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The Editor's Corner

Like previous issues of this journal, this one also focuses on transition research and welcomes different research areas, topics, and methods. As a result, the articles cover international as well as interdisciplinary topics. The current issue covers topics of radical innovation in corporate entrepreneurship, the use of metaphors in inter-cultural business communication, intra-industry trade flows, stock prices and board members, and shadow economy.

This issue begins with a paper written by Astrid Heidemann Lassen who explores the strategic entrepreneurship construct through case studies evolving around radical technological innovations. In the second paper, Sophie Cacciaguidi-Fahy and James Cunningham contend that the use of strategic metaphors can help deliver the effective inter-cultural business communication that is necessary for global success. The third paper, by Stanislav Černoša, provides the results of the analyses of the production structure or intra-industry trade specialization of the Czech Republic, Hungary, Poland, Slovenia and Slovakia in foreign trade with the European Union. In the fourth paper, Henryk Gurgul and Paweł Majdosz present an empirical examination of announcements of resignation of board members using data from the Warsaw Stock Exchange. In the last paper, Bojan Nastav and Štefan Bojnec investigate the shadow economy in Slovenia by using the labour approach.

Boštjan Antončič
Editor

Corporate Entrepreneurship: An Empirical Study of the Importance of Strategic Considerations in the Creation of Radical Innovation

Astrid Heidemann Lassen

The recognition of the importance of entrepreneurial dynamics in corporate context is increasingly acknowledged in both entrepreneurship and strategic management literature, as firms today face a reality in which frame-breaking innovation is an important element of survival. From this understanding, the concept of Strategic Entrepreneurship (SE) has arisen, arguing a logic of focusing on the intersections between the two fields. This paper sets out to explore the SE construct empirically. Through seven case studies evolving around radical technological innovations, evidence is found of the importance of incorporation of strategic considerations taking place at several different levels of the organization, in order to obtain a desirable balance between entrepreneurial and strategic forces. An Integrative Model of Strategic Entrepreneurship is suggested based on this evidence.

Key Words: strategic entrepreneurship, radical innovation, case studies

JEL Classification: O31, O32

Introduction

In a reality characterized by intensified global competition, dynamic change and increasing uncertainty, the need for organizations to become more innovative in order to survive and grow is increasing rapidly. In this context, corporate entrepreneurship is more relevant than ever, as a viable means for existing organizations to continuously explore and exploit previously unexploited opportunities, thereby moving the organization (or some subset of individuals) to a new state of being (Stevenson and Jarillo 1990; Krackhardt 1995).

Researchers have suggested that the pursuit of corporate entrepreneurship requires established companies to strike a fragile balance between engaging in activities that make use of existing knowledge, while at the same time challenging themselves to embark upon new adventures, seeking new knowledge and opportunities to rejuvenate themselves (Hannan and Freeman 1989; Floyd and Woolridge 1999).

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Radical or breakthrough innovations often lie at the core of entrepreneurial activity; corporate entrepreneurial activity therefore differs dramatically from all else known to the firm (Ahuja and Lampert 2001). However, engaging in radical innovation as a periodical divergence from firm strategy in order to pursue corporate entrepreneurship may involve such a degree of unfamiliarity and risk that firms experience great difficulties in doing so, and consequently explore, manage and exploit the innovation poorly.

Focusing on this problematic aspect, a perspective has recently emerged within the field of entrepreneurship, calling for the integration of strategic advantage-seeking and entrepreneurial opportunity-seeking behavior. This perspective, called Strategic Entrepreneurship (SE) emphasizes the importance of managing entrepreneurial resources or activities strategically in order to obtain competitive advantage (Hitt, Ireland, Camp, and Sexton 2001; Ireland, Hitt, and Sirmon 2003). In this light, corporate entrepreneurship should be interpreted as an on-going strategic consideration of entrepreneurial opportunities rather than as an isolated activity diverging from strategy, and this way as the 'locus of contact' between the fields of entrepreneurship and strategic management (Sandberg 1992).

Most literature on SE has to date focused on arguing a logical theoretical construct, integrating aspects from the fields of strategic management and entrepreneurship based on the understanding that both fields are concerned with firm growth and wealth creation and hence are often mutually supportive (Ireland, Kuratko, and Covin 2003). However, the empirically based understanding remains to be further developed.

Acknowledging and building upon the theoretical contributions of SE, as well as the Schumpeterian perspective on the degree of innovation involved in entrepreneurial activity, the research presented in this paper aims at exploring empirical relationships between strategic advantage-seeking and opportunity-seeking behavior leading to radical innovation in a corporate context.

Initially a theoretical background of the topic in question will be accounted for, providing the analytical frame of the empirical data. Secondly, the research method applied will be discussed. Hereafter, the findings of the qualitative research will be discussed in relation to the existing understanding of SE, and conclusions on the research question will be drawn.

Theoretical Background

The fields of strategic management and entrepreneurship are becoming increasingly intertwined, in a reality where firms need to be able to manage continuous change and maintain flexibility in order to survive. Hence, the concept of Strategic Entrepreneurship (SE) has seen the light of day, as a highly relevant topic.

The idea behind SE has progressively emerged over the past decades as a perspective on the intersecting dynamics between entrepreneurship and strategic management; Miles and Snow (1978) consider the entrepreneurial problem as a fundamental issue faced by all firms; Stevenson and Jarillo (1990) and Day (1992) express this idea as entrepreneurial management; Mintzberg, Lampel, and Ahlstrand (1998) through his discussion of the entrepreneurial and cognitive schools within the strategic management literature; Sandberg (1992) views it in terms of corporate entrepreneurship; Dess, Lumpkin and Covin (1997) as entrepreneurial strategy making; and McGrath and McMillan (2000) discuss strategy as discovery and the need for an entrepreneurial mindset. As such, the idea of interrelatedness between strategic management and entrepreneurship has through a range of contributions been discussed in different terms, underlining the need for addressing this intersection explicitly. This need has in particular been addressed by Hitt, Ireland, Camp and Sexton (2002), uniting thoughts by various scholars under the term Strategic Entrepreneurship.

One of the major hurdles in doing so lies in the fact that where strategic management has traditionally been concerned with large corporations, entrepreneurship has mainly focused on start-up ventures and small firms. As such, the challenges and opportunities in focus in the two fields respectively have been at different units of analysis and consequently influenced by different dynamics. Strategic management of large corporations has been largely concerned with optimizing the use of existing resources, making judicious allocation decisions and controlling correct utilization, while entrepreneurship implies identifying non-addressed needs, proposing original solutions and creating new organizations. As such, SE initially seems to entail a contradiction in terms.

But, there are forces within both fields driving forth thoughts of integration. Within the field of strategic management there has been a shift in paradigms, highlighting the dynamic nature of organizations and the

need for all organizations to be entrepreneurial. This is, for example, seen through the transition towards defining strategy as a perspective rather than a position, meaning that strategy is seen in wide terms, as the 'theory of the business' (Drucker 1994) and a 'pattern that is consistent in behavior over time' (Mintzberg, Lampel, and Ahlstrand 1998).

Entrepreneurship literature has also paid increasing attention to existing companies, through terms such as; intrapreneurship (Pinchot 1985; Kuratko et al. 1993; Antoncic and Hisrich 2001); corporate entrepreneurship (Kuratko, Montagno, and Hornsby 1990; Zahra 1991; 1993), internal corporate entrepreneurship (Schollhammer 1982), corporate ventures (MacMillan et al. 1986; Ellis and Taylor 1988); venture management (Veciana 1996), internal corporate venturing (Burgelman 1984), entrepreneurial posture (Covin and Slevin 1986; 1991) and entrepreneurial orientation (Lumpkin and Dess 1996). This paper focuses on firm level entrepreneurship and is built on the definition of this phenomenon being: 'a scholarly field that seeks to understand how opportunities to bring into existence future goods and services are discovered, created and exploited, by whom, and with what consequences' (Shane and Venkatamaran 2000, 218), which is seen through 'emergent activities and orientation based on the effective combination of autonomy, innovativeness, risk-taking, proactiveness and competitive aggressiveness' (Lumpkin and Dess 1996, 162).

A unifying factor between strategic management and entrepreneurship is also found in the fact that researchers in both fields use firm performance as a primary dependent variable. For example, Schollhammer (1982), Miller (1983), Venkataraman and Ramanujam (1986), Khandwalla (1987), Guth and Ginsberg (1990), Naman and Slevin (1993), and Lumpkin and Dess (1996) have all noted that organizational level entrepreneurship can be used to improve competitive positioning and transform organizations, their markets, and industries as opportunities for value-creating innovation are developed and exploited. As such, the traditional barriers between strategic management and entrepreneurship theory have become increasingly transparent, and a need to address the overlaps in thoughts has become apparent.

When addressing the overlaps between entrepreneurship and strategic management it is furthermore relevant to focus on the notion of *innovation*, as there is a very strong relationship between innovation and entrepreneurship (Antoncic and Hisrich 2003). Depending on the perspective applied, innovation can be perceived as either the firm performance

achieved through entrepreneurial behavior, or as the grounds on which entrepreneurial behavior grows. In this paper the relationship is seen in the fact that the essence of entrepreneurship is perceived to be *newness*: new resources, new customers, new markets, and/ or new combinations of existing resources, customers or markets. In this sense, *opportunity recognition* is highly related to *departure from the customary*.

The notion of 'newness' has, however, also been treated from different angles in entrepreneurship literature and needs further clarification before considering the overlaps with strategic management. Following a Kirznerian perspective, entrepreneurial newness is accomplished through equilibrating actions that are based on the combination of existing and related resources that revise existing knowledge about markets and fill out asymmetries (Kirzner 1982). As such, entrepreneurship is in this perspective placed in the context of exploitation and incremental innovation. In contrast, a Schumpeterian perspective is the notion of disequilibrating actions that are based on a combination of existing but unrelated knowledge that is incompatible with prevailing mental models (Schumpeter 1934). In this sense, entrepreneurial newness disrupts existing patterns and structures in order to create new ones. Disequilibrating actions can produce long-term competitive advantage because they are complex and will be difficult for competitors to identify and especially imitate. In this sense, entrepreneurship is connected to exploration and holds the potential of setting the stage in new arenas of competition, and leaving competitors far behind.

As such, entrepreneurial innovation can be thought of as a continuum from incremental to radical innovation. Incremental innovation is critical to sustaining and enhancing shares of mainstream markets (Baden-Fuller and Pitt 1996) and focuses on improving existing products and services to meet evermore demanding customer requirements (Bessant 2003). Radical breakthroughs, on the other hand, serve as the basis for future technologies, products, services and industries (Christensen 1997; Hamel 2000; Abetti 2000), and are of a highly revolutionary or discontinuous nature. Radical innovation represents a new paradigm that can generate new wealth whilst transforming or displacing some or all of an established market (Christensen 1997).

In this paper, a Schumpeterian perspective on entrepreneurial newness is adopted, as radical and disequilibrating innovation is considered to pose an obvious and interesting contrast to strategic and planning oriented activities, which could provide additional insights into the differ-

ent patterns of growth covered by the term Strategic Entrepreneurship.

For the purpose of this paper, radical innovation is defined following the definition of O'Connor and Ayers (2005) as the commercialization of products or technologies that have a strong impact on (1) the market, in terms of offering wholly new benefits, and (2) the firm, in terms of generating new business. To specify this somewhat more in detail, Leifer's definition is also considered, stating that a radically innovative project must entail at least one of the following: (1) new to the world performance features, (2) significant (5–10×) improvement in known features or (3) significant (30–50%) reduction in cost (Leifer et al. 2000). As a significant contribution, March (1991) furthermore, made the distinction between exploitation of existing technology and exploration of new technology. Adopting this thought, the definition is thereby driven by the degree of new value added to the marketplace through exploration of new opportunities.

It is clear that the rationale behind *SE* is highly relevant and well-argued by both fields. This has led to the development of a model of Strategic Entrepreneurship by Ireland, Hitt, and Sirmon (2003), describing the process of combining advantage-seeking behavior and opportunity-seeking behavior. The outset, the 'entrepreneurial mindset', the 'entrepreneurial culture' and the 'entrepreneurial leadership', reflects opportunity-seeking behavior; followed by the advantage-seeking strategic management of financial, human and social capital. Next, creativity is applied in the development of the actual innovation, which will provide the competitive advantage and wealth creation. The model serves as point of departure for the analysis of the empirical data.

Method and Research Question

Using a holistic multi-case design (Yin 1989), case studies in seven established firms were carried out. The case firms were selected based on criteria for corporate entrepreneurship defined through theory and involvement in radical innovation. The case firms are all placed within high-tech industries, and each evolves around a radical technological innovation. The case firms differ in size, age and specific industry, and this does to some extent influence the circumstances surrounding the innovation process. However, the essential elements of comparison between the cases were the fact that they have all achieved a radically innovative performance through the projects which were followed, and the fact that they can all be characterized as entrepreneurial. As such, the

similarities in entrepreneurial dimensions involved and innovative performance are considered to be a central unifying factor. The differences between the cases are perceived to be useful in highlighting different angles of the relationship between strategic considerations and corporate entrepreneurship. By selecting cases based on the involvement in corporate entrepreneurship rather than industry specific characteristics, Yin's (1989) recommendations of not falling into the trap of trying to select a representative set of cases in order to create generalizability were considered, as no set of qualitative cases is likely to deal satisfactorily with this. Instead, the intent is to generalize the different qualitative findings to theoretical patterns. Through the analysis of the cases the central research question of the paper is answered:

Which roles do strategic considerations play in a corporate context in relation to the recognition and development of radically innovative opportunities?

The cases are based on between 3 and 10 in-depth qualitative interviews with top-management, middle-managers and R&D professionals over a period of one year. As such, the process of innovation was followed through considerations about the past, the present and the future, made by the interviewees at different points in time during the process. This research approach is an expression of an explorative and reflective approach, allowing for a gradual development of the understanding of the case through a dialectic process between interviewee and interviewer. Validity in the qualitative data is obtained through emphasis not on the repeatability of the interviews but rather on their quality by focusing on the careful training of the interviewer, the use of interview protocols and the quality control of the data-analysis done by sharing the information and analysis with the interviewee.

Time was additionally spent on the premises of the firms, observing the day to day working of each organisation. This enabled the development of insights into organisational culture and establishment of impressions from other employees which would have been difficult to obtain through interviews only.

Relevant documentation was furthermore provided by the respondents both prior to and after the interviews. This included; strategic documentation, product development roadmaps and funding proposals. These data have been used to cross reference findings from the interviews and to provide added historic background on the case studies.

TABLE 1 Overview of case firms

Case	Characteristics of the firm	Innovation
A	Established in 1976. <i>Profile:</i> Develops, manufactures and markets professional audio products. <i>Size:</i> 185 employees.	Unique technology within digital signal processing.
B	Established in 1925. <i>Profile:</i> Develops, manufactures and markets high-design audio/visual products. <i>Size:</i> 2300 employees.	Unique audio power conversion technology.
C	Established in 1956. <i>Profile:</i> Analytical solutions for food and agricultural products. <i>Size:</i> 1100 employees.	Variations of existing technologies applied in unrelated fields.
D	Established in 1922. <i>Profile:</i> Healthcare firm focused on diabetes care. <i>Size:</i> app. 20,250 employees.	Monitor of intracellular events and protein translocation in real time.
E	Established in 2001 as independent spin-in to a British firm. <i>Profile:</i> Wireless communication. <i>Size:</i> 32 employees.	Front edge silicon IP for wireless terminals.
F	Established in 1933. <i>Profile:</i> Refrigeration and air-condition, heating and motion control (case within Heating and Water division). <i>Size:</i> 17,500 employees.	Radical rethinking of CO ₂ sensor technology.
G	Established in 2002. <i>Profile:</i> Audio development firm. <i>Size:</i> 5 employees.	Unique 3D sound.

TABLE 2 Radical innovation in cases

Indication of radical innovation in the cases	A	B	C	D	E	F	G
Offering wholly new benefits to the market	•	•	•	•	•	•	•
Generating new business within the organization	•	•	•		•	•	•
New to the world performance features	•	•	•	•			•
Significant (5–10×) improvement in known features	•	•	•	•	•	•	•
Significant (30–50%) reduction in cost		•			•	•	

Tables 1 and 2 respectively give an overview of the case firms and illustrate the radicalism of the innovation in each of the cases, following the definitions of Ayers and O'Connor (2005) and Leifer et al. (2000).

Findings and Discussion

Although it is possible to interpret the findings from the case studies in somewhat different ways, it is suggested in this section that distinctive and valuable insights arise on the strategic considerations involved in the

recognition and development of radical innovation in the cases. Looking at the cases in a cross-case perspective three distinct patterns arise. Each case is not presented separately; instead the observations in the cases are grouped, adding representative highlights, to allow for reflection on the central question.

Initiating the analysis, the cases are evaluated in relation to the overall corporate strategies of the firms in which the cases took place, in order to create a picture of the possible different strategic patterns to consider in the continued research. This instantly revealed a high variety between the cases. Cases B and C were examples of technologies developed in line with the overall firm strategy. These were based on a consciously intended course of action, and with the strategy being formulated ahead of the events leading to the innovation. Top-management were instigators behind the projects, and had clear views on why the innovations were developed, how they would fit/differ from the existing product portfolio, and which markets could be targeted or created with this innovation.

A second grouping, consisting of cases D and F, was clearly not related to the overall firm strategies. These projects were highly influenced by individual entrepreneurs with great personal involvement in the projects, and were *developed in an atmosphere of conflict* where they found resources and leeway on a 'on and off' basis, only due to the ever-changing opposing internal political agendas.

Cases A, E and G on the other hand were peripherally related to the firm strategy, and the strategic decision making seemed to develop in the absence or maybe even in spite of explicit intentions – in this way developing and *revealing the strategy in step with the development* of the innovation. A changing range of different individuals, from top-management to R&D, were involved in the experimentation, conceptualisation and creation of the innovation at different points in time, and clear formal procedures did not lead the process.

This initial grouping of the cases provides a useful pattern of very different roles played by strategic considerations in entrepreneurial innovation, which in the following is used as point of departure for the continued analysis. The three groupings are referred to as 'the pre-defined journey', 'the personal quest' and 'the infinite journey of opportunity creation'.

THE PRE-DEFINED JOURNEY

Case B tells the story of how top-management teams from two sources of existing knowledge realized that through research-cooperation, radically new

knowledge in a mutually beneficial area could be created. Hence, a strategic partnership was formed, a plan for the entrepreneurial journey was specified, and the right innovative individuals to undertake the journey were appointed. This journey was focused on the development of a radically new technological platform, used in audio power suppliers, audio amplifiers and audio transducers, which diminishes the loss of effect by more than 10 times. This offered possibilities of supplying customers with far better, much cheaper and more environmentally safe sound as well as new, smaller and very different designs of the products in which it was to be implemented. The technological invention was in focus and the specific project idea had an obvious home when it matured and was ready for commercialization. Thus, a constructive relationship between the business unit and the project was established and organizational uncertainty was reduced. The infrastructure for contacting customers, understanding markets and delivering the innovation was also well understood. The performance of the technology gave the firm strong advantages in comparison to competitors.

It was, however, also realized that the new technology held the additional possibility of being applied and creating profit in a range of unfamiliar markets, which the firm of origin did not wish to enter itself. Hence, the project was spun off into a separate firm, which gave the parent firm clear competitive advantages in markets not prior addressed.

The source of the initial opportunity recognition in this first group (cases b and c) is the top-management; setting the stage for entrepreneurial innovation based on top-down strategic considerations. The strategic management of resources (human, social and financial) aligns the innovative activity very well with existing products, markets and known customers, and the management-teams are highly oriented towards opportunity recognition within a strategically well-defined context.

Both cases are characterized by being projects aimed at replacing existing technologies for essentially the same customers and markets, and the radical innovations consist mainly of offering new features and dramatic cost reductions. As such, the main aim of the entrepreneurial innovations is to strengthen the firms' position in a familiar market. Additional opportunities were discovered and exploited as the innovations evolved, which indicates a strategic flexibility of the firms, but the main part of innovation process evolved according to a formal plan, showing the high influence of strategic planning. This furthermore has the effect that the innovation processes are largely controllable and risk is reduced

significantly. The competitive advantages gained through the two cases are considered to be results of an intended advantage-seeking behavior and deliberate strategic planning of the entrepreneurial innovation.

Relating the knowledge of the characteristics of this group to the model of SE by Ireland, Hitt, and Sirmon (2003), it is found that there is a high degree of similarities between the model and the empirical evidence; At the outset, the process is initiated based on the entrepreneurial mind-set of top-management and is made possible by a corporate culture embracing highly innovative and knowledgeable individuals, who are assigned to the projects. The strategic management of resources is a primary activity in the process, taking place before the actual application of creativity and development of the innovation. This process leads to competitive advantages and significant wealth creation largely within the context it was originally planned to target.

