

DISSERTATIONES RERUM OECONOMICARUM
UNIVERSITATIS TARTUENSIS

14

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**THE IMPACT OF THE AUTONOMY ON THE
PERFORMANCE IN A MULTINATIONAL
CORPORATION'S SUBSIDIARY
IN TRANSITION COUNTRIES**

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TABLE OF CONTENTS

THE LIST OF AUTHOR'S PUBLICATIONS AND CONFERENCE PRESENTATIONS	9
Introduction	13
1. CONCEPTUAL FRAMEWORK FOR IDENTIFYING THE MULTIDIMENSIONALITY OF THE AUTONOMY AND THE IMPACT ON THE PERFORMANCE IN THE MULTINATIONAL CORPORATION'S SUBSIDIARY	25
1.1. The changing role of multinational corporations and subsidiaries in international technology upgrading	25
1.1.1. Multinational corporations as networks for international technology upgrading	25
1.1.2. The governance of technology upgrading within multinational networks	33
1.1.3. The role of the national absorptive capacity in international technology upgrading	40
1.2. The autonomy and development of the multinational corporation's subsidiary	47
1.2.1. The multidimensional nature of the autonomy of the multinational corporation's subsidiary	47
1.2.2. Autonomous roles and mandate change in the multinational corporation's subsidiary	53
1.2.3. Determinants of the autonomy and development of the multinational corporation's subsidiary	60
1.3. Research framework to analysing the impact of the multidimensionality of the autonomy on the performance in the multinational corporation's subsidiary	68
1.3.1. The autonomy of the multinational corporation's subsidiary and the impact on the performance in the previous empirical research	68
1.3.2. Research framework for analysing the impact of the multidimensionality of the autonomy on the performance in the multinational corporation's subsidiary	78
2. EMPIRICAL RESEARCH ABOUT THE IMPACT OF THE MULTIDIMENSIONALITY OF THE AUTONOMY ON THE PERFORMANCE OF THE MULTINATIONAL CORPORATION'S SUBSIDIARY IN FIVE CENTRAL AND EASTERN EUROPE TRANSITION COUNTRIES	87

2.1. Rationale for the research of the five Central and Eastern Europe transition countries and description of the hypotheses and methodology	87
2.1.1. General economic profiles of the five Central and Eastern European transition countries.....	87
2.1.2. Introduction of the research hypotheses and methodology	92
2.2. Research results: the multidimensionality and the determinants of the autonomy of the multinational corporation’s subsidiary	105
2.2.1. The multidimensionality and country-specific determinants of the autonomy of the multinational corporation’s subsidiary.....	105
2.2.2. Industry-specific determinants of the autonomy of the multinational corporation’s subsidiary	114
2.2.3. Firm-specific determinants of the autonomy of the multinational corporation’s subsidiary	122
2.3. Research results: the impact of the multidimensionality of the autonomy on the performance in the multinational corporation’s subsidiary	132
2.3.1. Model specification.....	132
2.3.2. The impact of the multidimensionality of the autonomy on the performance in the multinational corporation’s subsidiary	138
2.3.3. The impact of the country-, industry- and firm-specific determinants on the performance of the multinational corporation’s subsidiary	145
2.4. Synthesis of the research results and implications for the management of the multinational corporation’s subsidiary and policy-makers	151
2.4.1. Synthesis of the research results.....	151
2.4.2. Implications for the managers of the multinational corporation’s subsidiaries and policy-makers	163
CONCLUSION	168
REFERENCES	179
APPENDICES	195
Appendix 1. Typologies of MNC subsidiary roles/strategies and “autonomous” subsidiaries	195
Appendix 2. Linkages between MNC subsidiary roles and performance in an environmental and structural context.....	196
Appendix 3. Mandate Life Cycle Framework.....	197
Appendix 4. MNC subsidiary development: cause and effect.....	198
Appendix 5. Drivers of MNC subsidiary development.....	199
Appendix 6. The development of MNC subsidiary-specific advantages	200
Appendix 7. Real GDP growth rate, 1995–2006 (%)......	201

Appendix 8. GDP per capita in PPS, EU25=100, 1995–2006 (%)	202
Appendix 9. FDI inward stock, 1990–2003 (% of GDP).....	203
Appendix 10. The role of industry sectors in the creation of total manufacturing value added (as % of total value added).....	204
Appendix 11. Value added per employee in the manufacturing industries of five accession countries (in thsd USD annually)	204
Appendix 12. Structure of the sample by manufacturing branches in total and by individual countries	205
Appendix 13. Distribution of sample firms by number of employees (%)	206
Appendix 14. Distribution of sample firms by foreign share (%).....	206
Appendix 15. Distribution of sample firms by establishment year as foreign investment firm (%).....	207
Appendix 16. Distribution of sample firms by type of product (%)	207
Appendix 17. Sales structure of sample firms (%).....	208
Appendix 18. Purchases structure of sample firms (%).....	209
Appendix 19. The ANOVA tests for sales and purchases structures, upgrading activities of MNC subsidiaries	210
Appendix 20. Initiatives of MNC subsidiaries for changes in three areas	211
Appendix 21. Development of future mandate of MNC subsidiaries	212
Appendix 22. Means of categorical variables by four group of functions	213
Appendix 23. The ANOVA tests – statistically significant means for categorical variables by four group of functions	214
Appendix 24. Definition of the variables	215
Appendix 25. Results of the ordered regression analysis – summary of parameter estimates	217
Appendix 26. Results of the ordered regression Model 1 (dependent variable – change in level of productivity in production).....	219
Appendix 27. Results of the ordered regression Model 1 (dependent variable – change in level of technology of production equipment).....	220
Appendix 28. Results of the ordered regression Model 1 (dependent variable – change in level of quality of product).....	221
Appendix 29. Results of the ordered regression Model 1 (dependent variable – change in share of exports).....	222
Appendix 30. Results of the ordered regression Model 2 (dependent variable – change in level of productivity in production).....	223
Appendix 31. Results of the ordered regression Model 2 (dependent variable – change in level of technology of production).....	224
Appendix 32. Results of the ordered regression Model 2 (dependent variable – change in level of quality of product).....	225
Appendix 33. Results of the ordered regression Model 2 (dependent variable – change in share of exports).....	226
Appendix 34. Results of the curve estimation analysis for variable FACTTECH	227

Appendix 35. Results of the curve estimation analysis for variable FACTMARK.....	229
Appendix 36. Results of the curve estimation analysis for variable FACTMAN	231
Appendix 37. Results of the curve estimation analysis – for variable FACTFIN	233
SUMMARY IN ESTONIAN – KOKKUVÕTE	235
CURRICULUM VITAE.....	251

THE LIST OF AUTHOR'S PUBLICATIONS AND CONFERENCE PRESENTATIONS

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3. **Männik, K.**, Hannula, H., Varblane, U. Foreign Subsidiary Autonomy and Performance in Five Central and East European Countries. – Hannula, H., von Tunzelmann, N., Radosevic, S. (eds.) *Estonia, the New EU Economy. Building a Baltic Miracle?* Hampshire: Ashgate, 2006, pp. 258–284.
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INTRODUCTION

Motivation for the research

During the past two decades, foreign direct investments (FDI) have shown an increasing growth of inward flows, particularly between developed nations, and have become the largest source of external finance, knowledge and technology knowledge for less developed countries. Alongside technology globalisation, multinational corporations (MNCs) are substantially contributing to the international technology transfer while also to the technology development. Besides their role in technology upgrading in catching-up economies, MNCs as networks are acting as innovation generators across national boundaries. Participation in such innovation and production networks through multinational corporation's subsidiaries is becoming a driving force of international competitiveness for countries and firms. The multinational corporations' subsidiaries themselves tend to be granted greater mandates within the corporations to get access to specific knowledge and skills available in the host economies.

With changes in the general framework adopted for assessing technological change, the understanding of the MNC role in such a change as well as the analysis of the impact of FDI upon the technology development has also shifted in the FDI and subsidiary management research. The interaction between different entities and the national/regional/global environment in which they operate has increasingly become the major focus for researchers (see, for example, Dunning 2001). There is also an evident movement in the research from the level of country or the product towards the level of firm, particularly focusing on subsidiary evolution within multinational corporations (see, for example, Birkinshaw and Hood 1998a, b).

In the context of multinational corporations, competence building through international networks is increasingly considered to be a growing niche in international business research. The evolutionary theorists to a large extent address the accumulation of technology within the corporation as a path-dependent learning process (see, for example, Cantwell 1989, 2001; Chesnais 1988; Hagedoorn and Narula 1996). In its turn, learning within the MNC is developed through international networks, which has provided a reason for increasingly approaching the MNC as an international network organisation in the literature (see, for example, Hedlund 1986, 1996; Bartlett and Ghoshal 1989; Prahalad and Doz 1987a; Kogut and Zander 1992; Zander 1999). MNCs are foreseen as specialising in the creation and internal transfer of knowledge. Productive knowledge or "combinative capabilities" like those introduced by

Kogut *et al.* (1992) define comparative advantages of MNCs today (see also Nelson and Winter 1982).

While in the meantime becoming more mobile, in terms of both production and technology, entry levels of FDI have risen, and investors are paying attention particularly to countries with strong local capabilities like higher skills, more appropriate knowledge infrastructures, etc. MNCs are seeking strong complementary factors wherever they locate. It is observable that capabilities in the host-country context matter for the magnitude and intensity of technological upgrading. Without the appropriate level of domestic absorptive capacity, the technology is unlikely to become embedded, or provide significant externalities or technology spillovers to the host economy (see, for example, Narula 2003a, b; Lall and Narula 2004; Andersson *et al.* 2002, 2004). International technology transfer and development is defined as a firm- and location-specific process. From the host-country point of view, externalities or technology spillovers accompanying foreign direct investments are the most expected results appearing in domestic firms. Allowing spillovers to establish by multinational corporations, demands that at least a minimum level of capacity is assumed to be present in domestic firms.

MNCs have started to change their organisation structures into heterarchies and strategies more consistent with general shifts taking place in international production systems. This crucial change has also led researchers to turn considerable attention to governance issues related to international technology development and innovation within the national innovation system (see, for example, Lundvall 1992; Nelson 1993; von Tunzelmann 1995, 2004). In the system, the efficiency of economic actors, either firm or non-firm, depends on how much and how efficiently they interact amongst themselves. Particular focus has been recently given on the governance of the functional networks as a separate type of networks in the context of multinational corporations (see von Tunzelmann 1995, 2004). Multinational corporations and subsidiaries are argued to be networked through various business functions (product development, process engineering, marketing and sales, etc.). The various types of knowledge between the HQ and local entity are predominantly flowing via different business activities.

Furthermore, the multinational corporation's subsidiary is by its nature defined as fulfilling a mediating position between the parent firm's aims and the host country's opportunities. With an increasing complexity of multinational corporation networks, decision-making processes within their international organisation have taken another crucial turn. The autonomy of the multinational subsidiary¹ and its heterogeneous nature in target countries of foreign investments has received primary attention in subsidiary management research

¹ The autonomy of multinational subsidiary is defined by decision-making processes between the parent and local unit, which are measured over various types of business functions in the production value-chain (see Taggart 1997; Björkman 2003).

during the last decade (see, for example, Björkman 2003; Young and Tavares 2004). An autonomous role for the multinational subsidiary within the corporation is assigned by the parent firm or assumed through the subsidiary's own behaviour (see Birkinshaw 1996, 2001; Birkinshaw and Hood 1998a,b). However, once MNCs establish operations in a country, subsidiaries often develop new capabilities (or specialised resources), which are a function of capabilities developed at the country level. In the end, the multinational subsidiary might be granted greater mandates within the corporation by the parent or gained on its own (see Birkinshaw 1996, 1998). It is largely discussed in the subsidiary development literature that the main driving forces framing the development and the autonomy level of the subsidiary tend to come from the parent firm's assignment, on the other hand subsidiary choice and local environment determinism (Birkinshaw and Hood 1998b).

The main motivation behind the present research topic results from the preceding discussion of the increasing role of the multinational corporation and multinational subsidiary autonomy in international technology upgrading. More specifically, it is going to focus on the multifarious nature of the autonomy of the multinational corporation's subsidiary and the impact on the performance only in terms of the technology upgrading. Performance is presently considered to result as an outcome of the subsidiary development, which generally captures all evolutions taken place within the multinational corporation's subsidiary incl. technology, organisational improvements, etc. In overall, subsidiary development is handled to capture more than only business area such as technology advances in the firm.

These shifts taking place in practice and largely conceptualised by representatives of evolutionary economic theory and international business theory (foreign direct investments, corporate and subsidiary management) have given fundamental support to the development of the framework for the present research. Overall, the area integrating these two notions – the MNC subsidiary autonomy and performance – is found to be relatively under-researched, which in turn induced carrying out a larger-scale study on the peculiarities of subsidiary autonomy and the impact on performance, whilst doing efforts to figuring out the performance in terms of technology progress within the MNC subsidiaries.

The specific context of the following research is related to the evolutionary processes experienced by Central and Eastern Europe (CEE) countries during one decade from their establishment as multinational subsidiaries up to 2001. Five CEE countries to be thoroughly analysed in the empirical research were selected as follows: Hungary, Slovenia, Poland, Estonia, and Slovakia. The role of foreign investments in industrial upgrading of these countries is obvious. On the one hand, their backgrounds are similar, yet they differ a great deal. Among them, Hungary and Slovenia are to be taken as leaders in terms of economic development, Estonia as starting in the lowest position in terms of economic development, foreign direct investments, etc. To date, Estonia and Hungary

have been positioned themselves as the two leading economies of FDI inward stock, as well as Estonia and Slovenia achieving leader scores by means of innovation performance in comparison with all other new European Union (EU) member states (since 2003). Therefore, five distinguishing transition processes, as well as the impact on the autonomous level of multinational corporation's subsidiary will be discovered in the empirical study of the dissertation.

The aim and research tasks of the thesis

The main aim of the present thesis is to figure out the impact of the multidimensionality of the autonomy on the performance in multinational corporation's subsidiary in Central and Eastern European countries. In terms of the performance, a particular focus will be given on the technology upgrading of multinational corporation's subsidiaries in manufacturing sector in Hungary, Slovenia, Poland, Estonia, and Slovakia. To achieve this aim, the following research tasks are set up:

- 1) in order to understand the changing role of multinational corporations and subsidiary autonomy in global technology upgrading the concepts developed by evolutionary theorists on economic growth, multinational corporations and governance issues of the national innovation system are to be explored;
- 2) in order to learn more specifically about the evolutionary processes occurring within multinational corporation's subsidiaries the major concepts developed concerning subsidiary development and autonomy will be much in focus;
- 3) a framework for analysing the impact of the autonomy on the performance in the multinational corporation's subsidiary in the five CEE countries will be developed on the basis of the present theoretical conceptions and results of the preceding empirical research on the topics covered in the earlier parts of the thesis;
- 4) a general comparative analysis, which aims to discover peculiarities of transition processes experienced by the five CEE countries, will then follow;
- 5) formulation of the research hypotheses about the internal structure and distinctions of MNC subsidiary autonomy in regard to factors of observable countries, industry groups and firms, as well as the impact of MNC subsidiary autonomy on performance (focusing on technology upgrading of the MNC subsidiaries) will be developed based on the conceptual framework of the thesis;
- 6) explanation of the research methodology will be included in the next stage of the dissertation;
- 7) an analysis of the internal structure and country-, industry-, and firm-specific determinants of the autonomy in the multinational corporation's subsidiary will be performed;

- 8) an analysis of the impact of the multidimensionality of the autonomy on performance controlling country-, industry-, and firm-specific determinants will follow;
- 9) finally, research results on the specific nature of multinational subsidiary autonomy and performance in the five CEE countries will be synthesised, as well as drawing implications at subsidiary management level and for host-country policy.

