Zagreb International Review of Economics & Business, Vol. 16, No. 1, pp. 37-63, 2013

ISSN 1331-5609; UDC: 33+65

Controlling and Sustainability: Empirical Evidence from Europe

Alexandra Rausch[*]

Nidzara Osmanagić Bedenik[**]

Irene Fafaliou[***]

Davor Labas[****]

Malgorzata Porada-Rochon[*****]

Abstract: This paper analyses the level of development of current controlling practice and sustainable development in four selected European countries, i.e. Austria, Croatia, Greece, and Poland. It specifically aims to increase the awareness for country-specific differences and to capture key factors and shortcomings that companies experience in controlling and sustainable business practice. We hypothesize that companies in more mature countries have a higher level of development in this respect than companies in less mature countries. To this end, we use a questionnaire and a sample of 146 companies. Contrary to our hypotheses we reveal that besides Austrian Croatian companies are more advanced in controlling and sustainability than Greek companies. Furthermore, instead of Austria Poland appears to form a country-cluster with Greece. Based on these findings business executives and public officers should be able to cope with present shortcomings in a more appropriate way and to initiate improvements towards sustainability against country-specific backdrops.

Keywords: Corporate sustainability; sustainable development; controlling practice; Europe; empirical survey.

JEL Classification: L2

[*] Alexandra Rausch is at Alpen-Adria-Universität Klagenfurt, Austria.
[**] Nidzara Osmanagić Bedenik is at Faculty of Economics and Business, University of Zagreb, Croatia.
[***] Irene Fafaliou is at University of Piraeus, Piraeus, Greece.
[****] Davor Labas is at Faculty of Economics and Business, University of Zagreb, Croatia.
[*****] Malgorzata Porada-Rochon is at Faculty of Management and Economics of Services, University of Szczecin, Poland.

Introduction

For many years the overall goal of firms was to maximize a firm's value and the only social responsibility of firms was considered to create profits (Friedman, 1962). Consequently, corporate controlling practice primarily focused on profit maximization for owners (Horváth, 2006; Küpper, 2008; Weber and Schäffer, 2008). In current European business practice recent developments in the marketplace have stimulated both the critical review of controlling practice (Cooper and Hopper, 2007; Sundin et al., 2010) and the global sustainability debate (European Commission, 2012). Hence, current business conditions require a paradigm shift from the reductionist orientation on profit to a holistic perspective that balances economic, social, and ecological goals; and controlling practice has to be designed accordingly to give support to management in achieving these goals and ensure sustainable development (Weber and Schäffer, 2008).

Since the design of a company and controlling-systems take context- and development-related forms that reflect country- and company-specific conditions (Küpper et al., 1990; Möller and Stoi, 2002; Weber and Schäffer, 2008; Witt, 1997), we exemplarily direct our research towards the controlling practice in four selected European countries: Austria, Croatia, Greece, and Poland. There are two major reasons for this choice. First, studies of contemporary European business practice usually concentrate on large politically Western European countries while smaller Western European countries (i.e., Austria and Greece) and Eastern European countries (i.e., Poland and Croatia) are frequently ignored. Second, with these countries we represent a somewhat representative cross-section of the European economic area because Greece became a member state of the European Union in 1981, Austria joined in 1995, and Poland in 2004 while Croatia is still a candidate for membership. Due to the countries' maturity and integration in the European economic area we expect differences in the level of development of both controlling practice and sustainable development. We hypothesize that companies in more mature countries, i.e. Austria and Greece, are more advanced than companies in less mature countries, i.e. Croatia and Poland.

To check our hypotheses we conduct a large-scale empirical survey involving participants from 146 companies. Results, indeed, reveal a considerable potential for further development of controlling practice towards sustainable development and differences along the participating countries although not in the hypothesized way. On the basis of our findings business executives and public officers should be able to cope with present shortcomings in a more appropriate way and to initiate improvements towards sustainability of business activities at an international level. This should finally result in a healthier society and environment in general.

The paper is organized as follows: In Section 2 the theoretical background of controlling and sustainability with special regard to European countries is presented.

In Section 3 two hypotheses are developed. Section 4 introduces the method and the process of our empirical survey. Results are presented in section 5. Section 6 discusses the results and the limitations of the study and gives some recommendations.

Theoretical Background

Over the course of time controlling has become a core management function and one of the most important sub-disciplines of business management (Küpper, 2008; Weber and Schäffer, 2008). Nevertheless, there are a hardly manageable number of definitions and meanings in research and practice notably resulting from the fact that controlling has emerged from practice and lacks an original theoretical reference level (Küpper et al., 1990; Preißler, 1998). While controlling in European countries, for example, has a clear focus on management, US-companies more likely assign an explicit financial focus to controlling (Witt, 1997) including tasks that are usually part of external accounting in European and, particularly, German speaking countries (Weber and Schäffer, 2008). Hence, Anglo-Saxon terms like "managerial control" and "management control" (Schwarz, 2002; Weber, 2005) more likely correspond with the understanding of controlling in European linguistic usage in Mainland Europe. As our study focuses on European countries, we limit further considerations to the European perspective on controlling.

In European countries and particularly in the German-language literature as compared to English-language literature the term "controlling" especially refers to what individuals do to perform controlling tasks in the company (Horváth, 2006; Weber, 2005; Witt, 1997). Controlling tasks depend on the need for support on the part of management which, in turn, is strongly influenced by the external and the internal environment. Since environmental conditions for business actions and corporate goals change in the course of time, controlling continuously faces challenges to embrace new perspectives and corresponding tools (Weber and Schäffer, 2008). As long as there is a relatively stable environment where management behaviour is primarily reactive and profit maximization is the overall corporate goal, controllers are primarily engaged in information supply, (i.e., financial and operational bookkeeping and reporting) (Zünd, 1979) and use a manageable range of instruments (Brühl, 2012); but this covers only a rather small part of controllers' responsibilities (Weber and Schäffer, 2008). Therefore, at an advanced level of controlling practice planning and monitoring are integrated into controlling systems. With profit maximization on top primarily monetary measures and the internal environment are still in the focus and controlling systems are likely limited to an operational and short-term perspective including areas such as statistics, budgeting, result-oriented monitoring (i.e., of profits), taxes and internal auditing (Brühl, 2012; Hahn, 1987; Weber and Schäffer, 2008). However, assumptions about a largely stable environment low in complexity

are too simplistic and such an information- and result-oriented dimension is too restrictive. More complex and volatile business conditions lead to uncertainty in management decision-making and, thus, to an increased need for better adaption to accelerating environmental changes and better management of internal coordination problems (Zünd, 1979). A more elaborated controlling system is not limited to information supply but coordinates also other sub-systems such as planning and monitoring, (Horváth, 2006), the human resources system and the organization (Küpper, 2008).

Although the current understanding of controlling in Mainland Europe is heavily influenced by this opinion, controlling is most recently viewed as assuring rational decision-making and as providing business support to managers in any situation in a respective company and business environment (Weber and Schäffer, 2008). Given that contemporary companies operate in highly dynamic and complex environments with high uncertainty (Sachs and Maurer, 2009; Weber and Schäffer, 2008), increasing demands on controlling concepts are quite challenging. First, controlling must be future- and action-oriented (Zünd, 1979). The short-term operational perspective has to be expanded towards long-term strategic issues incorporating both monetary and non-monetary measures (Brühl, 2012) and strategic instruments such as SWOT- and scenario analysis, benchmarking, strategic reporting, planning and control tools, balanced scorecards, and early warning systems (Nevries and Weide, 2012; Krystek and Reimer, 2012; Schäffer and Weber, 2012). Second, due to cognitive and motivational constraints managers are inclined to share managerial tasks and controllers are demanded to work in a team with managers fulfilling unburdening, supplementary and/or constraining tasks (Weber and Schäffer, 2008). Third, due to the extension of the relevant environment controllers must consider multiple goal dimensions. This wider perspective and these increased demands in today's business and controlling practice are incorporated in an overall goal known as sustainable development (Fischer et al., 2009; Fischer et al., 2010; Weber and Schäffer, 2008).

