.2946	37.78	***	0.0393	3.06	***	0.1601	4.97	***	0.2209	15.86	***
Mediterr	0.2912	30.20	***	0.0969	6.14	***	-0.0670	-1.59		-0.0636	-3.26	***
Mixed	0.3166	18.00	***	0.2645	9.54	***	-0.1539	-1.84	*	-0.1929	-5.21	***
Observations	15309			18567			15430			15419		
LR Chi2	22442.1	***		10015.7	***		1167.5	***		29851.0	***	
Log Likelihood	-78378			-29952			-6738			-68250		
Pseudo R2	0.1252			0.1432			0.0797			0.1794		

between long-term care and health care utilizations of the older people – long-term care serves as an addition (and not replacement) for formal hospital facilities. Although this relationship would need more econometric testing, as the variables of long-term care and hospital care are surely in an endogenous, reverse causal relationship and there are many possible confounders, this could be an important information for future measures in both areas, which are particularly adjourn and actual in Slovenia with reforms being under construction.

We can also see that for the control variables there are no notable changes in sign and significance of the coefficients.

In the analysis above we presented an econometric analysis of determinants of health care utilization in older Europeans, using SHARE dataset. Our main findings on the basis of above elaboration can be grouped as follows:

- Among the determinants, gender has a different effect

for visiting doctors and taking medications vs. hospitalization. Women tend to have more visits to doctors and medications while men tend to be hospitalized more. This could be a consequence of women being more frail and prone to milder forms of health care while men using the health facilities mainly when their health situation is more severe.
- Age has an expected effect for most of the variables: older people tend to use health facilities more often, with an exception of visiting doctors where the oldest group tends to visit the doctors less frequently. Perhaps this could be explained by survival effects – the ones who are the oldest had a largest probability of survival and are therefore more resistant to at least the milder forms of health problems.
- Education and income have mainly expected effects: those with higher education and income tend to use health facilities less often.
- Those, living in urban areas tend to have more visits to doctors and taken medications, which could be a consequence of better access to healthcare as compared to rural areas. Interestingly, those living in urban areas tend to have more hospitalizations which we explain as a sign of their worse health as compared to urban areas.
- »Need«, i.e. health variables has an expected, positive effect to utilization of health care services: those in more need use health care facilities significantly more often.
- There are significant differences between welfare regimes: those in social-democratic countries tend to use health facilities less often (as compared to the reference, Eastern European regime), which is probably a consequence of their better health in general[2]. Interestingly, those in continental regime tend to use facilities significantly more often (both the number of hospitalizations, number of taken medications as well as medical visits), compared to Eastern European regime, while Mediterranean and mixed regime tend to have more visits to doctors and taken medications, while having significantly less hospitalizations.
- Informal and formal long-term care contributes positively and significantly to the usage of health care facilities, which we interpreted as sign of complementarity between long-term care and health care utilization. Again, we warn that causal structure of the model (including the modelling of an apparent reverse causal relationship between long-term care and health utilization) could be oversimplified and would have to be modelled more accurately in future studies.

The main drawback to the study, therefore, lies in an over-simplified causal structure of our models. For the future work, models of causal inference (instrumental variables, counterfactuals, longitudinal modelling, etc.) should be used, taking into account several recursive, i.e. reverse-causal relationships in the model, as observed already by Andersen (1995). Furthermore, these techniques would allow us to estimate marginal effects of individual variables and by that the size of their effects on health care utilization. We, nevertheless, hope that the findings of our study will provide important information in both scientific sense as well as a foundation for the future policy measures in the field.

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Uporaba zdravstvenih storitev s strani starejših Evropejcev: empirična analiza

Ozadje in namen: Kronične bolezni in s tem povezana obolenja so zelo razširjena med starejšimi, povezana pa so tudi z večjo uporabo zdravstvenih storitev, kar povečuje izdatke za zdravstveno varstvo v vseh sodobnih razvitih družbah. Vendar pa še vedno preslabo razumemo in poznamo dejavnike uporabe zdravstvenih storitev s strani starejših, še posebej glede razlik med evropskimi državami. V prispevku uporabimo nabor podatkov petega vala raziskave SHARE za raziskavo uporabe zdravstvenih storitev starejših v 15 evropskih državah.
Metodologija: V prispevku raziskujemo razmerja med dejavniki, kot so starost, spol, dohodek, izobrazba in zdravstvene spremenljivke ter uporabo različnih vrst zdravstvenih storitev. Pri preučevanju determinant uporabe zdravstvenih storitev starejših (različnih socioekonomskih in zdravstvenih spremenljivk) uporabimo regresijsko modeliranje.
Rezultati: Pokažemo na nekaj pomembnih razlik med dejavniki uporabe zdravstvenih storitev tako glede verjetnosti kot pogostosti uporabe. Prav tako pokažemo na razmerja med blaginjskimi sistemi, pri čemer so vzhodnoevropske države referenčna kategorija, s katero primerjamo vse druge. Ob koncu z uporabo preprostega vzročnega regresijskega modela pokažemo tudi, da zagotavljanje formalne in/ali neformalne dolgotrajne oskrbe starejših služi kot dopolnilo (komplement) k uporabi zdravstvenih storitev.
Zaključek: Rezultati našega izdelka so pomembni za upravljanje v zdravstvenih ustanovah, posebej glede uporabe zdravstvenih storitev s strani starejših in so lahko velike vrednosti za izvajalce zdravstvenih storitev in oblikovalce politik na tem področju.

Ključne besede: *uporaba zdravstvenih storitev, starejši, SHARE, determinante, blaginjski sistemi*

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Analysis of Interactions of Key Stakeholders on B2C e-Markets - Agent Based Modelling and Simulation Approach

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Background/purpose: This paper discusses the application of ABMS – agent-based modelling and simulation in the analysis of customer behaviour on B2C e-commerce websites as well as in the analysis of various business decisions upon the effects of on-line sales. The continuous development and dynamics in the field of e-commerce requires application of advanced decision-making tools. These tools must be able to process, in a short time period, a large amount of data generated by the e-commerce systems and enable the use of acquired data for making quality business decisions.
Methodology: The methodology of the agent-based simulation used in this paper may significantly enhance the speed and quality of decision making in electronic trade. The models developed for the needs of this research aim to improve the use of practical tools for the evaluation of the B2C online sales systems in that they allow for an investigation into the outcomes of varied strategies in the e-commerce site management as regards customer behaviour, website visits, scope of sales, income earned, etc.
Results: An agent-based simulation model developed for the needs of this research is able to track the interactions of key subjects in online sales: site visitors – prospective consumers, sellers with different business strategies, and suppliers.
Conclusion: Simulation model presented in this paper can be used as a tool to ensure a better insight into the problem of consumer behavior on the Internet. Companies engaged in the B2C e-commerce can use simulation results to better understand their consumers, improve market segmentation and business profitability and test their business policies.

Keywords: *ABMS, B2C, e-commerce, website, customer behavior*

1. Introduction and literature review

Electronic commerce has been expanding rapidly in the last decade or so and is now present in almost all industry branches and in a majority of developed countries' markets. In order that e-commerce business be successful, it is necessary that quality strategies of entrance on the market should be developed and implemented and that additional services should be offered that grant the customers better purchasing conditions, a possibility of service adapting and additional value for customers (Hyung, 2010).

The development of the electronic commerce model

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has for long been a subject of numerous research attempts. The scientific literature often states the implementation of regression analysis as one of the most common approaches in recognizing the impact of key factors upon the success of a selected model of electronic commerce (Kim et. Al., 2008; Zhu et. Al., 2009; Wang et al., 2010). Besides, neural network based models are increasingly developed (Poh *et al.*, 1994; Russell and Norvig, 2003). To improve the existing solutions and explore new means to support better business decisions, research has in recent years increasingly implemented agent-based models in the analysis of e-commerce business models. Railsback and Grimm (2012) have shown that the agent-based simulation model can successfully add a larger number of characteristics of a realistic system to modelling. They have also shown that agents can adapt their behaviour as regards the current conditions of the environment and of other agents. Grimm et al. (2008) have proven that adaptive behaviour is one of the most vital properties of agents. Hence, complex and dynamic environments such as on-line markets can be successfully modelled and simulated using this methodology. One of the best-known models used in practice was developed by North and Macal (2010) for the needs of the Procter & Gable company. Zhang and Zhang (2007) used the agent-based simulation model to present the effect of introducing a new product on the market to serve as decoy. The authors confined themselves to only explaining the application of the mentioned effect, however, the model itself is far more comprehensive and deals with psychological mechanisms that govern customers in choosing a particular product. Okada and Yamamoto (2009) used the agent-based simulation model to investigate the impact of the eWOM effect upon the habits of customers purchasing on B2C websites. Special attention is paid to the exchange of knowledge (useful information on the product) among customers. Furthermore, literature describes a large number of agent-based simulation models used in customer behaviour studies (Schramm *et.al*, 2010; Roozmand 2011). An interesting example is the CUBES simulator (Customer Behaviour Simulator) (Said *et.al*, 2002), which studies mechanisms of customer interactions and their effect on different economic phenomena. Liu *et al.* (2013) used the agent-based simulation model to investigate into the nowadays common continual price reductions on online markets. In recent years this methodology is successfully used in simulating customer behaviour on social networks and research into the effect of social networks on viral marketing (Hummel *et al.*, 2012; Zutshi *et al.*, 2014).

Our aim in this paper is to show the manner in which it is possible to model and analyse the Internet consumer decision-making process. The precondition for the development of a quality model is a thorough apprehension of consumers on the Internet. Customer behaviour on the Internet significantly differs from the traditional behaviour since the Internet consumers have different habits and needs. The number of papers and research articles on the subject of customer behaviour in e-commerce today is rather large (Currie and Rowley, 2010; Dyner and Franco, 2004; Furaiji *et al.*, 2012). While a number of papers is devoted to socio-demographic characteristics of e-commerce participants, the other group of articles deal with phenomena affecting the consumer trust, privacy and safety as well as their inclination to buying a particular type of product or brand (Bagozzi *et al.*, 2002).

The approach used in this paper is to consider the possibility of applying agent-based simulation models as basis in B2C business models evaluation for the purpose of improving the existing e-commerce strategies and obtain data that can be used in business decision analysis. Connecting the areas of agent-based modelling and electronic commerce creates opportunities for a better understanding of both the behaviour and the causes of behaviour in *e-commerce* systems. One goal of this research is to investigate into how different consumer habits in purchase decision making affect the complexity of their habits when purchasing on the Internet. The application of the proposed simulation model is meant to enable decision makers to test the consequences of different business policies and track the behaviour of sellers, suppliers and consumers on the B2C electronic sales websites.

2. Simulation model of consumer behaviour

The study of the consumer population, their habits and behaviour serves as basis for the B2C electronic commerce analysis. This analysis is of vital importance for B2C shareholders and managers, marketers, sales people, but also for the consumers themselves. The consumer analysis is to analyse their needs – what, why and how they purchase. Consumer behaviour can be described as a set of activities prospective customers undertake in searching, selecting, valuing, assessing, supplying and using of products and services in order to satisfy their needs and wants. These also include decision-making processes that both precede and follow the above-mentioned activities (Belch 1998; Schiffman *et al.*, 2009; Solomon, *et al.* 2009). In making their decisions to purchase a product, online shopping consumers go through different phases. The phases are similar to those present in traditional shopping, however, the manner in which they are carried out differs. Generally speaking, in their decision-making process, consumers go through the following stages (Engel et al., 1994): problem awareness, information search, evaluation of alternatives, decision on purchase and post-purchase evaluation. The aim of the model is to link consumers, on one side, and the sellers (Internet sales sites) on the other and to determine the manner in which they communicate. Hence, in this model we observe consumers with their social and cultural

characteristics, on the one hand, and the market, namely online shops and intermediaries in sales with their e-business and e-marketing strategies, on the other. The model also takes into account the impacts of the on-line community and social networks on forming consumer decisions in online purchase, whose influence increases daily. The model treats the consumer's decision on purchasing as the outcome variable.