However, the element of entrepreneurial leadership is not clearly present in the empirical evidence. Entrepreneurial leadership is defined by Covin and Slevin (2002) as consisting of: the nourishment of an entrepreneurial capability, protection of innovations that threaten current business models, sense-making of opportunities, questioning the dominant logic, revisiting the 'deceptively simple questions' and linking entrepreneurship to strategic management. Sense-making of opportunities and linking entrepreneurship to strategic management are clearly present, but the remaining elements are not found.

Looking closer at the dominant logic reflected through the cases, a plausible explanation for the absence of the before-mentioned elements is reached. Using the metaphor of a journey, it became clear that the destination/performance of the entrepreneurial journey was in focus from the very outset, and that the boundaries of the journey were clearly defined through planning. The management of this process was hence largely within a comfortable zone, because the course of events was predictable, and no particular risks were necessarily taken. This reflects a *dominant logic of causation*; taking a particular effect as given and focusing on selecting between means to cause this effect (Sarasvathy 2001). This illustrates a view on entrepreneurship as the inevitable outcome of mechanical forces, stochastic processes, or environmental selection, rather than as creation of artifacts by imaginative actors fashioning purpose and meaning out of contingent endeavors. Nourishment of entrepreneurial capabilities, protection of innovations that threaten current business models and questioning the dominant logic of a firm, im-

ply the ability to picture the unforeseen, rather than the planned, as the driving force of the entrepreneurial capability, and are as such opposing the dominant logic depicted in the cases. Hence, the leadership portrayed was strategic to a much higher degree than it was entrepreneurial.

Hence, an approach reflecting *SE* as a 'pre-defined journey' does not necessarily foster a continuous entrepreneurial ability, which will provide firms with a foundation for repeatedly exploring new arenas and the ability to exploit the possibilities emerging. This perspective rather presents a way of managing processes aimed at combining and exploiting known resources, and is in this sense not *departing from the customary*, which is an essential part of entrepreneurship. As such, the optimal balance between entrepreneurship and strategic management is not reached.

THE PERSONAL QUEST

Case D tells the story of how a few innovative individuals in a large healthcare firm discovered a radically new technique for monitoring and using protein translocation as a readout for the activity of cellular signaling pathways. As such, the technique offered a way of testing and comparing the effect of millions of different components on protein-based medical products at a very high speed, and was able to lead healthcare research on the track of new effective components to substitute old and increasingly ineffective ones. The development of the invention therefore had the potential of serving new customers in new ways as well as adding value for old customers. The invention in itself was not a core business area for the firm, but nevertheless fell within the context of the firm.

The idea originally won resources for project funding through an internal contest in the firm, but the project was closed down after a change in management, as it did not match the narrow but very profitable corporate strategy. The inventor was, however, still highly committed to the project and placing personal pride in the survival of the idea, as he was convinced that it held the potential for new market creation and wealth. Using political skills and his power as a central research figure, the inventor gradually convinced management to support the creation of a spin-off firm, which he would head himself. The spin-off has since then been able to create unique results in cooperation with a wide range of other healthcare firms.

A second group (cases *D* and *F*) is characterized by high personal involvement of particularly entrepreneurial individuals within the firm. The ini-

tial opportunity recognition is made by the individuals and the development of the opportunity is also largely dependent on the personal efforts rather than on a formal process. As such, the entrepreneurial mind-set of top-management is in these cases less important than that of the individuals for recognition of the opportunity and development of the innovation.

The projects are characterized by being radical new technologies which fall 'between' existing businesses, meaning that they do not have obvious homes from the initiating stage, but could possibly end up as either new business units or in existing divisions that are prepared to expand the scope. Although the markets served by these innovations would be new for the firm, they would still be related to the firms' existing contexts. However, as the projects in the cases are not clearly aligned with the overall firm strategies, they face difficulties at all stages of the process, and they developed in an atmosphere of on-going conflict. The cases depict bottom-up entrepreneurial activities that are carried out as personal opportunity-seeking quests, rather than advantage-seeking behaviour.

Considering the development of the innovations in light of risk vs. control, it is found that both cases are considerably risky projects that are difficult to evaluate in terms of traditional criteria, such as time, need of resources, potential return on investment etc. As such, the possibilities of control during the process are limited, which constitutes a serious challenge in relation to the strategic management.

Although top-management in both cases consider themselves to be entrepreneurial and both firms do have an innovative organizational culture, it is clear that entrepreneurial activity is allowed only within certain pre-defined limits, and that projects breaking these boundaries are handled only with great difficulty. This indicates that management apply a dominant logic of causation, which in this group is causing a conflict since the dominant logic of the individual entrepreneurs is not in line with that of the top-management. The *dominant logic* of individual entrepreneurs is based on *effectuation* (Sarasvathy 2001), where they as imaginative actors seize contingent opportunities and exploit any and all means at hand to fulfill a plurality of current and future aspirations, many of which are shaped and created through the very process of decision making and are not given a priori.

The opposing forces of the corporate strategy and the entrepreneurial individual are also seen in relation to competitive advantage. In case D, the entrepreneurial individual breaks away from the corporate strategy as

the project is spun off, and the competitive edge, which the innovation could have provided for the parent firm, is now shared with a range of competitors. Case F is, on the other hand, still living a life in the skunks of the parent firm, trying to adjust to conformity in such ways that it will be able to fit into corporate strategy. This, in spite of the fact that the project has demonstrated the potential of significant improvements in known features leading to significant cost reductions, and possible application in a wide cross-sectional selection of the products of the firm, creating radically new effects in performance of these.

As such, the innovation process depicted through cases D and F deviates noticeably from the one pictured in the model of SE (Ireland, Hitt, and Sirmon 2003). The initiation is based on the entrepreneurial mindset of the individual rather than the management of the firm. This is closely interlinked with the firms' entrepreneurial culture, yet lack of entrepreneurial leadership. The application of creativity and the development of the innovation are central activities in this process, and only hereafter is the strategic management of resources considered. Due to the conflicting forces, the competitive advantage and wealth creation gained by the parent firm on the basis of the innovations is limited.

It is evident that cases D and F demonstrate the exact conflict between a largely strategically oriented firm and the entrepreneurial forces, which SE wishes to overcome. As such, an approach reflecting corporate entrepreneurship as a 'personal quest' is considered to entail the risk of the entrepreneurial forces creating strong contradictions to the strategic forces of a firm. However, in order for a firm to successfully nourish an entrepreneurial culture, the ability to embrace and incorporate 'personal quests' must be present as a means of continuous exploration. The conflict portrayed by this group is highly relevant for the understanding of SE, as it draws attention to the importance of the individual in entrepreneurship.

THE INFINITE JOURNEY OF OPPORTUNITY CREATION

Case A tells the story of a firm which repeatedly has been able to move in new directions, leapfrogging competitors, and creating rapid growth. The firm was started as an entrepreneurial venture by two brothers, based on their personal interest in how to develop new technological advances for guitar pedal-effects. When adding a professional management-team, the firm experienced rapid growth over several years, and became world-leader within digital signal and effect processing for professional audio environments, for example recording-studios, TV, and radio stations.

The case evolves around the development of digital signal-processing equipment, which revolutionized possibilities in audio products, and the case pictures how re-thinking a technological platform from hardware to software meant that the firm was able to expand existing markets, move into different markets, and direct the creation of new markets. This embodied a high organizational uncertainty and implied that the strategic context of the firm had to be reset. This was done through a process where the project was initially spun off into a separate venture and later integrated again, as the innovation and its possibilities had matured and become more manageable in connection with existing resources. The management of the firm considers the abilities to explore and integrate new knowledge on an on-going basis, and the willingness to break existing frames of conduct as core competences of the firm. This spirit is highly reflected in the employees. One of the main difficulties experienced by the firm is how to make sure that the ability to create cutting edge innovations does not overshadow the focus on and the ability to exploit all innovations to the fullest.

The third group, consisting of cases A, E and G, showed a very different pattern from the two prior groups. Slightly different roads were followed by the three cases in the group, but essentially the patterns for opportunity recognition and development were highly similar.

The initial opportunity recognition did not have an obvious starting point as a top-down or bottom-up initiative. Instead a changing range of individuals from top-management to R&D were involved, and the opportunity recognition consisted of thoughts about the technological possibilities, the markets that could be targeted, as well as markets that could be created. The projects were as such not held to a specific plan based on the existing strategy, but rather *expanded and created the strategy* as the possibilities of the innovation became clear. The top-down management was reflected as leadership rather than management and the significance of self-organized groups around motivating individuals was defining. These individuals were in some cases members of the top-management, but in others individuals with specific insight into marked and/or technological conditions. As such, the actual management took place in the groups and through the motivating key individual. This approach highlighted a culture with high focus on the capabilities and responsibilities of the individual, and the symbolic 'hero' in the firms was the highly knowledgeable developer with the ability to depart from the customary.

The type of innovation engaged in was predominantly highly ex-

ploratory and thus subject to risk. The risk management, however, did not use planning and control parameters as the primary tool to reduce this risk. Instead, risks were reduced through deliberate sharing of knowledge across a wide spectrum of people, discussing many different angles of the projects continuously. This approach reflects a *dominant logic of effectuation*, where a set of means is created and focus is placed on selecting between the range of possible effects that can be created with this set of means. This brings a unique ‘rationality’ to the management applied in the absence of preexistent goals and high uncertainty.

Effectuation-logic was also reflected through the strategic management of resources, as considerations on human- social- and financial resources were highly interlinked with the top-management’s efforts to create a balance between being market oriented and exploring unknown arenas. The competitive advantages were achieved by establishing several different rhythms in the firm, for example one focusing on exploiting existing cash-cows and one focusing on the exploration and creation of new initiatives. The entrepreneurial activities in case firms A, E and G were as such perceived to be ‘infinite journeys of opportunity creation’ rather than isolated events initiated at strategically planned points in time.

Seen in relation to s_E , this group reveals a very high ability to integrate strategic and entrepreneurial forces. An approach reflecting corporate entrepreneurship as an ‘infinite journey of opportunity creation’ therefore illustrates the thoughts put forward in s_E .

However, the model of the innovation process seen through this group evolved somewhat differently than the process suggested in the model of s_E by Ireland, Hitt and Sirmon (2003). The entrepreneurial mindset in the organization was an integrated part of the entrepreneurial culture, and as such, the two elements did not stand out from one another; the shared system of values and beliefs that shaped the firms’ structural arrangements and the actions of their members continuously reinforced the entrepreneurial mindset and vice versa. The integrated entrepreneurial orientation in the firms provided the essential foundation for initiation of the opportunity recognition as well as the development of the innovation.

A strong influential factor was the entrepreneurial leadership, which created a frame of innovation and creativity in the firm, consisting of development of opposing scenarios, a flexible use of resources, and a dynamic changeability in structures and processes. The entrepreneurial

leadership was found to be expressed through, respectively, the self-management by the individual, the top-management, and the dynamics of self-organization at group-level. This approach ensured that leadership and strategic management of resources is not merely a concern of the top-management, but is an integrated part of the way, in which the entrepreneurial individuals in the organization perceive and develop opportunities.

An Integrative Model of Strategic Entrepreneurship

Considering the different patterns in relation to sE, it has become evident that the process of the 'pre-defined journey' corresponds highly to the process illustrated in the model of sE; the organizational mindset and culture is innovative, and the specific innovations developed are products of intended planning through a primary process of strategic management of the existing resources of the organizations.

However, lacking from this picture is the entrepreneurial leadership allowing for questioning of the dominant logic, protection of innovations that might threaten the current business models, and innovations based on emergent strategies. As such, the 'pre-defined journey' approach is not fully able to capture the exploratory nature of entrepreneurship, but remains predominantly focused on the strategic exploitation of the existing.

The 'personal quest' approach illustrates exactly the conflicts caused by the lack of entrepreneurial leadership in the before-mentioned approach, when an entrepreneurial individual seeks to explore new venues. The approach reflecting an 'infinite journey of opportunity creation', however, captures the logic underlying sE; the integration of *emergent activities based on the effective combination of autonomy, innovativeness, risk-taking, pro-activeness and competitive aggressiveness* (Lumpkin and Dess 1996) with advantage-seeking behavior through *strategy as discovery* (McGrath and McMillan 2000). This shows an integration of the entrepreneurial culture, the entrepreneurial leadership and the strategic management of resources in such a way that both opportunity-seeking behavior and advantage-seeking behavior become a concern of the entire organization. The level of responsibilities allocated to group-level stands out and indicates that this level is of primary importance for the successful integration of the two opposing forces.

Based on this understanding, a revisit of the model on sE by Ireland, Hitt, and Sirmon (2003) is suggested and an illustration, which high-

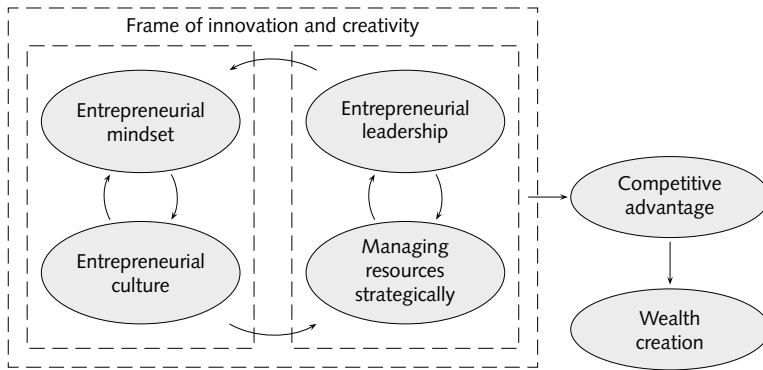


FIGURE 1 An integrative model of Strategic Entrepreneurship

lights an iterative integration rather than a sequential development of the Strategic Entrepreneurship process, is proposed (see figure 1).

The Integrative Model of Strategic Entrepreneurship calls for a continuous organizational readiness to explore new arenas and recognize possibilities, and the ability to act on and exploit the recognized possibility. This requires an integration of entrepreneurial as well as strategic considerations made at the individual level, the group-level and at level of top-management, as strategic decisions are the result of much more than the characteristics of a top management team. The entrepreneurial mindset and the entrepreneurial culture found in the firm become mutually reinforcing, and the entrepreneurial leadership and the strategic management of resources stimulates this posture and is likewise in reverse influenced by it. Especially the development of an SE consciousness at group-level is considered to be of essential importance, as the empirical evidence shows that this is where the actual development of innovations takes place and where an understanding of direction must ensure that disequilibrating activities are undertaken yet not overshadowing exploitation. Also, it is at this level, in the everyday interactions between actors, that a corporate culture of SE is created and reinforced on the base of the joint knowledge, experience, cognitive skills, and other resources of the organization. As such, group processes in strategic decisions and the effectiveness hereof must be in focus.

Conclusion

This paper closes as it began; reflecting on the fragile balance between strategic advantage-seeking behavior and entrepreneurial opportunity-

seeking behavior. The research presented has shown that the construct of Strategic Entrepreneurship is not implemented without difficulties in reaching the right level of balance between entrepreneurial forces and strategic forces. In answer to the research question, three different roles played by strategic considerations influencing the patterns of recognition and development of radically innovative opportunities were identified. It was suggested that strategy as a pre-planned behavior does not entirely capture the emergent and exploratory nature of entrepreneurship. Instead, firms which do manage to successfully integrate advantage-seeking behavior and opportunity-seeking behavior, apply a dominant logic of effectuation and incorporate advantage-seeking considerations from several different levels of the organization. These results gave inspiration to the development of an Integrative Model of Strategic Entrepreneurship, highlighting the necessity of perceiving sE as a continuous organization-wide attitude rather than a periodical divergence from corporate strategy allowing for entrepreneurship within well-defined boundaries.

The contributions of this paper are considered to be both theoretically and practically valuable. Theoretically, the paper contributes to the development and further underpinning of the field of sE, as the empirical evidence points to distinct forms of strategic considerations involved in successful entrepreneurial activities in a corporate context. On a practical level, the insight into which strategic considerations are made in connection to the successful recognition of radically innovative opportunities adds to the existing body of knowledge on management practices of corporate entrepreneurship.

Further research opportunities for the sE construct include testing of the generalizability of the three patterns found in this research, using quantitative research methods, as well as paying explicit attention to the types of performance and wealth creation connected to the different patterns. By effectively doing so, a more solid empirical understanding of the sE construct can be created, providing useful insights to academia as well as practitioners.

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The Use of Strategic Metaphors in Intercultural Business Communication

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This paper contends that the use of strategic metaphors can help deliver the effective intercultural business communication necessary for global success. Using the Renault-Nissan Alliance as an example, the authors argue that an appropriate metaphor can help provide the global glue which captures the essence of the organisation's activities, encapsulates its strategic intent, incorporates the national and global cultures, and portrays its ethical and business stance. Indeed, as is the case in the Renault-Nissan Alliance, the appropriate use of metaphor allowed the firm to bind a diverse group of stakeholders to a common goal by using the inherent ambiguity and multiplicity of meaning of the metaphor to overcome Asian and Western intercultural differences and at the same time maximise goal congruence.

Key Words: intercultural business communication, strategic metaphors, alliance relationships

JEL Classification: M12, M14

Introduction

Over the last decade, research on strategic alliances has received increased attention in the literature. Several streams can be identified: the first dominant theme involves examining the underlying conditions favouring alliance formation (Williamson 1991; Garcia-Pont and Nohria 2002); the second deals with investigating the alliance outcomes and the impact of alliances on the original partner firms (Kogut 1989; Doz 1996; Judge and Dooley 2006); while the third explores issues relating to alliance dynamics (Singh and Mitchell 1996; Ireland, Hitt, and Vaidyanath 2002; Das and Teng 2002). Concurrently, a wide body of literature discusses the difficulties experienced by cross-national alliances. Findings also indicate that many international strategic alliances are either abandoned or

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taken over by one of the partners a few years after their start up (Kumar and Andersen 2000).

To date the literature on international strategic alliances indicates that the critical factors facing an alliance performance and success are: the development of shared values and norms among culturally divergent alliance partners (Lyles and Salk 1996; Kumar and Andersen 2000); the importance of managing relations between the people of the alliances in the early implementation stages (Doz and Hamel 1998; Kelly, Schaan, and Jonkas 2000); and finally establishing a trust-based relationship (Kok and Wildeman 1999; Nielsen 2001). Inter-partner diversity (Parkhe 1991; Adler and Graham 1989; Das and Teng 2002), culture clashes and associated language differences are frequently cited as the most common reasons for alliance problems and failure (Child and Faulkner 1998; Kelly, Schaan, and Jonkas 2000).

As global corporations mature, cross-cultural issues can become quite confusing (Pooler 1992). Global strategic alliance management skills, built through experience, become a core organisational competency. This type of advantage at a time when mergers, joint ventures, and alliances are a prerequisite for global competitiveness and effectiveness, will launch a select few organisations into the elite realms of global leadership (Quill 2000). Cultural dissimilarities when managed efficiently and creatively will enhance innovation and dynamism leading to better group performance (Cox 1993; Jehn and Bezrukova 2004).

Intercultural Business Communication

Research on the relative importance of national context and organisational characteristics highlights two divergent perspectives. The first believes that organisations are 'culture free' (Kerr et al. 1960; Mouton and Blake 1970; Eisenstadt 1973; Prentice 1990). It argues that competitive forces in the form of markets, industrialisation and new technology override differences in a national context (Pugh et al. 1968; Child 1973; England, Negandhi, and Wilpert 1979). The contrasting view contends that organisations are in fact 'culture bound' (Dore 1973; Maurice, Arndt, and Warner 1980). It argues that national contextual factors definitively determine management practice (Crozier 1964; Adler and Ghadar 1990; Hofstede 2001). However, while a large number of researchers have looked at cultural variables that affect intercultural business, the emphasis is typically not on the intercultural business communication process or linguistic issues but instead on cultural attitudes (Haire, Ghiselli, and Porter

1963; Laurent 1983; Hofstede 2001; Trompenaars and Woolliams 2003).

Studies in intercultural competence and cross-cultural communication in MNCs have increased in the last 20 years (Beamer 1992; Chen and Starosta 1998; Piekkari and Zander 2005). In the business literature, national differences are often cited as the source of intercultural communication conflicts and breakdowns arising between headquarters and local site staff. Intercultural business literature tends to focus on miscommunication or differences in discourse conventions often attributed to cultural attitudes and variables (Hofstede 2001). While a large number of researchers have looked at cultural variables that affect intercultural business, the emphasis is typically not on the intercultural business communication process or linguistic issues but instead on cultural attitudes.

Varner (2000) in setting out an intercultural business communication theoretical framework drew a clear differentiation between intercultural communication and international business communication. She defines intercultural business communication as a unique construct, which aims to include business as a distinct variable, therefore differentiating it from other intercultural communication processes. She argues that business – such as an organisation or a business activity – must be an essential variable of the communication hypothesis in so far as intercultural business communication includes business strategies, goals, objectives and practices that form an essential part of the communication process and help create a new environment out of the synergy of culture, communication and business.