The structure of the thesis

The thesis will comprise two major parts. The structure and the respective parts of the present dissertation are shown in Figure 1. Part 1, consisting of a review of the fundamental theoretical and conceptual literature, will support the establishment of the research framework for analysing the country-, industry-, and firm-specific determinants of multinational subsidiary autonomy and the impact on performance in CEE transition countries. However, the framework to be developed in the present work could not be only used in the context of catching-up or more specifically of transition countries. It is recommended by the author to apply for any other country under focus. In the thesis, a predominant focus will be on the foundations of evolutionary theories of the economic growth and multinational corporations and subsidiaries, whose central focus lies on the creation and recombination of knowledge within MNC as an inter-organisational network. Performance of the multinational corporation's subsidiary is defined to be as a final outcome of evolutionary processes carried by the firm. Discussions of the same topics both on macro and micro levels will be developed throughout the thesis. The macro level discussion on the changing role of multinational corporations and subsidiaries is started in section 1.1 by reassessing some of the MNC literature from the 1980s-90s (see, for example, Nelson and Winter 1982; Cantwell 1989; Dunning 2001; Narula 2003b; Zander 2000, 2002).

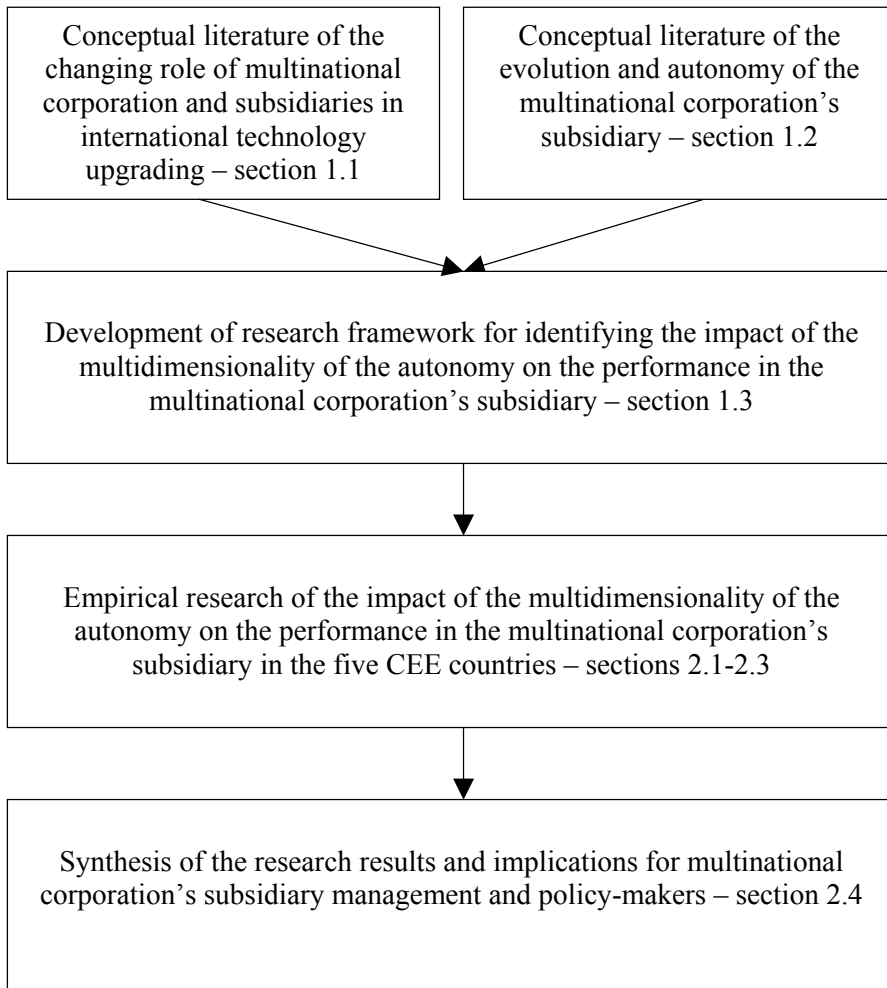


Figure 1. The research structure of the dissertation.

This is followed by a multi-level (micro, macro) approach to governance issues of technology transfer and upgrading within multinational networks. The evolution of organisational complexity within multinational corporations will be explicitly developed, as well as a “network alignment approach” (von Tunzelmann 1995, 2003) introduced in detail. The latter will be presented as having a considerable importance in terms of the present research subject. In the framework of “network alignment”, functional networks at the micro and macro level are defined as interrelated, which will enable us to see the firm-level links across business functions to immediate functions at the country level. The approach well describes the links within the national innovation system as influenced by both internal and external knowledge flows. Therefore, only functional networks in the context of multinational corporations and sub-

subsidiaries are predominantly focused in the present thesis. Section 1.1 will conclude with a discussion of the nature and role of national absorptive capacity in the creation of multinational and external networks in catching-up economies. Particularly, the research developed by Cohen and Levinthal (1989, 1990), Cantwell (1989), Narula (2003a,b) and Lall *et al.* (2004) will be reviewed in this part of the thesis.

The purpose of section 1.2 is to review a wide range of research on multinational subsidiary evolution and autonomy (see, for example, Birkinshaw 1996, 1998) and also to relate it more closely to the literature on innovation management (see, for example, Pavitt 1984; Dosi 1988; Freeman and Soete 2004). Hence, approaching the necessary topics from the micro-level is intended to implement in section 1.2. Subsection 1.2.1 aims to provide a discussion of different approaches to the notion of multinational subsidiary autonomy (see, for example, Brooke 1984; Taggart 1997; Björkman 2003; etc.) as well as to sketch out the literature on subsidiary management and change in focus relating to subsidiary autonomy over time. Autonomous roles and the mandate change logic of a multinational subsidiary over business functions will be thoroughly addressed in the following subsection. Depending on the capabilities and opportunities provided by one or other side of the multinational subsidiary – the parent or local environment – in principle four types of subsidiary roles might be conceived of. The division of subsidiary roles is predominantly associated with the relatedness of multinational and external networks. Finally, a general framework for influencing factors of multinational subsidiary development and autonomy will be presented in subsection 1.2.3. Three major driving forces: the HQ assignment, subsidiary choice and host country environment will be regarded as playing critical roles in subsidiary development and autonomy over time. Resulting from the aim of the thesis to deal with the impact of the autonomy on the performance of the multinational corporation's subsidiary in host economies, it is going to be intentionally limited in the present research with the local environment' and firm-specific determinants of the autonomy and performance.

Section 1.3 constitutes a conceptual basis for the following empirical analysis. First, a number of previous studies of multinational subsidiary autonomy across business functions, its relation to country-, industry- and firm-specific determinants, as well as the association with the performance, will be introduced. Overall, it will be found that the present research area is little examined, particularly in terms of the latter aspect of multinational subsidiary autonomy. The context of catching-up economies is almost non-existent (with some few exceptions) in previous empirical studies of subsidiary autonomy. The conceptual part of the research to be developed then will aim at an integrated framework for analysing the country-, industry-, and firm-level peculiarities of multinational subsidiary autonomy and the impact on performance. The heterogeneous nature of multinational subsidiary autonomy will be approached from the joint viewpoint of firm- and environment-specific

determinants. The autonomy of the multinational corporation's subsidiary will be approached as a cause of the subsidiary performance whilst controlling against environment and firm-specific influences. However, the reciprocal developments between the autonomy and performance might be expected to occur in practice. Thus, autonomy could be also argued to be as an effect of subsidiary performance. Since we foresee the performance of subsidiaries to be the final outcome of subsidiary development, the autonomous roles of subsidiaries are to be considered as an input for technology and other improvements. The research framework to be developed is also applicable to all other countries (either developed or developing).

Empirical research on the country-, industry-, and firm-specific determinants of multinational subsidiary autonomy and the impact on performance in CEE countries will appear as the second major part of the thesis. First, the rationale for analysing subsidiary autonomy and performance in five CEE transition countries, as well as a description of the hypotheses and research methodology will be included in section 2.1. The following analysis will be based on the database created as the result of work in the EU Fifth Framework Project: "EU Integration and the Prospects for Catch-Up Development in Central and Eastern European countries (CEEC): the Determinants of the Productivity Gap". A special Survey Questionnaire for multinational subsidiaries was undertaken in 2001–2002. The author of the present thesis participated as one of the team members of the research project. The survey was an attempt to evaluate the changes in terms of technology upgrading occurring in multinational subsidiaries since they were established as foreign investment firms in manufacturing sectors in the five CEE countries. A total of 433 responses were received from multinational subsidiaries in the five countries.

A whole set of hypotheses to be developed will end up with eight distinctive proposals related to the nature of autonomy of multinational subsidiaries and the impact on performance focusing on the technology upgrading of subsidiaries (subsection 2.1.2). The components of the research methodology will be detailed by introducing five phases of empirical research. First, descriptive analysis of multinational subsidiary autonomy in terms of sales and supply structure and some selected upgrading activities will be performed. This is followed by a principal component factor analysis for grouping business functions on the basis of multinational subsidiary autonomy (subsection 2.1.2). Based on the results, the heterogeneous nature of autonomy will be considered among subsidiaries in the CEE manufacturing sector. Thirdly, tests using univariate analysis of variance (ANOVA) and multivariate analysis of variance (MANOVA) will be performed in learning about the environment- and firm-specific determinants of multinational subsidiary autonomy (subsection 2.2). The four new factor loadings from the principal component factor analysis are only used in the ANOVA and MANOVA tests as well as in the sequential analysis. Fourthly, an ordered regression models will be built and the impact of multinational subsidiary autonomy on subsidiary performance (whilst

controlling against environment-, and firm-specific determinants) analysed (subsection 2.3). As complementary analysis to the ordered regression models, curve estimation analysis of the relationship between subsidiary autonomy and performance will conclude our empirical research.

The research method of the present work differs from previous studies particularly in terms of the more accomplished approach on both MNC subsidiary autonomy and performance. The novelty of the method particularly lies in the more multifarious view on subsidiary autonomy and the impact on performance. The distinctions of subsidiary autonomy will be made in four areas of business, whilst analysed against four performance indicators such as productivity, technology production, product quality and export share from sales. The first three output indicators are directly and the latter one indirectly related to the technology upgrading activities in MNC subsidiaries. Therefore, the analysis will be characterised by multidimensionality throughout the subsequent parts of the empirical research.

Concerning the rationale behind the application of one or another research or analytical method first, the questionnaire survey was preferred to use in the present dissertation due to the need for generalisations of the autonomy and the impact on the performance in MNC subsidiaries, as well as implications for policy-makers in CEE countries. For example, case-study analysis does not usually allow us to present general conclusions on industry, industry group or manufacturing sector as a whole. Currently, the data of the MNC subsidiaries of manufacturing sector from five CEE countries gives an opportunity to generalise the analysis results to the level of countries. It is also worth to note that at the beginning of the transition period foreign investors started mainly to enter the manufacturing sector in CEE countries, which gives a particular focus of the impacts of FDI in this sector in the first transition period.

Secondly, since the aim of the present research is to figure out the multidimensionality of the autonomy of the MNC subsidiary, the internal structure of the autonomy is required to determine. The principal component factor analysis is a commonly used method to group interrelated variables, which may result in new statistically independent factors. In the database of our Survey Questionnaire, the data about the decision-making process between the parent and local unit across 13 originally stated business functions is given. The ANOVA and MANOVA tests will give us an opportunity to identify statistically significant differences among the new components of business functions and to distinguish country-, industry-, and firm-specific determinants of the autonomy in the CEE manufacturing subsidiaries. The ordered regression analysis is used in identifying the impact of the autonomy on the performance in the MNC subsidiary. This analytical method is specifically applied in cases where the dependent variable is measured by surveys and has ranked (ordered) values. This method takes the original dataset of the present research into consideration very well. Finally, curve estimations are only included to complement the ordered regression analysis to draw out actual shapes of the

relationships between the autonomy and the performance of the MNC subsidiary across the dimensions of the business areas.

Then, it is also necessary to point out the possible weaknesses of the selected sample and the research method. These shortcomings might be predominantly related to the quality of responses given by managers of subsidiaries to the Survey Questionnaire, underrepresentativeness of the data from Hungary and, in contrast, a little over-representation by Estonian and Slovenian subsidiaries, although the biggest contribution to the sample is made by the Polish multinational subsidiaries. The next concern might be linked to the selection bias of the sample. Although, the sample of the MNC subsidiaries was selected occasionally we could not guarantee the inclusion of the reasonable weight of any type of firms in the sample. The relatively big share of large firms in the sample may reflect the presence of more compatible subsidiaries in the sample (see section 2.1). But this may also be a reason of the Polish subsidiaries, which share is the biggest in the sample and which are larger by average (as well as Hungarian subsidiaries) compared to the other three countries. Since the selection bias was not identified as a particular concern of the present sample, it is not going to apply for a specific method.

Finally, synthesis of the research results, as well as implications for subsidiary managers and policy-makers will be summarised in the last section 2.4. Based on the research results, various kinds of suggestions will be introduced that consider the heterogeneous nature of the autonomy of multinational subsidiary across five countries, four groups of industries and four types of firm-specific characters. It will end with technology challenges foreseen for CEE transition countries from the perspective of the autonomy and the impact on the performance in the multinational corporation's subsidiary.

Theoretical limitations

The evolutionary theories on the economic growth and international business are used as the main theoretical basis in the present dissertation for analysing the specific environment- and firm-specific features of multinational subsidiary autonomy and the impact on subsidiary performance. According to the research aim the conventional theoretical literature (mostly published before the 1980s; see, for example, Dunning 1977; Rugman 1981) on MNCs and technology transfer and upgrading will not be explored. The new approach to MNCs and innovation has drawn heavily on the evolutionary view of the firm and the industry (see Nelson and Winter 1982) examining the accumulation of technology within the international networks of MNCs as a path-dependent corporate learning process (see, for example, Cantwell 1989, 1991, 2001). Other representatives of this new evolutionary approach have focused on the organisational change within the MNC as a learning process (see, for example, Kogut 1989; Teece 1991). Successful learning establishes technological

competence (Cantwell 1991) or organisational capabilities (Teece 1991). Due to the MNCs' use of international networks for R&D and innovation, there is also a growing literature on network organisation in the MNC (see for example, Hedlund 1986; Bartlett and Ghoshal 1989; Pearce 1989). Other theories to be used as an input for further explorations are associated with the literature on co-evolution of technology and governance (see von Tunzelmann 1995, 2003) and innovation systems (see, for example, Lundvall 1992; Edquist 1997). In terms of networks, the present thesis is limited with the focus on functional networks in the context of the multinational corporations and subsidiaries. Functional types of networks are to be developed between the HQs and multinational corporation's subsidiaries across various business functions, whilst those are immediately tend to be related to certain sectors of the national innovation system (e.g., product development in the MNC subsidiary with the science sector incl. research and development or higher education institutions, etc.). Integrating micro- and macro level of discussions around the multinational corporations and subsidiaries is intended to perform throughout the thesis.