The model shown in Figure 1 focuses on three segments: the seller segment, the consumer segment and the communication channel segment. The seller is the Internet site dealing in B2C sales of products and/or services. The most important site characteristics contained in the model are the technical characteristics: infrastructure, software

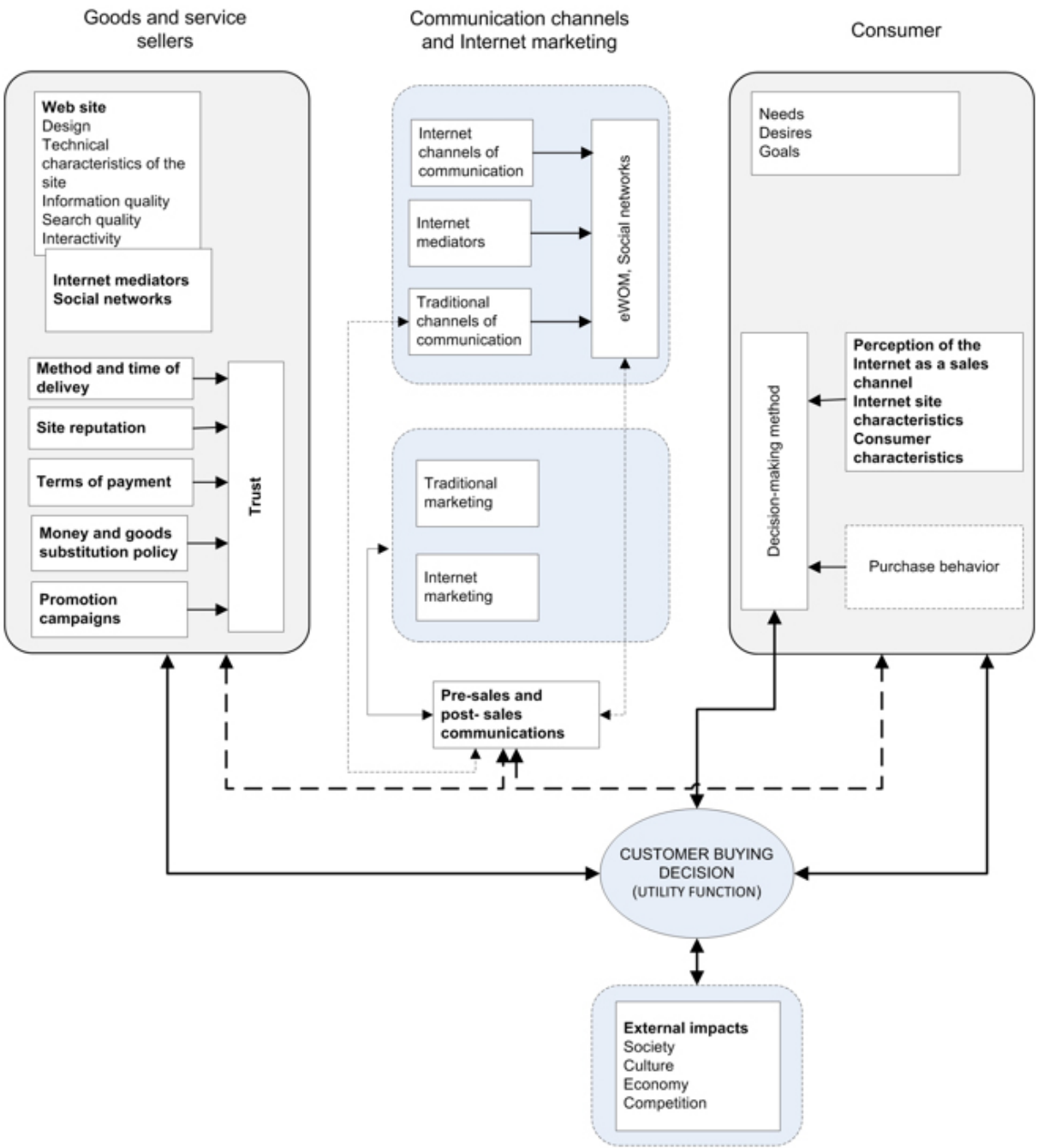

Figure 1: Consumer decision-making model in B2C electronic commerce

support, website design and the quality of information on the products offered via the website. The consumer segment observes online consumers. The model monitors the impact factors concerning their attitudes, goals and beliefs. The communication channels are the online (Internet) and traditional channels of communication. The model under consideration is confined only to the effects of online communication channels application. In addition to the three described segments, the model includes business strategies created by the seller, whose aim is to increase sales and build consumer trust. The model allows for varying the input variables that simulate the effects of implementation of different business strategies, primarily those referring to price changes and product quality attributes. The model also helps track the effects of Internet marketing as a business strategy segment.

In the observed simulation model, the prospective consumers go through all the stages of online purchase. They first find the B2C online shops of interest, then they search for information on the products, form their own opinion of the product and/or service (utility function) and finally make a decision to buy (regardless of whether these are

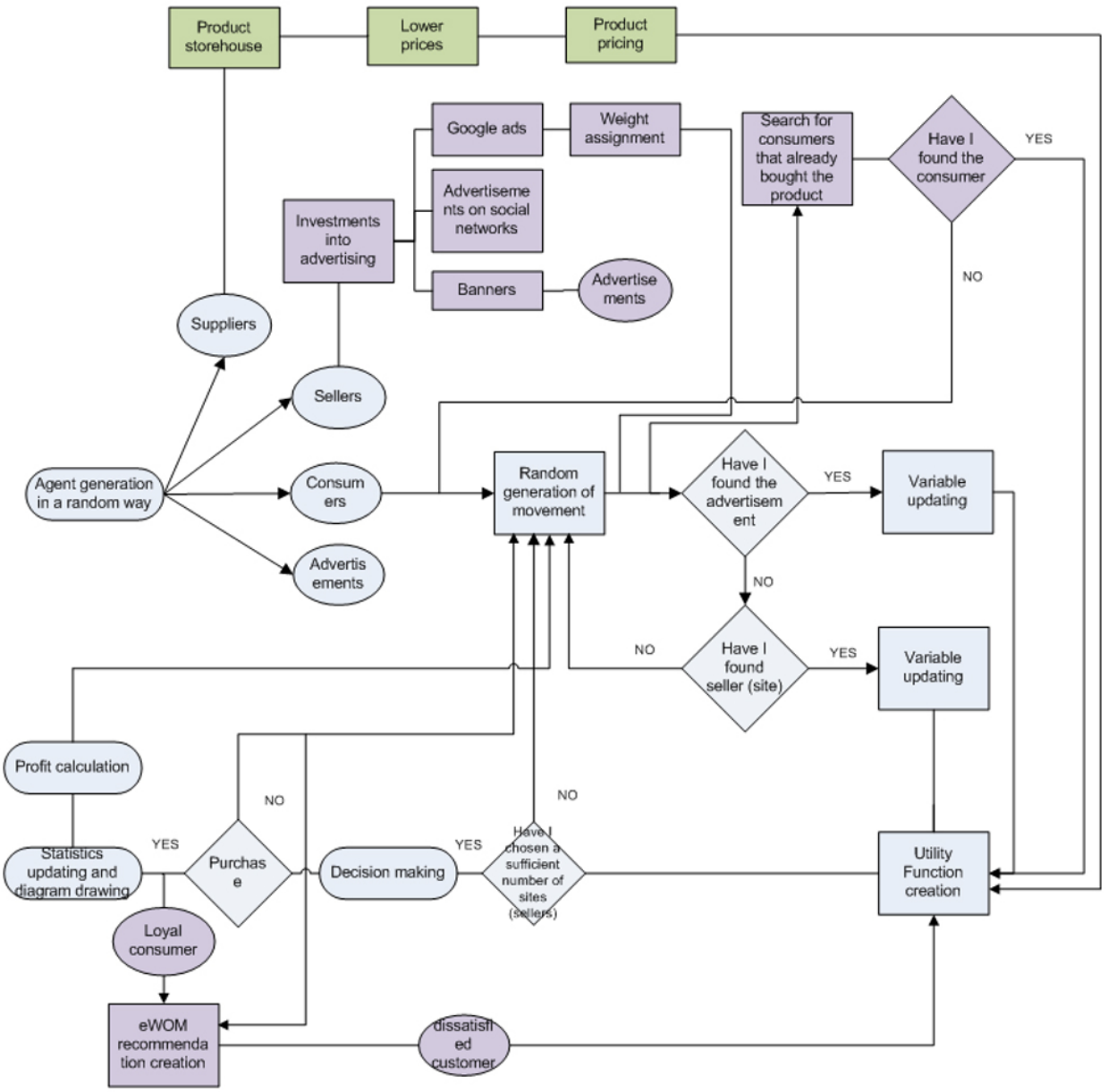

Figure 2: Graph of online purchase flow process in the simulation model (Colours are visible only in the internet version of the paper at http://dx.doi.org/10.1515/orga-2016-0010)

consumers that buy only once or consumers that remain loyal after their first purchase).

Figure 2 shows the basic steps in the simulation model, blue boxes represent the basic simulation flow. In the first step the simulation model forms a virtual market by generating agents: consumers (ConsumerAgents), sellers-Internet sites (SellerAgents), suppliers (SuppliersAgents) and advertisement agents (BannerAgents), on the basis of input variables.

The Consumer Agent models an individual consumer and his/her purchasing habits. The model can observe the behaviour of each individual consumer or a group of consumers. It is of key importance that we identify consumers with similar behaviours and needs and segment them for the purpose of targeted marketing campaigns (Klever, 2009). Agents that represent consumers in the model are generated by categories (on the basis of classification in (Moe 2003; Moe and Fader, 2002), and depending on their intention when visiting an online sales site:

1. **Direct consumers:** they visit the website with the intention to purchase a particular product; they rarely leave the website without having purchased.
2. **Consumers who search/reason:** they generally intend to buy a product from a certain category; it is possible that they make their purchase after several visits and comparisons with other websites and shops.
3. **Hedonic browsers:** initially, they do not intend to purchase a product; if made, a potential purchase is exclusively the result of stimuli from the site.
4. **Information gathering visitors:** visit website to gather information without any intention of buying.

The ConsumerAgents are assigned colours so that their behaviour in the model should be tracked separately. In generating ConsumerAgents, each agent is assigned characteristics shown in Table 1.

The Internet sellers (B2C e-commerce websites) are modelled as SellerAgents. The model presumes that each sales website sells one brand, and the seller is assigned a particular colour for the purpose of identification and visual tracking in the model during the experiment. When generating at the beginning of the simulation, agents are randomly assigned attributes shown in Table 2.