Metaphor, Organisations and Strategy

The use of metaphors in business communications can be viewed from a number of perspectives. For the purposes of this section, the literature is divided into three main areas: firstly, the role and purpose of metaphors from a linguistic perspective, secondly the use of metaphors in organisational change, and finally the use of metaphor in competitive strategy.

METAPHOR: A LINGUISTIC PERSPECTIVE

A metaphor offers patterns of interrelationships, which are normally nonexistent: that is, a creative metaphor is a novel and original way of building a bridge between two different, usually separate, apparently anomalous conceptual domains. If examined closely, they usually express a logical inconsistency, incongruence or a contradiction (Black 1962; MacCormac 1985; Morgan 1986; Ortony 1979). It is the contradic-

tions within the metaphor, which increase its value in communicating new concepts, new visions and motivating innovation and new product development.

Since the Lakoff and Johnson study (1980), metaphors are no longer viewed as Socratic verbal ornamentation, a system of stylistic strategy used to embellish speech. Linguists now believe that metaphors ‘actually mirrored the cognitive processes that underlie abstract concepts’ (Danesi and Perron 1999, 164). Johnson and Lakoff argue that abstract perceptions are derived from a systematic ingestion of concrete perceptions through metaphorical reasoning or mapping, and rename the output of this process as conceptual metaphors. They traced the source of conceptual metaphors to image schemas (mental orientation; ontological thinking and the third one, a mixture of the aforementioned two schemas), which are defined as culture bound. A conceptual metaphor is the product of a cultural groupthink. It produces a process of cumulative cultural models of ideas and provides the ‘conceptual glue’ that keep a system of culture together with a view to creating another one (Danesi and Perron 1999).

METAPHOR AND ORGANISATIONAL CHANGE

Metaphors and metaphorical analysis are not solely used in linguistic and literary studies, but have formed for the last few decades an important part of business and social science literature. The value of using metaphors and metaphorical language has been quickly recognised by business analysts and strategists as a way to provide valuable insights into organisations. Though there still exists a continuum of conflicting views about its use, purpose and interpretation (Palmer and Dunford 1996; Cornelissen, Kafouros, and Lock 2005), the impact of metaphor use in business studies has today firmly established itself.

In organisational change settings, a metaphor is a straightforward method used to simplify the complex description of an organisation. It can be used to perform a variety of analyses within the organisation such as ‘decision-making, leadership, organisation development, policy, strategy, information technology, organisational culture, organisation design and production management’ (Palmer and Dunford 1996). Overall it is used as a means to describe, convey large amounts of information and understand organisational practices and problems (Palmer and Dunford 1996). As table 1 indicates, the range of metaphors used for organisational change has been impressive if at times perplexing.

TABLE 1 Metaphors in organisational change

Machine and organisms	Morgan 1980
Cultures, political systems, brains and psychic prisons	Morgan 1986
Jazz bands and missionaries	Akin and Schultheiss 1990
Clouds and songs	Gergen 1992
Soap bubbles	Tsoukas 1993
Strategic termites and Spider plants	Morgan 1993

Adapted from Palmer and Dunford (1996).

METAPHOR AND COMPETITIVE STRATEGY

Hunt and Menon (1995) argue that the four most commonly used frameworks in the competitive strategy literature are all based on metaphors. They highlight the evolutionary market/firm, game theoretic, strategic alliance and marketing warfare frameworks as the dominant examples of the use of metaphors in the strategy literature. They go on to explore the dimensions of metaphoric transfer for the four principle competitive strategy metaphors as outlined in table 2.

For management researchers, competitive strategy metaphors use language to convey information and ideas, which can be transferred into tacit knowledge, a way of thinking and viewing the world, which cannot be easily articulated (Morgan 1986). In essence, a metaphor captures the deficiency of the incapability to convey discrete symbol systems (language) about an object, event or experience.

In dealing with cross-cultural communication in an international context with multiple stakeholders, a strategic metaphor helps to achieve uniformity of purpose and development of emotional links with a global organisation. A strategic metaphor is a linguistic construction of carefully chosen words, which conveys the essence of the organisation's strategic intent and its core values. Due to the different cognitive perspectives of stakeholders to an organisation, they take the same or different meanings from the strategic metaphor.

Metaphor and Communication

A metaphor is nonetheless a means of communication in so far as its purpose is to convey a series of messages through a process of association and images. As a process enabling the connection of different cultures, it is an ideal way to communicate and bond all stakeholders in an alliance or joint venture regardless of their national or organisational

TABLE 2 Dimensions of metaphoric transfer

Metaphor	Source	Ontology	Concepts	Theories	Values
War	Military science	Nations, armies, divisions, battalions, non-combatants, combatants, allies, military academies	Strategy, tactics, missions, intelligence, deployment, action diplomacy, echelon, fortification, espionage, pre-emption rules and level of war, mobilization	Theory of absolute war, theory of cold war, voluntary theory, Douhet theory of war	Victory, defense, retaliation, honor, duty to country, territory, conquest, economic gain
Game	Sports	Teams, players, fans, coaches, trainers, writers, commentators, referees, scores, audience, bookies, sponsors, leagues, championship	Offense, defense, cooperation, team spirit, score	Zero-sum game theory, finite game theory, infinite game theory, prisoner's dilemma	Sponsorship, gamesmanship, competition, exercise, pleasure, relaxation, release of energy, physical fitness
Organism	Biology	Cells, humans, plants, animals, ecosystem, genes	Life-cycle, growth, adaptation, nutrition, niche, environment, resources, progress	Evolutionary theory, natural selection, adaptation theory	Life, growth, survival
Marriage	Sociology, home economics	Spouses, family, household, children, orphans, relatives, step-relatives, father, mother, sister, brother, neighbors, marriage, marriage counselors	Kinship, relationship, trust, reproduction, partners, divorce, extra-marital affairs, alimony, child support	Marital theory	Commitment, love, harmony, financial security, protection

Adapted from Hunt and Menon (1995).

cultures. It provides a common language and a basis for communication within the organisation. Through metaphor, an organisation can develop a common language to express a common vision and strategy. It is a very

effective tool to engage multi-cultural teams and mono-cultural teams operating in different cultural contexts, building up cross-cultural teams (Gibson and Zellmer-Bruhn 2002). The higher the power distance, the more likely teamwork metaphors will be used (Gibson 2001).

Most strategists consider metaphorical language to be greater than literal language (Srivasta and Barrett 1988) because it can capture all organisational stakeholders' experience and emotions better and can 'communicate meaning in complex, ambiguous situations where literal language is inadequate' (Palmer and Dunford 1996, 694). In business communication, metaphors are mostly used to introduce the concept of change, and metaphorical discourse is to be found mainly in strategy change literature. In this context the use of a metaphor is usually considered as an act of 'pure creativity' since its primary function is to stimulate the creative process and use one's imagination to 'evoke and suggest new ways of doing things' (Cleary and Packard 1992; Palmer and Dunford 1996). They become a valuable communication tool to share concepts and visions and redirect both internal and external communication of purpose. Whatever the nature of the metaphors, they are continuously referenced to, and language driven by them is continuously used in the organisation to direct problem formulation and solution processes (Boland and Greenberg 1988).

A commitment to addressing cross-cultural and intercultural issues through changes in structures and processes significantly increases the likelihood of success, a sustainable competitive success and facilitates competitive agility in the global arena. An essential element for success in an alliance, a joint venture or an MNC intercultural communication strategy is to develop a strategic metaphor. This provides the global glue, which captures the essence of the organisation's activities, encapsulates its strategic intent, the national and global cultures, and portrays its ethical and business stance. The chief strategist as part of the intercultural business communication process to all stakeholders uses the strategic metaphor to bind the activities of the MNC and aim for global success. Each stakeholder can take the same or different meaning from a strategic metaphor since its purpose is to stir different personal emotions from various stakeholders, be they shareholders or employees.

The Case Study

To be a global competitor in the car manufacturing industry, companies need a strong geographic market presence in all continents. Today six car manufacturers – General Motors, Ford, Toyota, Renault-Nissan, Volk-

swagen and Daimler – have achieved sufficient critical mass to separate them from the remaining volume manufacturers. When Renault first approached Nissan, it was naturally seeking to acquire a global dimension, which would allow the company not only to promote its products and its business values, but also to secure greater profits for its shareholders.

Renault had already experienced a very traumatic divorce with Volvo in 1993, subsequent to political and legal unrest in France. The progressive wear and tear of that relationship had left Renault with a bitter-sweet taste and a fear of ‘remarrying’. Once bitten, twice shy, Renault courted Nissan with a very different approach. Nissan was and is considered a symbol of Japanese society and culture in the same manner as most French people equate Renault with their sense of *Frenchness*. Therefore, the challenge faced by both companies was to reassess not only their own internal (organisational culture) environments but equally, to reassess their own external (national culture) environments while keeping communication channels opened both at local and international levels.

THE PRE-ALLIANCE PROCESS

Korine, Asakawa, and Gomez (2002), following an in-depth study of the formation process of the alliance, identified four stages: the conceiving, courting, commitment and closures phases. The initial conceiving phase strictly involved the two CEOs alone and was designed to develop trust and mutual respect at the highest levels within the two firms. Only after this trust and understanding had been established did the firms move to the more formal courting stage. As part of this phase in July 1998, Nissan and Renault embarked on a set of talks, with approximately 200 staff members conducting joint team studies for several months to explore the possibilities of complementing each other and creating potential synergies by sharing critical information on each other’s strengths and best practices. The results of their findings revealed that an alliance between the two companies could have a positive outcome for both parties. These joint team studies showed that Renault would be the best partner for Nissan for building a mutually beneficial, complementary relationship in terms of regional business activities and for obtaining a variety of cross-cultural synergies. The intention was to promote collaborative ventures, not through a mere merger or business tie-up, but through a new approach to a corporate alliance.

It was decided at the onset that the corporate alliance, would rely on a strategy based primarily on trust and equity of participation, the imple-

mentation of which came through the exchange and deep involvement of middle management executives in the alliance process. Early in the pre-stage negotiations, Renault had identified in Nissan similar working values and similar business ethics. Nissan is viewed in Japan as a strong symbol for the working class economy while Renault itself, in France, epitomised the history of a working class taking pride in valuing not only the work of its employees but the men who produced that work. Though Renault acknowledges that this joint-venture was initially a capital transaction (it made a substantial financial commitment to Nissan), it also recognises that their alliance must be based on a partnership between two different corporate identities, representing strong brands and very attached to the mutual development of their own company.

GOVERNANCE AND STRUCTURE OF THE ALLIANCE

As part of the commitment phase the two firms began to put in place structures and processes to allow them to operationalize the principles of the alliance. Renault-Nissan set up a Global Alliance Committee, co-chaired by the CEO of Renault and the Chairman of Nissan, plus ten other top executives (made of an equal number). It was agreed that, this committee should meet at least once a month, alternatively in Paris or Tokyo. Their task was primarily to drive the main strategic orientations of the alliance and aims for a merger of all cultural synergies, which could only benefit the alliance. To ensure success at a micro level, Renault-Nissan agreed to set up a joint co-ordination Bureau, responsible for the co-ordinating and implementation of the decisions taken by the Global Alliance Committee. At the operating level, they appointed several cross companies teams – with equal input – for each geographical zone, which aimed to implement actions such as research and development, supplier relations, productions platforms and powertrain families, distribution and financing of sales. A third and final committee – functional task team – was created. Its function was to support quality, cost control, scheduling, market analysis, human resources, tax implications and legal resources. The cross companies' team members were also responsible for analysing non-operational effects on the development of the group and the harmonisation of standards and practices.

In addition, the number of board members was reduced, and a new system for the appointment of 'corporate officers' was introduced to distinguish management decision-making and execution of operations. To strengthen Nissan's management, a Renault Executive Vice President,

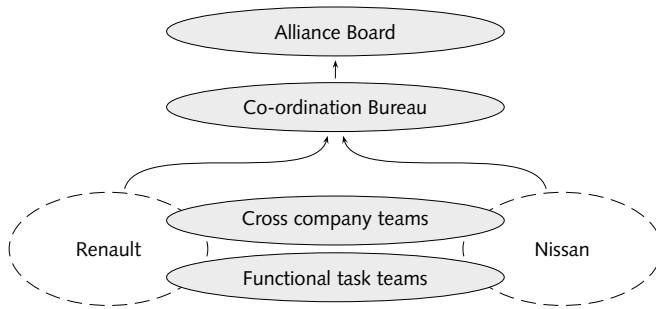


FIGURE 1 Management structures and governance of the alliance

was appointed Chief Operating Officer and became a member of the Board of Directors of Nissan. As part of its new management system, Nissan received another two executives from Renault. Nissan reduced the number of members on its Board of Directors from thirty-seven to ten as part of its effort to improve management efficiency.

It was also agreed that Renault would send thirty Renault executives on assignment with Nissan and appoint the chairman of Nissan to the Renault Board of Directors. Once, this was concluded, both companies were left to face their first real challenge, that is implementing all the above conceptual partnership structures at an operational level. The challenge was to put into practice the above strategies while safeguarding the cultural ethos of both companies and to improve intercultural communication.

Following more discussions, it was decided that partnership structures should adhere to the following principles:

- they should be simple and understandable by both companies;
- they should be transnational;
- they should facilitate confidence and transparency;
- they should be based on the spirit of a win-win scenario;
- no party should be favoured or disadvantaged;
- no party should lose its cultural identities and/or brand;
- continuous dialogues and communication, despite geographical distance, should be encouraged to promote a spirit of partnership at all times.

It was not until at a very advanced stage in the formation of the alliance that formal contractual positions began to be addressed. Instead

the two main focuses during these four phases remained the same at all times: both CEOs put the alliance process itself at the centre of their respective strategies and both CEOs used the process of the alliance as an opportunity to initiate strategic changes within their firms prior to the signing of the agreement. Korine, Asakawa, and Gomez (2002) point out that both CEOs took a long-term view on the alliance project, not only to secure its viability but also to ensure that they could deliver. They further indicate that for the majority of strategic alliances organisational commitment and identification based-trust need to be established (2002, 49). It is with this in mind that Renault and Nissan saw in the alliance formation an opportunity to launch change within their own organisational structures, review Nissan's problems and the occasion to build up Renault's profile in the automotive world. Korine, Asakawa, and Gomez (2002) identified three steps both companies had to undertake to give birth to the alliance: build up a deep knowledge of each other through the formation of the joint team studies; break down Nissan's resistance to change; and infuse entrepreneurial spirit into Nissan by implementing new management structures and developing new strategic views.

The set up of the Global Alliance Committee and the use of joint team studies prior to the signing up of the agreement allowed the establishment of a common language and protocol. Everything appeared to be very positive and well planned. However, one of the main problems, as identified by both companies at the time of negotiations, remained not only the cultural confrontation of two organisational cultures but also the cultural confrontation of their employees. The question became how to sustain this beautiful marriage and avoid cultural war?

The Renault-Nissan Alliance Metaphor

Both companies had to transcend their own national culture and stereotypes to reach what Airaudi (consultant for Renault and specialist on Japan) refers to as the 'conquest of the inner frontier'. As a result, both parties could then appreciate and assess what was needed to change two such complex organisations. In other words, Renault recognised that the success of the adventure did not solely depend on the economical and legal aspect of the venture, but it had to succeed at a more human, quasi-anthropological level (Housson 2000).

Communication difficulties arose not only because of there being two different languages in use (two different systems and registers of languages) but more importantly because conceptual frameworks, favoured

by the French, are not easily accepted by the Japanese since *ideograms* already represent a visual and concrete concept in the Japanese written language (Housson 2000). Cartesian semantics clashed with the subtle ambiguities of Japanese communication processes and the complexities of silence and its cultural interpretations in various negotiation and social contexts. From an organisational point of view, both the French and the Japanese are fundamentally opposed on the question of an essential cultural ideology: the role itself of the company. The western ideological quest for value added, turnover, and increasing profit is not at the heart of the Japanese organisational philosophy. In Japan, an organisation's purpose is to reinvest whatever and however small the profit is in the company. Its *raison d'être* is to survive, that is to reinvest itself within itself on a continuous basis.

Since the early days, both companies recognised and worked on the assumption that the national cultural aspects of the two partners were profoundly different. Both companies understood that they both feared the usual cultural clichés of French idiosyncrasies (arrogance, individualism, egocentrism, intellectual pretentiousness, anarchism management style, inability to follow instructions, allergy to authority etc.); while on the other hand Renault's employees were equally challenged by the same subconscious prejudices of their Japanese counterparts (insularity, fear of invasion, unilateral mindset, fear of conceptualising etc.). To overcome this cultural challenge, it called upon a team of consultant psychologists, who advised them to acknowledge and accept the friction arising out of such negative emotions without censoring them. Both parties undertook to reach this inner frontier without attempting to colonise the other culture and instead identify the affinities or positive singularities of the other party, that is to acquire a sense of self and subsequently a sense of the other.

A key element in achieving this goal was the importance paid to language, linguistic and cultural issues but more specifically the use of metaphor to create the emotional climate for success. Two specific examples of the use of metaphor stand out. The first of these, the strategic metaphor, 'The Renault-Nissan Alliance' was designed to ensure that the transaction was to be a marriage of equals (a true partnership) while the second 'Renault Créateur d'Automobiles' (a marketing metaphor) was primarily concerned with highlighting the synergies, which the alliance would subsequently bring to the parties.

From a purely financial and legal perspective the Renault-Nissan

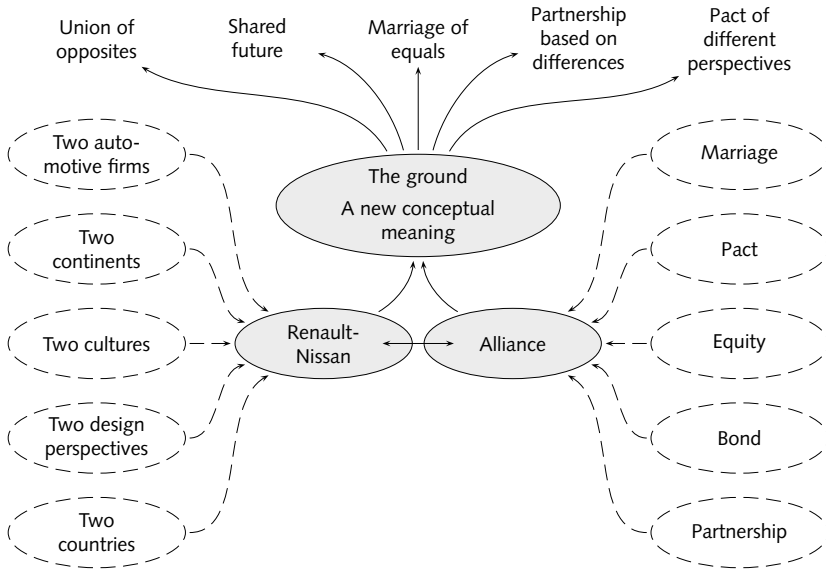


FIGURE 2 Analysis of the metaphor Renault-Nissan alliance

agreement effectively gave Renault a controlling interest in Nissan. The size of the initial shareholding acquired (36.8%) and the subsequent rise to 44.4% make Renault the dominant shareholder in Nissan for the foreseeable future. From a strictly accounting perspective the new firm Renault-Nissan bv amounts to an effective takeover of Nissan by Renault. Despite these realities Renault has continued to place enormous importance on portraying the transaction as an alliance. A key part of this portrayal is the firm's insistence on continuing to use the 'Renault-Nissan Alliance' metaphor.

'Renault-Nissan Alliance' is a conceptual metaphor. The first point to notice is the use of the dash between the words Renault and Nissan, which is used to portray both organisations as a single and united entity. Consider an ontological analysis of the word alliance. In the western world, the connotations of the word alliance are: a marriage, the union of two persons based on a legal relationship. In French, it also signifies a wedding ring. In military terms, it implies the agreement of two parties joining their respective efforts to face a common enemy, presenting a united front to win against the opposition, the enemy. In business terms, it stands for a partnership based on trust, equality and equity. In religious terms, it refers to the pact concluded between God and the

Hebrew people and in rhetoric, it refers to the meeting of two different group concepts. At the other end of the spectrum, we must also look at the temporary connotations associated with the word alliance such as, marriages end in divorce, military alliances end, partnerships fail.

Now consider a mapping of the words: Renault-Nissan. The connotations associated with Renault-Nissan are two competing car manufacturers for a share in the Asian market, competition between the European market and the Asian market. It juxtaposes two different cultures, the West and the East, French and Japanese. It stands to represent the strengths of each party involved, that is creative design and engineering innovativeness.

To support and encourage this process, the alliance raised the notion of a global citizenship, which purports to complement the respective identities of all parties involved. To realise this notion of a global citizenship, they drafted an Alliance Charter, the purpose of which is to be used as a symbol and rallying point for all the citizens of the alliance tautology. To overcome cross-cultural challenges, conflicting perspectives, national cultures prior to the Alliance, reinforce the concept of an alliance and subsequently maximise communication post the alliance, a strategic metaphor was developed. Alongside this concrete statement of intent was the decision to adopt English as the lingua franca of the new organisation.