Sustainable development or sustainability is defined as any economic activity that meets the needs of the present generation without compromising the ability of future generations to meet their needs (WCED, 1987). It asks for a long-term and respectful handling of human and ecological resources in three respects, i.e. the environment, society and business, while simultaneously providing competitive outcomes in the short-term (Artiach et al., 2010; Europäische Kommission, 2002; Quick and Knocinski, 2006). The three-fold corporate orientation known as "Triple Bottom Line"-principle (Elkington, 1997) entails the complex task of balancing the needs of multiple interest-groups (Habisch et al., 2005) that can exert a visible, economic relevance (e.g. sales on the part of customers, energy costs on the part of suppliers) or operate indirectly (e.g. laws and regulations, social trends, politics) (see also Schaltegger, 2010). Since companies have become increasingly aware that they can contribute to sustainable development by reorienting their operations and processes (López et al., 2007), controllers are called upon to provide a broader range

of instruments, measures and information in all three dimensions of sustainability, in monetary and non-monetary terms and in the short- and long-run (Coenenberg et al., 2009; Preller, 2007). Major challenges for contemporary controlling practice are to link the larger variety of sustainability-oriented strategic goals to operations, to measure sustainability and to evaluate the achievement of corporate goals at a high level of uncertainty but with a limited scope of action (Fischer et al., 2009; Fischer et al., 2010; Habisch et al., 2005; Quick and Knocinski, 2006; Preller, 2007; Weber and Schäffer, 2008).

Hypothesis Development

The relevant literature and research on contemporary business management show that developments in current European business practice (i.e., globalization of the marketplace, limitation of resources, intensified competition, increased public awareness) have stimulated both a high level of environmental complexity and dynamics (i.e., due to incidents such as the 2008 financial crises) and the present global sustainability debate at a political and economic level (European Commission, 2012; Chichilnisky, 2011; López et al., 2007; Wall and Greiling, 2011). Against this backdrop and as outlined in Section 2 companies should adapt advanced and sustainability-oriented controlling concepts to gain long-term competitive advantages. Quite contrary, studies reveal that both controlling practice and sustainability are not yet routine and commonplace but differ significantly at the company and the country level (e.g. López et al., 2007; Stoffel, 1995; Weber and Schäffer, 2008). This might be explained by the fact that European companies proceed from quite different economic and political starting situations, operate against different cultural backgrounds and are at different stages regarding the level of development of business practice. One possible reason for this is the maturity of the country, for example in terms of GDP, particularly GDP per capita, and the integration in the European economic area. Countries with a high level of GDP per capita and a strong economy might have more human and financial resources to adopt state-of-the-art management and controlling practices (Reinhart and Reinhart, 2009; Rose and Spiegel, 2009). Further, countries that are more integrated in the European economic area, that are therefore more connected to other mature European countries, and that are closer to the German-language literature and practice from which European controlling practice emerged (Weber and Schäffer, 2008) are more likely exposed to the controlling mindset and more likely to have a higher level of development of controlling practices and sustainability. Due to the level of GDP (see Appendix Table A1) and the level of integration in the European economic area, we regard Austria and Greece as more mature countries as compared to Croatia and Poland which we consider to be transition countries and, hence, less mature. Accordingly, we define our first hypothesis:

Hypothesis 1: Companies in more mature countries, i.e. Austria and Greece, show a higher level of development of controlling practice than companies in less mature countries, i.e. Croatia and Poland.

As outlined in Section 2 a higher level of development of controlling practice means (1) more responsibility and higher awareness for controlling issues, (2) the consideration of both the internal and external environment and, consequently, a greater contribution of controlling to corporate success, and (3) the involvement in both short-term operational and long-term strategic tasks and functions. Further, we assume that a higher level of development of controlling practice is accompanied by a long-term commitment to sustainability. Accordingly, we define our second hypothesis:

Hypothesis 2: Companies in more mature countries, i.e. Austria and Greece, are more engaged in sustainable development than companies in less mature countries, i.e. Croatia and Greece.

As outlined in Section 2 the engagement in sustainable development means that companies (1) respect multiple interest-groups (stakeholders), (2) aim to achieve a broader range of corporate goals including economic, social, and ecological goals, and, consequently, (3) apply sustainability-oriented measures and instruments in controlling practice.

Research Method and Process

The aim of our research was to investigate the controlling practice in four selected European countries, i.e. Austria, Croatia, Greece, and Poland, and to compare both the level of sustainable development and corresponding controlling tasks, systems and instruments. We conducted a large-scale empirical survey using a traditional questionnaire. With this research method we follow Weber and Schäffer (2008) who recommend using case studies or large-scale questionnaire-based empirical studies to find out what controlling is and what controllers really do. Since the results presented in this article are a part of a wider field of study on controlling and sustainability in entrepreneurial firms, the entire questionnaire consisted of 43 closed questions. We used three types of questions: (1) multi-choice questions, (2) Yes-or-No-decisions, and (3) rating questions (5-point Likert scale).

The survey was conducted during 2010 and in early 2011. The questionnaires were distributed by electronic mail. Participants were informed that the survey was totally anonymous and that results are used for the purpose of scientific research only. We received a total of 146 questionnaires, i.e. 16 from Austria (94% rate of

return), 31 from Greece (89% rate of return), 20 from Poland (21.05% rate of return), and 79 from Croatia (8.78% rate of return). Analyses in SPSS primarily included frequency statistics, analyses of variance and Chi square tests.

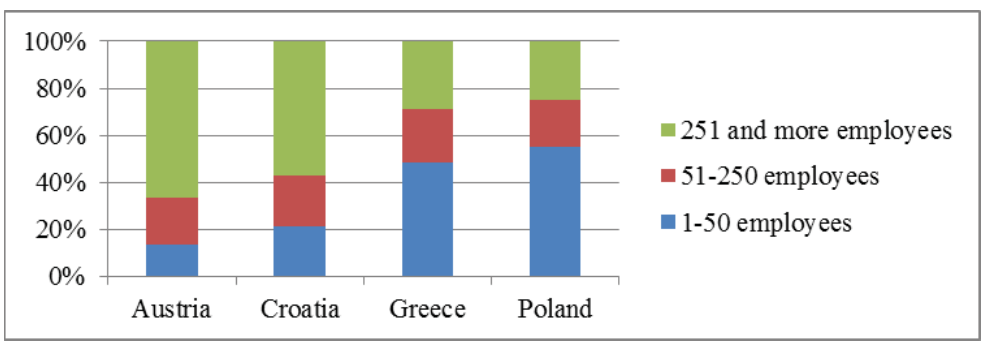
Results

Below we present the results of our survey. We first show some sample characteristics and then test the hypotheses elaborated above.

Sample Characteristics

To classify companies concerning their size we adopt the definition issued by the European Union in the Commission Recommendation 2003/361/EC which is based on the staff headcount and turnover or balance-sheet total. A small company is defined as a company which employs fewer than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million. A medium-sized company employs fewer than 250 persons; annual turnover does not exceed EUR 50 million or annual balance-sheet total does not exceed EUR 43 million. Most companies of our sample can be defined as large companies with more than 250 employees (see Figure 1). However, there are some differences between countries: The Austrian and the Croatian sample are dominated by large companies, while the Polish and the Greek sample consist of mainly small companies. A Chi square test reveals that differences between countries are significant (see Appendix Table A2).

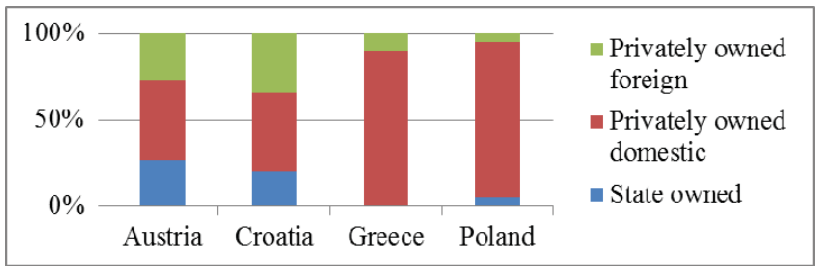
Figure 1: Companies' size by number of employees



Besides companies' size ownership structure varies considerably between countries. Companies of the Greek sample are almost exclusively privately owned and domestic. They are significantly different from the companies in the Croatian and

Austrian sample. In contrast to the Greek sample, 20-25% of both the Croatian and Austrian sample are (mainly) state-owned companies and 27-33% are privately owned but foreign. Although these differences are significant according to a Chi square test (see Appendix Table A2), they do not come as a surprise because the major part of the Greek and the Polish sample consists of mainly small companies which are presumably privately owned and domestic.

Figure 2: Companies' ownership structure (frequencies of responses in %)



The majority of the companies in the Croatian and Greek sample operate in the processing industry and in retail/wholesale. The construction industry is primarily represented in the Croatian sample, the hotels and restaurant industry and financial business are predominant in the Greek sample, while the agriculture, hunting, and forestry industry is well represented in the Austrian sample. Since companies in the Polish sample largely refrained from indicating their main business field, the validity of the results in this area is limited. Overall, however, business fields do not evoke any significant differences between countries regarding the level of implementation of controlling practice and sustainable development.