The literature on the MNC subsidiary has evolved over time. Most of the recent literature falls into the subsidiary role (see, for example, Gupta and Govindarajan 1991) and development streams (see, for example, Birkinshaw and Hood 1998a,b) according to the classification of research provided by international business scholars (see, for example, Birkinshaw 2001; Paterson and Brock 2002). These two lines of investigation are to be used as the main conceptual input for the review of subsidiary-level literature. Other lines of investigation relating to multinational subsidiary research on the strategy-structure relationship (see, for example, Bartlett and Ghoshal 1988), as well as the head-office-subsidiary relationship (see, for example, Brandt and Hulbert 1976) are, in principle, beyond this study. The main focus remains on the MNC subsidiary and its evolution as the unit of analysis.

An integrated approach based on different parts of international business research (MNC level, subsidiary level) will be attempted in developing the study. There will also be references to the innovation and strategic management literatures.

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Naturally, all the mistakes and errors found in this dissertation are the sole responsibility of the author.

1. CONCEPTUAL FRAMEWORK FOR IDENTIFYING THE MULTIDIMENSIONALITY OF THE AUTONOMY AND THE IMPACT ON THE PERFORMANCE IN THE MULTINATIONAL CORPORATION'S SUBSIDIARY

1.1. The changing role of multinational corporations and subsidiaries in international technology upgrading

1.1.1. Multinational corporations as networks for international technology upgrading

An evolutionary approach on multinational corporations and subsidiaries

The conceptualisation of international exchange and upgrading of technology within the multinational corporation² has received an increasing attention in international business literature. Although, in his earlier works Dunning had discussed foreign direct investment based upon technological leadership and creativity, his later discussions developed the eclectic paradigm of international production in view of rising interdependencies between firms and markets (see Dunning 1995).

With changes in general framework for technology change, the understanding of the MNC's role in technological change, as well as the analysis of the impact of FDI upon technology upgrading has shifted during the last decade. Scholars have become more multi-disciplinary and geographically diffuse (Dunning 2001, pp. 61–62). The interaction between different entities and the national/regional/global environment in which they operate has increasingly become a major focus in the research. There can also be seen a movement of the research from the level of the country or the product towards the level of the firm. In the context of multinational corporations, competence building through international networks is increasingly considered to be a growing niche for international business research.

The current sub-section will highlight the role of multinational corporations and subsidiaries in international technology transfer and upgrading based on the evolutionary approach to technological growth and international business. The governance of technology creation within complex multinational networks and

² International technology exchange or transfer means the transfer of an intermediate good, knowledge via foreign direct investments, which embody a firm's advantage in technology, production, marketing, or other activities (Kogut and Zander 2003, p. 518).

the national absorptive capacity will be the main discussion objects in the next sub-sections, 1.1.2 and 1.1.3. The entire dissertation will be built upon a system's view of technology upgrading through multinational corporations, as well as conceptualising and estimating the peculiarities of the autonomy of MNC subsidiaries in relation to their performance.

According to the models developed by the new growth theorists, technological change is taken as an endogenous phenomenon in economic development (see, for example, the evolutionary models from Nelson and Winter 1982; Chiaromonte and Dosi 1993; Silverberg and Verspagen 1994; the neoclassical models from Romer 1986, 1990; Grossman and Helpman 1991; Aghion and Howitt 1992). It is assumed that knowledge is specific to the agents that develop it (Verspagen 2005, p. 490). The international competitiveness of any individual economy depends largely on the quantity and quality of resources locally available. The more appropriate the information and knowledge that one country is able to create, attract from abroad and diffuse, the more extensively technology will be accumulated and indigenous innovation potential raised in a national innovation system (NIS).³

The evolutionary approach to the MNC to a large extent addresses the accumulation of technology within the corporation as one of path-dependent corporate learning processes (Cantwell 2001, p. 434). The competence building at the level of both multinational corporations and subsidiaries has received primary attention in the present international business research (see, for example, Cantwell 1989, 1991, 2001; Chesnais 1988; Hagedoorn and Narula 1996; Cantwell and Piscitello 2000, 2005, Birkinshaw 2001). According to Cantwell, a successful learning establishes technological competence or organisational capabilities (1991, 2001; see also Teece 1991). Technology transfer is not just the immediate exchange of knowledge, it rather involves interaction with learning processes (Cantwell 2001, p. 435). Learning within the MNC is developed through international networks, which have given a reason to view the MNC increasingly as an international network organisation (see, for example, Hedlund 1986, 1996; Bartlett and Ghoshal 1989; Ghoshal and Bartlett 1990; Hedlund and Rolander 1990; Prahalad and Doz 1987a; Ghoshal *et al.* 1994; Holm *et al.* 1995; Zander 1999; von Tunzelmann 1995, 2004). The tacit knowledge⁴ concerned is that of designing firm-specific competitive advantage and relying heavily on internal group learning processes of the MNC (see, for example, Cantwell 1991, 1994, 2001; Kogut and Zander 1993, 1995, 2003). Secondly, tacit knowledge is restricted to the local environment (Porter 1990).

³ Edquist equates the NIS with the determinants of innovation processes and defines it to cover all important economic, social, political, organisational, institutional, and other factors that influence the development, diffusion, and use of innovations (Edquist 2005, p. 182). See also section 1.1.3.

⁴ Tacit knowledge involves firm-specific rent-yielding assets, which are non-tradable for transaction cost reasons (Teece 1983, p. 55).

Multinational corporations are gradually achieving a new status as international technology creators instead of having simply a role of technology transferor across national boundaries (Cantwell 2001, p. 433). Following Kogut and Zander, the multinational corporation is a social community that specialises in the creation and internal transfer of knowledge (1993, p. 625; 2003, p. 516). Evolutionary theory does not stress market failures for buying and selling knowledge across borders as causing internationalisation (Sölvell and Birkinshaw 2002, p. 82).⁵ Instead, the MNC arises out its superior efficiency as an organisational vehicle by which technology could be effectively transferred across borders and used in certain locations (Kogut and Zander 1993, p. 625). The decision to transfer technology within the firm or in the market is explained by the attributes of knowledge that constitute the ownership advantage of the firm (Kogut and Zander 2003, p. 517). Hence, productive knowledge is that defining a comparative advantage of the MNC. The ability to learn and use knowledge elsewhere in the firm is one of the primary advantages of multinationality (see, for example, Kogut 1989). MNC management is suggested to maximise the “combinative capability” developed and distributed throughout the whole corporate system (see, for example, Kogut and Zander 1992; Zander 1997; Cantwell and Piscitello 1996). The innovation management literature takes another view focusing on multinational corporations as facilitators of innovation processes occurring across national boundaries (see, for example, Granstrand and Sjölander 1990; Granstrand, Håkanson and Sjölander 1992; Granstrand, Patel and Pavitt 1997).

Alongside these major changes, multinational subsidiaries are increasingly engaged in the creation, use, and dissemination of knowledge and skills (Zanfei 2000, p. 515). The role of foreign branches in local contexts has particularly grown due to the increasing need for gaining access to external knowledge sources and application abilities. So, individual branches are not only seen as absorbers of technology diffused through internal corporate channels. Instead, they are also acquiring a new status as developing external networks of relationships with local counterparts (see the next discussion about external networks and technology spillover effects). Units in foreign locations are becoming involved in the local integration of several related technologies (Zander 1997, pp. 209–227). Foreign branches are expected to contribute to the competence building within the corporation, as well as in the local environment. The significant effects from the presence of foreign investments are particularly expected to appear in the developing and catching-up economies (see also sub-section 1.1.3).

⁵ Different from the earlier studies produced, for example, by Buckley and Casson (1976), Teece (1977).

External networks and technology spillover effects

In describing networks as a mechanism for technology progress via multinational corporations, the internal or multinational networks and external ones are distinguished. The latter includes all other organisations, such as customers, suppliers, regulators, and others with which the different units of the multinational must interact (Zander 2002, p. 327). In the context of effects accompanying foreign direct investments in the host economy, technology spillovers (or indirect FDI effects or externalities) generated in MNCs' external networks are being most emphasised and examined. The technology spillover effect is the subsequent spread of this technology to domestic firms following the MNC parent-to-subsidiary international transfer of technology (Marin and Bell 2004, p. 2). These externalities are most likely to occur through the backward or forward linkages earlier called external networks. Dunning differentiates similarly the downstream relations with customers and upstream linkages as communication with suppliers (Dunning 1994, pp. 446, 459).

There are numerous studies that see the technological spillovers created in domestic firms by the entry of foreign-owned firms into local markets. Among the earliest studies addressing the technological spillover effect were those by MacDougall (1960), Corden (1967), Caves (1971, 1974), Hymer (1976), and Globerman (1979). In general, again there is seen a shift from the aggregate level analysis towards firm-level studies (see, for example, Haskel *et al.*, 2002; Keller and Yeaple 2003) during the last years.

Within the earlier research, there appear to be contradictory findings about the impacts of FDI on local firms. Studies performed by Caves (1974), Globerman (1979), Blomström and Persson (1983), Blomström and Wolff (1994), Nadiri (1991), Lipsey and Sjöholm (2001) and Dimelis and Louri (2002) confirm the expected benefits from FDI presence. On the other hand, there are also opposite results with no significant or even negative FDI effects found in the research carried out by Cantwell (1989), Haddad and Harrison (1993) and Aitken and Harrison (1999). Perez (1998) and Cantwell (1989) show that positive technology spillover effects take place only in some industries.

Many of the researchers analysing technology spillover effects in earlier times have followed the theoretical models of Koizumi and Kopecky (1977) and Findlay (1978). The models presume a proportionality of spillover in the host country with the foreign presence. Findlay's model advances a hypothesis about the gap between the local and foreign-owned firms according to which the occurrence of technological spillover at a certain level of foreign share is more probable the bigger the technological gap between the local and the foreign-owned firms.⁶ Among studies, there exist findings either consistent with the

⁶ Findlay's so-called "convergence hypothesis" comes from the idea of Veblen and Gerschenkron about the different development stages and is warranted primarily under the condition of the economic transfer period. The greater the relative disparity in

hypothesis (see, for example, Blomström and Wolff 1994) or contrasting with it (see, for, example, Haddad and Harrison 1993; Kokko 1994; Blomström 1986; De Mello 1997). But with overall changes in approaches to technological development, and relations between MNCs and technology, there has appeared an oppositional second and so-called “technology accumulation” hypothesis proposed by Cantwell (1989, pp. 6–15).

Cantwell strongly supports the technological capacity of indigenous firms being as a major factor in determining FDI success in the host economy (Cantwell 1989, p. 3). Wang and Blomström (1992) emphasise the importance of the learning efforts of host-country firms in increasing the rate at which MNCs transfer technology. Various host-industry and host-country characteristics may influence the incidence of spillovers (Kokko 1994, p. 280; Blomström, Globerman and Kokko 1999, p. 22). Blomström and Kokko emphasise the nature of industries and countries in generating the FDI spillover effects (Blomström and Kokko 1996, pp. 29–30). Therefore, spillovers generated through local customers and suppliers are not automatic consequences of foreign investment.

The scope and competence of multinational subsidiaries themselves and the absorptive capacity (as will be explained in sub-section 1.1.3) of domestic firms tend to determine the embeddedness (or relatedness) of subsidiaries in the local economy. As stated by Benito *et al.*, corporate internal strategies interact with host-country capabilities and resources (2003). Where host countries cannot offer high-level local assets (e.g. advanced specialised skills, strong industrial and service firms and clusters), MNCs will not set up high quality branches (Lall and Narula 2004, p. 5). Blomström and Kokko suggest that the host-country characteristics influencing the extent of linkages are the market size, local content regulations and the size and technological capability of local firms (see 1996 p. 14). Alongside the knowledge accumulation, linkages tend to increase over time. The motive for foreign investment is crucial in determining how linkages and externalities develop. The relative importance of each motive: natural resource seeking, market seeking, efficiency seeking and strategic asset seeking (Dunning 1998) reflects the stage of economic development (see, for example, Lall 1987; Narula 1996; Dunning and Narula 1996; Narula and Dunning 2000, Lall and Narula 2004).

As proposed here, MNC subsidiaries are interacting with the corporate, as well as with local institutions thereby representing the meeting of two different business faces. Zanfei (2000) describes MNC subsidiaries as being subject to both centripetal forces (due to the interdependencies) and centrifugal forces (due to the external links). The MNC subsidiary requires skills and knowledge, as well as the motivation for “survival”. From one side, it has to fulfill the tasks

development levels between a country at the outset of a process of industrialisation and the already industrialised part of the world, the faster the rate at which the backward country can catch-up (Findlay 1978, p. 86).

delegated by the corporation. On the other hand, it is expected by the host government and institutions that the MNC subsidiary will be locally responsive or justifying its existence in the local context. It is supported in the literature that a high degree of MNC subsidiary autonomy is necessary in order to develop effectively external networks of collaboration with local contexts (see, for example, Control ... ; Zanfei 2000).

The relative balance of MNC subsidiary autonomy and centralised control over subsidiaries has emerged as an important contemporary issue in the subsidiary management research during the last two decades (see the latest literature reviews from Paterson and Brock 2002; Björkman, 2003; Young and Tavares 2004). In addition, a wide range of recent literature is investigating the gains and losses of subsidiary corporate (multinational) and/or external embeddedness in terms of subsidiary autonomy. The latest overview of studies applying the embeddedness concept in the research on MNC subsidiary management is by Andersson, Forsgren, and Pedersen (2001). The major part of the research about multinational subsidiary autonomy and related topics (e.g. subsidiary embeddedness) will be introduced in section 1.2.

International technology upgrading defined as a firm- and location-specific process

As learnt from the previous discussion, technology upgrading and innovation activities tend to be the key to the success in combining the firm- and location-specific characteristics. This argument is not surprisingly emphasised by all FDI theorists over times (see, for example, Dunning 1977, 1988, 1994, 1995, 1999, 2000; Cantwell 1989, 1992, 2001, 2005; Nelson 1993, 1995; Nelson and Winter 1982; Rugman 1981, 1996; Rugman and Verbeke 1992, 2001a; Porter 1990; Caves 1996). Firm-level knowledge creation is embedded in localised innovation systems (Rugman and Verbeke 2001a, p. 155). MNCs may develop and exploit the most valuable knowledge in a localised innovation system. MNCs may also further develop the location advantages of the host countries through spillover effects or externalities with the domestic institutions they are associated with, through both cooperation and competition. The location advantages determine the motivation of the MNC to enter the new market. Whether the foreign investor will decide to exploit or/and to build local competence, largely depends on the strengths provided by the local environments.