PROMOTING INTERCULTURAL COMMUNICATIONS AND COOPERATION

Despite significant restructuring, both companies actively promoted intercultural communication firstly through personnel exchanges and secondly through the Alliance Business Way Program. Personnel exchanges fell into four categories: namely Renault and Nissan expatriates employed by the company during their expatriation; alliance projects such as engines and transmissions and RandD; employees exchanged within a regional framework, where for example Renault employees have been assigned to European Nissan affiliates.

The importance of the Alliance Business Way Program cannot be underestimated in terms of promoting a performance-oriented culture, and should be regarded as a concrete measure to support intercultural communication and as a mechanism to support the values of the Alliance and of the strategic metaphor. The programme has two strands. The first concentrates on cross-cultural training to understand cultural backgrounds

and working styles, consisting of a number of conferences with the theme of 'Working with Japanese/French Partners'. The focus of the conferences is centred on communications, project management and how to overcome resistance and problems while maintaining a positive partnership and pursue a common objective. The second is a series of Team Working Seminars, focusing on team and individual efficiencies by developing team's processes and enhancing team communication.

STRUCTURES AND GOVERNANCE

The Alliance Charter and the communication of the Alliance metaphor significantly aided Goshn's revival plan for Nissan. In terms of the Alliance structures, over 350 personnel drawn from both companies are involved in management and governance structures of the Alliance. Its management structure consists of an Alliance board responsible for developing the long-term strategy and initiating global joint activities. The next level consists of a Co-ordination Bureau based in Paris and Tokyo, coordinating the work of Cross Company Teams and Functional Task Teams (see figure 1). This management and governance structure reinforces the Alliance Charter principles and values. Such a structure not only formalises the Alliance, but culturally signals the importance of cross learning, mutual respect and maintains the balance between both parties. In essence the structure supports the view that the Alliance is the construction of a group with dual nationality not a merger. As Douin (2002, 3) commented: 'This meant establishing a subtle balance between two companies. This balance was guaranteed by the Alliance charter, which is a symbol of support for values which are held in common such as ambition and the desire to succeed, performance, mutual trust and respect, balance and loyalty.' Essentially, by focusing on common even universal values, the Alliance begins the process of becoming culturally free (Kerr et al. 1960; Mouton and Blake 1970; Eisenstadt 1973; Prentice 1990). Therefore, over time, management practices throughout organisations become more alike, bound by common values, irrespective of the national context. Using personnel exchanges and the Alliance Business Way Program assists in the development of intercultural communications, but over time also means that the focus for both parties will be on their common values and a culture that is performance orientated, which ultimately binds every person in the organisation at personal level and personalises risk and reward for every employee irrespective of nationality.

Discussion

Conflicting national and organisational cultures are blamed for the failure of international alliances. However, the Renault-Nissan experience provides strong evidence that where these differences are explicitly recognised and accepted, and where appropriate processes and structures are put in place, national and organisational culture obstacles can be surmounted. The harmonisation of culture, which Turnheim (1996) speaks of, can be accomplished in the form of structures, policies and practices. This harmonisation of cultures ought to take place through a process of cross-cultural communication, in the early implementation stages, to maintain a competitive advantage based on organisational culture. The Alliance Charter drawn up between Nissan and Renault gives a structure as to how this harmonisation can be achieved, building on trust, truth, human respect, business ethics, confidentiality, and fairness to ensure balance between both parties.

Reconciliation of cultural differences can be approached in a number of different ways. The most common one is to adopt one partner's culture as dominant. The other alternative is to separate or limit the activities of the partners so as to minimise cultural interaction and hence the likelihood of cultural clashes. These not only limit the prospect of cultural conflicts but also reduce the potential of the partners learning and benefiting from each other's culture and business experience. The most integrative approach remains to face up to, manage cultural differences by involving partners at all levels, and participate in cross-cultural development programs. More recent research has claimed that it is not the initial cultural clashes per se that create problems, but people's divergent beliefs and values of the organisation which give rise to problematic situations. They maintain that a strong adopted integration strategy should be culturally compatible and that it is the acculturation processes that managers should turn their attention to with a view to either assimilate, integrate, separate or 'deculturise' (Vaara 2000).

Effective cross-cultural communication combined with managerial pluralism and the acceptance of substance over form in the design of organisational structures (in particular the senior management team) are prerequisites for success in bringing together two organisational cultures. Strong and efficient cultures which Christensen and Gordon (1999) described, are typically characteristic of Japanese firms such as Nissan Motor Co. Renault culture is also very efficient, but both companies are used

to different management styles. They both needed to be aware that a successful enterprise would only grow if they acknowledged and respected each other's respective cultures and were committed to co-operating and working closely together. In establishing the Global Alliance Committee and the cross-cultural teams, it appears that senior management was aiming for an 'insiderisation' approach to managing the new partnership. Their aims were to motivate and develop a shared vision with an emphasis on team building, restoring the self-esteem of both companies with the intention of raising their visibility and credibility on the international automotive trade scene. This pragmatic approach to cultural issues convinced both partners to reassure their workforce by cultivating the employees' sense of the *métier* (trade), thereby creating a sense of pride and participation in the new epic venture.

Cohabitation not colonisation is the effective long-run model for exploiting the Alliance. This in turn requires a high degree of transculturality and the creation of a new corporate citizenship, the birth of a new nomadic brain. Trompenaars (1998) believes culture is the way in which a group of people solves problems. Again, the Alliance Charter cites trust as the building block towards joint problem solving. Academics and researchers must urgently address the poverty of the informing conceptual frameworks that guide management in creating post-alliance organisations. In particular, there is a need for more longitudinal field-based research to provide theoretical insights into the true nature of international alliances and in particular to improve our understanding of the dynamic of what are often colliding national and organisational cultures. It is only with these practical and theoretical insights that architects for change can achieve true cross-cultural fluency and create the emotional climate for communication and co-operation.

As organisations and industries become more knowledge-intensive there is a growing need to recognise that it is intangible assets, resources in the form of ideas, brands, innovation etc., which are the source of long-term competitive advantage. International alliances which fail to retain and nurture the knowledge and human capital of the post-merger organisation will not achieve success in the long-term. In the modern organisation of the 21st century, the marauding conqueror view of global expansion must give way to more enlightened ideas such as the meeting of minds and shared meaning that characterise the learning organisation. Comparative advantage in the long run will come not from capital, products or even superior manufacturing and marketing processes, but

from the ability to master and manage the continuous stream of cross-cultural challenges which globalisation brings with it.

In order to cope with the complex international environment pressures, Bartlett and Ghoshal (1989) stressed the importance of developing not one strategy (transnational, albeit multidimensional), and urged organisations to commit to a global, multinational and international strategy simultaneously. They must become, in Bartlett and Ghoshal's words, a transnational company. Again, the Global Alliance Committee and cross-cultural teams reflect this thinking, concentrating on establishing an integrated networking structure, committed decision-making and highly innovative capabilities.

Metaphors are often used in the language of business to maximise effect and delivery. The purpose of a metaphor is to view one thing in terms of or as a substitute for another. Its concepts are crucial to uncover or trigger latent needs and emotions. Metaphor is often used to identify a belief of value or a value system within which people can operate. In that sense it requires a cognitive function. A strategic metaphor provides the strategist with words to shed light on his /her cognitive function which outlines simplicity of purpose and creates a platform to address competing needs. The strategic metaphor encapsulates the strategic intent of the organisation, its competitive position in the market, its core competencies, and its approach to business ethics and in dealing with society as a whole. Furthermore, it reinforces a culture of success, by attempting to create a personal emotional connection with key stakeholders such as employees, investors and customers. Moreover, stakeholders take their own interpretation from the strategic metaphor thus satisfying their needs. In an international alliance the strategist can use the different interpretations to communicate the positive aspects of the alliance to all stakeholders, while maintaining some degree of freedom to pursue all strategic paths to ensure the success of the alliance.

In seeking to understand the Renault-Nissan's use of metaphor, it is important to note that it can be argued that the deployment of metaphorical language in its stead ignores the fact that people may interpret it from heterogeneous cultural and conceptual backgrounds. Fluid it may be for the 'national culture', but alien it may be to another. A simple illustration of this point is 'Snow-white corporate ethics' could have many interpretations – overt honesty, ethics can melt over time, white can turn to grey very quickly when convenient, snow is malleable etc. However, the subtleties are likely to be lost on an Indian, a Nigerian, a New Caledonian who have never seen snow. In addition, issues of trans-

lation may also raise concerns about the applicability of the metaphor. The question that arises is does this lack of uniformity not cause a problem? A strategy that can be this easily manipulated by heterogeneous groups may be seen as being fundamentally flawed the 'global glue' might be of no more use than sellotape. As such it could be argued that a metaphor, which attempts to involve all the cultures in an alliance, a joint venture, an MNC, might be overly optimistic?

Quills (2000) argues that cultural differences ought to be viewed as opportunities to achieve synergy and to enhance effectiveness, not as obstacles to overcome. To create a synergistic organisation, that values and uses difference, management must employ an intercultural communication framework and develop an organisational intercultural competency. A strategic metaphor can help towards achieving this goal. Today, Nissan and Renault are equally aware that, while both companies are coming from very different backgrounds, they must remain enthusiastic and willing to work through their cultural differences – the Charter alone is evidence of this dedication. As outlined earlier, the reality of the transaction between the two firms was an effective acquisition of a controlling interest by Renault in Nissan. From the outset, however, senior management in both firms were prepared to set aside that reality and instead move forward on the basis of an alliance of equals based on acceptance of their differences. The adoption of the 'Alliance' label for the transaction was a powerful and lasting first step in creating the emotional and organisational climate for real partnership. While some would suggest that the reality of Renault's shareholding leaves it as the dominant partner in the relationship, the use of the Alliance strategic metaphor has been an important part of the successful deployment of processes, structures and strategies that have allowed the important intercultural communication to take place right from the beginning. While some commentators might interpret the use of the 'Alliance' strategic metaphor as a cynical manipulation designed to camouflage an underlying reality, the authors would suggest that in fact the strategic metaphor has allowed the two firms to avoid the pacman approach, to escape what was a potential fatal source of cultural conflicts and create a new reality based on a partnership of trust, respect and equals.

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Horizontal and Vertical Intra-Industry Trade between the Former CEFTA Countries and the European Union

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This paper analyses the production structure or intra-industry trade specialization (IIT) of the Czech Republic, Hungary, Poland, Slovenia and Slovakia in foreign trade with EU member states from 1995 to 2001 at the five-digit level of the SITC. The results confirmed that former CEFTA countries in general showed IIT specialization in the production of vertically differentiated products of lower quality either at the aggregate level of the manufacturing sectors (i. e. SITC 5–8) or at the level of the twenty chosen manufacturing activities (i. e. divisions 17–36 of the ISIC) and that differences also exist between IIT specializations of these countries.

Key Words: intra-industry trade, horizontal and vertical intra-industry trade, CEFTA countries

JEL Classification: F14

Introduction

The fact is that the Czech Republic, Hungary, Poland, Slovenia and Slovakia as former CEFTA countries are less developed measured by GDP per capita¹ than Austria, Belgium, France, Germany and Great Britain as relatively developed EU member states. If we use other economic indicators such as openness and GDP growth rate, than the position of former CEFTA countries is somewhat better in comparison with advanced countries. But differences between GDP per capita income of former CEFTA countries and developed EU states are crucial for better understanding of the correlation between the stage of development of each observed country and its intra-industry specialization.² It is also well known that the EU is the main foreign trade partner of the former CEFTA member countries.³ Therefore, the analysis of the foreign trade in European transition countries provides a good opportunity for better understanding of the determinants of intra-industry trade specialization of these countries. The purpose of this paper is to verify the production structure or

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intra-industry specialization that former CEFTA countries revealed in trade with EU member states at the aggregate level of the manufacturing sectors (i. e. SITC 5–8) in 1995, 1998 and 2001 and at the level of the twenty chosen manufacturing activities (i. e. divisions 17–36 of the ISIC) in 2001. In this way we test the hypothesis that five former CEFTA countries showed predominant specialization in the production of vertically differentiated products of lower quality in their foreign trade with EU member states.

The previous study (Černoša 2005a) also analysed the production structure in Slovenia from 1994 to 2003 and revealed predominant specialization of this country in the production of lower quality products. A similar study (Černoša 2005b) verified intra-industry trade specialization for Slovenia and Czech Republic in comparison with Germany and Austria in 1998 and showed that both Central European countries were specialized in the production of lower quality products, while Germany and Austria were simultaneously specialized in the production of vertically differentiated products of higher quality. The empirical study by Aturupane, Djankov and Hoekman (1999) also analysed the determinants of horizontal and vertical intra-industry trade of eight Central and Eastern European States in foreign trade with the European Union from 1990 to 1995.⁴

Thus in the present study, the observed years 1995, 1998 and 2001⁵ were chosen in order to be able to compare the results of the measurements of horizontal and vertical intra-industry trade of this analysis with those obtained in the previous studies cited above. It is common knowledge that production structure or IIT specialization is relatively stable and that methodology for the measurement of horizontal and vertical IIT is based on unit value index (UV).⁶ Thus Greenaway, Hine, and Milner (1994; 1995) in their fundamental studies use statistical data for only one observed year as basis for the measurement of horizontal and vertical IIT.⁷ In this way, we suppose that the present study clearly represents significant production structure or predominant IIT specialization of the Czech Republic, Hungary, Poland, Slovenia and Slovakia as former CEFTA countries at the beginning of the twenty-first century.

If the new theory of international trade supposes intra-industry trade in horizontally or vertically differentiated products between two countries, then the theory of comparative advantage supposes inter-industry trade in homogeneous products between two countries. During the 1980s, different models of the new theory of international trade were

developed. Thus, for example, Helpman and Krugman's book (1985) presented several theories that supposed trade with horizontally differentiated products. One of the basic messages of this book was that the traditional theory of comparative advantage is still alive and well, and that it had lost only its monopoly position. While during the last twenty years many other authors deepened the theoretical background of the new theory of international trade, the traditional theory of comparative advantages survived in different modifications. Thus one of the important messages of this paper is that it is still possible to explain trade between less developed CEFTA member countries and EU member states with the modified version of the Heckscher-Ohlin model, which is a significant representative of the theory of comparative advantage.

The paper is structured as follows. The first section presents the theoretical background for the new theories of international trade. The second section presents the methodology for the measurement of horizontal and vertical intra-industry trade, while the third section empirically tests the production structure of each of the observed economies at the aggregated level. Similarly, the fourth section verifies intra-industry trade specialization for twenty manufacturing activities (divisions ISIC 17–36) of observed countries trading with the EU in 2001. The final part of this paper presents concluding comments.

The Theoretical Background

Research on two-way trade in similar products in the 1960s and the 1970s was mainly focused on the empirical estimation of the phenomenon of intra-industry trade (IIT). Thus Grubel and Lloyd (1975) empirically confirmed that intra-industry trade is a real phenomenon and that the levels of intra-industry trade grow faster within the trade between developed countries which are members of custom unions or other regional trading arrangements, than in the trade of the developed countries with other countries. One of the important distinctions made in theoretical literature is a distinction between horizontal and vertical product differentiation. The former arises when different varieties of the product are of a similar quality and the latter when varieties of the product are differentiated by quality. Thus vertical product differentiation is related more to the traditional theory⁸ of international trade and its modified version, while horizontal product differentiation is related to the new theories of international trade, which supposes horizontal product differentiation.⁹ All of this is well known, but it was empirically under researched due to

difficulties connected with disentangling vertical and horizontal intra-industry trade.¹⁰ Therefore, the majority of studies investigated intra-industry trade exchange between highly developed economies. These works on IIT, which estimated regression models for developed countries, have generally found more support for the importance of country specific effects (i. e. GDP per capita) as opposed to industry specific factors (Greenaway, Hine, and Milner 1995). Trade between former CEFTA countries and EU member states should be driven by differences in factor endowments and also differences in technologies. Accordingly, the Aturupane, Djankov and Hoekman (1999) study estimated a regression model and empirically confirmed that vertical IIT of the former Central European countries is positively associated with product differentiation, economy of scale, labour intensity of production and foreign direct investment (FDI).¹¹

Since many analyses¹² confirmed that the share of vertical IIT was larger than the share of horizontal IIT for the observed CEFTA countries, intra-industry trade in vertically differentiated products of these countries can be explained using the Falvey model (1981). The Falvey model is based on some presumptions of the Heckscher-Ohlin model, but it also includes a modification with the new presumptions. While the Heckscher-Ohlin model supposes trade in homogeneous products and inter-industry trade between two countries, the Falvey model supposes trade in vertically differentiated products and IIT. The Falvey model also supposes that IIT between two countries occurs at least in one industry, in which the home country produces and exports its own specific range of differentiated products and imports other types or a range of vertically differentiated products from a neighbour country. So the Falvey model supposes that the manufacturing industry of each country is best defined by capital¹³ and that each industry is no longer assumed to produce a single homogeneous output, but instead can produce a range of products using as inputs labour and its own industry specific capital. Therefore, the manufacturing industry of each country has different endowments of capital (K) and labour (L).

The different endowments result in different factor prices in two countries with the foreign price of labour being relatively low and the domestic price of capital being relatively low. It is assumed that the higher capital-labour ratio results in a higher quality of the vertically differentiated products. As a consequence of the assumption that a higher capital-labour ratio results in a higher quality, the capital abundant country will

export relatively high quality products, while the labour-abundant country will export relatively low quality products. The direction of trade is also determined by this model and provides an explanation of IIT in vertically differentiated products between developed countries and less developed states.¹⁴

Methodology

Horizontal and vertical intra-industry trade of the five observed CEFTA countries was measured by using the Greenaway, Hine and Milner (1994; 1995) methodology. There also exists an alternative methodology for the measurement of horizontal and vertical intra-industry trade proposed by Fontagne and Freudenberg (1997), which is not useful for the measurement of multilateral trade¹⁵ of the five observed countries. Nielsen and Lüthje (2002) also showed that the methodology introduced by Greenaway, Hine and Milner is more appropriate for the measurement of horizontal and vertical intra-industry trade than the alternative methodology mentioned above.¹⁶

The method introduced by Greenaway, Hine and Milner also supposes the separation of total IIT or, better said, disentangling of \bar{B}_i on the belonging shares of horizontal IIT (HB_i) and vertical IIT (VB_i):

$$\bar{B}_i = HB_i + VB_i. \quad (1)$$

Following this methodology, the unit value index (UV) is calculated for exports and imports of each manufacturing industry at the five-digit level of the SITC.¹⁷ Horizontal IIT is defined as a ratio between the unit value of exports UV_i^x and the unit value of imports UV_i^m for a particular industry i or, to put it differently, UV_i^x/UV_i^m . More specifically, horizontal IIT is defined (HB_i) when the unit value index (UV) was inside the range of $\pm 15\%$:

$$0.85 \leq \frac{UV_i^x}{UV_i^m} \leq 1.15. \quad (2)$$

When the unit value index (UV) was outside the $\pm 15\%$ range, vertical IIT (VB_i) is defined for the particular industry at the five-digit level of the SITC. The share of vertical IIT (VB_i) is separated on the dependent share of V_1 and V_2 using the following condition:

$$V_1: \frac{UV_i^x}{UV_i^m} > 1.15 \quad \text{and} \quad V_2: \frac{UV_i^x}{UV_i^m} < 0.85, \quad (3)$$

where V_1 represents the share of vertical IIT when the ratio between the unit value of exports UV_i^x and the unit value of imports (UV_i^m) is greater

than 1.15, and V_2 represents the share of vertical IIT when the ratio between the unit value of exports UV_i^x and the unit value of imports UV_i^m is smaller than 0.85. It is assumed that the relative quality of each product at the five-digit level of the SITC is best defined by the achieved relative price for the same product and that the relative share of V_1 represents trade in vertically differentiated products of higher quality, which are sold at a higher average price, and that V_2 represents trade in vertically differentiated products of lower quality, which are sold at a lower average price. Černoša (2005b) showed that the Greenaway, Hine, and Milner methodology (1994; 1995) is able to capture adjustment cost. In short, since the Greenaway, Hine and Milner methodology for measurement of horizontal and vertical intra-industry trade is grounded on unit value index (UV), it is able to capture adjustment costs.

Results of the Measurements at the Aggregate Level

It is widely recognized that the average levels of horizontal and vertical intra-industry trade show the production structure of the observed country or intra-industry trade specialisation of that country. The horizontal and vertical intra-industry trade is measured for each manufacturing industry (of sections SITC 5–8) at the five-digit level of SITC¹⁸ for the Czech Republic, Hungary, Poland, Slovenia and Slovakia in 1995, 1998 and 2001. The statistical data at the five-digit level of SITC were used in order to be able to compare the results with those obtained in the previous studies.¹⁹ Statistical data were obtained from COMEXT, Eurostat's trade database, where the EU was the reporter for both import and export flows.²⁰ Table 1 shows average levels of total, horizontal and vertical intra-industry trade for the Czech Republic's, Hungarian, Polish, Slovenian and Slovakian trade with EU in 1995, 1998 and 2001 at the aggregate level (SITC sectors 5–8), using the Greenaway, Hine, and Milner methodology.