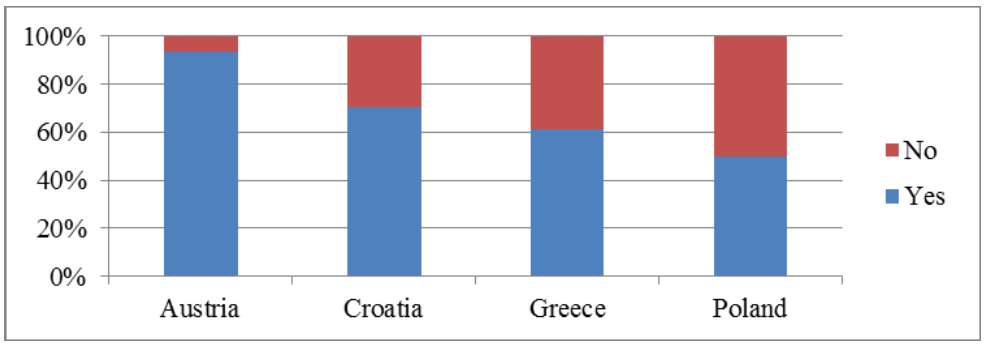
To summarize, contrary to our expectations companies of the Austrian and Croatian sample are found to be more alike while companies of the Greek and Polish sample have more in common. This contra-intuitive finding must be recalled when interpreting further results.

Test of Hypothesis 1

In hypothesis 1 we stated that companies in more mature countries, i.e. Austria and Greece, show a higher level of development of controlling practice than companies in less mature countries, i.e. Croatia and Poland. In order to explore the relevance of controlling in business practice, we asked for sections, departments and/or divisions within the company that have some responsibility in terms of controlling tasks and systems. As shown in Figure 3 at least half of the companies in each country hold some corporate unit responsible for controlling tasks and functions. Remark-

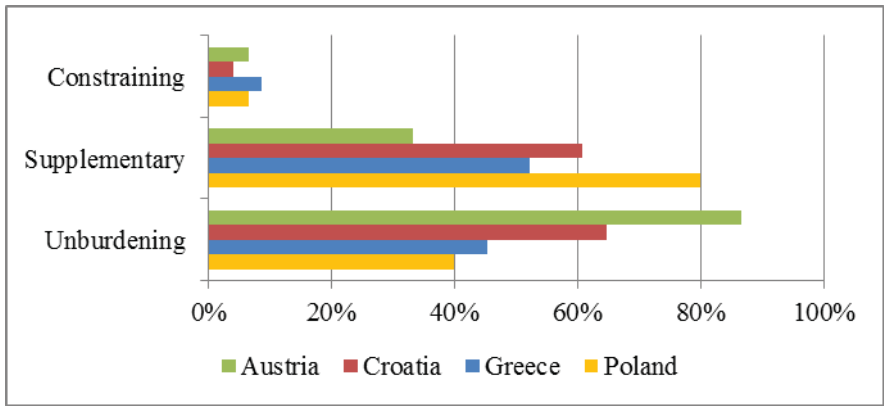
able results are revealed in the Austrian sample where almost all companies have institutionalized controlling practices. However, this is not that surprising because the Austrian sample consists of mainly large companies. Similarly Croatian companies show a rather high responsibility for controlling at an institutional level. Differences between the countries are significant (see Appendix Table A2).

Figure 3: Responsibility of sections/departments/divisions



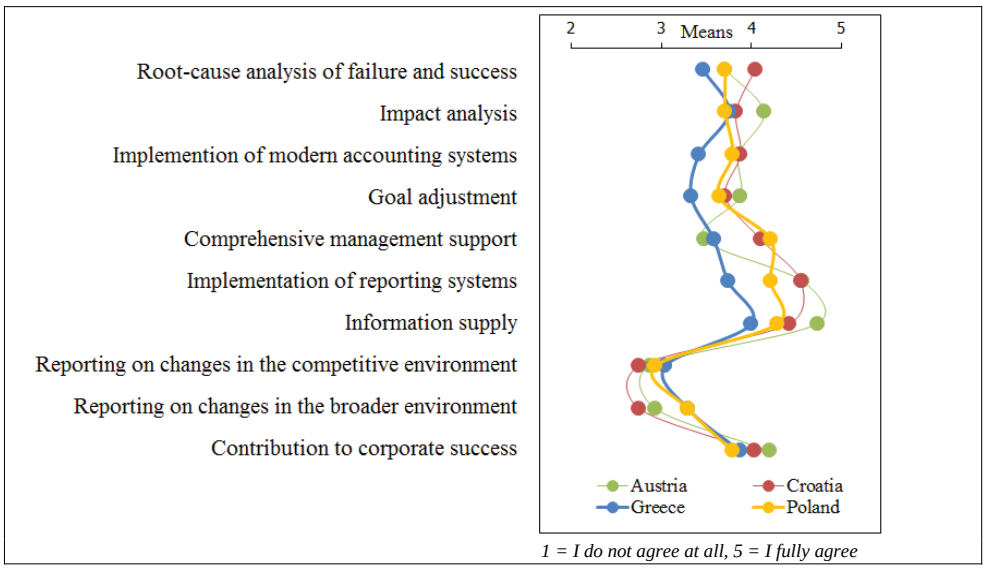
Regarding the dominant controlling conception within the companies of our sample we find that controlling is predominately perceived as supplementary to and/or unburdening management. As shown in Figure 4 only around 4-8% of the companies think that controllers constrain managers in their actions. Even though there are no significant differences between the four European countries ($F(3,123)=1.739$, $p=.163$), there are some recognizable tendencies: While Croatian and Greek companies apparently perceive supplementary and unburdening controlling tasks as almost equally important, there is clear evidence that the controller's role in carrying out unburdening tasks is most prominent in Austrian companies and least prominent in Polish companies ($F(3, 122)=3.370$, $p=.021$). Polish managers are not very likely to delegate tasks they can fulfil themselves to controllers. Reasons for this kind of delegation might be that managers in Polish companies are limited in their abilities or forced by a higher authority to accept a supplementary contribution (for the kind of tasks see also Weber and Schäffer, 2008). In contrast, in Austrian companies a rather high number of tasks are delegated from managers to controllers to ensure they are carried out better, faster or with less effort. However, due to the structure of the Austrian sample limited managerial capacities and a therefrom resulting high amount of delegation was expected. Croatian companies reveal a similar but much weaker tendency, although Croatian companies show a rather high inclination towards supplementary tasks as compared to Austrian companies. Greek companies are apparently least engaged in controlling tasks.

Figure 4: Dominant controlling conception (frequencies of responses in %)



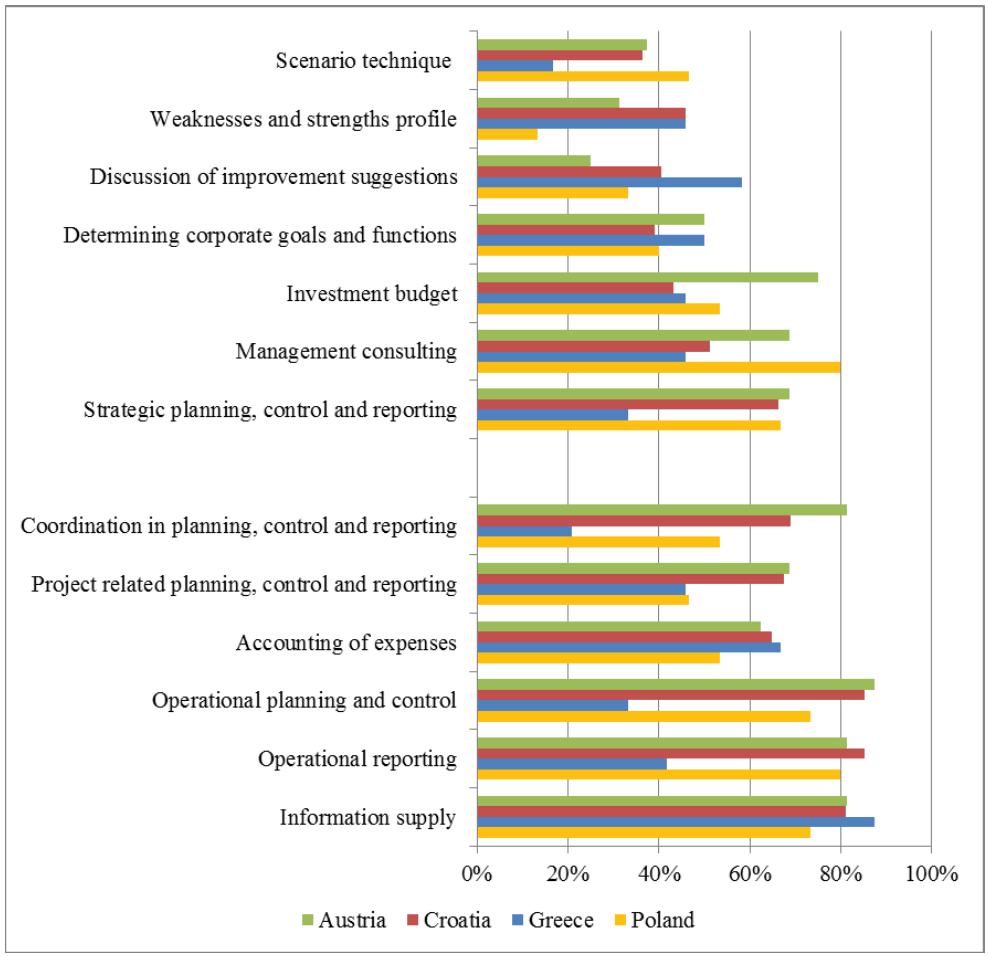
Similar to prior research (e.g. Landsberg and Mayer, 1999; Niedermayr, 1994, 1995; Osmanagić Bedenik and Lalovac, 2007; Stoffel, 1995), our survey identifies information supply and running the information system as the most common and therefore fundamental controlling tasks in all four countries. Overall, Austrian and Croatian companies perceive a higher contribution to corporate success on the part of controllers and controlling systems, while Greek companies are apparently most pessimistic. As shown in Figure 5 and corroborated by the results of an ANOVA (see Appendix Table A3) considerable country-related differences occur in the perception of controlling's contribution in the form of root-cause analyses of failure and success, comprehensive management support, information supply and reporting systems. Both Croatian and Polish companies think that root-cause analyses and comprehensive management support have a considerable impact on corporate success. This finding is consistent with the abovementioned predominant role of supplementary controlling tasks in Croatian and particularly Polish companies. Although reporting-related contributions on the part of controllers are perceived significantly more relevant by Austrian companies, these activities and systems likely do not include reports about changes in the competitive or broader environment which are hardly important throughout the entire sample. Generally spoken controlling's contribution to corporate success is perceived in a rather classical way and rated highest by Austrian companies, while Greek companies seem to be most critical.