Foreign direct investments in high value-added activities tend to be “location-sticky”. The local embeddedness of MNCs is often a function of how long they have been present (Narula 2003, p. 25). Rugman and Verbeke argue about the sustainability of the local environment (2001a, pp. 163–166). Using their approach, four types of “sticky places” are distinguished (see Figure 2). In

the FSA-CSA framework⁷, the authors argue about the presence of the threatened (quadrant 1), challenged (quadrant 2), non-cooperative sustainable (quadrant 3) or cooperative sustainable (quadrant 4) local networks⁸.

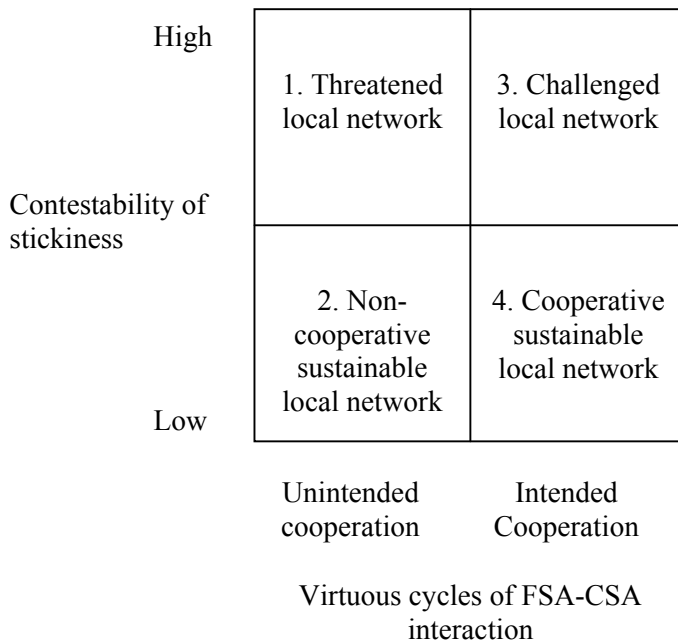


Figure 2. The sustainability of sticky places (Rugman and Verbeke 2001a, p. 165).

The horizontal axis in the figure shows whether the cooperation within the localised network is occurring intentionally or occasionally in the combination of firm- and country-specific characteristics. The vertical axis measures the international contestability of the local network resulting from international competition. The most challenging network locates in quadrant 3, which aims to create local network externalities instead of letting them appear unintentionally.

⁷ FSA – firm-specific advantages (MNC subsidiaries, domestic firms), CSA – country-specific advantages. The framework is explicitly described by Rugman and Verbeke 2001, pp. 150–177.

⁸ There are other alternative approaches like the Integration-Responsiveness (IR) framework (see, for example, Prahalad 1975, Doz *et al.* 1981, Bartlett and Ghoshal 1991) or the Integration-Responsiveness-Completeness Model (see Devinney *et al.* 2000) to describing the logic of international strategy in multinational corporations but those are predominantly discussed from the view of the MNC management. The approach presented by Rugman and Verbeke (2001) enables us to see the process of FDI from the view of the local environment, as well as MNC subsidiary management, which is the main research focus of the present dissertation.

What the authors call the defence mechanisms of the local network will be much stronger in quadrant 3 compared to the threatened local network positioned in quadrant 1 (Rugman, Verbeke 2001, p. 165).

The key issue here is whether the local structured mechanisms (e.g. industrial clusters, knowledge infrastructure) are attractive and internationally contestable enough to guarantee the internalisation of FDI effects and generation of externalities (about clustering mechanisms see also Porter 1986, 1990). The cooperative sustainability in the fourth position ensures the local but not certainly the international contestability of the local network. Aiming to keep a high profile in terms of technology development and systematically moving closer to the technology frontier, the local network and capabilities play a major role in this dynamic process. Depending on the FDI motive, whether exploiting or augmenting the local knowledge base (see also Kuemmerle 1999, pp. 2–4) and whether oriented towards local or export markets, foreign investments are more or less extensively committed to the local business and/or R&D and innovation environment. The multinational corporation can always choose between specific geographic locations across all value-adding activities (e.g. R&D, marketing, manufacturing). The location strengths give subsidiaries an advantage in absorbing the technology transferred internally through the corporation and/or also contributing to knowledge creation based on mutual problem-solving (see, for example, Andersson *et al.* 2004).

This all explains why governments increasingly attempt to contribute to the effective functioning of structures (knowledge infrastructure) and to enhance the resource concentration (e.g. through industrial clusters) in the local innovation system. The local governments are forced to ensure the maximum contribution from the MNCs' global activities. From the host country perspective, the position of a challenged local network in the FSA-CSA framework is suggested as aiming to maximise the gains through the MNC global performance. MNCs are not only transferring the technology appropriate for the local conditions, they are also using local resources for competence building. In these circumstances, the presence and strength of local resources and capabilities become the determining factors.

As learnt from the preceding discussion, the role of multinational corporations and subsidiaries in international technology transfer and upgrading has shown some changes. MNCs are not only seen to contribute to the international technology transfer. Today, they are rather considered to take a role of technology upgrading over national boundaries. While in the meantime local subsidiaries in host economies tend to be granted more autonomous roles in getting access to local-specific knowledge in certain sectors of economy. This has also raised a question about the reasonable balance between the local responsiveness and the global integration of MNC subsidiaries. The local entities are in parallel involved with the two distinguishing types of partnerships through multinational and, on the other hand, external (clients, suppliers) networks. Technology spillover effects to be established through backward and

forward linkages define the scale and scope of the local embeddedness of the MNC subsidiary. That in its turn gives signals to the HQ to assign a position of the local entity within the corporation. FDI is supposed to be location sticky depending on the availability of specific knowledge in the host economy. The more challenging is the target country, the more strategically oriented are to be the MNC subsidiaries and the better they tend to perform in terms of technology improvements. FDI is particularly contributing to the industrial integration of catching-up economies into international production networks.

1.1.2. The governance of technology upgrading within multinational networks

Rising organisational complexity of multinational networks

Starting with the research article published by Gunnar Hedlund, “The Hypermodern MNC – A Heterarchy?” in 1986, the research that followed has no longer raised this question but rather been thoroughly exploring the change from a hierarchical to a heterarchical view of the MNC, as well as driving forces behind and management issues related to change. Hedlund claims that the heterarchical MNC differs from the standard view of the firm as a hierarchy both in terms of strategy and in terms of structure (1986, pp. 20–27). Strategically, the MNC is actively seeking advantages originating in the global spread of the firm. In order to make the process work effectively, the development of new structural mechanisms is required. The heterarchical MNC has many entities, which are individually used either for launching and implementing the full set of business tasks or only carrying out some of the functions (e.g. only manufacturing, marketing, or R&D). Referring to the previous sub-section, the technology level and the absorptive capacity of a certain host country will determine the scope and scale of the presence of multinational corporations. Thus, a heterarchy implies at different kinds of entities within the corporation. In turn, subsidiary managers are also given different roles, either a strategic role in terms of their own company or the MNC as a whole, or a more operative mandate serving the parent firm only with downstream activities such as sales, marketing, distribution, etc.

The whole organisation of MNCs has changed dramatically applying other methods of managing international production mechanisms. The balance between specialisation and integration is the main dilemma to be solved by the top managers of MNCs (see also Männik and von Tunzelmann 2005, p. 5). As Zanfei states: “The traditional organisational model based on the vertical, unidirectional transfer of knowledge from the parent firms to subsidiaries, is being gradually replaced by a model where parts of corporations are more tied to one another by means of collaboration rather than hierarchical linkages” (2000, p. 516). From one side, a relatively higher autonomy is needed to give

the local entities opportunities to gain from local business and R&D conditions. On the other hand, the internal system of production requires an appropriate level of the integration to justify the existence of the MNC as an organisation (see an overview of advantages of autonomy versus advantages of centralised structures in the literature survey by Paterson and Brock 2002, p. 155).

Global businesses are becoming more complex to manage and new management tools are needed to govern the business (Control..., p. 176). Figure 3 illustrates the evolution of organisational complexity due to the emerging internationalisation by multinationals.

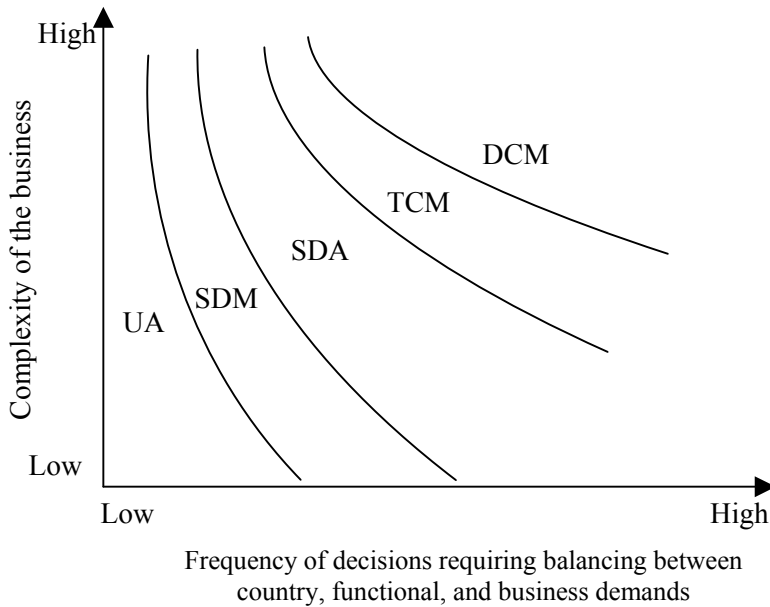


Figure 3. Evolution of the organisational complexity (UA – unidimensional approach, SDM – substantive decision management, SDA – substantive decision arbitration, TCA – temporary coalition management, DCM – decision context management; Doz *et al.* 1981).

Doz *et al.* have considered the nature of the decision-making process (horizontal axis) as being determined by the complexity of the business (vertical axis). In the figure, different levels of combinations are drawn between the complexity of the business and the frequency of decisions requiring balancing between country, functional, and business demands. Considering the local responsiveness and global integration needs, the perspective in decision-making might move from one to another level of leveraging a single (called unidimensional organisations – UO) or multiple perspective of the organisation (Control... p. 176). The more complex as well as international the MNC is to

become, the more delegation and team involvement instead of personal endowment tend to be used by the top managers of MNCs. Different from the traditional structure (UO), top managers can start to use more actively certain individuals as key persons in decision-making (substantive decision mode - SDM) or to delegate the job (substantive decision arbitration – SDA). A modern organisation takes advantage of the use of *ad hoc* groups to study a specific issue (temporary coalition management – TCM).

Therefore, the decision-making process managed by top managers of the parent company may take different forms of applying more or less actively certain individuals or teams in key decisions. In general, local units are increasingly involved in innovative activities of multinationals aiming at developing external networks of collaboration with local institutions. Their independence is however limited by the corporate interdependence in terms of knowledge, technology, products and markets (Zanfei 2000, p. 517). In the literature, the governance issues of multinational corporations as international networks and MNC subsidiaries acting within a network of systems are an increasing focus.

The governance of multinational networks – a multi-level approach

In the discussions from the previous sub-sections, the multi-level and multi-dimensional natures of international technology transfer and upgrading through foreign investments are emphasised to a large extent. Thus, knowledge accumulation is heterogeneous by the ways in which it is created and diffused, as well as production taking place in a certain community by various actors. The development processes within the international corporations could be characterised as having non-linear, rather than linear, features. Contemporary studies in the international business literature are more to be found arguing about “system failures” or “network failures” (instead of “market failures” or “government failures”) determining the success or failure of the economy or certain of its sectors (see, for example, Lundvall 1992; Nelson 1993; Edquist 1997; McGowan *et al.* 2004; Narula 2003b). McGowan *et al.* (2004), as well as Radošević (1999) are concerned with the governance of industrial upgrading via both internal and external sources of knowledge and skills, particularly on an example of CEE transition economies. The transition process of dramatic change occurring mainly since the beginning of 1990s was not only involved in ownership but also in resource, functional and spatial terms (Männik and von Tunzelmann 2005, p. 2). Many of the multinational corporations have considerably supported the integration of CEE countries into international production systems, thereby with new knowledge and skills providing ways to assist the transition. Thus, MNC subsidiaries themselves come between so-called centrifugal and centripetal forces (Zanfei 2000). The complexity of managing these international networks is the main reason behind widespread discussion about the governance logic and methods in international business

research. In the catching-up context, the interface between the internal and foreign knowledge is becoming a key issue to address.

Since the main research focus of the thesis is always on the functional autonomy of the MNC subsidiary resulting from the interaction between the international corporate-specific system and the domestic production and knowledge capabilities, it will be crucial to see this game in a wider conceptual framework. As Lundvall points out, “industrial dynamics is not linked to one specific level of aggregation in terms of micro-, meso- and macro-analysis ... but presents a specific perspective on the firm as an open system that is affected by and affects wider systems” (Lundvall 1998, pp. 2–3, cited in Radosevic *et al.* 2004, p. 12). Radosevic continues that the intersection between different networks might be context-specific involving a variety of forms of political and corporate governance and organisational aspects that impede or enable the alignment of different networks (Radosevic *et al.* 2004, p. 12). A multiplicity of networks is what drives the process of integrating CEE countries into global production systems. But it also generates misalignments at macro level in the very process of attempting to gain from various types of either local or international networks. In catching-up conditions, the integration taking place in a firm can best be approached from a system perspective.

Von Tunzelmann has considerably developed the understanding behind the economic growth via international production networks, particularly concentrating on the transition processes taking place in CEE (1989, 1995, 1997, 2003, 2004). The “network alignment” concept is adopted to learn how changes in governance and technologies are or are not aligned in an evolutionary process. The main element introduced in the concept comes from the theories of “governance” (see, for example, von Tunzelmann 2003; Prakash and Hart 2000). However, following the author, it is also explicitly linked to the theories of economic growth and transition, structural change and complexity.