Table 1 shows that the Czech Republic showed the highest levels of IIT trade in the observed period and that Slovenia and Hungary simultaneously revealed higher average levels of IIT than Poland and Slovakia. These results of the measurement of total intra-industry trade for former CEFTA countries were similar to the results of IIT levels in the trade between Eastern Europe and the EU from 1990 to 1995 (Aturupane, Djankov, and Hoekman 1999). The cited study also revealed the highest level of total IIT for the Czech Republic (42.5% in 1995), followed by IIT level of Slovenia (37.0% in 1995) and Hungary (33.0% in 1995), while

TABLE 1 Average levels of total, horizontal and vertical intra-industry trade of observed countries in 1995, 1998 and 2001

Country	Year	Total	Horizontal	Vertical	V_1	V_2
Czech Republic	1995	43.21	5.88	37.34	6.78	30.56
	1998	54.42	7.89	46.53	10.60	35.94
	2001	53.75	8.26	45.49	9.89	35.60
Hungary	1995	31.82	4.64	27.18	8.10	19.08
	1998	30.88	4.50	26.38	7.86	18.52
	2001	37.33	5.44	31.89	9.50	22.39
Poland	1995	22.21	2.55	19.67	3.75	15.92
	1998	25.78	3.64	22.14	5.18	16.96
	2001	34.10	5.53	28.57	7.57	21.00
Slovenia	1995	33.27	5.16	28.11	7.99	20.12
	1998	40.43	6.65	33.77	10.28	23.49
	2001	36.92	5.87	31.05	10.03	21.02
Slovakia	1995	24.33	2.64	21.69	3.59	18.10
	1998	26.58	3.78	22.8	4.47	18.33
	2001	30.97	4.36	26.61	6.50	20.11

NOTES V_1 – trade in vertically differentiated products of higher quality; V_2 – trade in vertically differentiated products of lower quality.

SOURCES Eurostat 2002 and own calculations at the five-digit level of SITC.

Poland and Slovakia both showed the lowest level of total intra-industry trade (approximately 28% in 1995). This study used Eurostat's statistical database from 1990 to 1995 at the six-digit level of EU's Combined Nomenclature,²¹ while the present study used statistical data at the five-digit level of SITC from 1995 to 2001.²²

While the summary statistics of the above mentioned study did not reveal significant changes in the average levels of total IIT for the chosen CEFTA countries in the period from 1990 to 1995, the present study has found that average levels of total, horizontal and vertical IIT of Hungary, Poland and Slovakia gradually grew from 1995 to 2001, while in the case of the Czech Republic and Slovenia these levels rapidly increased from 1995 to 1998, and then decreased or remained relatively stable from 1998 to 2001. In this way, the present study only captured the effects of the integration process on the territory of Europe. Thus the levels of total IIT of the five observed CEFTA countries increased after year 1995 due to trade

liberalization between the EU and these countries in the mid 1990's. The following paragraphs will show that the present study included complete methodology for the measurement of horizontal and vertical IIT.²³

To be more precise, total intra-industry trade of each of the observed countries in table 1, was disentangled into horizontal and vertical components using relative unit values of exports and relative unit values of imports. Horizontal IIT was defined as the simultaneous export and import of five-digit SITC products, where the unit value of exports relative to the unit value of imports was within the range of $\pm 15\%$. Where unit values of exports relative to the unit value of imports were outside of that range, IIT was considered to be vertical. Using the Greenaway, Hine and Milner methodology, vertical IIT was separated into V_1 and V_2 . Thus, V_1 represents the share of vertical IIT, where the ratio between the unit value of exports and the unit value of imports is greater than 1.15, and vice versa, V_2 represents the share of vertical IIT, where the ratio between the unit value of exports and the unit value of imports is smaller than 0.85. It is assumed that the unit value index as an indicator of quality gives us perfect information that the products sold at higher prices must be of higher quality and that products sold at lower prices must be of lower quality. It is further assumed that the relative share of V_1 represents trade of the observed CEFTA countries in vertically differentiated products of higher quality, which are sold at a higher average price, and the relative share of V_2 represents trade in vertically differentiated products of lower quality, which are sold at a lower average price.

Table 2 shows the relative²⁴ shares of horizontal IIT and vertical IIT, and relative shares of V_1 and V_2 in total intra-industry trade of the Czech Republic, Hungary, Poland, Slovenia and Slovakia in 1995, 1998 and 2001. The numbers confirmed that the shares of vertical IIT are larger than the shares of horizontal IIT of the observed CEFTA countries. Therefore, the share of vertical IIT represented approximately five sixths of total IIT of Slovenia and Poland in 2001, and approximately six sevenths of total IIT of the Czech Republic, Hungary and Slovakia. The previous study (Černoša 2005b), which measured horizontal and vertical intra-industry trade (on multilateral basis) for Slovenia and the Czech Republic in comparison with Germany and Austria in 1998, also showed that the share of vertical IIT represented approximately three quarters of total IIT of Germany, four fifths of total IIT of Austria and five sixths of IIT of Slovenia and Czech Republic in 1998.

A similar empirical study by CEPII (Fontagne, Freudenberg, and

TABLE 2 Relative shares of horizontal and vertical intra-industry trade in total intra-industry trade of observed countries in 1995, 1998 and 2001

Country	Year	Horizontal	Vertical	V_1	V_2
Czech Republic	1995	13.60	86.40	15.69	70.71
	1998	14.50	85.50	19.47	66.03
	2001	15.37	84.63	18.41	66.22
Hungary	1995	14.58	85.42	25.45	59.97
	1998	15.42	84.58	25.88	58.70
	2001	14.67	85.33	27.84	57.49
Poland	1995	11.47	88.53	16.87	71.66
	1998	14.12	85.88	20.09	65.79
	2001	16.23	83.77	22.19	61.58
Slovenia	1995	15.52	84.48	24.00	60.48
	1998	16.46	83.54	25.43	58.11
	2001	15.89	84.11	27.17	56.94
Slovakia	1995	10.87	89.13	14.74	74.39
	1998	14.24	85.76	16.80	68.96
	2001	14.08	85.92	20.99	64.93

NOTES V_1 – trade in vertically differentiated products of higher quality; V_2 – trade in vertically differentiated products of lower quality.

SOURCES Eurostat 2002 and own calculations.

Peridy 1997), which by contrast measured horizontal and vertical intra-industry trade for 12 EU member states on bilateral basis from 1980 to 1994 recorded that horizontal IIT of Germany, France and Great Britain represented between one quarter and one fifth of total IIT of these countries from 1980 to 1994, that the less developed members of the EU simultaneously showed lower levels of horizontal IIT, that vertical intra-industry trade V_1 of Germany, France and Great Britain was greater than vertical intra-industry trade V_2 in the observed period, and that the less developed members of the EU simultaneously showed inverse proportion between vertical IIT V_1 and vertical IIT V_2 . The authors of the cited study argued that in the case of EU member states two-way trade in vertically differentiated products is more significant than two-way trade in similar, or better said, horizontally differentiated products (Fontagne, Freudenberg, and Peridy 1997, 54).

The relative shares of horizontal and vertical intra-industry trade in

table 2 confirmed that vertical intra-industry trade also prevailed in total intra-industry trade of five former CEFTA countries. Thus in Hungary, Poland, Slovenia and Slovakia the relative shares of vertical IIT V_1 , which show specialization in the production of vertically differentiated products of higher quality, were increasing from 1995 to 2001, while in the Czech Republic the increase was recorded only from 1995 to 1998. The summary statistics also shows that Slovenia and Hungary revealed approximately the same proportion between the share of V_1 and V_2 and that during the observed period both countries expressed the lowermost proportion between the share of V_1 and V_2 , while Poland, Slovakia and the Czech Republic simultaneously recorded a relatively lower share of V_1 . In this way, it was empirically confirmed that former CEFTA countries due to the predominant share of vertical intra-industry trade of lower quality – V_2 – showed predominant specialization in the production of vertically differentiated products of lower quality.

The Results of the Measurements for Twenty Division of the ISIC

While in the previous section we presented the results of the measurement of horizontal and vertical intra-industry trade of five former CEFTA member states at the aggregate level of the manufacturing sectors (SITC 5–8), in this section we present the results of the measurements at the two-digit level of ISIC for the same countries. While the Standard International Trade Classification (SITC, rev. 3) is in concordance with International Standard Industrial Classification (ISIC, rev. 3; see <http://unstats.un.org/unsd/cr/registry/>) the same statistical data at the five-digit level of SITC were used as a basis for calculations in both analyses. The statistical data at the five-digit level of SITC were regrouped in concordance with the chosen divisions at the two-digit level of ISIC (see <http://europa.eu.int/comm/eurostat/ramon/>). In this way, twenty divisions²⁵ were formed, which represent the following manufacturing activities at the two-digit level of the International Standard Industrial Classification:

Code 17 – Manufacture of textiles

Code 18 – Manufacture of wearing apparel; dressing and dyeing of fur

Code 19 – Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear

Code 20 – Manufacture of wood and cork products, except furniture; manufacture of straw and plaiting materials

- Code 21 – Manufacture of paper and paper products
- Code 22 – Publishing, printing and reproduction of recorded media
- Code 23 – Manufacture of coke, refined petroleum and nuclear fuel
- Code 24 – Manufacture of chemicals and chemical products
- Code 25 – Manufacture of rubber and plastics products
- Code 26 – Manufacture of other non-metallic mineral products
- Code 27 – Manufacture of basic metals
- Code 28 – Manufacture of fabricated metal products, except machinery and equipment
- Code 29 – Manufacture of machinery and equipment *NEC*
- Code 30 – Manufacture of office accounting and computing machinery
- Code 31 – Manufacture of electrical machinery and equipment *NEC*
- Code 32 – Manufacture of radio, television and communication equipment and apparatus
- Code 33 – Manufacture of medical, precision and optical instruments, watches and clocks
- Code 34 – Manufacture of motor vehicles, trailers and semi trailers
- Code 35 – Manufacture of other transport equipment
- Code 30 – Manufacture of furniture; manufacturing *NEC*
- Code 31 – Manufacture of electrical machinery and apparatus *NEC*
- Code 32 – Manufacture of radio, television and communication equipment
- Code 33 – Manufacture of medical, precision and optical instruments and clocks
- Code 34 – Manufacture of motor vehicles, trailers and semi-trailers
- Code 35 – Manufacture of other transport equipment
- Code 36 – Manufacture of furniture, manufacturing *NEC*

The new aggregation of twenty activities included almost all con-corded manufacturing industries (sections *SITC* 5–8) and also a few con-corded industries of raw material (sections *SITC* 0–4) at the five-digit level of *SITC*. The main goal of this time-consuming work was to mea-sure horizontal and vertical intra-industry trade for each of the manufac-turing industries that formed the twenty above listed activities for Czech Republic, Hungary, Poland, Slovenia and Slovakia.²⁶ While the previous section of this paper verified the production structure or intra-industry

trade specialization of the five observed former CEFTA countries in 1995, 1998 and 2001 at the aggregate level of the sectors (SITC 5–8), this section tests intra-industry trade specialization of the observed countries at the level of the twenty chosen manufacturing activities (i. e. divisions 17–36 of the ISIC) in 2001.

Table 3 shows average levels of total intra-industry trade for twenty manufacturing activities in the Czech Republic's, Hungarian, Polish, Slovenian and Slovakian trade with the EU in 2001, which were measured by using the Greenaway, Hine and Milner methodology. More precisely, the total intra-industry trade at the aggregate level of the selected twenty manufacturing activities was measured by using the Grubel and Lloyd index for weighted average.²⁷ The calculated mean²⁸ in the last row (at the bottom) of the table recorded the average total IIT for each of the former CEFTA countries in 2001 and also showed that the Czech Republic in comparison with Hungary, Poland and Slovenia achieved the highest level of total intra-industry trade and that Slovenia and Hungary simultaneously revealed higher average levels of IIT than Poland and Slovakia. The average levels of total intra-industry trade for twenty manufacturing activities of the former CEFTA countries are comparable with average levels of total intra-industry trade of these countries in 2001 at the aggregate level (see table 1). On the other side, the calculated mean²⁹ in the last column of table 3 shows average levels of total intra-industry trade for twenty activities in 2001.³⁰

It should be emphasized again that Eurostat's trade database was used, where the EU was the reporter for both import and export flows.³¹ Thus the average total intra-industry trade of twenty activities (at the two-digit level of ISIC) was measured in the Czech Republic's, Hungarian, Polish, Slovenian and Slovakian total trade with EU member states in 2001. If the particular activity recorded an average higher total intra-industry trade of former CEFTA countries, the calculated mean value of this activity (in the last column of table 3) is relatively higher. In this way, the achieved average intra-industry trade ranked twenty activities in 2001.

This ranking of activities gave the following 'top eight' activities that revealed the highest average total intra-industry trade in the observed year: (1.) manufacturing of fabricated metal products, except machinery and equipment; (2.) manufacturing of electrical machinery and equipment; (3.) manufacturing of other transport equipment; (4.) publishing, printing and reproduction of recorded media; (5.) manufacturing of machinery and equipment; (6.) manufacturing of furniture; manufacturing

TABLE 3 Average levels of total intra-industry trade for chosen manufacturing activities of observed countries in 2001 (in %)

ISIC	CZ	H	PL	SI	SK	Mean
17	47.81	35.71	19.05	29.19	25.43	31.44
18	53.05	42.63	28.81	29.34	16.90	34.14
19	60.07	25.94	53.18	57.67	22.18	43.81
20	36.75	45.50	42.56	34.24	25.33	36.88
21	35.72	20.40	11.04	42.24	19.84	25.85
22	83.65	41.35	40.55	42.82	42.24	50.12
23	56.67	46.07	15.17	—	—	39.30
24	30.12	24.32	20.16	28.39	20.25	24.65
25	55.42	47.73	37.07	45.32	25.11	42.13
26	52.81	43.63	43.64	32.29	23.53	39.18
27	36.93	40.68	35.54	36.95	11.40	32.30
28	67.83	56.15	57.11	57.24	58.40	59.34
29	59.26	45.34	41.13	49.59	40.96	47.26
30	51.85	30.44	5.35	21.22	43.51	30.47
31	63.99	53.83	53.39	48.76	44.48	52.89
32	30.28	47.92	28.21	34.02	39.85	36.06
33	49.23	38.75	10.38	45.70	35.40	35.89
34	41.19	15.31	36.58	40.54	29.68	32.66
35	68.55	55.42	47.62	39.11	46.68	51.47
36	45.97	58.44	29.89	58.18	41.64	46.82
Mean	51.36	40.78	32.82	40.67	32.25	

NOTES ISIC – selected divisions of the International Standard Industrial Classification signed by two-digit code; CZ – Czech Republic; H – Hungary; PL – Poland; SI – Slovenia; SK – Slovakia; mean – calculated arithmetic mean (by using equation 6).

SOURCES Eurostat 2002 and own calculations at the two-digit level of SITC.

of other non-mentioned products; (7.) tanning and dressing of leather; manufacturing of luggage, handbags, saddlery, harness and footwear and (8.) manufacturing of rubber and plastics products.

It is important to note that the average total intra-industry trade³² of listed manufacturing activities is not correlated with intra-industry trade specialization of the five former CEFTA countries. This ranking of eight manufacturing activities by average total intra-industry trade only confirmed that export and import flows of these activities are relatively

balanced, while in the case of the remaining twelve manufacturing activities export and import flows are relatively less balanced.³³ In short, if the standard Grubel and Lloyd index *per se* shows the share of intra-industry trade of the particular industry in total trade in the same industry, then only in combination with the Unit Value (UV) did the index represent a useful methodology for the measurement of intra-industry trade specialization.³⁴ In this way intra-industry trade specialization of twenty manufacturing activities was tested. The results of the measurements of horizontal and vertical IIT for the Czech Republic, Hungary, Poland, Slovenia and Slovakia in 2001 confirmed that a great majority of the twenty chosen manufacturing activities (i. e. divisions 17–36 of the ISIC) showed predominant specialization in the production of lower quality products.

At the same time, the present analysis also found a few manufacturing activities at the five-digit level of ISIC, which showed predominant specialization in the production of higher quality products. The selection of these activities is based on the assumption (of the Greenaway, Hine, and Milner methodology) that the relative share of V_1 represents trade in vertically differentiated products of higher quality, which are sold at a higher average price, and that relative share V_2 represents trade in vertically differentiated products of lower quality, which are sold at a lower average price. Thus, if we assume that the unit value index gives us perfect information that the products sold at higher prices must be of higher quality, then the manufacturing activities – which showed a greater share of vertically differentiated products of higher quality ($V_1 \geq V_2$) – simultaneously reveal predominant specialization in higher quality products.

Table 4 shows total, horizontal and vertical intra-industry trade for selected activities in observed CEFTA countries, which recorded predominant specialization in the production of vertically differentiated products of higher quality V_1 . Thus the Czech Republic has one manufacturing activity, Slovenia and Slovakia have two activities that revealed specialization in production of vertically differentiated products of higher quality in 2001, while Hungary and Poland recorded three activities that showed the predominant share of vertical intra-industry trade – V_1 in 2001. Remember that according to the Greenaway, Hine and Milner methodology, the relative share of V_1 represents trade of the observed CEFTA countries in vertically differentiated products of higher quality, which are sold at a higher average price, and that the relative share of V_2 represents trade of these countries in vertically differentiated products of lower quality, which are sold at a lower average price.

TABLE 4 Total, horizontal and vertical intra-industry trade for selected manufacturing activities of former CEFTA countries in 2001

Country	ISIC	Total	Horizontal	Vertical	V ₁	V ₂
Czech Republic	23	56.67	28.33	28.33	14.17	14.17
Hungary	18	42.63	7.19	35.44	22.60	12.84
	21	20.40	6.22	14.17	6.91	7.26
	34	15.31	2.45	12.86	7.35	5.51
Poland	23	15.17	3.03	12.14	9.10	3.03
	32	28.21	3.94	24.28	12.47	11.81
	34	36.58	8.83	27.75	13.88	13.88
Slovenia	18	29.34	5.08	24.26	15.80	8.46
	19	57.67	8.24	49.43	28.84	20.60
Slovakia	18	16.90	3.82	13.09	6.54	6.54
	30	43.51	3.96	39.55	27.69	11.87

NOTES ISIC – selected divisions of the International Standard Industrial Classification signed by two-digit code; V₁ – trade in vertically differentiated products of higher quality; V₂ – trade in vertically differentiated products of lower quality.

SOURCES Eurostat 2002 and own calculation at the 2-digit level of SITC.

The table also shows that former CEFTA countries revealed the similar intra-industry trade specialization in the production of vertically differentiated products. Thus Hungary, Slovenia³⁵ and Slovakia were specialized in manufacturing wearing apparel, dressing and dyeing of fur products (ISIC 18), which represent so-called traditional manufacturing activity. Similarly, Czech Republic and Poland specialized in the production of coke, refined petroleum and nuclear fuel products (ISIC 23),³⁶ while Hungary and Poland competed in manufacturing motor vehicles, trailers and semi-trailers (ISIC 33).³⁷

We suppose that investments by foreign owned enterprises have caused Hungary and Poland to show predominant specialisation in the production of higher quality motor vehicles, trailers and semi trailers; that Poland reveals predominant specialisation in the production of higher quality radio, television and communication equipment and apparatus (ISIC 32); and that Poland shows the largest changes in the average levels of total IIT in the period from 1995 to 2001.

Concluding Comments

The main goal of this paper to verify the production structure or intra-industry specialization of Czech Republic, Hungary, Poland, Slovenia

and Slovakia as former members of CEFTA in trade with the EU member states. In this way the first analysis tested specialization of these countries at the aggregate level of the manufacturing sectors (i. e. SITC 5–8) in 1995, 1998 and 2001. The results of the measurement of total, horizontal and vertical intra-industry trade at the aggregate level by using the Greenaway, Hine, and Milner (1994; 1995) methodology confirmed predominant specialization of the former CEFTA countries in production of vertically differentiated products of lower quality. The findings of this analysis are comparable with those of the previous studies (Černoša 2005a; 2005b).

The same statistical data at the five-digit level of SITC were also used as a basis for the calculation in the second analysis presented in this paper, which tested IIT specialization at the level of twenty manufacturing activities (i. e. divisions 17–36 of the ISIC).

This analysis also revealed the predominance of IIT specialization of the majority of the chosen manufacturing activities in the production of lower quality products – V_2 – and it also found a few activities in each of the five observed former CEFTA countries, which, by contrast, showed predominant specialization in the production of higher quality products. Thus, if former CEFTA countries in general showed a similar production structure either at the aggregate level of manufacturing sectors (SITC 5–8) or at the level of twenty chosen manufacturing activities (divisions ISIC 17–36), then in accordance with these results it is not possible to conclude that these countries achieved the same intra-industry specialization.