Figure 5: Perception of controlling's contribution to corporate success



Besides information supply, controllers spend a lot of time and effort on operational reporting, planning and control, and expense accounting. Consequently, short-term and operational issues as presented in the lower half of Figure 6 are slightly more relevant than strategic issues. Hence, controlling practices correspond more likely with earlier controlling conceptions than with state-of-the-art controlling practices. Looking at cross-country differences (see Appendix Table A4) we find that Austrian and Croatian companies are significantly more engaged in both operational and strategic planning and control than Polish and particularly Greek companies. In Greek companies controllers make more effort in the accounting of expenses and discussions of improvement suggestions as compared to both other controlling tasks and other countries. Overall, Austrian and Croatian companies pay significantly more attention to all kinds of controlling tasks but particularly operational tasks such as planning, control and reporting, while Greek companies are apparently least engaged in controlling issues. They perceive operational and strategic tasks as equally important although at a comparatively low level.

Figure 6: Controlling tasks and functions (frequencies of responses in %)



To complete the test of our first hypothesis we summarize the results of this section. First, there is more responsibility and higher awareness for controlling issues in Austrian and Croatian companies as compared to Greek and Polish companies. Similarly, unburdening controlling tasks dominate the Austrian and the Croatian sample, while supplementary controlling tasks dominate the Greek and Polish sample. Second, controllers in Austrian and Croatian companies recognize a slightly greater contribution to corporate success, particularly regarding information supply and the detection of reasons for failure and success, although there is no evidence that they pay more attention to the external environment which is, nevertheless, largely ignored throughout the sample. Third, controllers in all four countries are more involved in short-term operational tasks and functions than in long-term strategic issues. However, the overall level

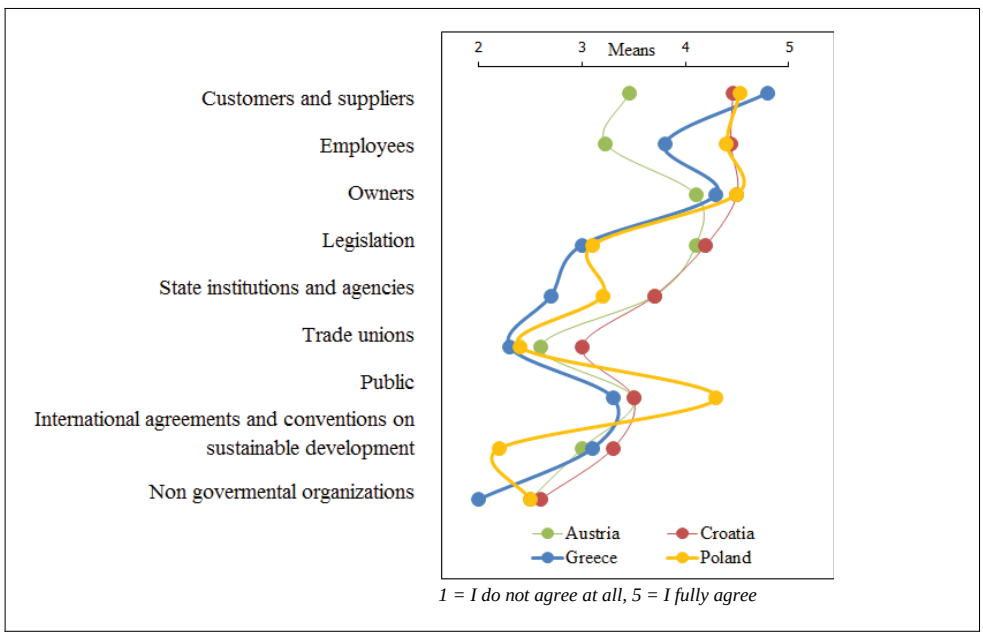
of development of controlling practices is slightly higher in Austrian and Croatian companies as compared to Polish and particularly Greek companies. Thus, our first hypothesis is not supported. Quite contrary, Austrian and Croatian companies on the one hand and Greek and Polish companies on the other appear to be similar to each other regarding the level of development of controlling practices.

Test of hypothesis 2

In hypothesis 2 we stated that companies in more mature countries, i.e. Austria and Greece, are more engaged in sustainable development than companies in less mature countries, i.e. Croatia and Poland. In the following, we first address results concerning contemporary challenges imposed on controlling practice and the importance of interest-groups (stakeholders). Second, we explore the range of corporate objectives against country-specific backgrounds. Third, we analyse what contemporary controlling practices are common for sustainable development in the four selected countries.

Figure 7 shows companies' perceptions of stakeholders' importance concerning their influence on business practice. Although there are obvious differences concerning the ranking (see Appendix Table A5), companies in all four countries tend to attribute great influence to owners, customers, suppliers, and employees. While owners are equally important in all four countries, Austrian companies disagree with

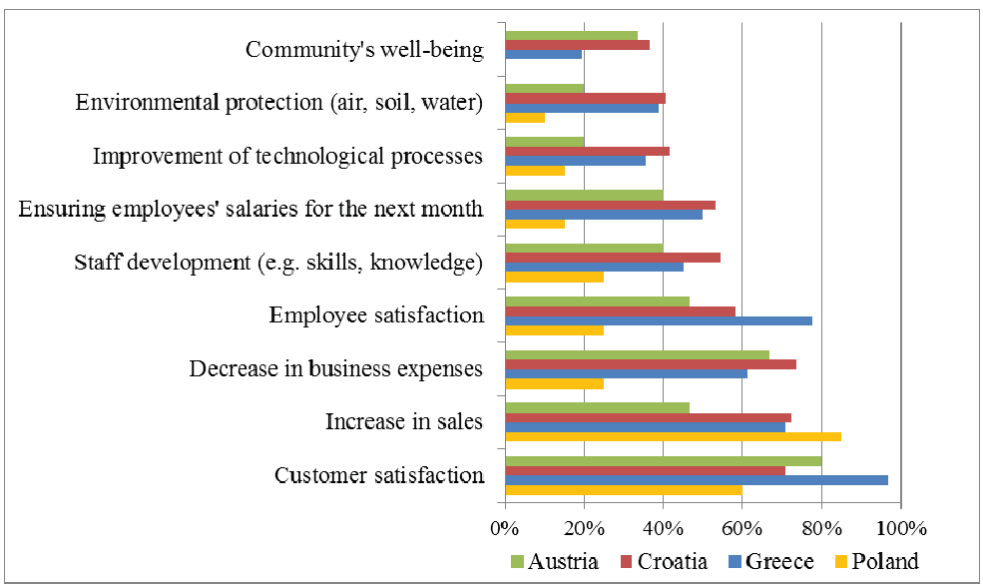
Figure 7: Importance of interest-groups (stakeholders)



Croatian, Greek and Polish companies by rating employees', customers' and suppliers' influence less important than the influence from legislation, state institutions and the public. In contrast, Croatian, Greek and Polish corporate business focuses more on employees than on the public, state institutions, agencies, and legislation. Trade unions and international agreements are most important in Croatian companies; this might be explained be the fact that Croatia is the only country in our sample that is not part of the European Union yet.