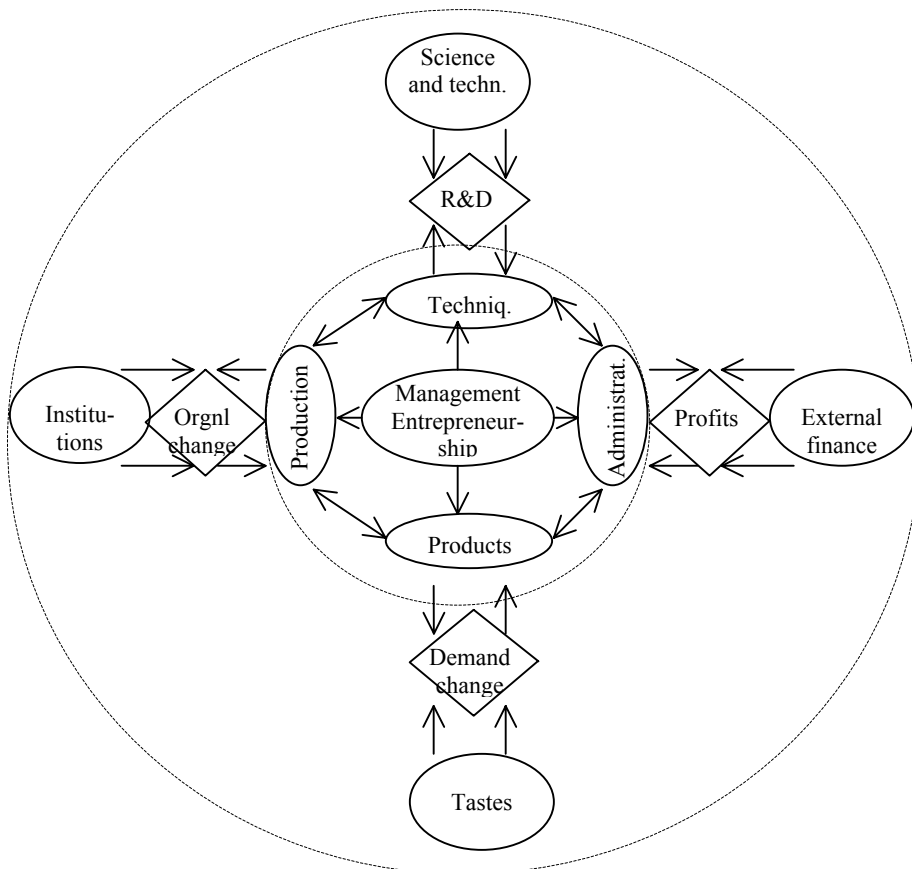
The concept takes a macro perspective on governance, distinguishing between the structure (the form in which decisions are made), control (the power to make decisions through structures) and process (the implementation of structure and control) (von Tunzelmann 2004, p. 24). It is a conceptual frame or what Radosevic (2004, p. 15) calls a “descriptive construct” well suited to the context of this thesis exploring the degree of functional autonomy in the relationship between the HQ and local units in Central and Eastern Europe transition economies. It is applicable for an entire industrial system, for an MNC, or a single multinational subsidiary. The alignment model incorporates local and international networks through production systems, as well as immediate linkages (or network tools) between the firm and a particular sector of the economy at the level of either functions or resources.

According to the author, the network alignment approach is a system-encompassing form of analysis taking account of both integration and incompatibility (von Tunzelmann 2004, p. 23). Network alignment requires horizontal, vertical and sometimes diagonal complementarities in at least three dimensions. These

are defined by the author as functional, resource and spatial networks (von Tunzelmann 2003, p. 379). Radosevic *et al.* emphasise the importance of the effective coupling between the evolution of local specific systems and the global (or regional) production networks in the alignment of the networks (Radosevic *et al.* 2004, p. 14). For the success of CEE firms, it is essential that they are active in this process, “that is, in plugging themselves in at different stages and levels (functions) of value chains” (Radosevic and Yoruk 2004, p. 59).

With regard to the aim of the research, only functional networks are the main focus of the present sub-section. Thus, functional networks are linked to the business functions carried out by all productive enterprises, especially technology, production, finance, products (marketing) and management or entrepreneurship (von Tunzelmann 2004, p.25). Second, resource networks relate to chain-like flows of resources through production or other systems. Finally, spatial networks have several levels, e.g. local, national, supranational (European Union) or global depending on the extent of the territory involved. Although, not directly illustrated in Figure 4, the resources are flowing through production systems across national boundaries. In the figure, there are connected analogous key functions carried out by the firm (surrounded by an internal dashed circle line) and various other institutions (ordinary surrounding cycles) in the national innovation system as a whole (see further Lundvall 1992; Edquist 1997; Nelson 1993).

Business functions are represented by techniques (the firm’s application of technologies), production (processes), products (for marketing), and administration (for finance, etc.). These are interlinked to one another and through management (in a static context) and entrepreneurship (in a dynamic context). It is a task of managers to keep all business functions effectively running. Von Tunzelmann emphasises the importance of linkages between each function of the firm and the respective function of the national innovation system to which it is most directly related (von Tunzelmann 2004, p. 26). For instance, the financing function is immediately dependent on the situation in the financing sector of the NIS, marketing on the demand either in local or international market, etc. Change (diamond shapes) in terms of each function “takes place not only internally through the exercise of entrepreneurship but also at the interface between elements that are internal and external to the firm” (*Ibid.*). These interfaces reflect the main role of networks in any system. The key question relates to the integration of ideas, skills and knowledge between different actors and sectors in an innovation system. The success or failure of an alignment depends largely on the nature of each individual entity and its willingness to cooperate within the local and international networks. The quality of the cooperation and the resources available in a national innovation system in turn will result in the capability level to be introduced into international systems of production and/or R&D, etc.



Note: The internal dashed circle line shows the micro or firm-level surrounding functions of the firm; the external dashed circle line shows the macro level of functional networks enclosing the national innovation system; the diamonds like “Demand change” refers to endogenous change agents.

Figure 4. Functional networks at micro and macro levels (adapted from von Tunzelmann 2004, p. 27).

In a traditional hierarchical corporate system, all these business functions are carried out internally within the firm. In the centrally planned economic system before the 1990s, these business functions were divided between different entities. At the opposite extreme, network type organisations such as multinational corporations split different functions between different entities, and this is becoming increasingly common (von Tunzelmann 2004, p. 26).

Again, such a division of tasks by business functions among all establishments over the national boundaries forces top managers to establish a balanced relationship between the company’s integration and specialisation (see also the

classic works of Coase 1937 and Stigler 1951). In the empirical part of the thesis, there will be a particular focus on this functional aspect of networks (see also section 1.2).

The network alignment model explicitly draws links between the micro and macro perspectives of business activities. The question remains of how various systems are aligned to gain the maximum from the networking. Complexity and network failures can be thought of as gradually rising. The MNC subsidiary is almost by definition interposed between two (or more) different spatial levels: global markets (for technology etc. as well as products) on the one side, and local/regional/national resources and constraints on the other (Männik and von Tunzelmann 2005, p. 6). More intense cooperation with HQ and weaker links with the local environment facilitate catching-up to international best practice. On the other hand, the active involvement in corporate systems might become a disadvantage through forgetting a response to local technological or other opportunities. Thus, the MNC subsidiary is confronting by at least two faces of the world in attempting to find a balance of opportunities received from both environments. From the viewpoint of the host economy, strong national and local networks ensure a sustainability of the stickiness (see also Figure 2) in the international context. “The more national and local networks are developed, the more sustainable will be their alignment with foreign firms and their networks provided that their interests are complementary” (Radosevic *et al.* 2004, p. 14).

The national aspect is the main base for indigenous growth. The longer-term economic success of CEE countries is particularly dependent on the national strengths and industrial structures. Multinational corporations might bring in short-term effectiveness, but the sustainability of the national production/knowledge infrastructure is very much determined by the motive of reinvestments and new flows of foreign investments. Internal technology accumulation could not be managed by the multinationals alone, as learning processes have to be initiated by the host-country institutions. In order to be capable of autonomous growth, the CEE countries have to absorb technologies developed elsewhere, to integrate the foreign technology to their production systems, and to begin the technology development process on their own.

Now having gone into a deeper discussion on rising organisational complexities of multinational corporations and their links with local entities within the corporation, the governance issues of such networks must be given a major focus. In the present thesis, functional networks in the context of multinational corporations are predominantly taken into consideration. The functional networks between the mother company and the local entity are immediately created at the establishment of any new unit in host economies of multinational corporations. Functional networks are meant to be established across business functions (R&D, sales and marketing, etc.) by which the appropriate knowledge and skills between the parent and local units tend to flow. Besides, the “network alignment” approach having judged presently clearly exhibits the immediate links of various business functions at the micro level to the certain sectors at the

macro level endowed in the national innovation system. The effective alignment of the links in the national innovation system must be particularly given attention by the local government. Secondly, the strengths and weaknesses of certain sectors and firms of the national innovation system are argued to determine the interest of foreign investors to enter the target market. More strategic investments are to be assumed to be related to the presence of local-specific knowledge in the host economy. The nature of national absorptive capacity in relation to the technology accumulation process in the catching-up phase of the economy will be considered.

1.1.3. The role of the national absorptive capacity in international technology upgrading

The relationship between national absorptive capacity and technology accumulation

Endogenous economic growth is dependent on the knowledge accumulated in the local context. Technology accumulation is based on both internal and external sources of knowledge, the latter mainly implemented through the global performance of multinational corporations. The type of technology transferred to the target country is largely determined by the factors of the local environment. Capabilities in the host country significantly matter for the magnitude and intensity of technology spillovers generated mainly via external networks of multinational subsidiaries and in turn of technological upgrading (see also sub-section 1.1.1). Technology spillover effects have recently received much attention via testing the “technology accumulation” hypothesis by Blomström (1989), Kokko (1994), Kokko, Tanzini and Zejan (1996), Perez (1997, 1998), Cantwell and Iammarino (1998, 2000), Blomström and Kokko (2003), Narula and Marin (2003), Castellani and Zanfei (2003), and others. The authors presume having a minimum level of absorptive capacity to ensure the externalities from the multinational subsidiaries’ activities to occur among domestic firms (see also Cantwell 1989; Nelson and Winter 1982; Perez 1998).

Technological knowledge transferred through foreign investments must be adapted to the specific context of the firm’s own tacit capability and then incorporated into an existing stream of innovation (Cantwell 2001, p. 440). The technology is accumulated through the acquisition of new skills and the generation of new technological capacity in a firm or country. It is a gradual process of developing new ideas and applications testing them in production systems and adapting them on a basis of previous experience. Atkinson and Stiglitz (1969), Nelson and Winter (1977) and Stiglitz (1987) have argued about “localized” technological change in the context of the previous technological evolution and learning experience of the firm or country. Narula relates technology or knowledge development to the learning process. He proposes

technology development to function in the way all learning takes place (Narula 2003a, p. 5). Countries in any given industry follow their own path of technological accumulation. Technology accumulation and innovation processes are unique and differentiated or heterogeneous (see Pavitt 2005, pp. 95–96; also Pavitt *et al.* 1989).

The concept of absorptive capacity has been primarily examined at the level of a firm and received increasing attention alongside the co-evolution of the research into multinational corporations and technology development. The notion is immediately linked to the world technology frontier. With the studies produced by Cohen and Levinthal (1989, 1990), one could talk about a systematic approach to the absorptive capacity of recipient firms. According to the authors, the firm's "learning" or "absorptive" capacity is its ability to identify, assimilate and exploit knowledge from the environment (Cohen, Levinthal 1989, p. 569). "It is a function of the firm's level of prior related knowledge" (Cohen, Levinthal 1990, p. 128). According to Cohen and Levinthal, the basic sources of technological knowledge utilised by a firm are the firm's own R&D, knowledge originating from its competitors' R&D spillovers, and knowledge originating outside the industry (*Ibid.*, p. 571). Narula adds that absorptive capacity is the ability, which also relates to the activities associated with creating new knowledge (2003a, p. 7). Finally, firms cannot absorb knowledge developed elsewhere without their own investments into innovation activities.

Several contributions in recent years stress that industrial development, as well as absorptive capacity must be seen from a "system's" viewpoint. By a system view it is meant that while learning and absorption take place at the firm's level, the success or failure of individual firms occurs within a "system" (Lall *et al.* 2004, p. 12). Thus, the concept of absorptive capacity needs to be extended to the country level, "reflecting the ability of a country to integrate the existing and exploitable resources – technological opportunities – into the production chain, and the foresight to anticipate potential and relevant technological trajectories" (Narula 2003a, p. 7). There are different multiplicative domestic and foreign influences adding value to the absorptive capacity. Using the definition given by Narula (*Ibid.*, p. 14), the components of national absorptive capacity are represented as follows: 1) basic infrastructure (such as roads, railways, electricity, etc); 2) advanced infrastructure (universities, advanced skilled human capital, etc); 3) domestic firms; and 4) formal and informal institutions (intellectual property rights regimes, incentives and subsidies to promote adoption and creation of new technologies, taxation, competition policy, etc.). In an international environment, foreign sources (foreign firms, arms-length purchases of technology, foreign suppliers, customers and non-firm organisations) considerably complement the package of knowledge located in one country. Hence, the sources of knowledge available in a national innovation system appear as a bundle of the domestic and the foreign.

In asserting the complex nature of a system (see also subsection 1.1.2), we know that the interaction between various actors representing different sectors of a society requires serious attention. The system approach to technological solutions is only guaranteed by the effective interactions between a firm and its environment. The previous subsection 1.1.2 thoroughly addressed the issue of alignment from the perspective of networks. The resources supporting the absorptive capacity of a country are all related to the business functions defined in the “network alignment” model, which describes the transition of economies through international industrial integration.

In conclusion, the considerable attention to absorptive capacity has emerged particularly in the catching-up context of economies. Economic growth of catching-up countries requires some minimum level of resources to be able to acquire and internalise knowledge and practises developed elsewhere. Even so, absorptive capacity is only a part of the technology accumulation process. Absorptive capacity consists of the appropriate supply of human capital and technological capability to be able to adapt technology efficiently to the production resources. Technology accumulation also includes the creation of new technologies following the technology path of countries (see Figure 5).

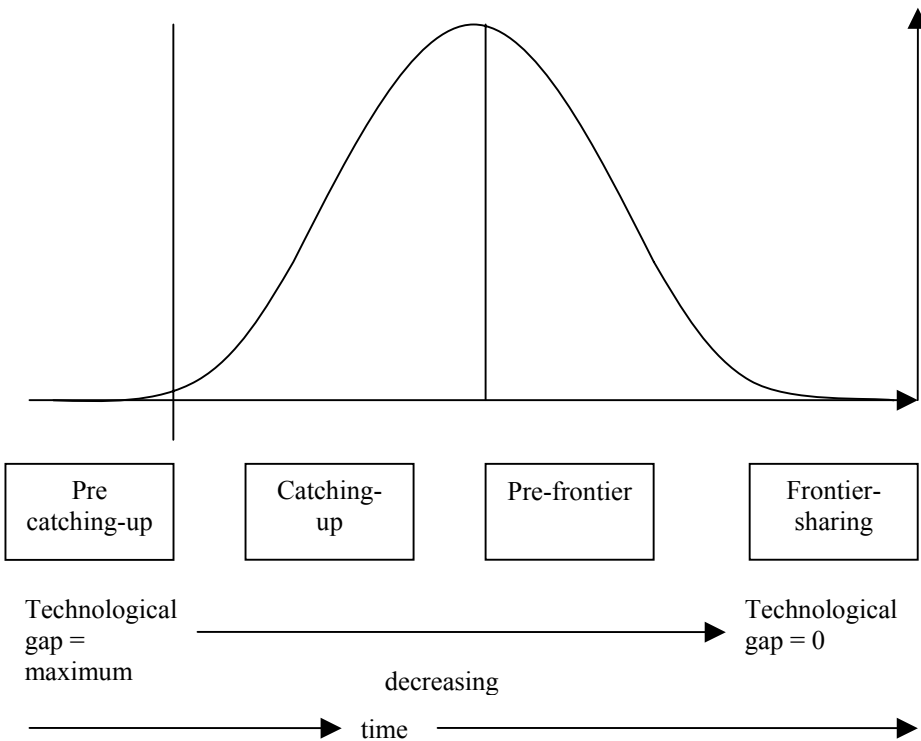


Figure 5. The non-linear relationship between absorptive capacity and the technological gap (Narula 2003a, p. 44).