The important message of the present analysis is that the Czech Republic, Hungary, Poland, Slovenia and Slovakia as former members of CEFTA showed predominant specialization in the production of vertically differentiated products of lower quality, while developed EU member states such as Austria, Belgium, France, Germany and Great Britain simultaneously showed predominant intra-industry specialization in the higher quality vertically differentiated products.

The governments of former CEFTA countries will need to recognize that the existent production structure of the observed Central European countries at the beginning of the first decade of the 21st century is by no means comparable with predominant intra-industry trade specialization of the advanced EU member states, which in comparison with former CEFTA countries also achieved higher GDP per capita income on average.

Notes

- 1 For instance, Austria has approximately one time bigger GDP per capita than Slovenia and approximately one and a half times bigger GDP per capita than the Czech Republic.
- 2 The difference in GDP per capita income between the observed country and the trading partner is frequently used in regression models as a proxy for differences in factor endowments. It is assumed that relative capital abundance of an observed country is reflected in its relative GDP per capita income.
- 3 Trade with EU represented approximately two thirds of the total trade of these Central European countries.
- 4 It is important to note that the Aturupane, Djankov and Hoekman study estimated a regression model meaning that only disentangled total intra-industry trade of the Eastern and Central European countries on the belonging share of horizontal and vertical intra-industry trade, while the present study disentangled total intra-industry trade of the observed former CEFTA countries on the belonging horizontal and vertical components and also separated the share of vertical intra-industry trade into two parts by using the Greenaway, Hine, and Milner methodology (1994; 1995).
- 5 The methodology for the measurement of the horizontal and vertical IIT also does not suppose use of statistical data for consecutive years.
- 6 Unit value index is defined as the ratio of the values (in national currencies) and the quantities (in kilograms or tons) of the particular industry *i*.
- 7 By contrast, Crespo and Fontoura (2004) use statistical data for the year 1994, 1996, 1998 and 2000.
- 8 The Heckscher-Ohlin model.
- 9 Krugman (1979), Lancaster (1980), Helpman (1981), Brander and Krugman (1983), Eaton-Kierzkowski (1984), Krugman and Venables (1990), Davis (1995), Markusen and Venables (1996) model.
- 10 Greenaway, Hine, and Milner (1994; 1995) developed a methodology which is based on the work of Abd-el-Rahman (1991) and which is able to identify vertical and horizontal intra-industry trade of the observed countries.
- 11 More precisely, the study by Aturupane, Djankov and Hoekman primarily tested an industry specific hypothesis and also found more support for the industry specific factors.
- 12 Aturupane, Djankov and Hoekman (1999), Černoša (2005a), Černoša (2005b), and the present analysis.
- 13 In other words, the range of products which a certain type of capital equipment can produce defines an industry.

- 14 If Černoša (2005b) showed that Germany and Austria as more developed EU members' economies were specialized in the production of vertically differentiated products of higher quality, and Slovenia and Czech Republic as less developed Central European economies were specialized in the production of vertically differentiated products of low quality at the end of the 1990s and at the beginning of the 2000s, then Germany and Austria, due to a higher capital-labour ratio, will produce and export vertically differentiated products of relatively higher quality, while Slovenia and Czech Republic, due to a lower capital-labour ratio, will produce and export vertically differentiated products of relatively lower quality.
- 15 The Fontagne and Freudenberg (1997) methodology is useful only for the observation of the bilateral trade.
- 16 The Greenaway, Hine and Milner methodology supposes calculation of the standard Grubel and Lloyd (1975) index. Thus the standard Grubel and Lloyd index is calculated:

$$B_i = \frac{[(X_i + M_i) - |X_i - M_i|] \cdot 100}{(X_i + M_i)} \quad (0 \leq GL_i \leq 100),$$

where B_i represents the Grubel and Lloyd index for a particular industry i at the five-digit SITC level, X_i represents exports of that particular industry, while M_i represents imports of that particular industry. The intra-industry trade at the aggregate level (weighted average) was measured using the following index (Grubel and Lloyd 1975, 21):

$$\bar{B}_i = \frac{\sum_{i=1}^n B_i(X_i + M_i)}{\sum_{i=1}^n (X_i + M_i)} = \sum_{i=1}^n w_i \cdot B_i, \text{ where the weights are}$$

$$w_i = \frac{X_i + M_i}{\sum_{i=1}^n (X_i + M_i)},$$

where \bar{B}_i represents Grubel and Lloyd's index for weighted average at the aggregate level, B_i represents the standard Grubel and Lloyd index for a particular industry i at the five-digit SITC level, X_i represents exports of that particular industry, while M_i represents imports of that particular industry.

- 17 Unit value index (*UV*) is defined as a ratio of the values (in national currencies) and the quantities (in kilograms or tons) of the particular industry i .
- 18 The same level of aggregation was also used by Greenaway, Hine, and Milner (1994; 1995), Greenaway, Milner and Elliott (1999) and Nielsen and Lüthje (2002). It is important to note that alternative data classification – Combine Nomenclature (*CN*) – in the case of Slovenia is available from 1996.
- 19 The results of the present analysis are comparable with the results of the measurement of horizontal and vertical intra-industry trade

(on multilateral basis) for Slovenia from 1994 to 2003 at the five-digit level of SITC (Černoša 2005a) and also comparable with the measured horizontal and vertical intra-industry trade (on multilateral basis) for Slovenia and the Czech Republic in comparison with Germany and Austria in 1998 at the five-digit level of SITC (Černoša 2005b). In short, Slovenia and the Czech Republic in both studies cited above recorded relatively higher levels of total intra-industry trade in multilateral trade and also in the present analysis both showed relatively lower levels of total intra-industry in trade with EU members states.

- 20 Concretely, we used Eurostat's statistical data inversely, where exports of EU member states (in 000 EUR and tons) to a selected CEFTA country were treated as imports of this country during the observed years, while imports of all EU member states from the same selected country (in 000 EUR and tons) were treated as exports of this country during the observed years.
- 21 Where only 9 EU member states are included (Belgium, Luxembourg, Germany, France, The United Kingdom, Italy, The Netherlands, Denmark and Ireland).
- 22 This study observed IIT of each former CEFTA (5) member state in foreign trade with all EU member states in 1995, 1998 and 2001.
- 23 While the present study following the Greenaway-Hine-Milner methodology disentangles total intra-industry trade on horizontal and vertical components and later also separates vertical intra-industry into two parts, Aturupane, Djankov, and Hoekman (1999) did only the first step.
- 24 Total intra-industry trade = 100.
- 25 Each particular division is signed by a two-digit code.
- 26 In short, we measured horizontal and vertical intra-industry trade of each particular manufacturing industry at the five-digit level of SITC and later repeated measurements at the aggregate level (at two-digit level of the ISIC).
- 27 Equationation \overline{B}_i .
- 28 Calculated as the arithmetic mean vertically (by columns) in table 3.
- 29 Calculated as the arithmetic mean horizontally (by rows) in table 3.
- 30 This arithmetic mean is calculated using the following equationation (Greenaway and Milner 1986, 65):

$$\overline{\overline{B}}_i = \frac{1}{n} \sum_{i=1}^n \overline{B}_i,$$

where $\overline{\overline{B}}_i$ represents the arithmetic mean and \overline{B}_i represents Grubel and Lloyd's index for weighted average at the two-digit level of ISIC.

- 31 We used Eurostats statistical data inversely, where exports of EU member states (in 000 EUR and tons) to a selected CEFTA country were

treated as imports of this country during the observed years, while imports of all EU member states from the same selected country (in 000 EUR and tons) were treated as exports of this country during the observed years.

- 32 Measured by Grubel and Lloyd index.
- 33 Grubel and Lloyd defined intra-industry trade as the value of exports of an industry, which is exactly matched by the value of the imports of the same industry. (Grubel and Lloyd 1975, 20). Thus, the GL index showed the higher average total intra-industry trade at the aggregate level (see equitation (2) for weighted average) in the case where the relation between the exports and imports of the observed manufacturing industries is relatively balanced, and also revealed lower average total IIT at the aggregate in all cases, when the proportion between the values of the exports and imports of the observed industries is on average relatively unbalanced.
- 34 See Greenaway, Hine, and Milner (1994; 1995) methodology for the measurement of horizontal and vertical IIT.
- 35 The previous analysis (Černoša 2002) also showed that Slovenia and the Czech Republic are competitors and partners in intra-industry exchange of the same or similar products.
- 36 Both countries showed specialization in vertically differentiated products of higher quality in the manufacturing of refined petroleum products, which represent a sub-group of code 23 (of the ISIC).
- 37 This activity supposed the use of advanced technologies.

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Stock Prices and Resignation of Members of the Board: The Case of the Warsaw Stock Exchange

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In this paper we provide an empirical analysis of announcements of resignation of board members using data which comes from the Warsaw Stock Exchange. The market reaction to this information is tested at different time horizons by means of event study methodology. The results show that market reaction is rather positive immediately before the announcement release and negative over the following six-day-period starting on the event day. A possible explanation for this phenomenon is suggested. Besides the traditional examination of abnormal return behaviour, we also check whether or not resignation announcements induce increases in the variance of stock returns over the period under consideration. It turns out that a tendency towards increased stock return volatility can be observed in the whole period prior to the announcement release.

Key Words: managerial resignations, abnormal returns, event-induced variance, emerging stock market

JEL Classification: G14; C22

Introduction

Stock price reactions to announcements of managerial resignations have been investigated by many researchers. Part of this research focuses on forced resignations. Forced resignations are relatively rare and are due more often to external factors like blockholder pressure or takeover attempts, than to normal internal monitoring. According to economic theory internal control mechanisms are effective if there are more changes of top management in poorly performing firms than in firms whose performance is good. Moreover improvements can be observed in firms' performance after top management changes. In general, identifying forced

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departures is difficult, because press reports do not describe them as such. Sometimes e. g. a departure announced as a retirement may be in reality a forced resignation.

However, if a newspaper release states that a resignation is forced, or that it results from the poor performance of a company, a researcher can take it for granted that the change is really forced. In order to build a data set of forced departures, one has to identify the properties of forced resignations. Then resignations which share these properties can be classified as forced resignations even if those are not announced as such. The interpretation of event study effects of a resignation is not easy; a management change may signal different things: that a firm's performance is worse than expected, or that a firm's performance will improve as a result of the management change but also that the firm is considered as a takeover target. In addition, top management changes can be probably partially anticipated by taking into account poor performance before the change.

Based on the forced managerial turnover data from the US stock market, Furtado and Rozeff (1987) found increases in stock prices due to the event, but from a statistical point of view this result was insignificant. Unlike Furtado and Rozeff (1987), Worell, Davidson, and Glascock (1993) documented a statistically significant price increase of 2.3%. A very interesting work is that of Weisbach (1988), who reported that, on the one hand, there is no price impact if the managerial resignation takes place in a company whose board is dominated by executive directors. On the other hand, there is a significant positive stock price reaction if the majority of the board consists of external, independent directors.

Khanna and Poulsen (1995) examine whether management turnover leads to improvement in firms' performance. They argue that removing poorly performing managers is an important step toward maximizing shareholder wealth. A management board must identify poor management and attract superior replacement managers. This is the main criterion of the effectiveness of internal monitoring. However a negative correlation between prior stock price trends and managements turnover may coexist with effective internal board monitoring. Khanna and Poulsen supply two alternative explanations. The first one is that managers of poorly performing companies may voluntarily resign in order to avoid shareholder lawsuits. The second one is that company boards may replace the managers of poorly performing firms even if those managers are not responsible for the bad financial situation of

a company. Under neither of these two scenarios would a change in management necessarily be expected to induce improvements in performance.

In contrast to the above-mentioned results, Warner, Watts, and Wruck (1988) provide empirical evidence of negative market reaction to forced managerial resignations. A possible reason for this is, according to Warner, Watts, and Wruck, the fact that the announcement of a forced resignation is interpreted as a signal of worse current and future firm's performance. This finding was later confirmed by Mahajan and Lummer (1993), who also documented a significant negative reaction over a two-day-period, starting one day before the announcement release.

The second very important topic of research is non-conflictual resignations and their impact on stock prices (see e. g. Mahajan and Lummer 1993). The conclusion that can be drawn from these studies is that the announcements of resignations on a non-conflictual basis are accompanied by a decline in stock prices. This means that such announcements are interpreted by market participants as a loss of valuable human capital by a firm. Resignations due to the retirement by managers need to be analysed separately from other non-conflictual resignations. The latter can usually be well anticipated, and as a consequence, no stock price reaction should be observed. The empirical work of Weisbach (1988) and Mahajan and Lummer (1993) provides support for this statement. In addition, forced resignations and normal retirements also exhibit a significant amount of post turnover corporate asset-restructuring sales, layoffs, cost-cutting measures and so on.

In this paper we provide an empirical analysis of announcements about the resignation of board members which took place in the companies listed on the primary market of the Warsaw Stock Exchange (WSE). Poland is a representative case for event study in an emerging stock market due to the Polish experience in the establishment and development of a stock market. The stock market in Poland did not exist, practically, until the beginning of 1990s. The WSE, the only stock exchange in Poland, became operational in April 1991. Despite the fact that the period under consideration is relatively short and comprises only five years, our results reveal a statistically significant stock price reaction to announcements of resignations. To be more precise, market reaction is rather positive immediately before the announcement release, and negative over the following six-day-period, starting on the event day. Besides a traditional examination of abnormal return behaviour, we also check whether or

not resignation announcements induce increases in the variance of stock returns over the period under consideration. It turns out that an increasing tendency towards stock return volatility can be observed during the period prior to an announcement release.

The rest of the paper proceeds as follows. The second section outlines the methodology that aims at uncovering the anomalous behaviour of stock prices induced by an event. The third contains a brief description of the data and the rules underlying sample selection procedure. In the fourth section we start with some basic descriptive analysis of the abnormal return series, and then the test results for the significance of an event effect over the period under consideration are presented. The last Section provides a summary of the main findings, comments and some guidelines for future research.

Methodology

Over thirty years ago Fama, Fisher, Jensen, and Roll (1969) introduced event study methodology which still seems an unbeatable tool for uncovering stock price as well as trading volume reactions to the arrival of new information. Obviously, the methods that are used now under event study differ from those of Fama et al. but the main idea has remained the same over the whole period since this methodology was introduced.

Let Π be the set of day indices t belonging to an event window, and Ω be a set of day indices t which are attributed to a pre-event or observation window. As a first step, stock prices (P_t) are transformed into returns (R_t) by means of a discreet or continuous formula. The latter, which is given by

$$R_t = \log\left(\frac{P_t}{P_{t-1}}\right), \forall t \in \Pi \cup \Omega, \quad (1)$$

is especially popular due to the well-known fact that return series (1) is better approximated by normal. In addition, the use of a continuous formula usually improves the stationarity properties of the return series (stabilizing the stock return variance with respect to time).

As a second step, the abnormal return series (AR_t) is obtained by subtracting the actual return from the expected return

$$AR_t = R_t - E[R_t | R_{k \in \Omega}], \forall t \in \Pi. \quad (2)$$

Note that the expected return in (2) is conditional on the returns observed over the pre-event window. The most popular model for generating expected returns is the market model (MM) introduced by Sharpe

(1963). This model shows the expected return as the sum of two components. The former is a constant (α). The latter, is a product of the systematic-risk parameter and the market-portfolio return (βR_m). With MM serving as an expected return model, (2) may be rewritten as

$$AR_t = R_t - \hat{\alpha} - \hat{\beta}R_{m,t}, \forall t \in \Pi, \tag{3}$$

where $\hat{\alpha}$ and $\hat{\beta}$ mean the estimators of the corresponding model parameters applied over the pre-event window.

In order to check whether the average abnormal return on a given day $t \in \Pi$ statistically differs from zero the t -statistic is employed, which is given by

$$t_{stat} = \frac{N^{-1} \sum_{i=1}^N AR_{i,t}}{\hat{\sigma}_{AAR}}, \tag{4}$$

where N stands for the number of firms included in the sample and the denominator (the standard deviation of the average abnormal returns) can be calculated as follows

$$\hat{\sigma}_{AAR} = N^{-1} \left[\frac{1}{\bar{\bar{\Omega}} - 1} \sum_{t \in \Omega} \left(\sum_{i=1}^N AR_{i,t} - \frac{1}{\bar{\bar{\Omega}}} \sum_{t \in \Omega} \sum_{i=1}^N AR_{i,t} \right)^2 \right]^{\frac{1}{2}}, \tag{5}$$

where $\bar{\bar{\Omega}}$ means a cardinal number of set Ω .

With the widely-documented fact that financial time series exhibit heteroscedasticity of variance, the use of a market model as in (3) does not seem to be fully justified. The estimator of the standard deviation of the average abnormal returns defined by (5) is not able to capture variance changes which may occur over the event window. As a consequence, the value of statistic (4) is no longer sufficient for the purpose of inference needs.

To relax the assumption that stock return variance remains the same on each day of the event window, while improving the statistical inference used under event study, has resulted in the development of several helpful techniques. One of them is that of Hilliard and Savickas (2000). An original test for abnormal performance is proposed by Hilliard and Savickas with the market model and the GARCH(1,1) error term. Under this study we, however, decided to use the generalized ARMA(r,m)-MM-GARCH(p,q) model given by

$$R_{i,t} = \Phi_{i,0} + \sum_{j=1}^r \Phi_{i,j}R_{t-j} + \beta_i R_{m,t} + \varepsilon_{i,t} + \sum_{j=1}^m \Theta_{i,j}\varepsilon_{i,t-j}, \quad \varepsilon_{i,t} \sim (0, h_{i,t}).$$

$$h_{i,t} = \alpha_{i,0} + \sum_{j=1}^q \alpha_{i,j} \varepsilon_{t-j}^2 + \sum_{j=1}^p \omega_{i,j} h_{t-j}. \quad (6)$$

The proper length of time-lags in the model is identified using the Akaike Information Criterion. The model parameters are estimated by means of the ML-method from observations included within the pre-event window, i. e. for $t \in \Omega$.

The test statistic (l_t) can be expressed as

$$l_t = \frac{ASR_t}{\sqrt{\sum_{i=1}^N (SR_{i,t} - ASR_t)^2}} (N - 1), \quad (7)$$

where $SR_{i,t} = AR_{i,t} \sqrt{1/\hat{h}_{i,t}}$ and $ASR_t = N^{-1} \sum_{i=1}^N SR_{i,t}$.

In order to test the implications of announcements over any sub-period of the event window whose boundaries are set as m and s ($m < s$), the standardized cumulative abnormal return can be calculated

$$SCAR_{i,m,s} = \frac{\sum_{t=m}^s AR_{i,t}}{\sqrt{\sum_{t=m}^s \hat{h}_{i,t}}}. \quad (8)$$

The corresponding test statistics are given by

$$l_{m,s}^{CAR} = ASCAR_{m,s} \sqrt{\frac{N(N-1)}{\sum_{i=1}^N (SCAR_{i,m,s} - ASCAR_{m,s})^2}}, \quad (9)$$

where $ASCAR_{m,s} = N^{-1} \sum_{i=1}^N SCAR_{i,m,s}$.

With the help of the methodology proposed by Hilliard and Savickas (2002) we are also able to study the event effect on the unsystematic volatility of stock returns. The multiplicative abnormal volatility parameter (λ), introduced by the above-mentioned authors, measures the scale of the increase in unsystematic volatility, caused by an event. This parameter is defined as

$$\hat{\lambda}_t = (N-1)^{-1} \sum_{i=1}^N \frac{(AR_{i,t} - N^{-1} \sum_{k=1}^N AR_{k,t})^2}{N^{-1}(n-2)\hat{h}_{i,t} + N^{-2} \sum_{k=1}^N \hat{h}_{k,t}}. \quad (10)$$

Note that if parameter (10) is equal to unity, the event has no impact on unsystematic volatility. A value of the parameter greater than one implies a volatility increase due to the event. To test it more formally, one can use a statistic expressed as

$$S_t = (N-1)\hat{\lambda}_t, \quad (11)$$

which is a chi-squared distribution with $N-1$ degree of freedom.

Analogically, to check the same for a given sub-period of the event window statistic (11) may be modified as follows

$$CS_{m,s} = (N - 1) \sum_{t=m}^s \hat{\lambda}_t. \quad (12)$$

This statistic also has a chi-squared distribution with $(N - 1)(s - m + 1)$ degree of freedom.

Sample Description

Our sample consists of announcements of board member resignations collected from the online database constructed by Parkiet from articles and news published, among others, by Parkiet Newsroom, PAP and Reuters. The number of items included in this database exceeds 400,000. Therefore, we first searched the database for announcements of interest using several different keywords. Afterwards, each of the filtered announcements was read carefully in order to make sure that the information conveyed by the announcement was clear enough and met our selection requirements (we talk about them in more detail below).

One important problem when addressing managerial resignations stems from the fact that the true motives underlying a resignation decision are not always given. As a result, the boundary between forced and non-conflictual resignations is rather vague. To ensure that our sample consisted only of informative managerial resignations, we left out any resignation as a consequence of retirements by the managers if it took place at the normal retirement age, or at the expiry of a contract.