Besides the influence of various interest-groups on business activities we also asked participants what corporate objectives they consider most important. As shown in Figure 8 and in accordance with the importance of specific interest-groups, satisfying customers is considered very important across all four countries. Nevertheless, Chi square tests reveal some significant differences between the sub-samples (see Appendix Table A6): Polish companies are rather moderate while Croatian companies are quite active in giving special prominence to specific corporate objectives. Although employees are an influencing interest-group in Polish companies, only low importance is attached to ensuring employees' salaries for the next month, satisfying employees, and encouraging employees in gaining new skills and knowledge. Conversely, Greek companies pay great attention to satisfying customers as compared to both other countries and other objectives. In fact, satisfying employees is less important for companies in all four countries than satisfying customers. One of the minor corporate objectives is the well-being of the community, even though the public was named as one of the five crucial interest-groups in all four countries. Not surprisingly this objective is still more

Figure 8: Corporate objectives (frequencies of responses in %)



prominent in Austrian and Croatian companies but ignored in Polish companies. Despite a quite low awareness for sustainability-oriented corporate objectives throughout the sample, Croatian companies are apparently most concerned about the environment and the community. Overall, Austrian and Croatian set priorities in a similar way with financial and customer-related objectives on top followed by employee-oriented objectives. While decreases in expenses are main concerns for 70% of the Austrian and Croatian companies, Greek and Polish companies regard increasing sales as significantly more important than lowering business expenses.

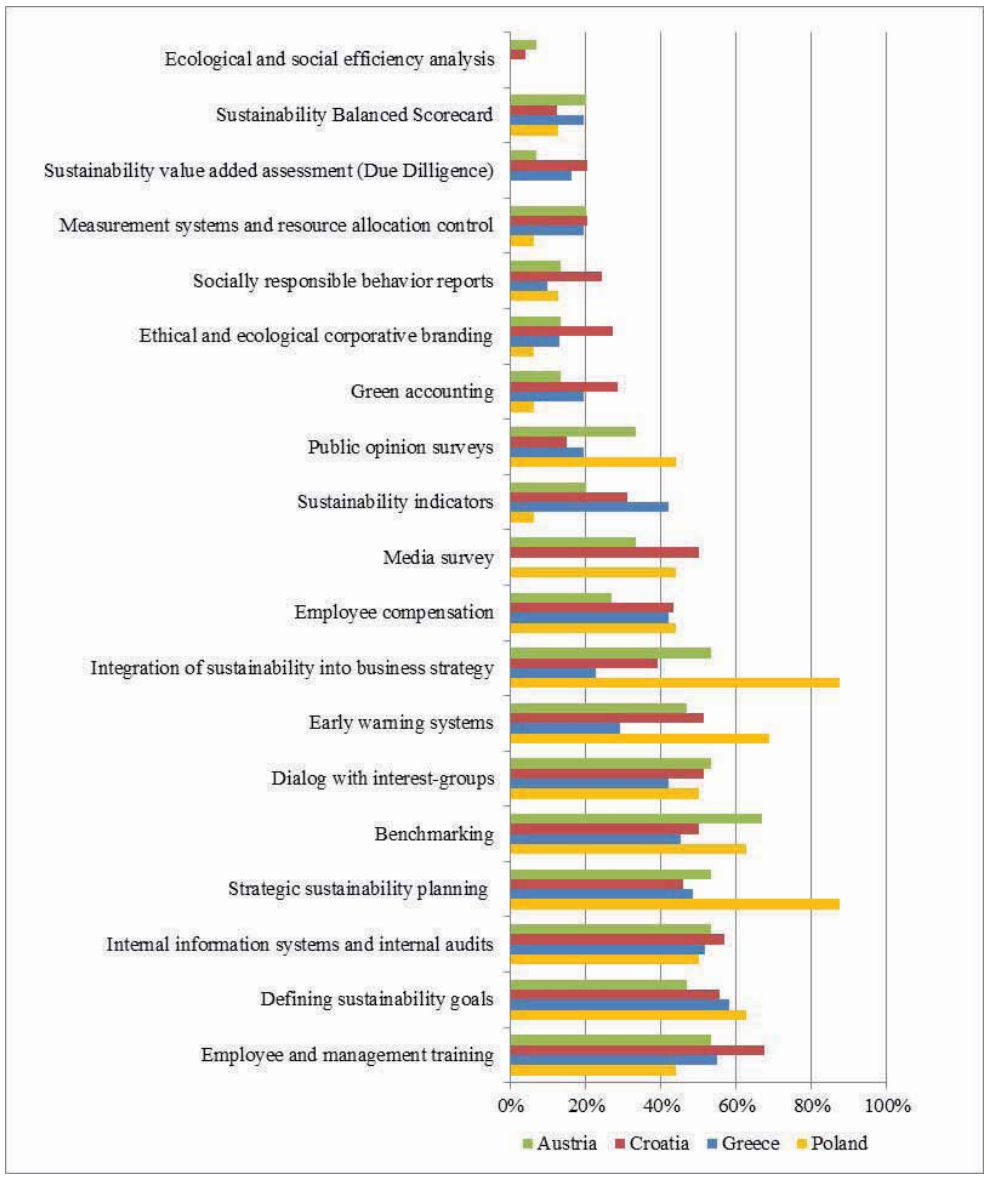
To achieve corporate objectives and sustainable development, there is a quite broad range of controlling instruments. Figure 9 provides an overview over the usage of selected operational and strategic instruments in the light of corporate sustainability. Apparent imbalances are two-fold. First, strategically oriented concepts and instruments tend to be more prominent than instruments applied in an operational field. Second, there is some evidence that Polish companies implement a smaller variety of controlling instruments but use specific instruments more intensely than companies of other nations. In particular, Polish companies are concerned about integrating sustainability into a general business strategy, defining sustainability goals and strategic sustainability planning. The relevance of the latter two is even significantly different as compared to Austrian, Greek, and Croatian companies (see Appendix Table A7). This is somewhat surprising because of the generally low level of development of controlling practice in Polish companies but it is in line with prior results (Leszczynska, 2010 and 2011). By contrast, Greek companies are clearly less engaged in sustainability matters.

The interest for stakeholders other than traditional shareholders manifests itself in the fact that about 50% of all companies communicate actively with interest-groups and the environment. Again Greek companies are slightly less likely to engage in stakeholder dialogs. Although encouraging employees in gaining new skills and knowledge is only moderately important for the companies of our sample, especially Croatian but also Austrian and Greek companies provide trainings and education programs for management and employees. Since Croatian, Polish, and Greek companies attribute high influence on business activities to employees, it is not surprising that particularly companies of these countries use employee reward systems for compensation. Despite the importance of legislation, state institutions, agencies, and the public for Austrian companies, only one third observes the media and conducts public opinion surveys. The media are apparently very prominent in Polish and particularly in Croatian companies, while Greek companies do not care at all.

As already mentioned operational controlling instruments for sustainable development are still quite rare in all four countries. While about half of all companies implement strategic controlling instruments for sustainability, only about one third uses economic, social, and ecological indicators and only about 20% engage in "green accounting", reports on socially responsible behaviour, specific measurement systems and resource allocation control. Contrary to our expectations, sustainability indica-

tors are most prominent in Greek companies but least prominent in Polish companies, although Polish companies are most concerned about integrating sustainability into strategic thinking. Companies in all four countries apparently reach their limits when it involves putting sustainability issues into concrete measures.

Figure 9: Controlling instruments for strategic and operational management of corporate sustainability (frequencies of responses in %)



To complete the test of our second hypothesis we summarize the results of this section. Companies in all four countries recognize the importance of interest-groups other than shareholders (i.e., owners). It is noticeable that Austrian companies care more about state and legislative authorities while companies in the remaining three countries are more concerned about customers and employees. Regarding the relevant range of corporate goals our survey reveals that ecological goals and social goals concerning the community as such are of clearly minor importance. However, there is still a greater awareness in Austrian and Croatian companies which have a most balanced set of sustainability-oriented measures and instruments in controlling practice. Quite unexpectedly, Polish companies are most concerned about strategically oriented sustainability tools but they are least advanced in operations. Greek companies show an unforeseen high engagement particularly in strategic sustainability oriented instruments while they reveal a comparatively low level of development of classical controlling practices (see Figure 6). Not surprisingly, the overall level of development of classical controlling practice is higher than that of sustainability-oriented controlling practices. Since the former is more advanced in operational dimensions while sustainability is more likely an issue at the strategic level, companies apparently reach their limits in transferring sustainability into operations. Thus, our second hypothesis is not supported. Austrian and particularly Greek companies do not meet the expectations imposed on companies in more mature countries. Quite contrary, Polish companies exceed expectations at least regarding strategic issues. Overall, again Austrian and Croatian companies on the one hand and Greek and Polish companies on the other appear to be similar to each other concerning the level of development of sustainable controlling practices.