The figure reflects non-linearity as far as the relationship between absorptive capacity and technology accumulation is concerned. At the beginning of the transition period, it is necessary to possess a minimum level of absorptive capacity to search and be able to adapt the appropriate knowledge from the environment. As fast as the technological gap of a country is declining (moving towards the world technology frontier), the more technology is accumulated and in contrast the level of absorptive capacity is falling. That, in turn, is expected to create externalities from the presence of multinational subsidiaries and translate into productivity growth for firms, as well as for economic growth of countries.

Absorptive capacity and technology accumulation in the catching-up context

Figure 5 illustrated explicitly the nature of capabilities of any given country to absorb external knowledge depending on its stage of development. The empirical study to be implemented in this thesis will use five CEE catching-up economies as an example for analysing the peculiarities of subsidiary autonomy in terms of their performance. This leads to the need to define the catching-up context in more detail beginning with some hints on the catching-up research in the literature.

“Catch-up” relates to the ability of a single country to narrow the gap in productivity and income vis-à-vis a leader country (Fagerberg and Godinho 2005, p. 514). The stream of literature on “catching-up” has explored this over a long time. Veblen (1994) was among the first to mention the differences in the economic growth between countries. Later Gerschenkron (1962), Abramovitz (1986) and Madisson (1979, 1982, 1984) and recently, for example, Perez and Soete (1988), Fagerberg (1988), Freeman and Hagedoorn (1994), von Tunzelmann (1995), Radosevic (1999), Freeman and Soete (2004) or Fagerberg and Godinho (2005) have contributed to the discussions. All these studies take their authors’ specific view on the “catching-up analysis” but none of them avoids emphasising the increasing importance of national technological activities and capabilities. As Fagerberg points out, semi-industrialised countries cannot rely only on a combination of technology imports and investments (1988, p. 451).

As initiated already in the discussion by Figure 5, the sequential catching-up phases will now be characterised by technological and absorptive capabilities, the activity of inward FDI, economic structure, industrial upgrading and expectations regarding productivity and economic growth (see Table 1). Narula defines four distinctive stages of economic catch-up and refers to the technological frontier as the set of all production methods that are the most efficient in the world at a certain point in time (Narula 2003a, p. 22).

Table 1. Stages of absorptive capacities

	Pre-catching up stage	Catching-up stage	Pre-frontier sharing stage	Frontier-sharing stage
Technological and absorptive capabilities, inward FDI	Technological capabilities non-existent; little or no basic infrastructure and inward FDI	Growing abs. capacity; “generic” basic infrastructure; growing inward FDI	Declining abs. capacity; increasingly specialised knowledge infrastructure; increasing inward FDI	Strong in-house R&D capacities and infrastructure; intense use of R&D alliances and networks; growing internationalisation
Economic structure	Primary sector	Primary sector declining, manufacturing sector increasing	Manufacturing, service sector increasing	Manufacturing sector decreasing, service sector increasing
Industrial upgrading	Natural resource based, commodity exports; few domestic firms with techn. capabilities; agricultural sector prevailing	Engaged in low-value adding manufacturing (‘Supplier-dominated’, ‘Scale-intensive’); growth of domestic industry in support and related sectors	Strong domestic industry, move towards ‘Specialised suppliers’, ‘Science-based’ sectors; increasing integration into efficiency based global production networks	Growing use of outsourcing to earlier stage countries of lower-value added activities; knowledge intensive ‘Science-based’ industry sectors prevailing
Expectations regarding productivity and economic growth	Low labour productivity, high rates of economic growth	High productivity growth, high economic growth	Productivity and economic growth much higher than earlier	Economic and productivity growth come from knowledge intensive ind.-s

Source: adapted from Narula 2003, p. 46 and using Pavitt 1984, p. 354.

“Pre-catching up” phase countries could be characterised by very limited technology capabilities requiring still a minimum level of absorptive capacity to be able to adapt these minor skills and knowledge received, rather via international trade than through foreign investments. A weak knowledge

infrastructure and even production resources and systems are not motivating foreigners to invest. The economy is primarily based on natural resources and low value-added manufacturing industry.

In the next “catching-up” economies, such as the CEE countries to be introduced in the present study their economic units enjoy the growing capacity to imitate and adapt technology flowing via international channels. The economies are increasingly attractive for foreign investors while also undertaking a little outward investment. But due to the relatively basic knowledge infrastructure asset-augmenting foreign investments are rather the exception than the rule. Multinationals keep low profiles with an interest in exploiting cheap labour resources, and investments are mainly motivated by these reasons. Manufacturing value-added is mostly collected from the low value-added industries, according to the Pavitt classification from ‘supplier-dominated’ and ‘scale-intensive’ sectors. However, domestic industry capacities are certainly showing a growing trend. Foreign investments are assumed to be the main channel for the international technology flows, accompanying externalities and expected technology upgrading in catching-up economies. Hence, in moving towards the next phase of economic level, strong efforts are needed to build up an appropriate infrastructure for establishing more value-added activities in a certain context.

In the next stage called the “pre-frontier sharing” phase, the absorptive capacity starts to decline (see also Figure 5). In this phase, countries have achieved the level where they are already able to contribute more from their own internal technology development than prioritising the international technology inflows. Nevertheless, both inward and outward foreign investments are running at an accelerated speed, particularly the latter to support domestic technology accumulation. Manufacturing value-added generated through knowledge-intensive or what Pavitt calls ‘science-based’ industry is significantly growing and integration into efficiency based global production networks is particularly intense.

Differing from the other economic phases, “frontier-sharing” stage countries have achieved technological opportunities primarily resting on long-term innovation and collaboration. Most of the world’s R&D is located in these countries due to the efficiently functioning innovation system with all R&D and supporting institutions such as technology parks, incubation centres, etc., as well as considerable in-house R&D capacity in the private sector. The economy is substantially knowledge-based in terms of manufacturing production or services. Foreign investments from frontier-sharing economies are of both types – asset-exploiting and asset-augmenting motivated either by resources and opportunities provided by lower-level or similar frontier-sharing economies.

Following Table 1, productivity and economic growth are expected to achieve their greatest speed especially in the “pre-frontier sharing” phase of the economy. In “pre-catching up” stage, there could be very low labour productivity because of the reliance on labour-intensive technologies but high

rates of economic growth due to the low starting positions. Since the technology used in the production is still not the most advanced in the catching-up countries, productivity growth might maintain a level similar to or little higher compared to pre-catching up countries. But much higher economic growth is expected to appear due to the gradual switch to technology-intensive industry.

One can, however, to some extent disagree in terms of productivity and economic growth during these economic phases. It is necessary to focus more on the factors resulting in the productivity or economic growth at certain points of a time. The productivity improvements might be caused by the restructuring of industry and the increasing efficiency of what is specifically taking place in the early stages of economic transition. On the other hand, in the “pre-frontier sharing” context productivity is much more based on the effectiveness of firms. Therefore, as far as productivity is concerned it might show relatively minor improvements in the “catching-up” stage and start growing again in the “pre-frontier sharing” phase due to the changed factors of productivity such as technology improvements, etc. The rate of economic growth is rather assumed to achieve its highest levels during the catching-up period and start declining later due to the already achieved efficiency during the catching-up period. However, even among transition economies the picture is not homogeneous (see further the differences in productivity and economic growth among the five observed CEE countries in the empirical study as noted in sub-section 2.1.1).

The first theoretical part of the thesis is aimed to show multinational corporations and subsidiaries in the light of global changes, particularly focusing on technology and industrial integration across national boundaries. Due to these changes, multinationals as organisations have extensively emerged and remarkably changed the organisational strategies and structures on their own. Delegation of organisational tasks to different entities and the governance of such network-like structures have received primary attention in the research. MNC subsidiaries tend to receive more rights and responsibilities in the value-added chain of the corporation, whilst completely depending on the local organisational, marketing, technology, etc., capabilities. On the other hand, the subsidiaries are “obliged” to show local responsiveness. The subsidiary performance is influenced by both the centripetal and centrifugal forces. The scale and scope of technology upgrading of local units and host economy in support of foreign investments is to a great extent defined by the strengths and weaknesses of certain sectors of the national innovation system. The extent of subsidiary autonomy given by the parent or assumed by the subsidiary management across business functions is linked to a specific knowledge available in the local environment. The absorptive capacity of host firms gives necessary impulses for foreign investors to enter the foreign market and to decide on reinvestments sequentially. The nature of capabilities of any of the given countries to absorb external knowledge depends on its stage of development. CEE transition countries later used as an input for analysing the peculiarities of subsidiary autonomy in terms of their performance are defined

to be in the catching-up phase of the economy. “Catching-up” relates to the ability of a single country to narrow the gap in technology upgrading against the leader country. Hence, the countries to be examined are on their way to catch the developed industrialised countries in terms of technology upgrading. Foreign investments are assumed to support this transition process particularly through integration into international industrial production networks. The second theoretical part concentrates in a more detail on the nature and peculiarities of MNC subsidiary autonomy in connection with subsidiary development influenced by location- and firm-specific characteristics.

1.2. The autonomy and development of the multinational corporation’s subsidiary

1.2.1. The multidimensional nature of the autonomy of the multinational corporation’s subsidiary

The definition of the autonomy of the multinational corporation’s subsidiary

In subsection 1.1.2, it was found that the issue of the autonomy of MNC subsidiary, in terms of the relative balance of subsidiary autonomy and centralised control over subsidiaries, has emerged as one of the key topics in international business research. The current section will consider more deeply the concept of subsidiary autonomy throughout the subsidiary management literature. Then in the next section, the autonomous roles of foreign subsidiaries and mandate change will be introduced from the contemporary literature. Subsection 1.2.3 will conclude this discussion with a synthesis of determinants influencing MNC subsidiary autonomy and development with reference to MNC subsidiary performance.

The concept of the autonomy of MNC subsidiary is perceived in the literature in a number of ways. Brooke suggests that the autonomy refers to an organisation “in which units and sub-units possess the ability to take decisions for themselves on issues, which are received to a higher level of comparable organisations” (1984, p. 9). Relatively similarly, O’Donnell states that autonomy is “the degree to which the foreign subsidiary of the MNC has strategic and operational decision-making authority” (2000, p. 528). Brooke was among the pioneers introducing the notion of subsidiary autonomy in the literature. He distinguished the characteristics of centralization and decentralization over seven issues in the MNC (see Figure 6).

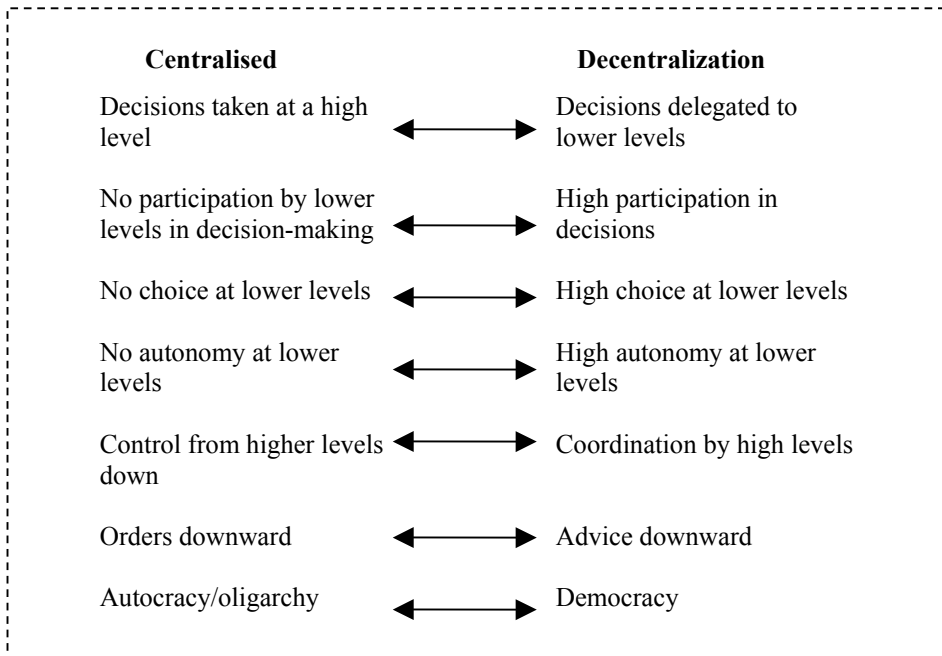


Figure 6. Connotations of centralisation-decentralisation (Brooke 1984, p. 148).

Decentralization allows top managers to delegate decisions to lower levels of management, as well as being characterised by high participation in decisions, high choice and autonomy at lower levels, coordination by high levels, advice downward and democracy. In the context of multinational corporations, these two organisational approaches – centralised and decentralised – explicitly reflect the two types of organisational structure and strategy of yesterday and today (see also subsection 1.1.2). Hence, subsidiaries tend to be given more autonomy alongside the shifts in corporate strategies and structures.

More recently, other scholars have approached the bargaining issues more in the context of the subsidiary autonomy and the definitions are more precise in terms of measurement. According to Taggart, autonomy may be regarded as a decision-based process that evolves through bargaining between the centre and periphery in an organisation (Taggart 1997, p. 55). Thus, the autonomy of a subsidiary is its position in relation to the parent company by all business activities. A simpler definition has been given by Björkman (2003) who defines subsidiary autonomy in the context of an MNC as the extent to which decision-making is taking place in the subsidiary without the interference from the headquarters. These definitions are more related to the distinctive subsidiary roles, either assigned by the parent or assumed through the subsidiary's own behaviour as discussed in the literature (Birkinshaw 2000, pp. 19–20). Young and Tavares follow the conclusion of Birkinshaw and Ridderstråle (1999, p.

155) that autonomy in the form of, for example, higher value-added roles, normally arises through the head-office assignment (2004, p. 228). However, there is a limited direct evidence on this subject and, for example, Forsgren *et al.* contend that “a subsidiary’s strategic role is not only, and perhaps not primarily, a consequence of a formal decision at headquarters level” (1999, p. 184).

Over all studies, it is generally agreed that the concept of autonomy in the management of any organisation is related to control. Child (1973) refers to the regulation of “activities within an organisation so that they are in accord with the expectations established in policies, plans, and targets” (cited in Björkman 2003, p. 3). Egelhoff (1984) furthermore argues that the importance of control “stems from the fact that it reduces uncertainty, increases predictability, and ensures that behaviours originating in separate parts of the organisation headquarter control over its subsidiaries is attempting them to act in accordance to the corporate strategies. However, too much control over subsidiaries might impede the creativity within the MNC (Björkman 2003, p. 3) and in turn the local responsiveness of subsidiaries.