In addition to consumers and sellers, the model includes SupplierAgents, which are also generated at the beginning of the simulation, under the assumption that they have an unlimited storage of products. One supplier is generated for every brand and is assigned the same colour as the respective SellerAgent.

The fourth type of agents are BannerAgents. They

Table 1: ConsumerAgents input parameters

Label	Definition	Value	Distribution
G_i	i-th ConsumerAgent gender	input variable	Random 50%
A_i	i-th ConsumerAgent age	input variable	(18 + random 60)
I_i	i-th ConsumerAgent income	input variable	(5 + random 10)
RS_i	i-th ConsumerAgent sensitivity to website rating	input variable	Random (0-1)
K_i	i-th ConsumerAgent sensitivity to product price	input variable	Depends on I_i – wealthier consumers are less sensitive to price
W_{ij}	i-th ConsumerAgent sensitivity to a particular product attribute	input variable	Random (0-1)
ADS_i	i-th ConsumerAgent sensitivity to advertisements	input variable	Random (0-1)
Ft_i	i-th ConsumerAgent sensitivity to other agents – consumers' decisions	input variable	Random (0-1)

Table 2: SellerAgents input parameters

Label	Definition	Value	Distribution
brand_seller	type of brand sold by SellerAgent		Random
cbrand-price	initial product price	input variable	Random(0-100)
sales-volume	number of sales	output variable	
R_i	site rating	site rating by consumers +1 = positive, -1 = negative	
Find me	initial search weight	input variable	Random(0-100)

serve to model the effect of Internet advertisements (banners) on purchase decision-making. When they are generated, they are assigned the colour on the basis of which they are tracked in the simulation experiment.

Upon generating agents and forming a virtual market, ConsumerAgents start searching for and evaluating products. The search is carried out via agents' random surfing through virtual market where they interact with other ConsumerAgents, SellerAgents and BannerAgents. With the proposed model it is possible to observe the effects of different strategies of SellerAgents on the effects of Internet sales.

Purple boxes on Figure 2 together with the basic model (blue boxes on Figure 2) show the model that takes into consideration different business strategies of Internet advertising. The development of social networks and Google services resulted in B2C e-commerce companies predominantly using these channels to market their products today. Customers with previous experience with online purchases display a tendency to share both positive and negative experiences about the purchase they made (eWOM effect) (Godes and Mayzlin, 2004; Said and Drogoul 2002). When making a decision on purchasing a certain product, a negative comment is 7.5 times more important in comparison with a positive comment (Dellarocas, 2003; Harrison-Walker, 2001). The model employs the following marketing tools:

- eWOM (interaction with other agents).
- Search weight (weights on the basis of which agents search the websites);
- Advertisements with banners (BannerAgents);

While surfing, the ConsumerAgent randomly finds Internet websites (SellerAgents). Finding different sellers may be entirely random or affected by search weight attributed to certain SellerAgents (input parameter of the model) to which the ConsumerAgent react. The model also allows for simulating a better "visibility" of the website on the Internet by generating the larger number of ConsumerAgents of a particular colour. Apart from finding SellerAgents, ConsumerAgents can conduct interactions among themselves in a given radius (input parameter of the model) while surfing through a virtual market and sharing positive and negative comments about products (eWom effect).

The basic model presented in Figure 2 (blue boxes) can be expanded for the purpose of observing a business strategy related to promotional price reduction (green boxes on Figure 2). Promotional prices are among the most important attributes affecting a consumer's decision to purchase online. Although investments into promotional campaigns of reducing prices have a positive effect on the increase in sales, they can in turn reduce the company's profits to a significant extent (Bailey, 1998; Michael and Sinha, 2000). When consumers expect price reductions and promotional campaigns to become a usual practice, they are reluctant to purchase goods that are not on promotional sales.

3. Components of utility function

The consumer's utility function is created on the basis of information the ConsumerAgent collects on a product and in interactions with other consumers. At the beginning of a simulation it is possible to define the lowest utility function value below which the ConsumerAgent never makes a pro-purchase decision. Suppose that N brands were present at a virtual market. If we view incentives as independent variables, and character traits as coefficients of these independent variables, we can define the function in the following manner:

$$U_i = P_i + A_i \quad (1)$$

where:

U_i - function of ConsumerAgent as regards product *i* (*i* = 1 to *N*).

P_i - ConsumerAgent rating of the *i*-th product price and quality.

A_i - effect of *i*-the product marketing campaign on ConsumerAgent.In product rating consumers usually compromise between what they get by purchasing the product and how much money they give in return. The model observes price as one product attribute and product quality as the other, integrating all the aspects of product quality.

$$P_i = C_i + EQ_i \quad (2)$$

where:

P_i - ConsumerAgent's rating of the *i*-th product price and quality.

C_i – ConsumerAgent's sensitivity to the *i*-th product (brand) price.

EQ_i – ConsumerAgent's sensitivity to the *i*-thproduct (brand) quality.

The value of coefficient C_i shows the effect of product price on the ConsumerAgent's attitude towards purchasing the given product. As a rule, higher prices tend to have a negative effect on consumers' motivation to buy a certain product. The distributed model of sensitivity to price (Kim et.al 1995) suggests that a lower price of a product generates a lower sensitivity to product price in a ConsumerAgent. Sensitivity to price can be expressed as follows (Zhang and Zhang, 2007):

$$C_i = -\alpha P_{ri} - P_{ei} + k \quad (3)$$

where:

α – consumer's rating ($\alpha > 1$) versus the real price of the observed product;

P_{ri} – price of the *i*-th product;

k – constant for ConsumerAgent which depends on socio-economic attributes (better-off consumers are less price-sensitive);

P_{ei} – expected price of *i*-th product; this parameter is difficult to define so it will be replaced by a mean value of all the products in the observed category P_{ave}

$$P_{ei} = P_{ave} = \frac{1}{N}\sum_i^N P_{ei} \quad (4)$$

So that after the replacement we obtain:

$$C_i = -\alpha P_{ri} - P_{ave} + k \quad (5)$$

The next key attribute the consumer-agent rates is the product quality. The coefficient Q_{ij} denotes the coefficient of *i*-th consumer-agent sensitivity to *j*-th product price. Sensitivity to quality is a multidimensional variable since the brand, that is, the product may have a number of quality aspects. Assuming that product *i* has *m* quality aspects, and on the basis of model shown in (Jager, 2008), ConsumerAgent's rating of *i*-th brand can be calculated as follows:

$$EQ_i = \sum_{j=1}^{m} \beta_{ij} Q_{ij} \quad (6)$$

where:

Q_{ij} – *j*-th quality aspect for brand *i*;

β_{ij} – weight of *i*-th quality aspect for brand *j* (value ranging between 0 and 1).

The next element of utility function regards the consumer-agent sensitivity to eWOM effect as well as sensitivity to marketing campaigns. Analytically, it can be expressed as:

$$A_i = \alpha_i W_i + \beta_i B_i \quad (7)$$

where:

A_i – effect of *i*-th product marketing campaign on ConsumerAgent.

α_i – ConsumerAgent's sensitivity to eWOM effect for product *i*;

W_i – effect of other ConsumerAgents on decision to purchase *i*-th product.

β_i – ConsumerAgent's sensitivity to brand *i* marketing (value ranging between 0 and 1);

B_i – number of banners for brand *i* ConsumerAgent sees during his Internet surf.

Effect of the exchange of knowledge and information on the product between the on ConsumerAgent can be calculate as:

$$W_i = N_i/N \quad (8)$$

where:

N_i – number of ConsumerAgents in the ConsumerAgent's surroundings who use product *i*;

N – the total number of ConsumerAgents in the ConsumerAgent's surroundings.

Effects regarding positive and negative recommendations after purchasing is possible to be calculated in the following way (Aggarwal et.al., 2012):

$$W_i = (E_p^{\,2} - E_p E_n) / (E_p + E_n)^2 \quad (9)$$

where:

E_p – number of positive rates of interaction.

E_n – number of negative rates of interaction.

ConsumerAgents rate their interaction with seller-agents following each purchase made. The percentage of negative comments is an input parameter into a simulation model and is a subject of calibration in the simulation experiment.

The model also observes the interaction between ConsumerAgents and BannerAgents that represent banners on the Internet. ConsumerAgent's sensitivity to marketing campaigns (banners) can be determined as follows:

$$B_i = R_i / R \quad (10)$$

where:

R_i - number of BannerAgents of brand *i* in the BannerAgent's surroundings.

R - total number of BannerAgents in the ConsumerAgent's surroundings.

Simulation model uses utility function as basis for the purchase decision making. All the incentives in the model are viewed as variables that can be changed with every other experiment. The process of evaluation of all impact parameters and their ranking for the purpose of purchase decision making is modelled by the utility function. In the simulation experiment it is possible to consider or exclude each of the four members of the utility function. In this way it is possible to test all influential factors separately or in any mutual interaction.

4. Simulation experiment

The observed simulation model is implemented in the NetLogo software. It was subjected to a number of experiments and data are collected for an analysis of the behaviour of B2C *online* sales system. The basic indicators of B2C sales site business that were observed are market share and the number of visits on the website (surf share). At the beginning of simulation ConsumerAgents, ConsumerAgents and BannerAgents are generated, as described earlier in the paper. The simulation ensures that impact factors from the utility function, which affect the consumers' behaviour, are observed separately.

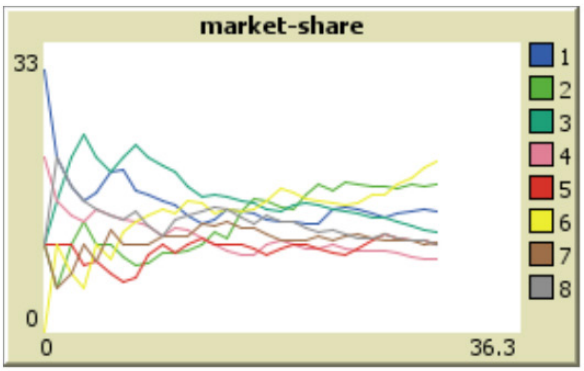

Figure 3-a: GraphvOM effect on market share

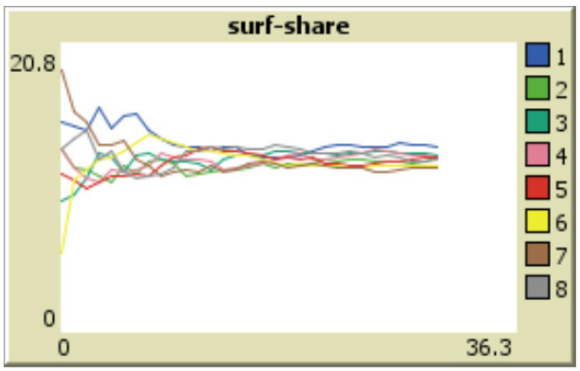

Figure 3-b: Graph: eWOM effect on surf share

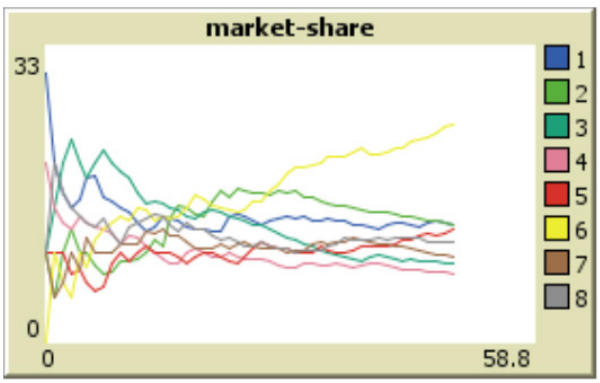

Figure 4-a: Graph: BannerAgent effect on market share

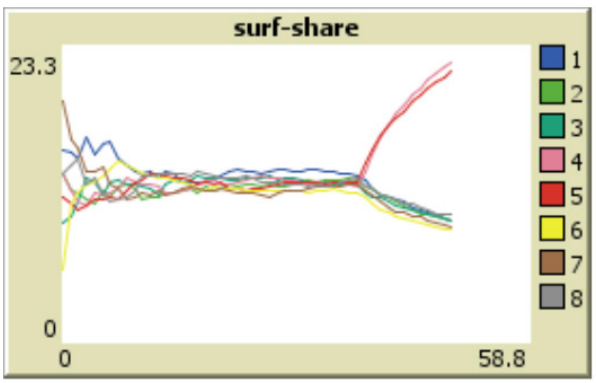

Figure 4-b: Graph: BannerAgent effect on surf share

In the initial simulation experiment all types of products are assigned the same price in the amount of 100 monetary units, as well as the same quality level. Thus all the Internet sites have the same initial conditions for business. For every purchase the ConsumerAgents contact four websites (SellerAgents) in their surroundings. This number is an input parameter and can be changed depending of the scenario we wish to test. After an initial oscillation, the SellerAgents' market share stabilizes and that both visits and sales are almost evenly distributed across SellerAgents. This is an absolutely expected result given equal initial business conditions set in the model and, in a certain way, may be used in model verification.