Discussion, conclusion and limitations

Our research is directed towards analysing controlling practice and the level of sustainable development in European companies. We aim to reveal whether controlling tasks and systems correspond with contemporary business conditions including the need of short-term economic alignment on the one hand and long-term commitment to sustainability on the other.

The results of our survey basically show that controlling plays an important role in all four European countries but that there is more responsibility and higher awareness for controlling issues in Austrian and Croatian companies as compared to Greek and Polish companies. Contrary to our hypothesis Austrian and Croatian (instead of Greek) companies recognize a slightly greater contribution of controlling tasks and functions to corporate success. Further, Austrian companies most likely dispose of controlling practices in an institutionalized way. Croatian companies show similar, but slightly weaker tendencies. Although controllers in all four countries are more

involved in short-term operational tasks and functions than in long-term strategic issues, the overall level of development of controlling practices is slightly higher in Austrian and Croatian companies as compared to Polish and particularly Greek companies. Accordingly, our results corroborate prior findings about the predominance of operational tasks including managerial information supply, operational reporting, planning and control (e.g. Becker and Ulrich, 2009; Stoffel, 1995; Weber et al., 1998). Only Austrian companies tend to perceive operational and strategic tasks as equally important, while Greek companies set largely different priorities on operational and strategic tasks.

Despite the emphasis on operational controlling tasks and, consequently, operational controlling instruments this focus is not identified regarding controlling activities directed towards sustainability. In general, instruments for sustainability controlling and sustainable development are rather rare in all four countries but, quite unexpectedly, strategic controlling instruments are still a bit more prominent than operational controlling instruments in this field. Our results corroborate findings of prior research that display a considerable lack of concrete measurements, efficiency analysis, and comprehensive controlling tools that encompass economic, social, and ecologic issues (Schaltegger et al., 2010). Nonetheless, Austrian and Croatian companies have the most balanced set of operational and strategic instruments towards sustainable development. On the basis of these insights we might assume that there are indeed considerable difficulties in making sustainability controllable and quantifying key-drivers of sustainability. It is maybe due to missing concepts for assessing sustainability and breaking it down to an operational level that controlling focuses on dimensions other than sustainability. In this sense, our research results reflect that controlling is still characterized by a dominant financial perspective, monetary values, short-term orientation, and internal information, even though companies are aware of other needs (i.e., increases in sales) and interest-groups (i.e., customers). Fortunately, all companies agree that education and training of management and employees is particularly important, followed by defining goals within the vision and mission oriented toward sustainable business practice. Since particularly Croatian, Greek and Polish companies pay much attention to employees, there are promising prospects to meet the requirements of a sustainable development and to increase corporate performance in the future.

Another eye-catching result is that Austrian and Croatian companies pay greater attention to legislation, state institutions and agencies. Knowing this might be important for foreign or internationally operating controllers and managers doing business with or in Austrian and Croatian companies. Moreover, foreign and national companies might be stimulated to develop ideas about cross-country and cross-company co-operations with Croatian or Polish companies because Croatian companies primarily care about trade unions and Polish companies about the public and industry partnerships. Concerning the latter prior results have already shown that business

activities in connection with the EU membership and public investments (i.e., in the infrastructure) are the driving force of the Polish economy (Leszczynska, 2010 and 2011).

Overall, Greek companies show lower and Austrian higher ratings than the other countries throughout most of the evaluated categories in our survey. Further, Austria and Croatia on the one hand and Greece and Poland on the other seem to form a country-cluster. Reasons for this apparent imbalance and contra-intuitive clustering regarding the level of development of controlling practices and sustainability may be four-fold: First, country-specific results may reflect differences in the history of a country (i.e., political development; industry partnership vs. industry competition; EU-integration). Second, since we conducted our survey in 2010 and early 2011 the impact of the 2008 financial crises may influence the results. Greece as compared to Austria, Croatia, and Poland was apparently most severely hit by the crises; this presumably explains some of the evident shortcomings in Greek companies. We therefrom may conclude that not maturity only determines a country's level of development but also unexpected and uncontrollable environmental incidents (i.e., business crises). Third, larger companies are more likely to implement controlling departments and use a broader range of controlling services and instruments (Küpper, 1991). Correspondingly, the predominance of large companies in the Austrian and Croatian sample but small and mainly privately owned domestic companies in the Greek and Polish sample might distort the results. Fourth, since controlling as a discipline emerged first in Germany (Weber and Schäffer, 2008) it is quite understandable that controlling practices are more advanced in Austria which is quite close to Germany in geographical, economic, cultural, and historical terms. However, since the unbalanced country-samples regarding the number of participants and business fields of companies might be a limitation of our survey, future research is recommended to build on an equal contribution from each country.

Further recommendations arising from these results mostly emphasise the need for increasing the awareness of a sustainable development and for enhancing concepts and instruments to link the large variety of sustainability-oriented strategic goals to operations and to make sustainability measurable and controllable. Given that there are country-specific differences, some countries, i.e. Greece and Poland, disclose a more considerable potential for further developments and improvements in the field of controlling activities, even though there is still noticeable potential also in Austria and Croatia. Fortunately, the companies of our survey apparently recognize the important role of internal business functions such as controlling and the need to expand knowledge, skills, and capabilities in order to support an integrative business management. If they did not, they would forgo the opportunity to take advantage of established information and management approaches and to make use of sustainability as well as economic information (Schaltegger et al., 2010). International comparisons like ours may not only help practitioners in controlling and

management to identify their individual level of development, but also open up possibilities to learn from others. On the basis of our findings it should be possible to cope with present shortcomings particularly in the European business environment in a more appropriate way and, consequently, to initiate improvements towards social and ecological sustainability of business and controlling activities.

REFERENCES

Artiach, T., Lee, D., Nelson, D. and Walker, J. (2010) 'The determinants of corporate sustainability performance', *Accounting and Finance,* Vol. 50, pp.31–51.

Becker, W. and Ulrich, P. (2009) 'Spezifika des Controllings im Mittelstand' *Controlling & Management*, Vol. 53, No. 5, pp.308-316.

Brühl, R. (2012) *Controlling: Grundlagen des Erfolgscontrollings,* 3rd ed., München: Oldenbourg.

Chichilnisky, G. (2011) 'What is sustainability?', *Int. J. Sustainable Economy*, Vol. 3, No. 2, pp.125-140.

Coenenberg, A., Fischer, T. M. and Günther, T. (2009) *Kostenrechnung und Kostenanalyse*, Stuttgart: Schäffer-Poeschel.

Cooper, D. J. and Hopper, T. (2007) 'Critical theorising in management accounting research' in Chapman, C. S., Hopwood, A. G. and Shields, M. D. (Eds.) *Handbook of management accounting research*, Vol. I, Amsterdam: Elsevier, pp.207–245.

Elkington, J. (1997) *Cannibals with forks. The triple bottom line of 21st century business*, Oxford: New Society Publishers.

Europäische Kommission (Ed.) (2002) *Mitteilung der Kommission betreffend die soziale Verantwortung der Unternehmen*, Brüssel.

European Commission (2012) *Sustainable development*, http://ec.europa.eu/environment/eussd/ (Download July 2012)

Fischer, T. M., Huber, R. and Sawczyn, A. (2010) 'Nachhaltige Unternehmensführung als Herausforderung für das Controlling', *Controlling,* Vol. 22, Nos. 4/5, pp.222-230.

Fischer, T. M., Sawczyn, A. and Brauch, B. (2009) 'Nachhaltigkeit und Sustainability Accounting', in Wall, F. and Schröder, R. W. (Eds.), *Controlling zwischen Shareholder Value und Stakeholder Value,* München: Oldenbourg, pp.261-287.

Friedman, M. (1962) *Capitalism and freedom*, Chicago: University of Chicago Press.

Habisch, A., Jonker, J., Wegner, M. and Schmidpeter, R. (2005) *Corporate social responsibility across Europe,* Berlin et al.: Springer.

Hahn, D. (1987) 'Controlling: Stand und Entwicklungstendenzen unter besonderer Berücksichtigung des CIM-Konzeptes', in Scheer, A.-W. (Eds.) *Rechnungswesen und EDV,* Heidelberg: Physica, pp.3-39.

Horváth, P. (2006) *Controlling*, 10th ed., München: Vahlen.

Krystek, U. and Reimer, M. (2012) 'Strategisches Controlling – Strategische Controller', *Controlling*, Vol. 24, No. 1, pp.10-15.