The period of study was from January 2000 to June 2005, and the companies which we took into account were those which are listed on the primary market of the WSE. There are all together sixty announcements of board member resignation that satisfied two major selection criteria. Firstly, the use of event study methodology made it necessary to identify an unambiguous event date for the resignation decision. This event date is, under this study, the day on which such a decision is first announced to the public. As a consequence, all news that only repeated the same information has been not taken into account. Secondly, the event must be adequately isolated, so the chosen eleven-day-period (the event window) centred on the event day ($t = 0$) should not be affected by any other firm-related events (confounding events). This made it necessary to exclude from the sample all those announcements that took place at the same time as other firm-related events.

The stock price data were provided by Parkiet, which compiles a database on the Polish stock market. Based on these data we obtain daily return series for each stock included in our sample, and the return on the stock index WIG which is a market-capitalization stock index, weighted and adjusted for cash dividends.

Empirical Results

ABNORMAL RETURN

We start our investigation with some basic descriptive analysis and a simple test of abnormal returns over the event window. First, for each event included in the sample market model parameters (α and β) were estimated on the basis of the return series from a two-hundred-day-period, ending on the sixth day before the event day ($t = 0$). Then, abnormal returns (3) were computed. The descriptive statistics for the abnormal returns as well as the t -statistic (4) are reported in table 1.

The sample mean abnormal return is rather erratic in terms of both sign and size over the event window. It ranges from -1.068% on the third day after the announcement release to 1.507% two days before that day. It is also worth emphasizing that over the sub-period prior to the event day the mean abnormal return reveals a trend towards positive values, while after the announcement release one can observe rather the reverse tendency. The minimum and maximum values of abnormal returns show huge variability of event effect across the firms included in the sample. The high values of the sample standard deviation of abnormal returns appears to confirm that information about managerial resignation diversely affected stock prices across the sample. In the whole event window, on the other hand, the sample standard deviation is fairly stable and ranges from 2.9% (for $t = -1$) to 7.4% (for $t = 2$). Finally, the abnormal return series display excess kurtosis and are skewed to the left, except for three cases ($t = -2, +1, +4$) where the skewness is positive. In all days within the event window, except for the last one the kurtosis is substantially larger than 3, but again one can notice that the largest values are observed over the second part of the event window (from $t = 0$ to $t = +4$).

With regard to the t -Student statistic, we observe a statistically significant value in three cases. The first time when the test statistic is different from zero, at a 1% level of significance, is two days before the announcement release. The corresponding mean abnormal return is positive and equals 1.51% . The two other cases where one can identify a sig-

TABLE 1 Descriptive and *t*-Student statistic of abnormal returns within the event window

Day <i>t</i>	Descriptive statistics						<i>t</i> -statistic
	Minimum (%)	Mean (%)	Maximum (%)	Std. dev. (%)	Skewness	Ex-kurtosis	
-5	-11.002	-0.595	11.071	4.095	-0.165	1.960	-1.165
-4	-23.079	0.042	13.952	5.549	-1.469	7.628	0.083
-3	-21.384	-0.547	13.304	4.619	-2.030	9.642	-1.070
-2	-6.521	1.507	20.019	5.025	2.040	4.593	2.950**
-1	-11.547	0.056	7.410	2.914	-1.250	5.042	0.110
0	-40.155	-1.006	9.714	6.678	-3.770	20.285	-1.969*
+1	-20.368	0.164	27.007	5.171	1.349	15.442	0.321
+2	-42.658	-0.184	20.254	7.404	-2.906	19.460	-0.361
+3	-41.490	-1.068	10.603	6.296	-4.508	29.276	-2.089*
+4	-8.602	0.757	35.096	5.725	3.776	21.733	1.482
+5	-9.208	-0.824	5.275	3.232	-0.663	-0.021	-1.613

NOTES ** Statistically significant value at 1% level, * stat. significant value at 5% level.

nificant event effect include the event day itself and the third day after that day. In both of them the mean abnormal return is negative and, respectively, amounts to -1.01% and -1.07%. It can be concluded from the figures that managerial resignation announcements cause stock prices to increase immediately before the official announcement, but then stock prices start to fall. Further, the decrease in stock prices not only completely cancels the previous increase, but also continues below the price level which could be assumed under non-event conditions.

The use of the market model as in (3) produces only a rough approximation of the true event effect due to the assumptions underlying the OLS method of estimation of model parameters, including homoscedasticity and non-correlation of the error term. It is a well-documented fact that stock return series exhibit time-varying variance and are usually auto-correlated. In this context the promising nature of a GARCH approach is obvious.

Therefore, as a second stage, we estimated the model (6), using the same estimation window as previously for the market model. After controlling for model misspecifications, we continue to evaluate event effects associated with managerial resignations by obtaining the standardized abnormal return series, and then by calculating the standardized cumu-

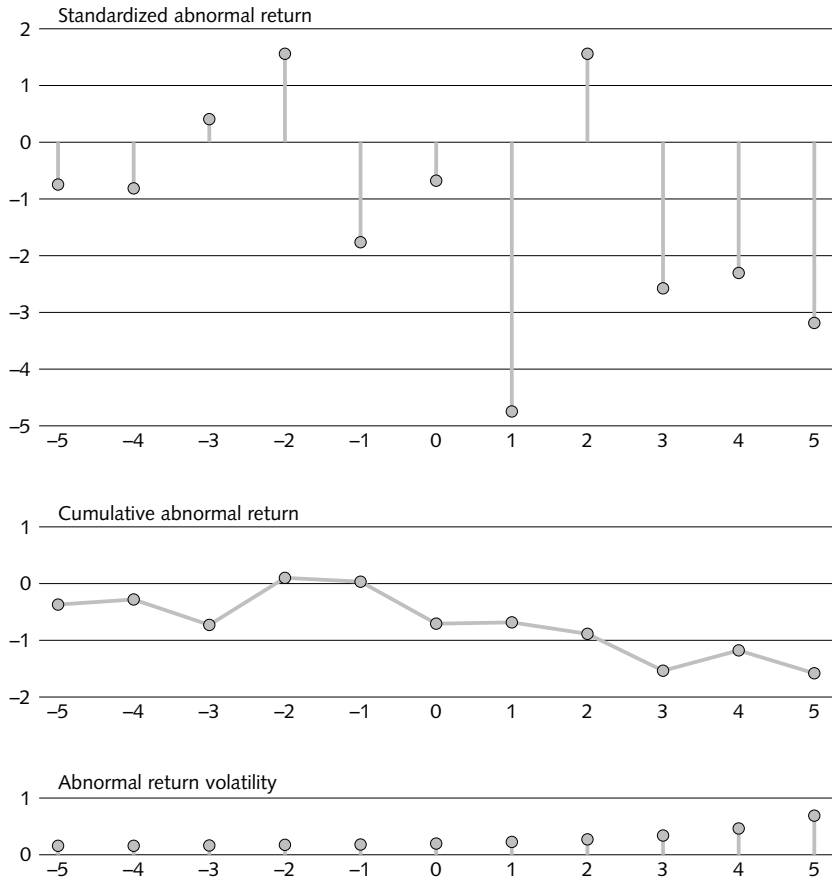


FIGURE 1 Abnormal returns and volatility within the event window (GARCH approach)

lative abnormal return (8) as well as the corresponding test statistic (9) over the seven periods of the event window.

Figure 1 presents the standardized abnormal returns, cumulative abnormal returns and conditional volatility generated by means of the model (6) over the event window. Taking the variance of stock returns into consideration does not change fundamentally our inferences about abnormal return behaviour in the whole event window. Again one can find that negative standardized abnormal returns are generally distributed in the second half of the event window (for $t \geq 0$). The shape of the line representing cumulative abnormal return fully supports this finding. As regards the conditional volatility of stock returns, one can

TABLE 2 Test results for event effect within sub-periods of the event window

	Time interval $\{m,s\}$						
	$\{-5,-1\}$	$\{-3,-1\}$	$\{-2,-1\}$	$\{0,+2\}$	$\{0,+3\}$	$\{0,+5\}$	$\{-5,+5\}$
$ASCAR_{m,s}$	0.033	0.729	1.564*	-1.781	-3.126**	-3.229**	-3.196
$I_{m,s}^{CAR}$	0.017	0.602	1.932	-1.598	-2.347	-2.093	-1.170

NOTES ** Statistically significant value at 5% level, * stat. significant value at 10% level.

notice a slow rise in variance in the second half of the event window. This observation, however, is not equivalent to saying that an event-induced shift in variance can be identified. We address this issue in the next section.

Table 2 reports the test results for the event effect in the seven different periods of the even window. Statistically significant values of average standardized cumulative abnormal returns ($ASCAR$) can be found in the case of three sub-periods of the event window, including the period from day $t - 2$ to day $t - 1$, from the event day to day $t + 3$, and finally from the event day to the last day within the window. In the whole event window the $ASCAR$ is negative (-3.196), but its value does not differ from zero from a statistical point of view.

What can be concluded from the figures in table 2? Firstly, the negative valuation effect in the second half of the event window clearly indicates that companies, on average, lost valuable human capital because of the resignation of board members. This finding is consistent with our intuition and corroborates other empirical evidence, e. g. that of Mahajan and Lummer (1993). Secondly, the positive valuation effect before the official announcement of managerial resignations may be, on the other hand, interpreted as evidence that a resignation results in conflict reduction inside the company, as a consequence of which stock prices start to increase.

One possible explanation for this phenomenon is that prior to an official announcement about a resignation there is trading by insiders. Insiders are well informed and probably know the true circumstances of a resignation decision. They may be convinced that the resignation of a given person will ultimately lead to improved performance. After the official announcement other investors start to trade. They are not as well informed as insiders and have to guess the true reasons for a resignation. From their view-point a resignation means a loss of the firm's human capital.

TABLE 3 Test results for cumulative abnormal volatility within sub-periods of the event window

	Time interval $\{m,s\}$						
	$\{-5,-1\}$	$\{-3,-1\}$	$\{-2,-1\}$	$\{0,+2\}$	$\{0,+3\}$	$\{0,+5\}$	$\{-5,+5\}$
$\sum_{t=m}^s \hat{\lambda}_t$	13.485*	5.229*	2.934*	0.931	0.968	0.977	14.462*
$CS_{m,s} \chi^{10}$	68.776	26.670	14.964	4.779	4.934	4.983	73.758

NOTES * Statistically significant value at 10% level.

TESTING FOR THE EVENT EFFECT ON THE UNSYSTEMATIC VOLATILITY

Finally, for the same periods of the event window as previously, we calculate the multiplicative abnormal volatility parameter (10) and the corresponding test statistic (12). The results are summarized in table 3.

We found an increasing tendency towards volatility in the cumulative abnormal returns over the first half of the event window (i. e. for $t < 0$). In the second half of the window (i. e. for $t \geq 0$) volatility is not changed. This can be seen as evidence that before the information about a resignation becomes public the market reacts more nervously. The volatility increase here may be a result of uncertainty about the possible resignation.

Conclusions

The purpose of this paper is to analyse whether the announcement of resignations of board members conveys valuable information in an emerging stock market like the Polish one. Using a variant of event study methodology, we provide empirical evidence supporting the hypothesis of market reaction to managerial resignations. Before the announcement release there is a tendency towards an increase in stock prices. When the firm announces the resignation of members of the board, this tendency is reversed, and stock prices start to fall.

In order to explain this phenomenon we have referred to differences in the interpretation of a resignation announcement by insiders and other investors operating on the WSE. Insiders, who know the true motives behind a resignation decision, are prone to buy shares. It may be they expect that a resignation, by reducing conflict and/or improving management, will result in better firm performance. With the limited information in an official announcement, other market participants have to guess what the resignation means for the current and future position of

TABLE 4 Companies included in the sample and the number of identified events

Name of company	<i>n</i>	Name of company	<i>n</i>
4media	2	Naftobudowa	3
7bulls.com	1	Netia	1
Agora	1	Optimus	1
Agros	1	Orfe	2
Amica Wronki	1	Pekao	2
Apexim	1	Pfleiderer Grajewo	1
Bank Millennium	3	Pollena Ewa	1
Bre Bank	2	PPWK	1
Centrozap	2	Projprzem	1
Comarch	2	Prokom Software	3
Elektrim	1	Redan	1
Energomontaż-P.	1	Softbank	2
Espebepe	1	Ster-Projekt	3
Ferrum	1	Szeptel	1
Fortis Bank Polska	1	TIM	1
Getin	1	Tonsil	1
Impel	1	Tras Tychy	1
Interia.pl	1	Wólczanka	2
Kruszwica	1	ZM Duda	1
Leta	1	ZPC Mieszko	1
Mostostal Zabrze	2	ZPUE	1
Mostostal-Export	1		

NOTES *n* – the number of events.

a firm. As our results show, resignations are regarded as a loss of valuable human capital. Hence, stock prices tend to go down over the period following the announcement.

It would be very interesting to check whether stock prices react differently to forced and non-conflictual resignations (e.g. normal retirement). It would be also interesting to find out the relative importance of different factors which cause forced resignations, such as blockholder pressure, takeover attempts, financial distress, shareholder lawsuits or normal board monitoring. With the meagre sample, we cannot do so under this study. Therefore, we must leave this problem for future research.

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Shadow Economy in Slovenia: The Labour Approach

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The all-around notorious shadow economy phenomenon is subject to constant reshaping, regarding both time and place, which results in a somewhat unclear definition. We use the following definition: all productive activities, whose output is legal, but is deliberately concealed from the authorities, usually for gaining financial benefits. Different methods of quantifying the size of the shadow economy have been developed. We focus on the labour approach, with Slovenia as the case-study during the last decade. The importance of such an analysis lies in the ambiguous effects of the shadow economy and their policy implications. We found that the shadow economy that relates only to the unemployment discrepancies in Slovenia amounts on average to around 6 percent of the official economy, and tends to slightly decline over the most recent years. On the other hand, employment discrepancy and more detailed activity-level results give much higher values and even an increase in the shadow economy: on average around 20 percent in the studied period.

Key Words: shadow economy, indirect methods, employment discrepancies, labour approach

JEL Classification: J21, E26

Introduction

Globalisation of the economy, cooperation and integration of countries and their common policies, cooperation and internationalisation of enterprises and entrepreneurial activities set a demand for consistent and internationally comparable evidences. Relating, for instance, to the gross domestic product (GDP), true values should be obtained by international methodologies and standards, where the *true* comprises both the official GDP and the one that is not covered by the official statistics. Deficiencies in the official statistics due to various reasons omit some of the pro-

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ductive activities that are otherwise within the production boundary. As defined by the System of National Accounts (SNA) (1993), these omitted activities should be included in the GDP figures. Moreover, several of such activities are hidden on purpose. This is where the phenomenon of the shadow economy emerges, as it covers some of the missed and hidden production.

Due to its definition of the unobserved (missed and hidden) production, the shadow economy presents a methodological challenge to measure its size and determine its characteristics, but also for policy formulation as it has different consequences. By studying and empirically evaluating the shadow economy and its size, there is more information gathered, thus serving the implementation of appropriate development and other policy tools. Many studies have been conducted on this issue, covering various approaches, data sources and countries. However, country-specific studies turned out to be the most appropriate.

In this paper we deal with that part of the shadow economy that is embodied in the labour market activities. Thus the labour approach alone represents an indirect method that is used to study the phenomenon. Furthermore, we restrict our investigation only to Slovenia. During the analyzed period the country moved through the period of transition from a self-managed centrally-planned economy to a market-oriented economy and adjustment to European Union (EU) membership. Currently Slovenia is strongly included in the international cooperation, and on 1 May 2004 Slovenia joined the enlarged EU.

Different studies have shown that the transition period is a hotbed for the shadow economy activities (e. g. Kaufmann and Kaliberda 1996; Feige and Ott 1999; Schnider and Enste 2002). The importance of the shadow economy in the official one varies across countries, but the estimated proportion of the shadow economy in a certain country depends also on different approaches and methodologies that are used by different studies. The same holds for Slovenia. We aim to show that development level and developmental path determine the level of the shadow economy, which is believed to be on a downturn in recent years.

The rest of the paper is structured in the following way. The next sections present the definition and characteristics of the shadow economy and a brief literature review of this phenomenon in general, both in transition countries and in Slovenia. In the subsequent section the description of the methodology and the data used is given. A further section explains the results. Conclusions are given in the final section.

The Shadow Economy

Shadow economy is a phenomenon present in all societies, regardless of their level of development. That is the reason why definitions of the shadow economy differ among researchers, countries and also between various time frames. Besides, different terms are used for labelling the studied phenomenon, sometimes interchangeably, and not always consistently. Nevertheless, expressions like the shadow economy have been rooted in the researchers' languages and are as such widely used.¹ Therefore it is important to stress the meaning of the *shadow economy* in this paper to avoid possible misinterpretations: shadow economy comprises *all productive activities, whose goods and services are legal, but the activity itself is deliberately concealed from the authorities*, usually to make financial gains (e. g. tax avoidance, non-compliance with certain regulations and standards, etc.).

Measuring the shadow economy poses a challenge to researchers primarily due to its nature:² by definition the shadow economy is concealed and therefore it is often impossible to directly measure its size. Nevertheless, several of the methods to quantify the size of the shadow economy have been developed. In general, three main groups can be identified:

1. *Direct methods*, which comprise surveys of households and enterprises on their shadow-economy behaviour.
2. *Indirect methods* quantify the shadow economy through the marks it leaves on the (official) economy. They can be further divided into several groups, for instance: monetary methods (the currency demand, transaction, and cash/deposit ratio approach); discrepancy methods (income/expenditure discrepancy, supply/demand of labour discrepancy); and physical output methods (electricity consumption method).
3. *Modelling* is the approach investigating relations of causes (determinants) and reflecting indicators through a latent shadow economy variable, which is then estimated.

The phenomenon of the shadow economy has both the negative and the positive sides. Shadow economy causes the public finance to collect fewer taxes, may cause damages to the official-economy firms as they face higher costs (and are thus not competitive), and also consumers may be worse-off due to no warranty for the products and services they purchase in the shadow economy. On the other side, the shadow economy has positive consequences as well. Firms engaged in the shadow economy can

operate at lower (labour) costs and more people can become employed. Consumers pay less, since no value-added tax is charged, or they do not deal with some operational and transactions costs that are caused by bureaucratic and administrative barriers that demand additional resources. This latter implicit taxation can also increase the entrepreneurial incentive in the shadow economy that can serve as an incubator for emerging small enterprises, which once they are successfully 'on the road' turn legal. It is a formidable task to determine, which, positive or negative, consequences of the shadow economy prevail. Therefore, several studies have been conducted across countries and over time to gain more information on the phenomenon, its causes and consequences. A brief review of some of them, with emphasis on the transition countries and Slovenia, is given below.

LITERATURE REVIEW

Several authors have conducted an in-depth study and gathered vital theoretical, methodological and empirical information on the shadow economy. It is important to stress that authors use different notations for the phenomenon and are not (always) consistent. Schneider and Enste (2002) for instance, use the same naming, i. e. *shadow economy*, yet with a slightly different definition. Williams (2004) addresses the phenomenon as the *cash-in-hand work*. Others, Breusch (2005) for instance, use the *non-observed or underground economy*, whereas Feige (1990) defined the phenomena as *unrecorded* and *informal* economies. Despite different definitions (which demands caution when comparing), these studies provide a valuable insight into the main terminological, methodological, and empirical issues of the phenomenon.

Besides individual researchers, international and supranational organisations such as Organisation for Economic Cooperation and Development (OECD), International Labour Organisation (ILO), United Nations (UN), and EU have realised the importance of the shadow economy and therefore, several definitions of the phenomenon, instructions on how to deal with it and estimates of its size have been put forward and some sort of standards in this field have been set.³ Different recommendations and terms have been proposed. OECD (2002), for instance, defines *underground*, *illegal*, and *informal sector* production, household production for own final use, and production missed due to deficiencies in data collection programme, with the underground production being the most consistent with our definition of the shadow economy. EU has focused

primarily on *undeclared work* in its member states and this is defined as 'productive activities that are lawful as regards their nature, but are not declared to the public authorities, taking into account the differences in the regulatory system between Member States' (European Commission 2004, 94) which is clearly in line with the above mentioned definition of the shadow economy.

Special interest in the past decade(s) has been given to the transition economies, which comprise Central and East European countries and Former Soviet Union countries. As these countries have some common features of the shadow economy they were normally studied and analysed jointly. For instance, within the OECD the 'Methods of measuring the hidden economy in the transition economies' were presented (Árvaý 1993). Their definition of the *hidden economy* is, however, not completely in line with the shadow economy used here, since illegal activities are added, so one needs to have this in mind when comparison is made. Furthermore, other authors (e. g. Dobozi and Pohl 1995; Kaufmann and Kaliberda 1996) use the electricity consumption method and they use the term *unofficial economy* defined as the 'unrecorded value added by and deliberate misreporting or evasion by a firm or individual' and thus giving room for illegal activities as well. Lackó (1999) and Feige and Urban (2005) provide further applications of the electricity consumption method to measure the *underground economy* in the transition countries. Besides, Feige and Ott (1999) gather some of these methods, and some additional methods that are arranged in a comprehensive guide to study the underground activities in transition countries.