In the next stage of the simulation experiment we observed the effect of eWOM on the output variables of the model. The graph in Figure 3-a[1] shows that the sales of, in that time, best-sold products (yellow and green) increased most rapidly. The price of the products remains the same and so does the quality, however, consumers most often "comment" the best selling products, which further improves their sales. The intensity of the eWOM effect, depending on the selected scenario, can be adjusted through the "choice-neighbours-buyers" input parameter that determines the radius in which ConsumerAgents follow other ConsumerAgents who have already purchased the observed product. The broader the radius, the more powerful the eWOM effect on the utility function. In case of eWOM effect on increase of surf share, it can be concluded that this effect is of minimum importance, as shown in the graph in Figure 3-b.

In the following stage of the simulation experiment we include the effects of product marketing through BannerAgent generation. In this iteration, 20 banners were generated for pink and red products, and the click-through-rate (CTR) was set at 10%. The 10% coefficient for CTR is unrealistically high (in practice, this coefficient normally amounts to 4%), however, we did this to illustrate the sensitivity of the model to an abrupt rise of this coefficient (Figures 4-a and 4-b).

Now we notice that the surf share on websites that sell the "pink" and the "red" products has increased significantly in comparison with the competition (Figure 4-b). However, even though the sales of the "red" product increased slightly, this type of advertising had no effect on the increase in the "pink" product sales. This can be explained by the fact that the "pink" product has so far had

[1] Colours are visible only in the internet version of the paper at http://dx.doi.org/10.1515/orga-2016-0010

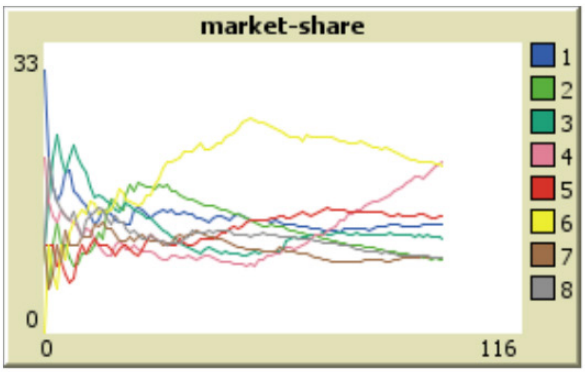

Figure 5-a: Graph: SellerAgent search weights effect on market-share

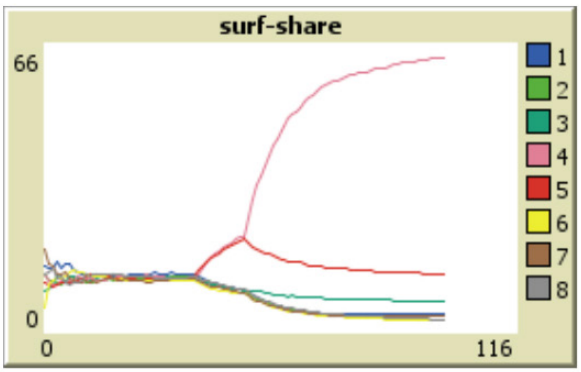

Figure 5-b: Graph: SellerAgent search weights effects on surf-share

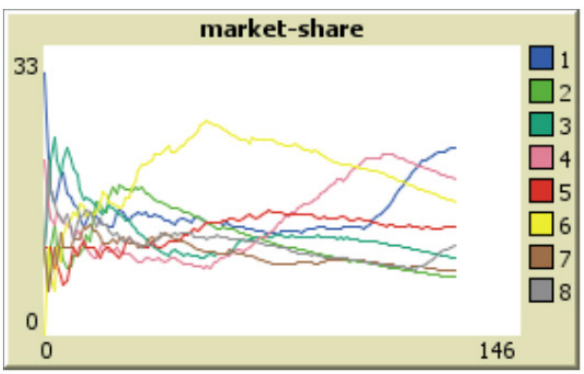

Figure 6-a: Graph: Effect of price and quality change on market share

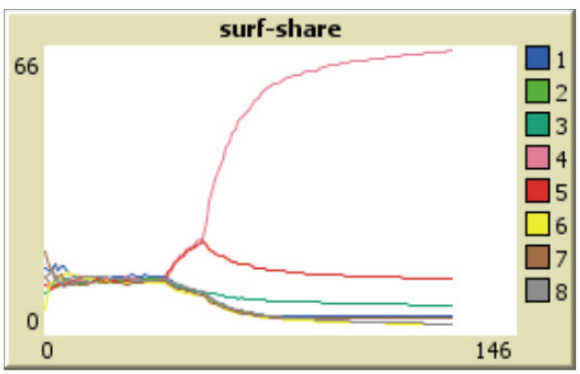

Figure 6-b: Graph: Effect of price and quality change effect on surf-share

the smallest market share (Figure 5-a), hence the eWOM effect on it was modest, and the applied level of marketing has not been powerful enough to alter the situation to a more significant extent. In this way it is possible to test different business policies related to the effects of internet marketing by way of banners.

Upon discontinuing the simulation, the experiment continues to test the effect of increasing the "visibility" of the website through increasing the ratings on the browsers. We will increase the "visibility" of SellerAgents by assigning weights for their search. At the same time we define the number of websites randomly searched with these weights. We will now assume that a majority of consumers browsing the Internet will check a certain number of top-ranked sites from the list of offered sites (in this experiment we will choose three), while in further browsing they choose the remaining sites randomly. The number of websites browsed on the basis of search weights and of those browsed randomly are input variables into the simulation model.

Figures 5-a and 5-b show that in this case, again, the number of visits to sites increases, as well as their sales after a certain time. We can draw a conclusion that investment into a better visibility of a site on the Internet increases the number of visits and sales to a larger extent in comparison with marketing via banners, which should be taken into consideration when planning the site promotion costs.

In the final stage of the observed simulation experiment we test the effect of the product price and quality change on the online sales. The prices of the best-selling "pink" and the second best, "yellow" products increased by 5% and 3%, respectively, whereas the price of the worst-selling, "grey" brand decreased by 5%. Simultaneously, the quality of the "blue" product improved by 5%, and that of the "red" product improved by 3%. Effects of these changes can be seen in the graphs in Figures 6-a and 6-b.

We can see from the graphs in Figures 6-a and 6-b that these relatively small changes in prices and quality do not have an immediate effect on the sales of the product, however, sales still improve over time. The increase in sales of the "red" product on the basis of improved quality is somewhat slower, though. This may be a result of relatively slack marketing activities of the observed Internet seller, but also of the time required that the improvement of the

product quality on the market should have a beneficial effect on sales.

The analysis of the obtained results proves that the model is capable of simulating various business policies and market effects on online B2C sales. We began the first simulation experiment with equal conditions of sale for all online shops, whereby we achieved a market balance with similar numbers of visits and sales for all SellerAgents. We continued the experiment to test the business policies of on-line promotion, product price variations, product quality variations and variations in the quality of the Internet site.

5. Conclusion

The research proves that the methodology of agent-based simulation and modelling can be successfully implemented in modelling and simulation of processes on online markets. It also shows that the results obtained can be successfully used to analyse the behaviour of such markets and monitor the effects of different business strategies of online sellers on generated sales, site visits and other success indicators in doing business in the e-commerce domain.

For the needs of this research a simulation model was developed in the NetLogo, software that enables us to monitor the key interactions of the core players on the online market. The generated agents who present the dynamic entities of the model are assigned attributes based on empirical and theoretical data retrieved from the B2C online market. Thus the online market managers are provided with the tool to investigate into the impacts and effects of implementing their own business strategies and strategies to the market flows.

The interactions of agents that make up this model are sublimated in the utility function that provides the basis for decision-making in the model. The rules of behaviour and interactions, included in the model through the utility function, denote the complexity of the decision-making process which occurs in evaluation and purchase of products in the part of B2C e-commerce. The utility function is comprised of two components. The first component relates to the price and the quality of the product. The second part implements the effects of different marketing activities of agent-sellers on B2C markets, whereby special attention is devoted to eWOM effects. The simulation model enable to monitor all interactions between the SellerAgent, ConsumerAgent and BannerAgent by generating the indicators of B2C site business performance (market shares and frequency of sites visits). It enables the model users to test different business decisions and monitor the behaviour of sellers, suppliers and consumers on sites dealing with B2C e-commerce.

The rules of behaviour and interactions included into the model stress the complexity of the decision-making process in product evaluation and purchase in the B2C e-commerce segment. The observed simulation model includes a broad range of impact variables whose aim is to model all the relevant aspects of consumer behaviour and explain their method of decision making when purchasing on-line. Of course, as well as any other model, the observed model does not pretend to take into consideration all the real components affecting the consumer choice, however, a careful choice of the utility function components provides for summing up all the key elements that can significantly affect consumers' attitudes and decisions. Such an approach to consumer behaviour modelling is founded on the conceptual model of consumer behaviour established on research and theoretical grounds provided by numerous works in the areas of marketing, psychology, philosophy, management, economics and other related disciplines.

We can conclude that the designed e-commerce simulation model is a tool that ensures a better insight into the question of consumer behaviour on the Internet, and the companies engaged in e-commerce in the B2C segment now have a tool that can help them better understand their consumers, improve market segmentation, improve the business profitability and test their business strategies. As shown in the above discussions, consumer decision making on the Internet is the subject of continual study, therefore, new insights and approaches are certainly out there, waiting to be explored, which opens a broad area for further study.