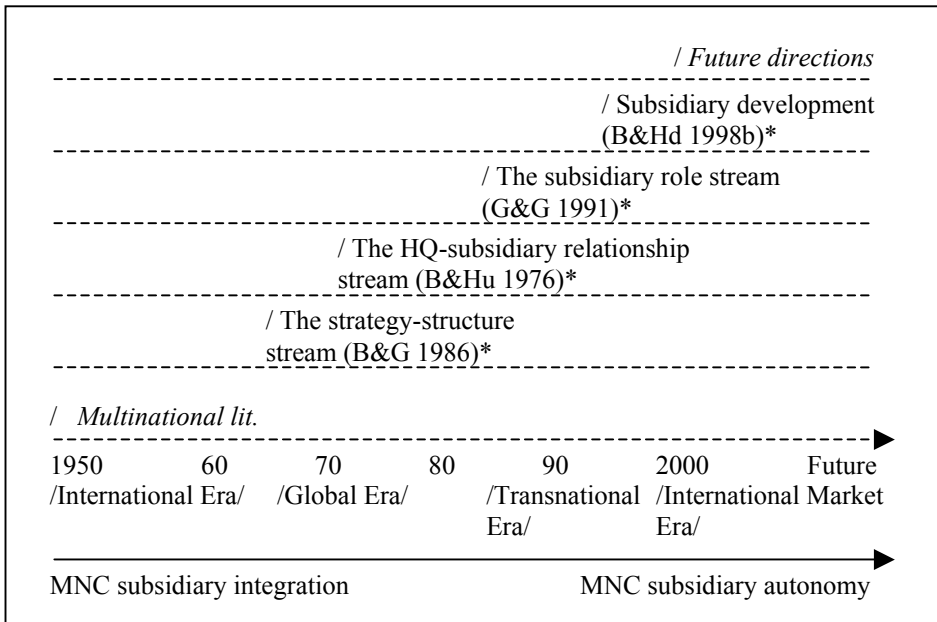
The present thesis will follow the definitions given by Taggart (1997) and also Björkman (2003) in concentrating on the decision-making process between the parent and local branch, and measuring it across business activities or functions. **The subsidiary autonomy is presently seen in the range of different value-adding business functions such as R&D, production, marketing etc., though more often just the distinction between strategic and operational decision within a value-adding activity is followed (see subsection 1.3.1).** In subsection 1.1.2, it was shown how different business functions are immediately related to certain sectors of the national innovation system. However, other elements of autonomy may be identified, too. For instance, Birkinshaw distinguishes between the types of subsidiary initiative, namely local market, global market and internal market initiatives (2000, pp. 22–30). See further discussion on subsidiary initiatives and autonomous subsidiary roles in subsection 1.2.2.

Autonomy *per se* is inadequate. First, it is associated with a positive motivation of subsidiary management. Granting the MNC subsidiary greater autonomy may encourage the subsidiary to promote initiatives (Young and Tavares 2004, p. 229). Successful use of autonomy requires also power. By Brooke’s definition, power “refers to the attributes or resources, which enable the authority to be exercised” (1984, p. 58). Birkinshaw and Ridderstråle associate power with “influence over people’s behaviour and decision outcomes” (1999, p. 153). Sources of power, in turn, include subsidiary competencies/resources including external relationships (see, for example, Andersson and Forsgren 1996; Andersson and Pahlberg 1997; Prahalad and Doz 1987a). Autonomy predominantly requires resources of different kinds including the managerial, technological or financial ones (Young and Tavares 2004, p. 216). A multinational subsidiary might be given more autonomy because it is in a

better position than HQ or other entities to serve the corporation (Taggart *et al.* 2002, p. 14). As autonomy will in turn also favour collaboration and resource accumulation, the increase in autonomy could be expected to be, *ceteris paribus*, a cumulative process (Zanfei 2000, p. 525). On the basis of this discussion, autonomy might be taken as either a cause or an effect of subsidiary development (this is explained further in the next sections).

Change in focus on autonomy in the multinational corporation's subsidiary management research

The research on MNC subsidiary management has evolved considerably over the last few decades. Following Birkinshaw (2001), based upon Birkinshaw and Hood (1998a), the lines of investigation in subsidiary management can be distinguished. Figure 7 presents all these literature streams and the pioneers alongside attitudes towards autonomy over time. The interest of the research originally lay on the strategy and structure of the multinational corporation itself (see, for example, Bartlett and Ghoshal 1986) as well as exploring headquarter-subsidiary relationships (Brand and Hulbert 1976; Otterbeck 1981; Gates and Egelhoff 1986; Hedlund 1981; Roth and Morrison 1992). Later, a shift towards setting-up subsidiary-specific research questions is more often seen, whether theoretical or empirical discussions are concerned. Subsidiary roles received an increasing attention during the 1990s (see the recent overviews of the literature by Paterson and Brock 2002; Birkinshaw 2001; Young and Tavares 2004). In the current subsidiary development studies, specific topics such as drivers of subsidiary development, subsidiary-specific assets, subsidiary initiatives and changes in mandates are increasingly becoming a major focus of the research (see, for example, Birkinshaw and Hood 1998a, b). Subsidiary autonomy is one of the contemporary issues in the latter strand of research and the focus is increasingly “on the local environment and the idea that the subsidiary can grow the organisation itself even in the absence of HQ support” (Paterson and Brock 2002, p. 147).



* B&G – Bartlett and Ghoshal (1988); B&Hu – Brandt and Hulbert (1976); G&G – Gupta and Govindarajan (1991); B&Hd – Birkinshaw and Hood (1998b) – the first examples of the literature streams.

Figure 7. Development of the literature on MNC subsidiary management and focus on MNC subsidiary autonomy (adapted from Paterson and Brock 2002, p. 140, 154, based upon Harzing 1999).

The main shift towards an increasing respect for subsidiary autonomy in the literature took place in the mid 1980s with the emergence of the subsidiary role stream. Harzing (1999) calls this period the ‘Transnational Era’ with the principal change in seeing multinational organisations more as international networks or heterarchies. The focus of the research fell more on subsidiary management and in detail looking at various strategic roles of subsidiaries in an entire network. The literature considered differences in roles within a single country (see, for example, Jarillo and Martinez 1990; Taggart 1997) and across countries for a single MNC (see, for example, Gupta and Govindarajan 1991). Ghoshal and Bartlett found links between autonomy and the ability to diffuse innovations through networks (1988, pp. 384–385). The more recent literature has considered subsidiary roles with different levels of autonomy (see, for example, Gupta and Govindarajan 1991; Jarillo and Martinez 1990; Birkinshaw 1996; Taggart 1997). The next subsection will pick up examples of autonomous subsidiary roles from the subsidiary management literature.

The authors of the subsidiary development stream have attempted to balance HQ’s control and global integration with the need for national responsiveness

(Paterson and Brock 2002, p. 147). Subsidiary development research has increasingly emphasized the endogenous nature of autonomy. This allows increasing the influence of subsidiaries in serving corporate networks, as well as establishing external links with local partners. However, the autonomy is assumed to be both a cause and an expected result of subsidiary development and beneficial to the whole corporation (see, for example, Forsgren *et al.* 1992; Birkinshaw and Morrison 1995; Taggart 1997; Hood and Taggart 1999; Birkinshaw and Hood 1997). Therefore, progress towards the strategic autonomy of a multinational subsidiary tends to be reciprocal, not unidirectional (only assigned by the parent or only determined by subsidiary management). In the contemporary research, it is more common to prefer a rather integrated approach to subsidiary integration and autonomy.

Recently, Birkinshaw *et al.* (2005) have presented a framework where the two competitive arenas, internal or corporate and external, are explicitly integrated (see Figure 8).

Competitiveness of external arena	High	3. Externally- focused competitive environment	4. Dual-focus competitive environment
	Low	1. Benign environment	2. Internally- focused competitive environment
		Low	High
		Competitiveness of internal arena	

Figure 8. Internal and external competitive arenas of the MNC subsidiary (Birkinshaw *et al.* 2005, p. 231).

The authors combine different degrees of competitiveness of the internal and external arena of a subsidiary and offer distinctions across the four main types of interactions. In the situation where both the internal and external competitive arenas are strong, the subsidiary is in a ‘Dual-focus competitive environment’ (quadrant 4). Drawing parallels with Figure 2 (subsection 1.1.1), the local

network context is largely challenging both for the HQ and subsidiary in this case. By ‘Dual-focus competitive environment’ is meant that subsidiaries are compatible in terms of both local and international networks. In terms of the host-country endogenous developments the positions in quadrants 1 (‘Benign environment’) and 2 (‘Internally-focused competitive environment’) could not be expected since multinational corporations are weakly “location-sticky” here.

Summarizing the first piece of section 1.2, the autonomy of multinational corporation’s subsidiary is to be determined by the decision-making process between the parent and subsidiaries over various business functions. Hence, functional autonomy is predominantly addressed in the present thesis. In their turn, business functions are linked to specific sectors of the national innovation system as seen in section 1.1. Alongside the general global movements giving attention to the autonomy of multinational corporation’s subsidiary in the subsidiary management, the literature has significantly increased during the last decades. The shift from subsidiary integration in the multinational networks towards subsidiary autonomy as individual research subjects has apparently taken place. The next section will now introduce the autonomous roles of multinational subsidiaries influenced by multifarious contexts of both corporate strategy and host country and firms’ capabilities.

1.2.2. Autonomous roles and mandate change in the multinational corporation’s subsidiary

Autonomous roles of the multinational corporation’s subsidiary

The two latter streams of subsidiary management research predominantly contribute to the importance of subsidiary autonomy over various types of subsidiary roles and as a facilitator formatting changes in subsidiary mandates. The subsidiary role might be assigned by the corporation management or is assumed to be achieved through the subsidiary’s behaviour. The latter argument is supported more often in the contemporary literature on international business. The main driving forces behind subsidiary development tend to derive from the resources and in turn, competence building of recipient firms and target countries of foreign investments. Hence, the destiny of multinational subsidiaries is to a large extent determined by its own initiatives. The aim of the current subsection is to answer the following questions. What are these autonomous roles or mandates widely exhibited in the literature? What is meant by mandate change and initiatives in the context of subsidiary development?

In Appendix 1, the most common among a wide range of subsidiary role typologies are presented. Young and Tavares identify these selected roles to be quasi-autonomous subsidiary categories (2004, p. 221). The literature has paid particular interest to the type of subsidiaries, which possess creative roles within

the group. Terms applied to the autonomous subsidiaries by such authors include e.g. product specialist (White and Poynter 1984), strategic leader (Bartlett and Ghoshal 1989), autonomous subsidiary (Jarillo and Martinez 1990), global subsidiary mandate (Roth and Morrison 1992), as well as later more commonly world mandate (Birkinshaw and Morrison) or militant (Taggart 1997). World or global subsidiary mandate is understood as having the highest contributory role in the development of both subsidiary and corporation as a whole. The third column in Appendix 1 also refers to the various approaches used in grouping the roles of subsidiaries, whether strategic or only location-specific autonomy, or whether the corporate and external integration or competence level of subsidiary is addressed. Regarding the key issue of the present dissertation, autonomy appears explicitly as an influencing variable in the models of Gupta and Govindarajan (1991), Roth and Morrison (1992), Birkinshaw and Morrison (1995) and Taggart (1997). See further the discussion about the concept by Birkinshaw and Morrison (1995).

Bartlett and Ghoshal (1986) differentiate subsidiary roles by the competence of the local organisation and the strategic importance of the environment with the latter already presented as an important influencing factor for ensuring the local stickiness of multinationals (see subsection 1.1.1). They suggest the strategic leader role as serving the corporate networks with a highly valued location-specific competence while being strongly related to the local partners such as suppliers and clients, etc. (see Figure 9).

High	Contributor	Strategic leader
Competence of local organisation	Implementer	Black whole
Low		
	Low	High
	Strategic importance of local environment (market)	

Figure 9. MNC subsidiary roles by competence and importance of the environment (adapted from Bartlett and Ghoshal, 1986, p. 4).

This contrast with the implementer, which lacks the autonomy and authority: its capabilities to generate firm-specific assets are very limited and aimed to serve only the local market. Hence, the higher the competence level of the local organisation and the strategic importance of the target environment, the more likely the status of the strategic leader will be granted or result from the subsidiary management.

Birkinshaw (1996) develops a typology of subsidiary roles in the framework of strategic relatedness and distinctive value-added of the multinational subsidiary (pp. 487–488). The author claims that mandate evolvement is positively associated with the strategic relatedness and distinctive value-added of mandate activity (see Figure 10).

Strategic Relatedness	High	Commodity Mandate	Large Integrated Mandate
	Low	Niche Mandate	Isolated Mandate
		Low	High
		Distinctive Value-Added	

Figure 10. MNC subsidiary roles by strategic relatedness and distinctive value-added (Birkinshaw 1996, p. 487).

Very low strategic relatedness will be associated with divestment or mandate decline. On the other hand, very low distinctive value-added will be associated with the phasing out of the mandate in the subsidiary. Many new businesses launch their activity in the niche quadrant, afterwards gradually moving towards higher mandates such as the commodity, large integrated or isolated ones. Isolated mandate is an immediate response to the black hole in the competence-based typology of subsidiary roles, and large integrated mandate to the strategic leader. In a parallel study, Jarillo and Martinez (1990) accordingly refer to autonomous and active subsidiary types in the corporate network system (p. 503). According to the opinion of Birkinshaw (1996) in reality, “most

subsidiary mandates end up towards the middle of the framework, with moderated value-added and strategic relatedness” (p. 488). Therefore, various subsidiary roles presented in the distinctive frameworks could be generalised at a relatively similar level of understanding. Subsidiary autonomy is mostly specified by the level of skills and accumulated knowledge, thereby being based on prior experience.

Complementary to the typologies of subsidiary roles, the wider framework developed by Birkinshaw and Morrison (1995) is included in Appendix 2. The authors make an attempt to relate the role of subsidiaries to the environment where they are located, as well as showing subsidiary autonomy to be defined as a driving force in subsidiary development in terms of its performance. Birkinshaw *et al.* predominantly focus on the strategic autonomy of a multinational subsidiary. In these circumstances, the local implementer might possess the autonomy but only in terms of the local market, as well as the specialized contributor type of subsidiary. The first is immediately linked to high, the latter to medium pressures for national responsiveness. Conversely, a world mandate is assumed to have low requirements for local response. Therefore, considering the expectations of the host-country government, probably the role of the specialized contributor might be the most preferred status of multinational subsidiaries. This type of subsidiary is assumed to have an appropriate balance between an internal integration and local responsiveness.

As far as the strategic autonomy is concerned, it is the lowest in the case of the local implementer and the highest for the world mandates as presumed (see the third box in the appendix). Additionally, local implementers are highly product dependent on parents, relate to inter-affiliate purchases and possess a low configuration of manufacturing and downstream activities (such as marketing, distribution, etc.). Regarding the subsidiary performance (measured as the return on investment – ROI), it is expected to achieve the highest values among local implementers and local entities with the world mandates. It can be concluded that the degree of subsidiary autonomy is directly related to specialized capabilities and involvement in either internal or external industrial networks.