SHADOW ECONOMY IN SLOVENIA

Slovenia was seldom covered in the above-mentioned studies of the shadow economy in the transition countries and not all of these studies are directly comparable, since authors follow different definitions and methodologies – which all contribute to different results. Schneider (2003) applied the modelling approach and recorded 22.6 percent of the shadow economy⁴ of the Slovenian official GDP in the period 1990–1993, 23.9 percent in the period 1994–1995, and 26.7 percent in the period 2000–2001. This evidence suggests an increase in the degree and level of the shadow economy in Slovenia to around one-fourth of the official GDP.

The early transition period was covered and studied by Glas (1991) and Kukar (1995). They both list similar causes for the existence and

development of the shadow economy, which all date back into the socialist system. Mainly, these focus on the rigid legislative framework, centrally planned and controlled supply of goods (which seldom followed the demand), unstable macroeconomic environment, and increasing tax and contributions burden in the period of transition. The need for increased efficiency and more market-oriented production enterprises had increased, whereas the bureaucratic obstacles were only partially removed. The latter caused many of the private businesses to start 'off the record', in the shadow economy. Glas (1991) estimated the size of the shadow economy⁵ in Slovenia in the late 1980s via a survey of the human resource departments in companies. The results revealed that up to 43 percent of the employed participates in the shadow economy, corresponding to above 38 percent of additional income. The trend was estimated to go even higher in the following years. Kukar (1995) estimates the size of the shadow economy⁶ with the labour method measuring the activity rate of the labour force. For the year 1993, it was estimated that around 26 percent of labour force (partially) participated in the shadow economy, amounting to almost 9 percent of fully employed people, which on the other hand means around 10 percent as a share of GDP. In this study, other authors estimated the size of the shadow economy using other methods, mainly by estimating the unregistered activities by subgroups of activities (related to main industry sectors, such as construction, tourism, and agriculture), and they sum up to between 16.8 percent and 21.3 percent of the GDP in Slovenia in 1993.

Flajs and Vajda (2004) present more recent calculations. They followed the Eurostat's exhaustiveness measures and revised the GDP for the period 1995–2002 and the non-observed economy (without illegal activities) on average amounts to around 6.5 percent. Furthermore, the European Commission (2004) estimated that the undeclared work in Slovenia in 2003 produced around 17 percent of the official GDP. The undeclared work seems to be in decline, which was anticipated, as the transition was coming to an end, and entry into the EU was on the doorstep, which all meant a more efficient and stable macroeconomic environment, legal framework and market economy as opposed to the situation in the early stages of the transition.

Methodology and the Data Used

Despite the whole range of methods, we have decided to focus on the labour-market data approach alone, which relies in essence on the dif-

ferences in actual (real) and official (registered) use of labour.⁷ There are two sources of evidence for these two aspects. On the one hand, the Labour Force Survey (LFS) reveals the actual side. On the other hand, the official records from the Employment Service of Slovenia (ESS) or the Statistical Office of the Republic of Slovenia (SORS) (or some other data source, where employers need to report their employees) provide the official labour use side in the labour market. Simplified, the discrepancy between the true and official labour use can be approximated by the data on (un)employment from the actual (LFS) and registered (ESS) labour use. First, the unemployment discrepancies provide rather rough indication of the phenomena, the results of which are often inconsistent across countries. We want to check the country-specific feature, i. e. whether the majority of registered unemployed work in the shadow economy, and thus we investigate the difference in unemployment rates or absolute numbers of unemployed, obtained on the one hand by the LFS following the more strict definition of the ILO, and by the ESS on the other. This difference provides a simple, but not very accurate number of the people working in the shadow economy. Second, we direct ourselves to more direct measurement of the discrepancy between the actual and registered labour use, estimating the discrepancy between the actual (LFS) and registered (ESS) number of employed. In Slovenia, these data are available from 1993 onwards. The next step needs to provide some evidence on the productivity of these people in order to obtain the final estimate of the size of the shadow economy as a percentage of the official GDP. However, there are three main drawbacks to such a methodological approach. First, it is almost impossible to determine the productivity measure for the shadow economy, when using indirect measures alone. Second, the assumptions that all unemployed work full-time in the shadow economy, and that no one with an official job participates (part-time) in the shadow economy, are rather weak. Besides, the problem of underreporting (understating) of the data to the LFS and ESS is also present. And third, different data sources on the labour force in the economy are very limited in their consistency. These three shortcomings have been tackled in the empirical analysis in the following way.

First, regarding the productivity, there is only limited work conducted on this aspect in the literature. Jon Isachsen and Strøm (1985) for instance distinguish between those who have been laid off and those who voluntarily switch to the shadow economy. They found that the two types/categories differ in their productivity. In the unobserved sector

the 'payment more likely is according to productivity' (Jon Isachsen and Strøm 1985, 34) and thus the more productive workers shift to the shadow economy. Schneider (2003, 34) also states that: '... the productivity in the shadow economy is quite likely to be considerably higher than in the official economy.' At the same time, those who are laid off are usually low productivity workers and this brings the productivity of the shadow economy down. Thus, one can argue in both directions: as people work for themselves, the motivation and productivity for a similar job is normally higher in the shadow economy. On the other hand, working in the shadow economy requires extra resources for staying undetected, therefore hindering the productivity. By nature, shadow economy activities are more labour intensive with very limited access to high technology, which further reduces their productivity. Therefore, in order not to be very limited in our approximations and to evaluate the sensitivity of our results on the applied assumptions, we have used three scenarios for productivity measures.⁸ Following the first one, the productivity in the shadow economy is 10 percent less than in the official economy. The second scenario approximates the same productivities, and the last one states that the shadow economy is by 10 percent more productive.

Second, the assumption on the full-time participation of the unemployed in the shadow economy is not properly grounded, due to sampling errors, underreporting and the fact that not all of those registered as unemployed according to the LFS work full-time in the shadow economy. Jon Isachsen and Strøm (1985, 35) stress that 'it is more common to work part-time in both sectors.' Thus we shift our analysis to the discrepancy between the registered and actual employment in the studied country, which suffers less from these drawbacks.

Third, the data from two different sources are not consistent, as the LFS measures the *employment*, whereas the administrative sources usually report the *jobs*. To bridge these shortcomings, we applied the methodological approach, which was developed by the Italian Statistical Office. This is the so-called Labour Input Method (LIM), which is obtained by the following five steps (OECD 2002, 53, 72): first, estimate the labour input underlying the GDP estimates. This registered use of labour is obtained from the tailor-made enterprise surveys or data from employment agencies. Second, estimate the labour input based on household survey data or the LFS (the actual labour use). Third, standardise the labour input estimates, which convert both of the evidences

into the same units of labour input, either to hours worked or full-time equivalents. Fourth, compare the two sets of estimates. Fifth, compute a multiplication factor to adjust the output and value added estimates to account for non-observed production obtained in the previous step.

The drawback of the LIM is a very high demand for the in-depth LFS. Also, some complementary special-purpose surveys are highly recommended. If these are not available, 'data from enterprise surveys and administrative files can be used' (OECD 2002, 73). Standardisation of labour input has been done through the number of hours worked, which are available for Slovenia on the activity level for the years 1995 and 2000 only. The OECD's (2002) handbook proposes that for each activity branch the value added per unit of labour input of non-observed production and the measured one do not differ. Essentially, this states, that the productivities are at the same level in both the shadow and official economy. We, however, use the following approach: calculate the value-added per official actually worked hour at the activity level and use it as the productivity ratio. Further, we assume that activities, requiring high-level skills are more likely to yield higher productivity in the shadow economy. Thus, activities of agriculture, fishery and mining (A, B, and C), following the International Standard Industry Classification (ISIC Rev. 3),⁹ are below the official productivity by 10 percent; that the manufacturing and electricity, gas and water supply (activities D and E) are on the same level of productivity in both economies; and finally, that other, service-based activities are by 10 percent more productive in the shadow economy than in the official economy (see also Nastav and Bojnc 2007). At this point we add the sensitivity analysis in the way that we take upper/lower bounds to these productivity measures by plus/minus 5 percentage points, respectively. Further, multiplying the hours, estimated to be worked in the shadow economy by the corrected level of the value added per official working hour by activities, we obtain the shadow value added by activity levels. By doing additional calculations we obtain the final results (see table 3).

The final approach applied uses the data on activity levels in Slovenia and essentially follows the Crnković-Pozaić (1999) application to the Croatian economy in the first half of the 1990s. By this approach, activity is supposed to move in more or less constant and inverse direction with the output. Crnković-Pozaić (1999, 220) argues that 'economic development and growth make it possible for a section of the working age population to stop working and turn to other activities which expand their

TABLE 1 Shadow economy in Slovenia (lower, middle, and upper bounds) following the employment discrepancy and the activity level approaches, 1993–2004 (%)

Year	Employment discrepancy			Activity level		
	Lower	Middle	Upper	Lower	Middle	Upper
1993	9.2	10.2	11.3	14.5	16.1	17.7
1994	11.8	13.1	14.4	4.3	4.8	5.3
1995	15.8	17.6	19.3	2.8	3.1	3.4
1996	16.1	17.9	19.7	4.4	4.9	5.3
1997	18.7	20.8	22.9	2.3	2.6	2.8
1998	19.5	21.7	23.9	0.5	0.6	0.6
1999	15.8	17.6	19.4	3.4	3.8	4.2
2000	14.7	16.4	18.0	—	—	—
2001	15.6	17.3	19.1	4.0	4.5	4.9
2002	15.9	17.7	19.4	3.7	4.1	4.5
2003	13.8	15.3	16.8	6.9	7.6	8.4
2004	18.8	20.9	23.0	1.9	2.1	2.3

SOURCES ILO (<http://laborsta.ilo.org>), ESS (<http://www.ess.gov.si>), SORS (<http://www.stat.si>), Eurostat (<http://epp.eurostat.ec.europa.eu>), own calculations.

quality of living, but are not considered economic activities.’ In essence, the method proceeds as follows: the base year’s activity rate is calculated and then used as a constant for all the subsequent years. By this, the so called *hypothetical* activity rates are calculated and then compared in each of the years to the official, *de-facto* activity rates. The latter would normally be (by assumption) lower and the difference between the hypothetical and de-facto active population is the measure of the number of people working in the shadow economy. Yet, the Slovenian case needs extra calculations: the activity rate has on average risen and therefore the base-year rate is not suitable for the hypothetical calculations.

Therefore, an assumption that the hypothetical activity rate was increasing at a constant annual growth rate,¹⁰ surpassing the annual de-facto rates, is applied. This adjustment enables the required calculations to be made.

Results

Applying the unemployment discrepancy approach to the data available, we found that, although the results are rather volatile, there is a down-

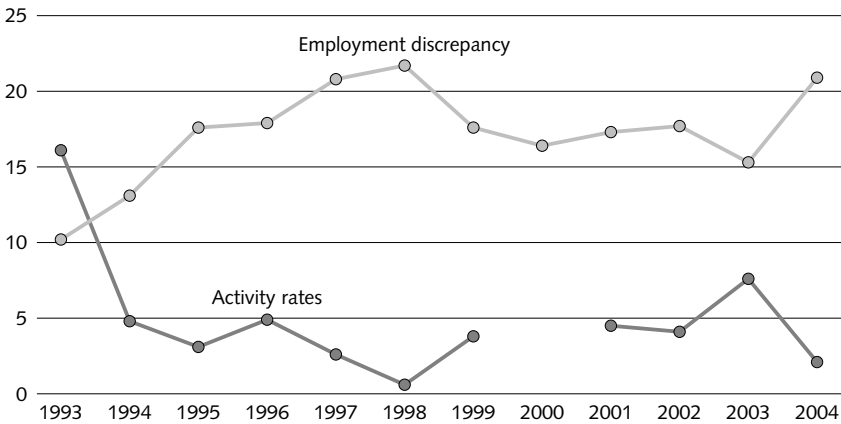


FIGURE 1 Shadow economy as a share in the official GDP for Slovenia in the studied period, comparing (middle values of) approaches from table 1

ward tendency and the results vary at around 6 percent and stabilize at around 4 percent of the shadow economy in the official GDP in 2004.

Table 1 presents results pertaining to the employment discrepancy and activity rate methodological approaches. We can see that the shadow economy's share in the official economy has been fluctuating, and that the results differ substantially. While the activity rate approaches show a downwards tendency, the employment discrepancy has the opposite path. It can also be seen, that the activity rate approach indicates a rather low share of the shadow economy (for all three scenarios), compared to previous studies by other authors, which is consistent with liberalization and more commercialized economic activities. Furthermore, it also reveals a much higher variability in the size of the shadow economy, indicating some deeper structural changes that have been induced by the stabilization programmes, privatisation and structural reforms, and also by EU enlargement. However, at the same time the results confirm the approximate level and the downward patterns in the share of the shadow economy as the country becomes more developed. On the other hand, the employment discrepancy reveals a slight upwards trend, especially in the last studied year, which is unexpected, but comparing it to the LIM approach (see below), these results seem reasonable. These movements of the share of the shadow in the official economy are presented graphically in figure 1.

The LIM approach, i. e. the comparison of the hours worked measured by the official data sources and the LFS reveals that there is again the

TABLE 2 Discrepancy between the official and LFS hours worked on average at annual level by the activity break-down for Slovenia for the years 1995 and 2000

Year	A and B	C	D	E	F	G	H
1995	985.2	547.6	424.4	358.8	446	323.2	468.4
2000	780.4	501.2	391.6	400	437.6	371.2	464.4
Year	I	J	K	L	M	N	O
1995	504.4	311.2	323.2	364.8	105.6	371.6	184.8
2000	490.4	420.4	388.4	369.2	349.6	439.6	275.6

NOTES A – agriculture, hunting and forestry, B – fishing, C – mining and quarrying, D – manufacturing, E – electricity, gas and water supply, F – construction, G – wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, H – hotels and restaurants, I – transport, storage and communications, J – financial intermediation, K – real estate, renting and business activities, L – public administration and defence; compulsory social security, M – education, N – health and social work, O – other community, social and personal service activities, P – private households with employed persons.

SOURCES ILO (<http://laborsta.ilo.org>), SORS (<http://www.stat.si>), own calculations.

discrepancy. This is shown in table 2. We can see that in total, the discrepancy has increased; this is inconsistent with our expectations, but in line with the employment discrepancy method outlined above, and also several of the activities have experienced an increase in this discrepancy, comparing these two years alone. This holds particularly for E – electricity, gas and water supply, G – trade, J – financial intermediation, K – real estate, renting and business activities, M – education, N – health and social work, and O – other personal services. Especially the latter is interesting, as it shows, that shadow economy activities are indeed concentrated (and expanded) in these activities. We can also add shadow tutoring and teaching, accompany them by renting and personal services (which point to unstable real estate market conditions), and we obtain what can be believed to be the major shadow economy activities.

From these data we can calculate the approximate shadow economy's share in the official value added at the activity levels. Table 3 presents the results. The figures show remarkably high shares in the value added at activity levels, but these numbers would be slightly lower if calculating them in the GDP at activity levels using detailed input-output tables. Nevertheless, looking at the dynamics, the results are consistent with the previous finding by some other authors (e. g. Schneider 2003) regarding the hours worked in the shadow economy by activities. The results for

TABLE 3 Percentage of the shadow economy (lower, middle, and upper bounds) in the official value added at activity level for Slovenia for the years 1995 and 2000

Year	A and B	C	D	E	F	G	H
1995 – upper	50.5	33.6	26.3	22.0	29.1	20.8	30.7
1995 – middle	47.8	31.8	25.1	20.9	27.8	19.9	29.4
1995 – lower	45.2	30.1	23.8	19.9	26.5	19.0	28.1
2000 – upper	42.3	30.1	24.1	25.0	28.1	24.5	31.3
2000 – middle	40.1	28.5	23.0	23.8	26.9	23.5	30.0
2000 – lower	37.9	26.9	21.8	22.6	25.7	22.4	28.6
Year	I	J	K	L	M	N	O
1995 – upper	33.8	19.9	20.8	23.5	6.5	24.1	11.7
1995 – middle	32.3	19.0	19.9	22.4	6.2	23.0	11.2
1995 – lower	30.9	18.2	19.0	21.4	6.0	22.0	10.7
2000 – upper	33.1	29.4	25.8	24.7	24.1	30.5	18.5
2000 – middle	31.7	28.1	24.7	23.7	23.1	29.2	17.7
2000 – lower	30.2	26.9	23.6	22.6	22.0	27.9	16.9

SOURCES ILO (<http://laborsta.ilo.org>), SORS (<http://www.stat.si>), own calculations.

activities E, G, J, K, M, N, and O show an increase in shadow activities. Making the sum-up, we obtain that the shadow economy as a percentage of the official GDP at the country level was from 18.9 to 20.8 percent in 1995, and from 20.4 to 22.5 percent in 2000. This confirms that the shadow activities *are* present and their presence is by no means negligible. More specifically, the widespread shadow economy activities in table 3 comprise activities that are not typical seasonal work activities, such as in agriculture, tourism or construction, but include mainly blue collar service activities.

Concluding Remarks

Following the step-by-step evolution of the labour approach, we have seen that the shadow economy in Slovenia is by no means a negligible phenomenon. The results at the level of the total economy, using the unemployment discrepancy and activity rates approaches, show that the shadow economy activities are, on average, on a downturn in the studied period. While this is consistent with economic growth, reduction of the transition impact, and socio-economic development that are believed to hinder the shadow economy activities, there were also some fluctua-

tions present. Nevertheless, the discrepancies between the results of both methods seem to converge at the end at a 4–6 percent level.

An employment discrepancy and more detailed, activity-level study, however, gives much higher values and even an increase in the shadow economy: on average at the level of around 20 percent of the official economy in the studied period. Accompanying results also point to several of the activities that have gained their importance in the shadow economy, namely: electricity, gas and water supply; trade; financial intermediation; real estate; renting and business activities; education; health and social work; and other personal services. More specifically, these are not typical seasonal work activities such as in agriculture, tourism or construction, but largely blue collar service activities. Thus, shadow economy policies should primarily aim at these activities.

We have illustrated that the labour methods applied could provide some evidence on the shadow economy activities in Slovenia. Yet, primarily due to lack of accurate evidence, their use is limited for concrete policy proposals. Thus, further research and detailed in-depth studies are needed. These, however, strongly rely on the data from the official sources or, especially, on the LFS results, which can reveal the true nature of the national labour market condition and evolvement. Nevertheless, official, administrative sources are important, as they serve as a benchmark, against which the shadow economy employment can be determined. They can be supplemented by special-designed surveys. Furthermore, it was assumed that the shadow and official economies were operated in a separate way, in the sense that there were no multiplicative effects of e. g. the shadow economy earnings spent in the official economy and vice versa, where some of the official resources could be used for the hidden activities. As the country develops and improves the data collection programmes, one is able to produce country-specific studies, relying on qualitative and long-run data, as well as specific-purpose surveys, thus resulting in an in-depth insight into the true state of the shadow economy. Such in-depth results can provide the basis for proper policy tools to enhance development and wellbeing.

Notes

- 1 Despite some clear objections by Williams (2004), the term 'shadow economy' is used.
- 2 And also due to some inconsistencies with its definition.
- 3 See for instance the ILO 1993 International Conference of Labour Statisticians (ICLS) for the definition of the informal sector, SNA (1993)

and its current reforms by UNSD, the set up of the Delhi Group on Informal Sector Statistics by the UNSD (<http://unstats.un.org/unsd/methods/citygroup/delhi.htm>) in 1997, the handbook *Measuring the Non-Observed Economy* (OECD 2002), and the work of the European Commission (2004) on undeclared work in the EU.

- 4 The author counts 'all economic activities which would generally be taxable were they reported to the state (tax) authorities' Schneider (2003, 24).
- 5 Defined as productive activities, not reported to the authorities but excluding own-production of households.
- 6 The definition is (again) in line with the SNA 1993 unregistered activities within the production boundary.
- 7 The labour market data were obtained from various sources, mainly from the International Labour Organisation (ILO) website (<http://laborsta.ilo.org>), the Statistical Office of the Republic of Slovenia (SORS, <http://www.stat.si>), and Employment Service of Slovenia (ESS, <http://www.ess.gov.si>). Additional (national accounts) data needed were supplemented mainly by SORS or the Eurostat statistics.
- 8 Total GDP (or value added by activities breakdown) per officially employed person has been used as a measure of productivity.
- 9 Or comparable national Standard Classification of Activities.
- 10 This could be a reasonable assumption, as the early transition years induced shocks by the break-downs of big state-owned enterprises as still the largest employers at that time. When the initial shocks were over, the official employment again started to rise.

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