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Analiza interakcije ključnih deležnikov na B2C e-trgih - modeliranje in simulacija z uporabo agentov

Izhodišče / namen: Članek obravnava uporabo AMB metode modeliranja, ki temelji na uporabi agentov in simulacije, in analizira vedenje kupcev na B2C poslovnih spletnih straneh, kot tudi analizira posledice različnih poslovnih odločitev na prodajo na spletu. Hiter razvoj in dinamika na področju e-poslovanja zahtevata uporabo naprednih orodij odločanja. Ta orodja mora biti sposobna v kratkem časovnem obdobju obdelati velike količine podatkov, pridobljenih s sistemi za e-poslovanje in omogočili uporabo pridobljenih podatkov za pripravo kakovostnih poslovnih odločitev.
Metodologija: Uporabili smo metodo simulacije, ki temelji na agentu, kar lahko bistveno poveča hitrost in kakovost odločanja v elektronski trgovini. Modeli so bili razviti za potrebe te raziskave, so namenjeni izboljšanju uporabe praktičnih orodij za oceno B2C spletnih prodajnih sistemov, tako, da omogočajo raziskati posledice različnih strategij v upravljanju e-prodajnega mesta, glede na obnašanje strank, obiske spletnih strani, obseg prodaje, prihodek, itd.
Rezultati: Razvili smo simulacijski model, ki temelji na agentu, in omogoča spremljati interakcije ključnih deležnikov v spletni prodaji: obiskovalcev strani - bodočih potrošnikov, prodajalcev z različnimi poslovnimi strategijami in dobaviteljev.
Zaključek: Simulacijski model predstavljen v tem prispevku se lahko uporablja kot orodje, da si zagotovimo boljši vpogled v problematiko vedenja potrošnikov na internetu. Podjetja, ki se ukvarjajo s B2C e-poslovanjem, lahko uporabijo rezultate simulacij, da bi bolje razumeli svoje potrošnike, izboljšali tržno segmentacijo in donosnost poslovanja in preverili svojo poslovno politiko.

Ključne besede: *AMB, B2C, e-poslovanje, spletne strani, vedenje odjemalcev*

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Key Factors for the Successful Operation of Clusters: The Case for Slovenia

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Background and Purpose: Companies are increasingly specializing and developing those key areas with which they can compete on the global market and are linking in clusters that are ingredient of territorial competitiveness. Clusters can play a competitive role in global value chains but once being successful, they may decline. For this reason, researching key factors for the successful operation of clusters in Slovenia is beneficial.
Methodology: This study is based on an extensive review of scientific literature. Theoretical findings are tested by a study of clustering in Slovenia. In practice, we determine the number of operating clusters fifteen years after they were initiated by the institutional environment with help of web pages, e-mails and telephone calls. Using interviews, we determine reasons for the cessation of operations on the part of former directors and factors of successful operations with directors of successful clusters.
Results: The institutional environment initiated start-up processes of creating clusters in Slovenia. After the termination of institutional financial support, Slovenian clusters, which have failed to develop their own financing system, ceased operation. Directors of still operating clusters confirmed that trust between cluster members is the most important success factor in the operation of clusters.
Conclusion: The institutional environment in Slovenia adopted cluster policy and successfully leveraged the establishment of clusters using start-up financing. Less than half of these clusters continue to prosper under their own stream after policy retreatment. Clusters were not prepared for a dramatically different way of working. Trust has become a major driving force of adjusting to new conditions.

Keywords: *network organizations, key success factors, clusters, Slovenia*

1. Introduction

Globalization is profoundly changing the business environment and leading company managers to face new challenges, as well as demands to analye and reevaluate the strategic directions of their companies and the methods and forms of their operations (Gajšek and Kovač, 2015; Kovač and Gajšek, 2014). Companies are finding that their knowledge, capabilities and other elements are often insufficient in developing their own competitive advantage. As the business environment continues to become increasingly competitive, companies and other organizations will establish and maintain their competitive edge not only by optimizing their own capacities, but also and especially with the ability to utilize the resources of other companies and their connectivity within a comprehensive business process (Sroka, Cygler and Gajdzik, 2014).

The need to integrate companies and bring together their potential arises from the demands of the global market to achieve price, time and quality competitveness. Individual companies cannot keep up with these demands alone. Companies are therefore becoming increasingly specialized and are developing those key areas with which

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they can compete on the global market. On the basis of these specializations, companies are integrating into network organizations (Milberg and Schuh, 2002, p. 21; Josserand, 2004, p. 3; Kieser and Walgenbach, 2010, p. 2; Bleicher, 2011, p. 56; Gassmann et al., 2014, p. 35; Oczkowska, 2015, p. 24).

Connectivity among individual companies does not only take place for the purpose of achieving competitive advantage on the basis of optimizing a process that creates added value. At the forefront are also demands to include the customer or user in the process of creating new value. The linear sequence of individual stages of the process to create added value is therefore increasingly shifting into an extensive vertical and horizonal network of interconnections among various companies, other organizations and individuals that collaborate in the entire added value chain (Prahalad and Ramaswamy, 2004, p. 96; Everett, 2011, p. 1). This allows competitors to develop mutual interconnections in individual areas of common interest and to shape a network connection in a narrow segment of the process to create new values (Gibbert and Durand, 2007, p. 3).

Different forms of connectivity among companies and other organizations that demonstrate the characteristics of networking have been familiar to us for a substantial period of time. However, over the last decade, network forms have gained new momentum (Gulati et al., 2000, p. 204; Kovač, 2001, p. 214). The aforementioned environmental factors as well as the development of information-communications technologies have contributed to a large expansion of different forms of networking among organized groups. There is also mutual interaction between demands of the environment – in the first place, demands placed on the market (market pull), which under the influence of globalization trends and structural changes and the possibilities of new information and communications technology (technology push), demand and enable companies and other organizations to establish new, more flexbile forms of network organizations (Rohde et al., 2001, p. 1; Steinmann and Schreyögg, 2005, p. 145; Rozman and Kovač, 2012, p. 264).

A well-known author in the field of business studies, Gomez had in 1992 already noted that network-organized companies and other organizations represent a new stage in the evolutionary development of the organization of companies and are bringing a renaissance to the field of organization theory (Gomez, 1992). Kelly (1998) has also defined the network organization as the dominant organizational form of the present and future. Since his writing, his prophetic thoughts have been confirmed. In the business environment, also in Slovenia, we are increasingly faced with different forms of network organizations and networking among organizations that have a tendency of constant expansion.

The basic characteristics of network organizations are the following (Winkler, 1998, p. 2; Vahs, 2005, p. 507; Gibbert and Durand, 2007, p. 172; Kieser and Walgenbach, 2010, p. 289; Bleicher, 2011, p. 322; Hatch, 2013, p. 283):

- represent a specific form of cooperation among organizations;
- the bearers of connectivity and cooperation can be very diverse: groups within organizations, organizations and/or groups of organizations;
- mutual coordination among individual bearers takes place with the help of hierarchical as well as market conditions;
- there is a mutual connection and common interest among bearers;
- trust represents an important element of coordination among the bearers of connectivity;
- organizations connect with one another both vertically and horizontally;
- participating organizations can be economically independent;
- an independent institutionalized organization form or simply an informal organization can be formed for the cooperation and operation of the network;
- information-communications technology represents an important element in networking and cooperation;
- complex mutual relations are established in various fields (information, human relations, technology, finance, etc.);
- there exist both dynamic and stable connections;
- the fundamental characteristics are: decentralization, diffusion of power and competence in decision-making.

Organizations can link due to very different goals and interests. This means that network connections can be found among profit as well as non-profit organizations.

Competitive clusters help cities, regions and countries to meet the socio-economic challenges of globalisation (European Commission, 2008). Therefore, they are an ingredient of territorial competitiveness. Studies and empirical evidence, while showing that clusters, once being successful, may decline. For this reason, researching key factors for the successful operation of clusters is beneficial.

Below, we first describe the theoretical background and state research questions. Answers are provided by literature review, case study and interviews with directors of Slovenian clusters. The aims of the literature review are to define the mechanism for the occurrence of clusters, collect basic data on established clusters and develop a ranking of key success factors for the operation of clusters.

2. Theoretical Background

One of the best known and widespread forms of network organizations are clusters. Their common feature is a regional network of connections. A feature of regional

network connections is geographical orientation and limitation (Kovač, 2011, p. 221). Strategic network organizations are often transnationally organized. Regional networks link small, medium and large companies with the aim of connecting resources and capabilities in a specific area of operation.

As a form of network connection among organizations, clusters have also been established in Slovenia. Within Slovenia, most clusters are networks among companies within a particular sector. There are, however, few regional clusters. This is also a consequence of the smallness of the Slovenian space and of trends in this field.

An accelerated establishment of clusters began over thirty years ago by connecting companies within individual geographical areas. In the nineties, clusters underwent new momentum and a real boom in development that extended beyond a regional form of networking. During his period, clusters became established in the areas of sectoral, multi-sectoral and regional integration. The most typical regional networks may be found in northern Italy (Emilia Romagna), southern France, America's Silicone Valley, etc. (Staehle, 1999, p. 746). Clusters drew on the findings and initial design of supply chains that had been established much earlier and that may also be classified in the group of non-capital contractual forms of networking among organizations (Kovač, 2011, p. 222).

The theoretical bases for understanding the functioning of clusters may be found in the earlier works of Marshall (1920) and in Early Theories of Agglomeration Economies (Felzensztein et. al., 2014, p. 838).

The concepts of co-partnerships, social elements of proximity, marketing and co-operation among industries are highly inter-related, as external economies or externalities – the economies of scale benefits derived from industrial location– are not confined to the company.

Substantially better known than Marhall's definition of clusters is the theoretical justification found in the works of Michael Porter. In his work, ″The Competitive Advantages of Nations″ (1990), Porter highlights the degree, level and stimulation of inter-company connections as an important element in achieving competitive advantage of the economies of individual countries. Even in his later works, Porter highlights regional clusters as a form of informally connected companies that link and work together while they also compete with one another (Porter, 1998). Both specialized suppliers and companies from particular fields, related institutions (agencies) engage in networking for the purpose of shaping competitive advantages that are difficult to replicate and are unique in their respective field of activity.

Individual authors define the term 'cluster' in different ways. From the various definitions, we can find the following common features of clusters (INNO Germany AG, 2010, p. 11):

- a geographical concentration of companies that are interconnected (Porter, 1998) by being a part of the same industry or supply chain, by a common resource or market, by a similar philosophy, by facing similar opportunities and challenges;
- a critical mass (Andersson et al., 2004, p. 28) of actors, resources, competences (in absolute terms - in relation to cluster competitors in other regions – but also in relation to other cluster candidates in the respective region) in order to sustain interaction between the cluster actors in the long term and to attract new members, and
- existing interaction *and* cooperation of companies (EC 2008). "These carry marked features of both competition and cooperation." (Andersson et al., 2004, p. 28).

As the authors note (Felzensztein et al., 2014, p. 838) - clusters provide general benefits to companies in relation to value chain inputs or aspects of production processes such as collective learning and resource leverage (Malmberg, Solvell, and Zander, 1996). While natural resource endowments are critical for regional development, the ability to add value within clusters in ways that produce superior results in international markets is even more significant (Perez-Aleman, 2005).

3. Research questions with argumentation

We stated research questions to guide and center research. Our goal was to answer on three research questions on the theoretical basis explained below and a review of documents that accompanied the development of clusters in Slovenia. First research question is as follow:

RQ1: How did the institutional environment influence on start-up processes of creating clusters in Slovenia.