Küpper, H.-U. (1991) 'Übersicht und Entwicklungstendenzen im Controlling', in Scheer, A.-W. (Ed.), *Rechnungswesen und EDV,* Heidelberg: Physica, pp.243-270.

Küpper, H.-U. (2008) *Controlling,* Stuttgart: Schäffer-Poeschel.

Küpper, H.-U., Weber, J. and Zünd, A. (1990) 'Zum Verständnis und Selbstverständnis des Controlling', *ZfB*, Vol. 60, No. 3, pp.281-293.

Landsberg, G. v. and Mayer, E. (1999) *Berufsbild des Controllers,* Stuttgart: Schäffer-Poeschel.

Leszczynska, A. (2010) 'Manager's attitude toward environment', *Industrial Management & Data Systems,* Vol. 110, No. 8, pp.1234-1250.

Leszczynska, A. (2011) 'Impact of selected economic instruments on sustainable technological innovations on the case of Poland', *Int. J. Sustainable Economy*, Vol. 3, No. 1, pp.77-91.

López, V. M., Garcia, A. and Rodriguez, L. (2007) 'Sustainable development and corporate performance: a study based on the Dow Jones Sustainability Index', *Journal of Business Ethics*, Vol. 75, No. 3, pp.285-300.

Möller, K. and Stoi, R. (2002) 'Quo vadis Controlling?', *Controlling*, Vol. 14, No. 10, pp.561-569.

Nevries, P. and Weide, G. (2012) 'Die Leistungen von Top Controllern in den Phasen des strategischen Planungsprozesses', *Controlling*, Vol. 24, No. 1, pp.4-9.

Niedermayr, R. (1994) *Entwicklungsstand des Controlling*, Wiesbaden: Deutscher Universitätsverlag.

Niedermayr, R. (1995) 'Die Realität des Controlling', in Eschenbach, R. (Ed), *Controlling*, Stuttgart: Schäffer-Poeschel, pp.125-168.

Osmanagić Bedenik, N. and Lalovac, B. (2007) 'Controlling – Factor for business success. An example from the hotel industry', *Actaturistica*, Faculty of Economics University of Zagreb, Vol. 19, pp.83-99.

Preißler, P. (1998) *Controlling*, München-Wien: Oldenbourg.

Preller, E. (2007) 'Controlling und Sustainability', *Controlling*, Vol. 19, No. 1, pp.51-53.

Quick, R. and Knocinski, M. (2006) 'Nachhaltigkeitsberichterstattung. Empirische Befunde zur Berichterstattungspraxis von HDAX-Unternehmen', *ZfB,* Vol. 76, No. 6, pp.615-650.

Reinhart, C. M. and Reinhart, V. (2009) 'From capital flow bonanza to financial crash', in Felton, A. and Reinhart, C. M. (Eds.) *The first global crisis of the 21st century*, London: VoxEU.org Publication, pp.31-37.

Rose, A. K. and Spiegel, M. M. (2009) *Cross-country causes and consequences of the 2008 crises: early warning,* NBER Working Paper 15357, Cambridge (MA).

Sachs, S. and Maurer, M. (2009) 'Toward dynamic corporate stakeholder responsibility', *Journal of Business Ethics,* Vol. 85, Supplement 3, pp.535-544.

Schäffer, U. and Weber, J. (2012) 'Zukunftsthemen des Controllings', *Controlling,* Vol. 24, No. 2, pp.78-84.

Schaltegger, S. (2010) *Sustainability as a driver for corporate economic success. Consequences for the development of sustainability management control,* Lüneburg.

Schaltegger, S., Windolph, S. E. and Harms, D. (Eds.) (2010) *Corporate Sustainability Barometer 2010. Wie nachhaltig agieren Unternehmen in Deutschland?,* Lüneburg/Frankfurt a.M.

Schwarz, R. (2002) *Controlling-Systeme*, Wiesbaden: Gabler.

Stoffel, K. (1995) *Controllership im internationalen Vergleich*, Wiesbaden: Deutscher Universitätsverlag.

Sundin, H., Granlund, M. and Brown, D. A. (2010) 'Balancing multiple competing objectives with a balanced scorecard', *European Accounting Review,* Vol. 19, No. 2, pp.203–246.

Wall, F. and Greiling, D. (2011) 'Accounting information for managerial decision-making in shareholder management versus stakeholder management', *Review of Managerial Science,* Vol. 5, Nos. 2/3, pp.91-135.

WCED - World Commission on Environment and Development (1987) *Our common future,* Oxford: Oxford University Press.

Weber, J. (2005) *Das Advanced-Controlling-Handbuch*, Weinheim: Wiley-VCH.

Weber, J. and Schäffer, U. (2008) *Introduction to controlling,* Stuttgart: Schäffer-Poeschel.

Weber, J., Weißenberger, B. and Aust, R. (1998) 'Benchmarking des Controllerbereichs', *BFuP,* Vol. 50, pp.381-401.

Witt, F.-J. (1997) *Controlling 1,* München: Beck.

Zünd, A. (1979) 'Zum Begriff des Controlling', in Goetzke, W. and Sieben, G. (Eds.) *Controlling,* Köln: Gebera, pp.15-26.

APPENDIX

Table A 1: Economic data

		Austria	Croatia	Greece	Poland
Nominal GDP in billion $US	**2011**	419.2	63.8	303.1	513.8
	2010	379.8	60.8	305.4	469.4
	2009	382.8	63.4	327.3	430.5
	2008	416.1	69.9	348.7	529.4
	2007	375.6	59.4	311.2	425.3
	2006	325.3	49.9	265.3	341.7
Real GDP in billion $US	**2011**	352.0	80.3	294.3	771.7
	2010	334.3	78.7	309.4	724.0
	2009	323.0	78.7	317.0	688.6
	2008	332.3	82.9	324.3	670.7
	2007	320.6	79.4	317.7	624.1
	2006	300.4	73.4	299.6	568.0
Real GDP Growth in %	**2011**	3.1%	0.0%	-6.9%	4.4%
	2010	2.3%	-1.2%	-3.5%	3.9%
	2009	-3.8%	-6.0%	-3.3%	1.6%
	2008	1.4%	2.2%	-0.1%	5.1%
	2007	3.7%	5.1%	3.0%	6.8%
	2006	3.7%	4.9%	4.6%	6.2%
Nominal GDP per capita in $US	**2011**	49,809.2	14,457.0	27,073.4	13,539.8
	2010	45,270.8	13,775.9	27,310.7	12,285.7
	2009	45,768.8	14,324.2	29,328.1	11,275.1
	2008	49,915.3	15,758.1	31,307.7	13,876.3
	2007	45,245.6	13,382.7	28,009.0	11,155.7
	2006	39,339.4	11,234.8	23,930.6	8,962.9
Real GDP per capita in $US	**2011**	41,822.0	18,191.7	26,293.9	20,334.2
	2010	39,848.0	17,818.6	27,668.3	18,950.7
	2009	38,621.3	17,775.8	28,403.3	18,035.0
	2008	39,858.0	18,685.9	29,115.9	17,579.3
	2007	38,621.2	17,888.3	28,587.5	16,370.2
	2006	36,335.4	16,531.7	27,024.6	14,899.9

Source: World Economic Outlook April 2012; © International Monetary Fund

Table A 2: Chi square tests across countries – Companies' demographics and responsibility for controlling

		Value	df	Asymp. Sig. (2-sided)
Company size	Pearson Chi-Square	17.375	6	.007
	Likelihood Ratio	17.735	6	.007
	Linear-by-Linear Association	6.022	1	.014
	N of Valid Cases	145		
Ownership structure	Pearson Chi-Square	28.790	6	.000
	Likelihood Ratio	34.564	6	.000
	Linear-by-Linear Association	.279	1	.597
	N of Valid Cases	145		

Responsibilities for controlling tasks and functions	Pearson Chi-Square	8.277	3	.041
	Likelihood Ratio	9.356	3	.025
	Linear-by-Linear Association	.113	1	.736
	N of Valid Cases	144		

Table A 3: ANOVA across countries – Controlling contribution

Controlling contribution to corporate success	**F**	***p***
Root-cause analysis of failure and success	3.124	*.028*
Impact analysis	.748	*.526*
Implementation of modern accounting systems	.299	*.826*
Goal adjustment	1.364	*.257*
Comprehensive management support	3.503	*.018*
Implementation of reporting systems	10.241	*.000*
Information supply	4.333	*.006*
Reporting on changes in the competitive environment	.587	*.625*
Reporting on changes in the general environment	1.215	*.307*
Contribution to corporate success	.855	*.467*