Institutional theory researches the relationship between companies and the institutional environment in detail (Mihelčič, 2011, p. 146). It presupposes that a social framework of rules, values and expectations forms a significant component of the impact of the institutional environment on companies and their: organizational structure, role, acts or processes, and systems. The institutional environment can stimulate or inhibit a company's business activities. In any case, companies need to adapt to the institutional conditions in which they operate (Hatch, 2013, pp. 74-76).

With respect to clusters, we observe a widespread practice that the institutional environment establishes mechanisms to accelerate the processes of the formation of clusters. A similar process is dictated by theory. For example, Porter had stressed in his works (1990; 1998) the necessity of introducing appropriate institutional measures

to accelerate the development and operation of clusters in a given region. Thus, in the European Union (as an institution) and at the level of the member state, an intensive process of creating various institutional initiatives has taken place since 1990, in order to facilitate the processes of cluster creation (Jappe-Hienze et al., 2008; INNO Germany AG, 2010).

Today, clusters are rarely mentioned in Slovenian public and academic media. Their existence is not widely known to non-experts. We assume that their obscured and reduced operation is related to the termination of institutional financial support. To deepen the understanding of this phenomenon, the following research question has been stated:

RQ2: Did clusters, which have failed to develop their own financing system, after the termination of institutional financial support manage to provide another source of funding?

Literature mentions several success factors for the operation of the clusters. We would like to collect and classify them according to their importance. We assume that some of them are of greater importance than other. Perhaps the importance of specific success factor can even change when cluster reaches higher phase on lifecycle. We suppose that trust between cluster members is essential although it is a concept that is hard to observe and measure (Sroka, 2011). The third researched question is like follow:

RQ3: Which are the most important success factors for the operation of the cluster and how are ranked by importance?

Renowned researcher of clusters and faculty member of Michael E. Porter's Institute for Strategy and Competitiveness of Harvard Business School, Christian Ketels identifies the following four key factors:

- geographical proximity (regional), which enables the logical grouping of companies and the integration of their resources;
- "critical number" of cluster members;
- interaction (content complementarity) between cluster members in terms of the use of technology or market segments;
- willingness of cluster members to cooperate (Ketels, 2011; Porter and Ketels, 2009).

Lorleberg et al. (2010), Koschatzky (2012) and Meier zu Köcker (2012) also came to very similar conclusions about key factors in the successful operation of clusters. Based on these studies, we may conclude that there are additional success factors to the above four. These may be divided using a content analysis on internal and external success factors. For external factors, it is characteristic that cluster management does not have impact on them. External success factors are:

- institutional incentives,
- infrastructure development level,
- the availability of qualified personnel,
- market development level,
- competition,
- demand and similar.

Unlike external success factors, internal factors are subject to the influence of cluster management. Internal success factors are:

- development of a common vision and strategy,
- defining common areas of operation,
- designing organization and a common organizational culture,
- creating a common information infrastructure and similar.

However, in all the mentioned studies, we have traced that the establishment of a high degree of trust between cluster members is a prerequisite for the construction of all the mentioned factors (Lorleberg et al., 2010, p.28). Irrespective of how effective the strategy or IT infrastructure might be, without trust, the successful operation of clusters is in question

4. Methodology

In the empirical section, we explore the development of clusters in Slovenia and factors for their successful operation fifteen years after the establishment of the first Slovenian clusters. Researching clusters within Slovenia makes sense from the perspective that all observed clusters operate within the same institutional environment. The study was conducted in three stages, namely using a literature review, verification of the functioning of clusters and interviews.

Firstly, we examined literature on the development of clusters and their evaluation in Slovenia. The literature review is largely based on national sources of the Ministry of Economic Development and Technology of the Republic of Slovenia and the Slovenian Chamber of Commerce.

To answer on the second research question, the first phase was followed by checking on how many clusters are still operable after fifteen years. An inquiry was conducted with the help of clusters' websites, e-mails and phone calls. Internet and newspaper publications indicated that four clusters from sixteen did not function. Those four clusters did not response to our e-mails and phone calls. We recognized six additional inactive clusters. Former Managing Directors of those six clusters explained, by e-mail or phone, the reasons for the suspension of operations. They were not involved in interviews that followed with director of operational clusters. They provided only e-mail

responses on reasons for the suspension of operations. We interviewed five of six Managing Directors of successful Slovenian clusters that still operate. Interviews were based on structured questionnaire. Five interviews were conducted from April to October 2015. One interview could not be completed due to occupancy of the Director. The questionnaire for interview consists of four sections, with sub-questions. Section General data consists of nine open sub-questions about the cluster name, address, year of establishment, founders, registered activity, number of members, key factors for establishment, a cluster's legal status, revenue and growth rates, a strategic plan, number of employees in the cluster and number of employees in member organizations. The Section Organization and managerial process consists of four open sub-questions about the job title of the interviewee, a cluster's organization structure, a cluster's management and management processes. The Section Cluster's areas of operation and performance consists of one open sub-question about a cluster's business areas and their shares. The fourth section was divided to ten closed sub-questions. To interviewees were offered suggestions on success factors based on a theory and literature review. The strength or intensity of the interviewees' views about the importance of the proposed success factors were measured by a ten-step descriptive scale, namely: 1 - the least important, 10 - the most important.

5. Research Results

5.1 The Development of Clusters in Slovenia and the Results of Past Evaluations

The literature review is largely based on national sources of the Ministry of Economic Development and Technology of the Republic of Slovenia and the Slovenian Chamber of Commerce as initiators. The Ministry of the Economy began a project (mapping study) in 1999 aimed at defining a systematic approach to developing clusters within a project entitled 'Encouraging Company Linkage, Specialization in Production Chains and the Joint Development of International Markets under a Cluster System (Dermastia and Križnič, 2000; Dermastia, 2004). As reported by Jaklič (2003), one of the most important finding was that no "real" cluster actually existed in Slovenia at that time. Cooperation and networking among companies and between R&D institutions, support organisations and companies, was relatively weak. Despite this, some clustering of production and knowledge existed that could form the basis for cluster development. The existing linkages and networking indicated the existence of at least ten potential clusters.

In place of a uniform measure for encouraging cluster development, the Ministry of the Economy thereafter designed a cluster development programme comprising a broader set of measures. The programme was aimed at promoting the cluster concept, acquiring experience and strengthening cluster policy and was planned for implementation over the period 2000 to 2003. Given a lack of experience, knowledge and available instruments in starting up cluster development in practice, the Ministry of the Economy decided to launch pilot cluster development projects. In 2000, the Ministry issued its first call for proposals (UL RS 36-37/2000), inviting groups of at least ten companies and at least three supporting institutions (Blatnik, 2005) to qualify together as a potential cluster nucleus and to work on developing a cluster in conjunction with the Ministry. Cluster support was limited to three pilot projects in the field of the automotive industry, tooling industry and transport logistics (Table 1).

Clusters have been developed with the aim of achieving competitive advantage, higher efficiency, innovation, productivity and expediting commercialization of innovations. From the beginning, they had established formal structure, common vision and development objectives supported by all members. In 2002, the Ministry of the Economy (UL RS 28/2002) supported five additional clusters, representing the so-called second generation of the development of Slovenian clusters (Table 1). In addition to the previously mentioned, the Ministry of the Economy launched a third call for proposals (UL RS 8/2003) and supported the creation of an additional eight clusters, or a so-called third generation of Slovenian clusters (Table 1). Until 2004, 16 clusters actively operated in the Slovenian space (Jaklič, Svetina Cotič and Zagoršek, 2004; the Slovenian Chamber of Commerce, 2010). The Ministry provided 40 per cent of the costs of cluster start-up with the companies involved providing the remaining 60 percent.

The first evaluation in 2002 was based on three pilot projects (Jaklič, 2003). It was designed as a mid-term formative evaluation that would demonstrate how the process of clustering evolved, identify potential problems and analyse the business opportunities of clusters (Cotič Svetina, Jaklič and Zagorsek, 2004). At this time, it was still too early to measure the quantitative effects of clustering. The analysis revealed some problems in promoting the development of clusters or, more precisely, in simultaneously promoting cooperation and competition between cluster members. The observed low level of trust between cluster members seemed problematic. In addition, top management in certain companies was not sufficiently engaged in the process of cluster establishment.

Since the first evaluation was of significant importance for policy learning, the government, in 2004, decided to order an external evaluation of all measures promoting entrepreneurship and competitiveness between 2001 and 2003 (Deloitte, 2004). The mid-term evaluation analysis included 16 clusters supported by the government between 2001 and 2003. Clusters were in different development

Table 1: The First Slovenian Clusters and Governmental Co-financing

Cluster	Number of Employees as Cluster Members	Governmental Co-financing (in million EUR)
1. Generation – established in 2001		
Automotive Industry	1,670	0.6
Tool and Die Development Centre	17,162	
Transport Logistics	14,340	
2. Generation – Established in 2002		
High Technology Products Manufacturers	4,000	1.3
Air Conditioning, Heating, Cooling	3,100	
Plasttechnics Cluster	6,000	
Geodetic Service Providers	900	
Wood Industry	7,288	
3. Generation – Established in 2003		
eAliansa IT Cluster	200	2.6
Environmental Cluster	1,976	
Energy and Power	542	
Small Hotels	300	
District Energy Cluster	1,020	
Consulting Cluster	5,000	
Construction Cluster		
Innovative Textiles	3,000	
Total of 16 clusters with 66,498 employees		

Source: Dovč, 2004; Ministry of Economy, 2004, in Blatnik, 2005.

stages and each with its own development dynamics, which was reflected in the different methods of organization and functioning of each cluster (Jaklič, Svetina Cotič & Zagoršek, 2004). Direct comparisons on performance between clusters were consequently not meaningful. The evaluation design included a collection of secondary data (national statistics databases, cluster reports, articles), focus groups with different stakeholders (e.g. representatives of the Ministries, Regional Development Agencies, cluster managers, company representatives and academia), in-depth as well as structured interviews with cluster managers and structured interviews with company representatives. Three quarters of the clusters agreed that governmental initiative was crucial to cluster formation and nearly all companies planned to continue to actively participate in their cluster after the termination of government co-financing. Participants could already identify the benefits of clustering, mainly in terms of improved communication, increased knowledge transfer and also some quantifiable improvements in terms of increased sales, value-added and export. However, the majority of companies expected major benefits of clustering in the long run and estimated the benefits of clustering to outweigh the costs after six or more years. An insufficient level of trust among members remains one of the main obstacles to clustering. However, the level of trust seemed to be constantly increasing, which was reflected in an increasing number of joint projects, greater number of cluster actors and improved transfer of information. Other obstacles identified by cluster actors were a lack of financial and human resources, insufficient knowledge and skills in network management. The evaluation confirmed the results of the first study, which identified a lack of harmonisation between ministries and other institutions that should actively be involved in regional development.

The evaluation confirmed several success factors for the development of clusters, as listed from most to least important (Jaklič et al., 2004):

- building of trust among members,
- the presence of a conceptual leader in a cluster's de-

velopment process,
- support from top management in member companies,
- active participation of cluster members,
- creation of a joint development strategy,
- a successfully carried out initial joint project.

Among reasons for clustering, the possibility to obtain financial resources from Slovenia, as well from structural and other European funds, dominated.

In 2005, Blatnik (2005) explored success factors for the operation of the Slovenian Automotive Cluster from 2005 onwards. Interviewed cluster members stated the following success factors for further development of clusters, from most to least important (Blatnik, 2005):
- achieving synergies in the area of knowledge enhancement, joint purchasing and marketing,
- active and equal participation and consideration of the opinions of all members, irrespective of their size and strength,
- charismatic conceptual leader with clear vision, strategy and objectives,
- trust among members,
- as many as possible joint development projects with both long and short-term effects,
- financial independence from government incentives.

While financial independence was noted as a less important success factor, the source of financing clusters became a key question following 2005, the answer to which was provided by the continued functioning of numerous Slovenian clusters.

5.2 Factors for the Successful Operation of Slovenian Clusters

Ten years after Blatnik (2005) and fourteen years after the establishment of the first Slovenian cluster, we verified the significance of previous evaluations and, in theory, defined factors for successful operations of Slovenian clusters among five Managing Directors of six operating clusters, as listed in Table 2. The other ten non-operating clusters stated a lack of financial resources for the operation of the clusters as being the main reason for their disintegration.

For all clusters, a milestone event was the termination of funding by the institutional environment. After this governmental decision, the mutual trust, written strategies and objectives of cluster soundness were tested. At least six clusters were able to integrate globally and established external links (European Technology Platforms, related foreign clusters). Eventually, they successfully completed one or more applications to European Union projects and obtained the necessary funds to finance the establishment of an office and basic integrative activities. Project funding does not provide clusters with a stable source of financing. Membership fees range from only 5 to 20% of revenues. Continuously ensuring financing interferes with the primary purpose of clusters' operations and hinders long-term planning. Due to the crisis of the construction sector in Slovenia, contractors further noted that each cluster shares the fate of enterprises in their respective sector.

Most members are active in Shareholders Assemblies. Managing Directors recognized that joint R&D projects are of major priority because their quality performance has a positive impact on enhancing trust among members and raises their self-esteem.

Interviews with Managing Directors revealed that clusters each have their own development dynamics, as reflected in the different methods of the organization and functioning of each cluster. An effort to develop or participate in R&D projects is common to clusters. All Managing Directors confirmed that trust among cluster members is the most important factor for their successful operation (Table 3). On a ten-step descriptive scale, from 1 being the least important to 10 being most important, trust was assessed with a 10. According to the opinion of interviewees, trust is strongly connected with successful communication between members and an established partnership. The third most important success factor is a cluster manager with relevant competences. The Managing Director should be a charismatic person with a vision and knowledge of the situation in their respective sector. It is important that he/she approaches members with charisma and professionalism and that he/she is able to listen and motivate them. Excessive authoritativeness can be discouraged from cooperation. Other accessed success factors are listed by order of importance in Table 3.

If comparing ranking based on interviews with preceding evaluations as described above, several points may be noted. Jaklič et al. (2004) have observed that the first clusters in Slovenia most probably evolved due to institutional support. Without this support and without the institutional environment promoting clustering, their occurrence would be questionable. Reliable source of funding is essential at the start-up phase. Funds on one hand, and will and mutual trust on the other, proved to be a winning combination in 2001. For the further development of a cluster, denomination of charismatic leaders with relevant competencies was of great importance. If he/she received support from top managers in member companies, he or she could motivate all cluster members to participate in joint efforts to the benefit of all.

Blatnik (2005) continued to observe the Automotive Cluster of Slovenia for a number of years. Financial support from the institutional environment continued to exist and the cluster was nearly free of financial savings, although it strove to become financially independent. The most important success factor for this growing period were synergies in the area of knowledge enhancement, joint purchasing and marketing. By rank of importance, the success factor of trust among members slipped from second to

Table 2: Active Slovenian Clusters

Cluster	Number of Members	Legal Status	Income [EUR]	Activities	Number of Employees	Number of Employees in Member Organizations	Organization and Management
EIG Geodetic Service Providers	81	EIG	62,659[a]	promotion, organization of events, publication of articles, press conferences, participation on events, education, blogging, a group for legislation, projects, application ZPK 24 UR for fast access to data from Geodetic Administration	3	380	Management Board Council of Association Shareholders Assembly Supervisory Board
Wood Industry Cluster	105	Institute	400,000[b]	promotion, preparation/organization/coordination of projects and activities of common interest, supporting internationalization / transfer of knowledge, collaboration in EU projects, activities for strengthening a cluster's infrastructure and network	2	3,000	Council of Institute Expert Council
Automotive Cluster of Slovenia	59	EIG	350,000[d]	promotion and marketing, R&D projects (40% of all activities), optimization of supply chain, education and training, quality and business excellence	2	20,500	Shareholders Assembly Supervisory Board Programme Council
Construction Cluster Of Slovenia	11	EIG	200,000[b]	• generation of project ideas (5%), • consulting, searching for partners/calls and application preparation (10%), • organization/coordination of projects and activities of common interest and financial reporting (70%), • involving members in approved projects and protection of intellectual property rights (5%), • international networking and collaborating with foreign research and business alliances /associations (5%), • informing/education/consulting/transfer of knowledge and research results in business practice (5%)	3	150	Shareholders Assembly Management Board Supervisory Board
Toolmakers Cluster of Slovenia	31	Institute	100,000[c]	promotion, participation in events, preparation / organization / coordination of R&D projects, collaboration in EU projects	1 part-time	1,800	Council of Institute Council of Experts

EIG - Economic Interest Grouping,
[a] average income for the last five years; [b] income in 2014, 90% from projects; [c] income in 2015, 90% from projects; [d] 30% income from membership fees, 60% from EU projects.

Table 3: Factors for the successful operations of Slovenian clusters in 2015

Success Factor	Min	Max	Mean
Trust among members – a willingness to cooperate	10	10	10.0
Successful communication between members, partnership	9	10	9.8
Cluster manager with relevant competences	9	10	9.6
Critical mass of human resources with relevant competences	8	10	9.2
Establishment of external links (European Technology Platforms, related foreign clusters)	7	10	9.0
Institutional support (grants, start-up funds, policy support, entrepreneurship-friendly environment)	7	10	8.6
Cluster‘s organisational culture is aligned with members‘ organizational cultures	7	9	8.4
Information infrastructure (uniform software, website)	4	9	6.8
Clear division of roles of individual members	4	9	6.6
Organizational infrastructure (common procedures, organizational regulations, working methodology)	2	8	6.4

fourth place. The cluster had obviously already achieved a desired level of trust, so for the future, it set out intensive work on identifying synergies between members in order to be able to work as a homogenous whole. Financial independence from governmental incentives was not yet as important because grants were still available.

Today, trust among members is unquestionably the most important success factor. Institutional support is in the second place of ranking. Clusters would be overjoyed to receive any kind of institutional support and causally stabilize their operations, which are largely dependent on finances from all types of R&D projects and from only membership fees to a lesser extent.

6. Conclusion

The institutional environment in Slovenia adopted cluster policy and successfully leveraged cluster building with start-up financing. Past evaluations (Jaklič et al. 2004; Blatnik 2005) observed that the institutional environment has played the role of promoter, initiator and sponsor in the formation of Slovenian clusters. The phase of gaining independence proved painful for clusters, and for some, even fatal. Policies in the EU within individual member states, such as Germany, further confirm the importance of institutional environment in support of clusters. After 1990, institutional support for the process of creating clusters became established as the central mechanism underlying development policy (Meier zu Köcker, 2012). Research results show that the institutional environment initiated start-up processes of creating clusters in Slovenia.

From 2001 to 2003, 16 clusters were established in Slovenia. Less than half of clusters continue to prosper under their own stream following policy retreatment in 2004. Clusters were not prepared for the dramatically different way of working. Fifteen years later only six are still operational. Only those that were able to overcome traditional Slovenian mistrust and became financially independent from government incentives that have since dried up, were able to survive. Former Managing Directors of six inactive clusters explained the reasons for the suspension of operations. In all cases, the termination of financial support and the failure to find alternative sources were stated. We conclude that after the termination of institutional financial support in Slovenia, clusters, which have failed to develop their own financing system, ceased operation.

Fifteen years following the establishment of the first Slovenian cluster, we verified the significance of previous evaluations and, in theory, defined factors for the successful operations of Slovenian clusters between five Managing Directors of six operating clusters. Interviewees agreed that trust is the most important factor for the successful operation of clusters. Without trust, no common activities could be crowned with R&D projects. R&D projects bring financial resources needed for their operation. Lack of confidence in the start-up of clusters may be replaced by a stable source of funding. When funding ceases, trust takes a key role in operations and become a major driving force of adjustment to new conditions. Ketels (2011) and Porter and Ketels (2009) have come to very similar conclusions.

We focused on the factors of successful operations of clusters. Tested factors derivate from the results of evaluations of clustering in Slovenia that were generated between 2002 and 2005 and from a theoretical framework. We noted that observed clusters managed to become financially independent but that any termination in acquiring new R&D projects could cause instability in their operation or

even threaten their existence. Clusters would benefit from more attention and support on the part of the Slovenian and local communities, but have proven that they can also successfully function without this support. The management of clusters is also important factor for the successful operation of clusters, as defined by trust, partnership and a charismatic leader.

We assume that factors for the successful operation of clusters could vary according to individual phases of a cluster lifecycle. We propose this for future research.

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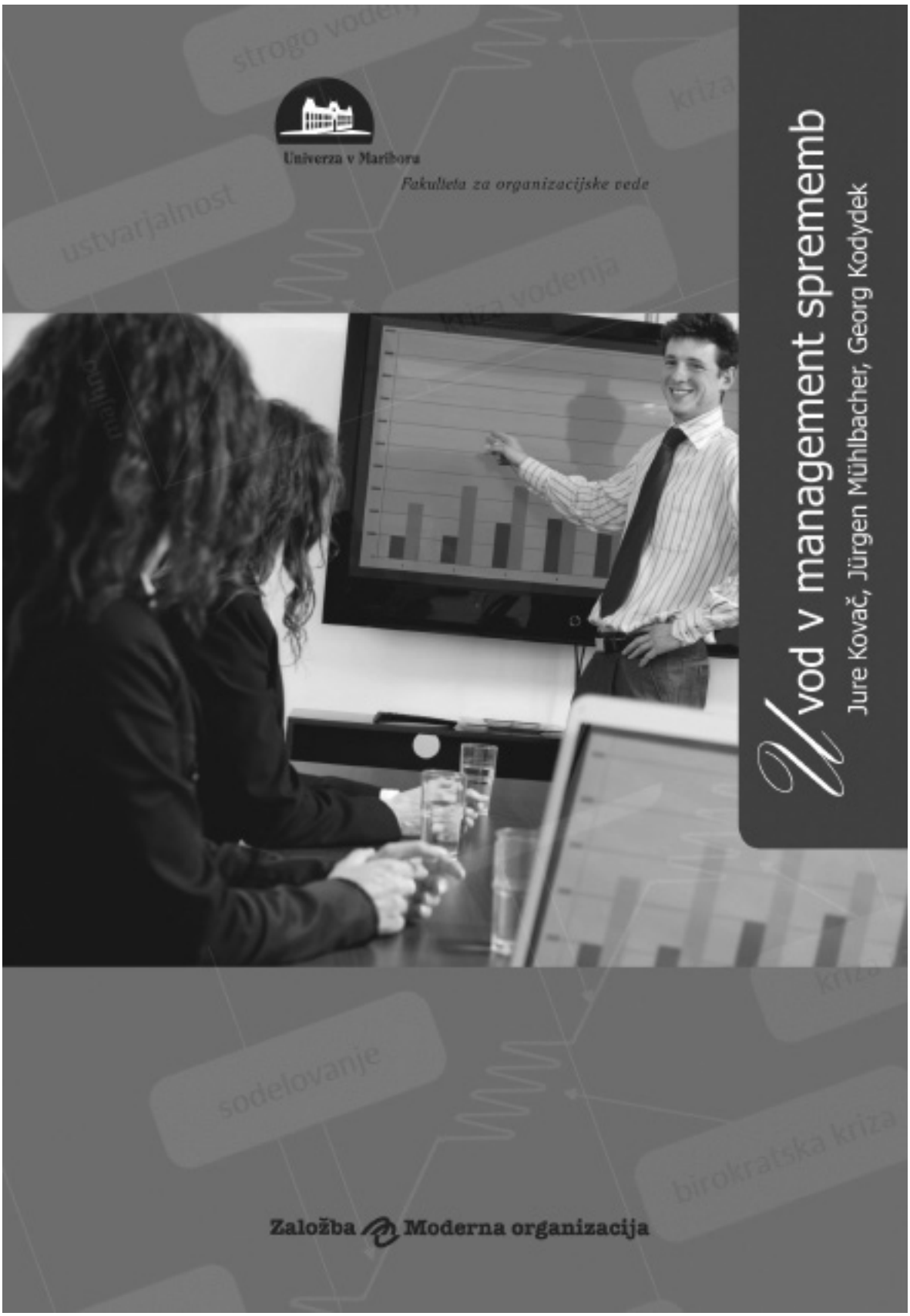
Ključni faktorji uspešnega delovanja grozdov: primer Slovenije