Table A 4: Chi square tests across countries – Controlling tasks

Controlling tasks		**Value**	**df**	**Asymp. Sig. (2-sided)**
Operational planning and control	Pearson Chi-Square	28.987	3	.000
	Likelihood Ratio	26.447	3	.000
	Linear-by-Linear Association	17.611	1	.000
	N of Valid Cases	128		
Operational reporting	Pearson Chi-Square	20.269	3	.000
	Likelihood Ratio	17.788	3	.000
	Linear-by-Linear Association	13.988	1	.000
	N of Valid Cases	128		
Strategic planning, control and reporting	Pearson Chi-Square	9.274	3	.021
	Likelihood Ratio	9.566	3	.023
	Linear-by-Linear Association	5.299	1	.021
	N of Valid Cases	128		
Information supply	Pearson Chi-Square	1.521	3	.677
	Likelihood Ratio	1.506	3	.681
	Linear-by-Linear Association	.592	1	.442
	N of Valid Cases	128		
Investment budgeting	Pearson Chi-Square	6.955	3	.073
	Likelihood Ratio	7.340	3	.062
	Linear-by-Linear Association	1.186	1	.276
	N of Valid Cases	128		
Management consulting	Pearson Chi-Square	6.997	3	.072
	Likelihood Ratio	7.395	3	.060
	Linear-by-Linear Association	,031	1	.860
	N of Valid Cases			

Project-related planning, control and reporting	Pearson Chi-Square	9.582	3	.143
	Likelihood Ratio	8.579	3	.199
	Linear-by-Linear Association	4.762	1	.029
	N of Valid Cases	128		
Expense accounting	Pearson Chi-Square	.886	3	.829
	Likelihood Ratio	.862	3	.835
	Linear-by-Linear Association	.026	1	.873
	N of Valid Cases	128		
Coordination in planning, control and reporting	Pearson Chi-Square	22.543	3	.000
	Likelihood Ratio	23.333	3	.000
	Linear-by-Linear Association	10.283	1	.001
	N of Valid Cases	128		
Weaknesses and strengths profile	Pearson Chi-Square	6.101	3	.107
	Likelihood Ratio	6.840	3	.077
	Linear-by-Linear Association	.143	1	.705
	N of Valid Cases	128		
Scenario technique	Pearson Chi-Square	4.697	3	.195
	Likelihood Ratio	5.076	3	.166
	Linear-by-Linear Association	2.031	1	.154
	N of Valid Cases	128		
Discussion of improvement suggestions	Pearson Chi-Square	4.603	3	.203
	Likelihood Ratio	4.630	3	.201
	Linear-by-Linear Association	.955	1	.329
	N of Valid Cases	128		
Determining corporate goals and functions	Pearson Chi-Square	1.627	3	.653
	Likelihood Ratio	1.618	3	.655
	Linear-by-Linear Association	1.313	1	.252
	N of Valid Cases	128		

Table A 5: ANOVA across countries – Relevance of interest-groups

Interest-groups	**F**	***p***
Customers and suppliers	7.436	*.000*
Employees	9.111	*.043*
Trade unions	2.795	*.043*
Owners	1.178	*.321*
Industry partnerships	3.643	*.015*
Industry competition	3.959	*.010*
Legislation	12.070	*.000*
State unions and agencies	6.657	*.000*
Non-governmental organizations	2.042	*.111*
Public	2.666	*.051*
International agreements and conventions on sustainable development	3.017	*.032*

Table A 6: Chi square tests across countries – Corporate goals

Corporate goals		Value	df	Asymp. Sig. (2-sided)
Ensuring employees' salaries for the next month	Pearson Chi-Square	27.886	3	.000
	Likelihood Ratio	28.335	3	.000
	Linear-by-Linear Association	5.251	1	.022
	N of Valid Cases	145		
Increase in sales	Pearson Chi-Square	54crease in sales receivablesr the next monthppendix Table A 6) untry that is not part of the European Union yet. ey do not pay s.274	3	.000
	Likelihood Ratio	58.434	3	.000
	Linear-by-Linear Association	33.537	1	.000
	N of Valid Cases	145		
Decrease in business expenses	Pearson Chi-Square	8.487	3	.037
	Likelihood Ratio	8.718	3	.033
	Linear-by-Linear Association	.472	1	.492
	N of Valid Cases	145		
Staff development (e.g. skills, knowledge)	Pearson Chi-Square	7.971	3	.047
	Likelihood Ratio	8.214	3	.042
	Linear-by-Linear Association	2.214	1	.137
	N of Valid Cases	145		
Customer satisfaction	Pearson Chi-Square	36.638	3	.000
	Likelihood Ratio	43.325	3	.000
	Linear-by-Linear Association	36.276	1	.000
	N of Valid Cases	145		
Employee satisfaction	Pearson Chi-Square	16.743	3	.001
	Likelihood Ratio	17.463	3	.001
	Linear-by-Linear Association	10.483	1	.001
	N of Valid Cases	145		
Community's well-being	Pearson Chi-Square	48.109	3	.000
	Likelihood Ratio	52.162	3	.000
	Linear-by-Linear Association	.229	1	.632
	N of Valid Cases	145		

Table A 7: Chi square tests across countries – Controlling instruments for sustainable development

Controlling instruments for sustainable development		Value	df	Asymp. Sig. (2-sided)
Dialog with interest-groups	Pearson Chi-Square	.756	3	.860
	Likelihood Ratio	.759	3	.859
	Linear-by-Linear Association	.371	1	.543
	N of Valid Cases	145		
Media survey	Pearson Chi-Square	17.611	3	.001
	Likelihood Ratio	20.381	3	.000
	Linear-by-Linear Association	1.405	1	.236
	N of Valid Cases	136		
Public opinion survey	Pearson Chi-Square	8.917	3	.030
	Likelihood Ratio	9.461	3	.024
	Linear-by-Linear Association	8.710	1	.003
	N of Valid Cases	136		
Benchmarking	Pearson Chi-Square	2.549	3	.466
	Likelihood Ratio	2.584	3	.460
	Linear-by-Linear Association	.047	1	.828
	N of Valid Cases	136		
Early Warning Systems	Pearson Chi-Square	8.633	3	.035
	Likelihood Ratio	8.863	3	.031
	Linear-by-Linear Association	5.711	1	.017
	N of Valid Cases	136		
Defining sustainability goals	Pearson Chi-Square	4.879	3	.181
	Likelihood Ratio	4.903	3	.179
	Linear-by-Linear Association	2.965	1	.085
	N of Valid Cases	136		
Integration of sustainability in business strategy	Pearson Chi-Square	18.239	3	.000
	Likelihood Ratio	19.799	3	.000
	Linear-by-Linear Association	3.361	1	.067
	N of Valid Cases	136		
Strategic planning of sustainability	Pearson Chi-Square	10.423	3	.015
	Likelihood Ratio	11.549	3	.009
	Linear-by-Linear Association	.374	1	.541
	N of Valid Cases	136		
Employee compensation	Pearson Chi-Square	12.497	3	.006
	Likelihood Ratio	12.730	3	.005
	Linear-by-Linear Association	8.795	1	.003
	N of Valid Cases	136		
Management and employee training	Pearson Chi-Square	32.386	3	.000
	Likelihood Ratio	34.142	3	.000
	Linear-by-Linear Association	28.626	1	.000
	N of Valid Cases	136		

Sustainability indicators	Pearson Chi-Square	17.736	3	.000
	Likelihood Ratio	20.258	3	.000
	Linear-by-Linear Association	3.885	1	.049
	N of Valid Cases	136		
Green accounting	Pearson Chi-Square	4.244	3	.236
	Likelihood Ratio	4.868	3	.182
	Linear-by-Linear Association	1.225	1	.268
	N of Valid Cases	136		
Ethical and ecological branding	Pearson Chi-Square	.554	3	.907
	Likelihood Ratio	.637	3	.888
	Linear-by-Linear Association	.019	1	.891
	N of Valid Cases	136		
Sustainability Balanced Scorecard	Pearson Chi-Square	1.227	3	.747
	Likelihood Ratio	1.314	3	.726
	Linear-by-Linear Association	.368	1	.544
	N of Valid Cases	136		
Socially responsible behavior reports	Pearson Chi-Square	2.836	3	.417
	Likelihood Ratio	2.789	3	.425
	Linear-by-Linear Association	1.563	1	.211
	N of Valid Cases	136		
Ecological and social efficiency analysis	Pearson Chi-Square	11.799	3	.008
	Likelihood Ratio	16.563	3	.001
	Linear-by-Linear Association	9.251	1	.002
	N of Valid Cases	136		
Measurement systems and resource allocation control	Pearson Chi-Square	1.791	3	.617
	Likelihood Ratio	2.216	3	.529
	Linear-by-Linear Association	.009	1	.923
	N of Valid Cases	136		
Sustainability value added assessment (Due Diligence)	Pearson Chi-Square	30.560	3	.000
	Likelihood Ratio	36.911	3	.000
	Linear-by-Linear Association	18.649	1	.000
	N of Valid Cases	136		