Uvod in namen: Podjetja se vse bolj specializirajo in razvijajo tista ključna področja, s katerimi lahko tekmujejo na globalnem trgu ter se povezujejo v grozde, ki so del regijske konkurenčnosti. Grozdi lahko kljub temu, da imajo konkurenčno vlogo v globalnih vrednostnih verigah in so uspešni, neprostovoljno prenehajo delovati. Ravno zato je preučevanje ključnih faktorjev za uspešno delovanje grozdov v Sloveniji pomembno.
Metode: Raziskava temelji na obsežni raziskavi znanstvene literature. Teoretične ugotovitve so primerjane z ugotovitvami raziskave poteka grozdenja v Sloveniji. S pomočjo spletnih strani, elektronske pošte in telefonskih klicev smo določili število še delujočih grozdov petnajst let po njihovi vzpostavitvi, inicirani s strani institucionalnega okolja. Z intervjuji smo določili razloge za prenehanje delovanja pri bivših direktorjih nedelujočih grozdov in faktorje uspešnega delovanja grozdov pri direktorjih delujočih grozdov.
Rezultati: Institucionalno okolje je iniciralo zagonske procese oblikovanja grozdov v Sloveniji. Po prenehanju institucionalne finančne podpore so tisti slovenski grozdi, ki niso uspeli razviti svojega sistema financiranja, prenehali z delovanjem. Direktorjih delujočih grozdov so potrdili, da je zaupanje med člani grozda najbolj pomemben faktor uspešnega delovanja grozdov.
Zaključek: Slovensko Institucionalno okolje je sprejelo politiko grozdenja in uspešno vzpodbudilo nastanek grozdov z zagonskim financiranjem. Manj kot polovica grozdov je nadaljevala svoje delovanje tudi po spremembi politike. Grozdi večinoma niso bili pripravljeni na dramatično spremembo v načinu financiranja. Zaupanje je postalo glavni gonilnik prilagajanja novim razmeram.

Ključne besede: *mrežne organizacije, ključni dejavniki uspeha, grozdi, Slovenija*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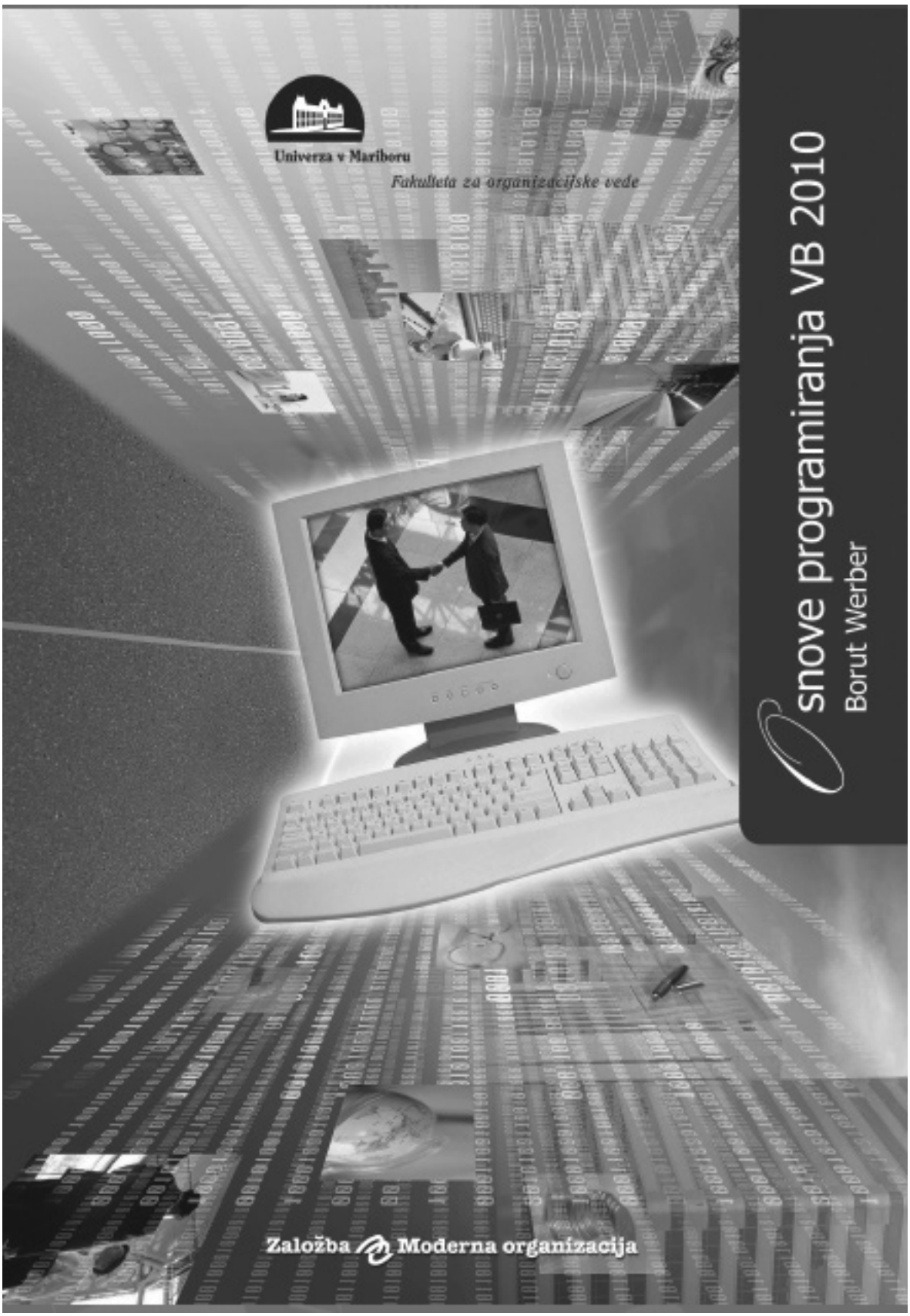
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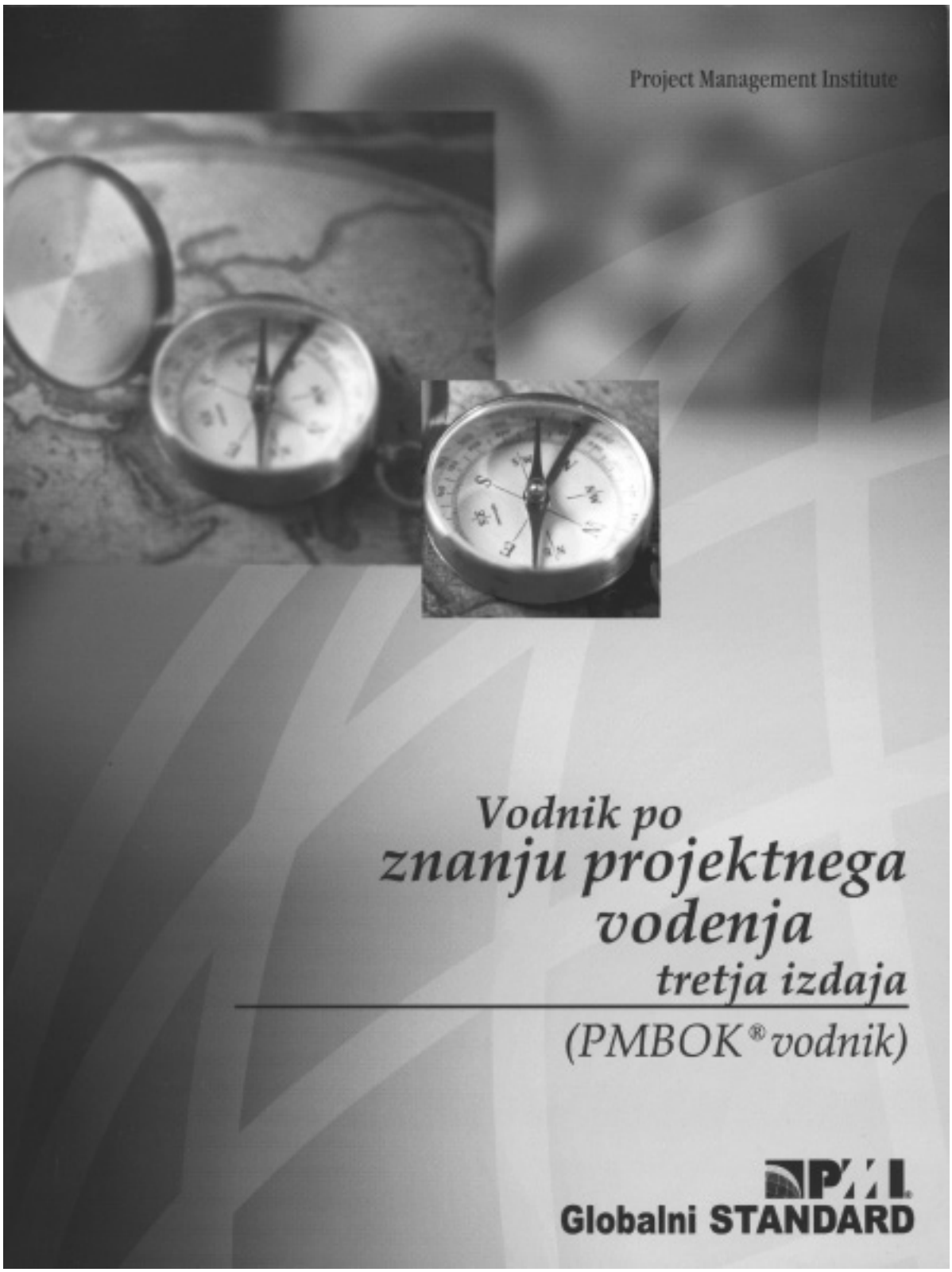
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