The evolution of the mandate of the multinational corporation's subsidiary over time

The MNC subsidiary may have a significant influence upon its own development. Subsidiary development is defined as the process through which the subsidiary firm adds increasing levels of value to the multinational corporation to which it belongs (Birkinshaw and Hood 1997, p. 340). Pedersen (2005) emphasizes that some subsidiaries are specialized in certain skills, capabilities or fields of operations for the whole corporation and are gaining a more strategic role than others (p. 2). This process of subsidiaries enhancing their resources and competencies is referred to as “subsidiary development”. It

principally represents increasing levels of resource commitments in local markets. Subsidiaries typically evolve along various paths, being closely influenced by the trajectory of competence growth, which is a function of location advantages of any country.

The Figure 11 produced by Birkinshaw (1998) denotes a spectrum of multinational subsidiary roles according to their evolution measured by the level of value-added (see also an alternative approach on the phases of mandate change in Delany 1998, p. 258). Value-added here is defined in two dimensions: the extent of the value chain that is undertaken by the subsidiary across all business functions (e.g. sales, marketing, manufacturing, etc.) and the geographical scope for which the subsidiary is responsible (local, regional, global). “Value-added has both tangible aspects, such as the number of jobs or the level of investment in the operation, and intangible aspects, such as the quality of the work undertaken” (Birkinshaw 1998, p. 272).

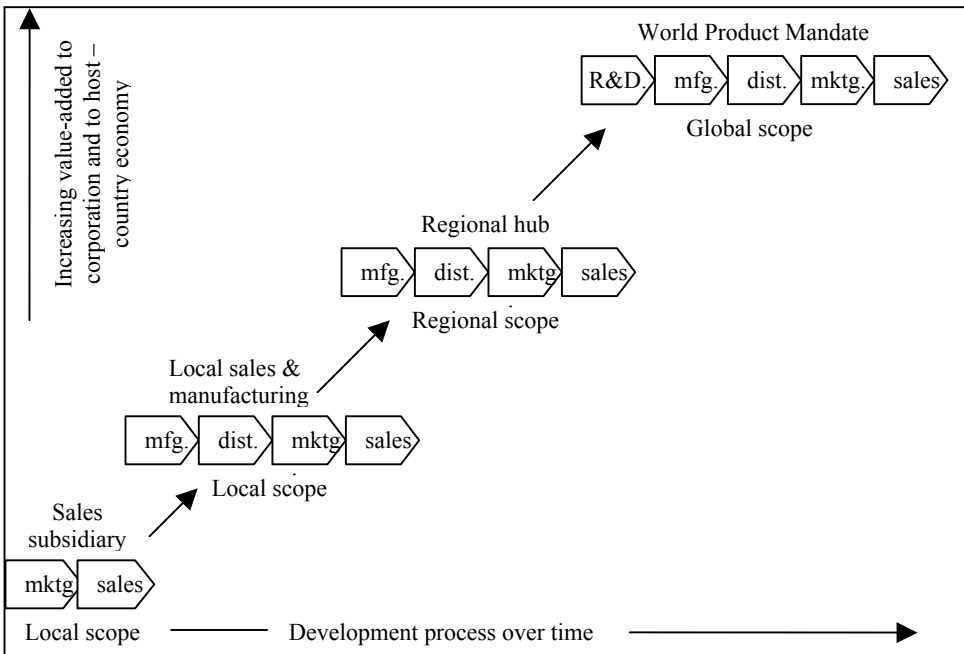


Figure 11. Stages in MNC subsidiary development (Birkinshaw 1998, p. 272).

As depicted in the figure, subsidiaries might gain mandates the more they add increasing values over the whole value-chain of the corporation. The motivation of the foreign investor determines the level of initial activities, which should be performed in the subsidiary. Preliminary functionality might be limited to just marketing and sales, or may involve more extensive and locally integrated

activities such as manufacturing, distribution or research and development. But the mandate given to the subsidiary or assumed by the proactive behaviour of the multinational subsidiary might always be increased by improvements in subsidiary strategic assets. On the other hand, it also might be reduced.

Birkinshaw (1996) has called for a “Mandate Life Cycle” framework, which shows how mandates could be gained, developed and lost within the corporation. (see Appendix 3). In this framework, mandate gain means a process through which a subsidiary takes responsibility for a business, or element of a business, beyond its national market (Birkinshaw 1996, p. 472). During the development, the subsidiary extends its mandate responsibility into a related product, market or functional area. Finally, mandate loss might occur due to an elimination of a subsidiary’s international responsibilities. Hence, mandate loss could take place alongside declining strategic relatedness to the corporation and increasing lack of distinctive value-adding activities. One could now ask, which should be thought to be the better situation – to lose the strategic mandate in terms of the corporation but thereby increasing the local responsiveness, or the opposite way around? In practice, it tends to be the question of a certain context at a certain point of time, and the balance between these two arenas tends to be searched for.

Subsidiary initiative is assumed for the mandate to be changing. The initiative is “undertaken with a view to expanding the subsidiary’s scope of responsibility” (Birkinshaw 2000, p. 8). As already observed, the final aim of subsidiary development may be to build subsidiary-specific advantages, which can involve production-related assets like technological, productive or marketing know-how, or be associated with the organisational capability to coordinate and control efficiently the MNC asset base (see Rugman and Verbeke 2001b).

It is important for the multinational to determine the proper combination of centralisation and autonomy under which foreign subsidiaries could maximize their value-creating roles (see Hewett *et al.* 2003). In earlier works, Birkinshaw (see, for example, 1996, 1997) identified several forms of subsidiary initiative – local, internal, global and hybrid market initiatives – and also indicated conditions for these to be executed. According to Birkinshaw, high autonomy appears important for local and global market initiatives, but low autonomy is associated with internal and hybrid market initiatives. High parent-subsidiary communication is associated with internal and hybrid market initiatives, while the reverse is true of local and global market initiatives.

Subsidiary initiative is closely linked with power creation and autonomy (see Varblane *et al.* 2005, p. 10). Power is something that can be given (assigned by delegation) or taken. The power can be gained by having ability or a capability or by possessing something with which it is possible to control somebody else. Firms differ in their ability to accumulate competencies and capabilities, which are rare, valuable, non-substitutable and difficult to imitate. Abilities and capabilities can be acquired and lost over time and hence power is a dynamic concept (see Björkman 2003).

A subsidiary that is important to the MNC as a whole will have the potential to negotiate more with the HQ than subsidiaries of lesser importance. Hence, using its negotiating power, the important subsidiary could be more autonomous than its less important counterparts. Furthermore, continuing the argument, subsidiaries that are able to outperform their corporate and local counterparts might have a higher degree of negotiating power than counterparts with weaker performance. The reason for this is that the MNC as a whole will be, at least to some degree, more dependent upon the well performing subsidiary for its performance. The better the subsidiary is performing in comparison to other corporate units and local counterparts, the higher its autonomy will probably be.

In conclusion, the autonomous roles of MNC subsidiary tends to be taken by the authors as a factor stemming from subsidiary initiative, which aims to increase the subsidiary's role and innovation potential (Young and Tavares 2004, p. 227; see also Ghoshal and Bartlett 1988; Hood and Taggart 1999). Initiatives of subsidiary management are strongly related to creating specialised resources at subsidiary level, as well as taking place of a reciprocal process (see also Cantwell and Mudambi 2005). The multinational corporation's subsidiary evolves over times gaining in more rights and responsibilities in terms of various value added activities within the corporation (see Figure 11). Based on the preceding discussion the autonomy of multinational corporation's subsidiary could be approached in terms of either a cause or a desired effect of subsidiary development. In their study about configurations of strategy and structure in multinational subsidiaries, Birkinshaw and Morrison (1995) were intentionally favouring autonomy as a driving force of subsidiary performance, though in general the subject of subsidiary performance as a topic is very under-researched (Andersson *et al.* 2001), and there is little work on the impact of autonomy on performance (Young and Tavares 2004, p. 226). The present study aims to be an attempt to add a considerable contribution to the contemporary research on MNC subsidiary autonomy in relation to its performance and to deal with autonomy as the effect of subsidiary performance. The performance of multinational subsidiary is to be intended to reflect the final outcome of subsidiary development while giving special attention on certain technology upgrading activities in the present thesis (see Part 2). The next section is going to identify driving forces behind the subsidiary development.

1.2.3. Determinants of the autonomy and development of the multinational corporation's subsidiary

The determinants

The previous sections exhibited specific firm-level assets for developing as a function of location advantages. The activities of multinational corporations tend to become more diversified. They are focusing on various locations across national boundaries to gain from specialized skills and knowledge available in certain geographical areas. The location- (country as well as industry) and firm-specific characters influence the degree of multinational subsidiary autonomy based on the balanced integration of corporate and external knowledge. The present section will concentrate on establishing a general framework for the major driving forces behind MNC subsidiary autonomy and development in relation to performance. It aims mainly to synthesize the issues discussed throughout the previous chapters around the changing nature of multinational corporations and subsidiary autonomy in technology transfer and upgrading giving a particular attention to the catching-up context. It is followed by a research framework for analysing the peculiarities of MNC subsidiary autonomy in terms of subsidiary performance across countries, manufacturing industries and firms in the present thesis (see section 1.3).

Birkinshaw and Hood (1998b), among the main scholars contributing to the subsidiary development research during the two last decades, have made a considerable attempt to model the “generic processes” of subsidiary evolution (Rugman, Verbeke 2001, p. 243). See Figure 12. The authors identify three interacting drivers of subsidiary evolution and thereby capability creation. These three basic interacting mechanisms to determine the development and capability building of a subsidiary are presented by the authors as follows: head-office assignment, subsidiary choice and local environment determinism. Birkinshaw and Hood (1998b) concentrate on the accumulation of dynamic capabilities in the process of subsidiary evolution. In this respect, the authors are very similar to Nelson and Winter (1982), Kogut and Zander (1992), Sölvell and Zander 1998 or Teece *et al.* (1997) concerning the dynamic capabilities perspective on firms (see subsections 1.1.1 and 1.1.3). Technology development and innovation activities are generally assumed to being influenced by location- and firm-specific contexts. Birkinshaw and Hood (1998b) integrate the same logic of dynamic processes into the framework of subsidiary evolution, which is the main research focus of the current empirical study (see Part 2). In Figure 12, these three subsidiary development drivers and their immediate influencing factors are all included.

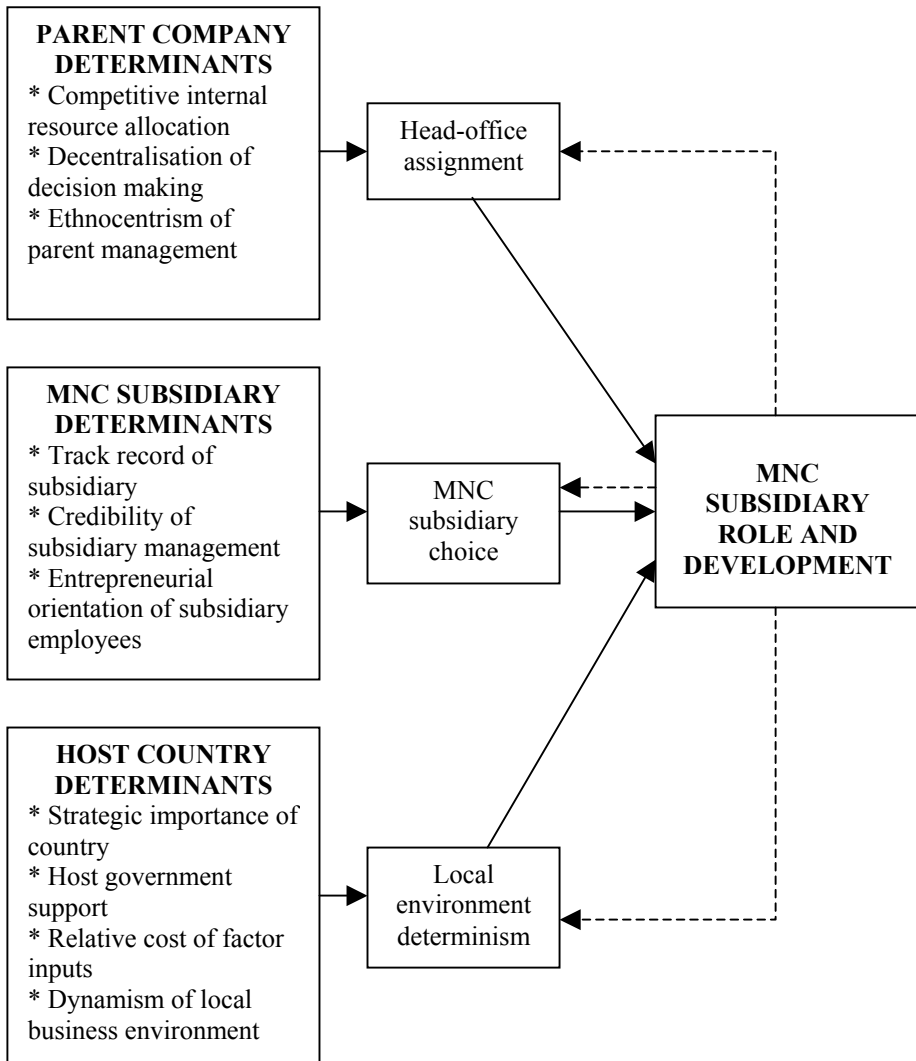


Figure 12. Determinants of MNC subsidiary evolution (compiled by the author on the basis of Birkinshaw and Hood 1998b, pp. 775, 785).

Hence, the first driver is **the multinational corporation** itself expressed through the head-office assignment. Factors designating the role given by the parent are mainly related to competitive internal resource allocation, as well as corporate strategy for the decision-making process following more centralised or decentralised organisational routines in relation to subsidiaries. From one side, subsidiary development is determined by the HQ's assigned role for the allocation of activities and resources to the subsidiary. From the HQ, the subsidiary can also gain from changes in the global environment, resource

availability, global restructuring, and competition from other subsidiaries (Paterson and Brock 2002, p. 148). It is argued in the literature that HQ assignment might be the driver of subsidiary evolution mostly in the early stages of the process when the level of resources and capabilities in the subsidiary is not too advanced. They continue: “Subsidiary roles might be controlled by HQ but motivated by the changing economic conditions and capabilities developing in the host country” (Birkinshaw and Hood 1998b, p. 777).

On the other hand, as argued earlier the changes in subsidiary roles are to a large degree implemented on a basis of the track record of the subsidiary in question (see the second left box in the figure). **MNC subsidiary choice** reflects the decisions taken by subsidiary management to define for themselves the role of their subsidiary (Birkinshaw and Hood 1998b, p. 775). It includes subsidiary-management desire to increase autonomy, network importance and justify its own existence to HQ and its country (Paterson and Brock 2002, p. 148). Being capable of absorbing knowledge from elsewhere, the subsidiary management is responsible for developing its own unique resource profile (Birkinshaw and Hood 1998b, p. 778). Improving its stock of distinctive resources, the subsidiary becomes more responsible for its own activities as well as being ahead of the corporation through the mandate evolution. According to the evolutionary approach to the multinational corporation subsidiary autonomy tends to become a requirement or an endogenous factor to support competence building within an international network organisation. Credibility of subsidiary management and, in a more dynamic perspective, entrepreneurial orientation of subsidiary management and employees are defined as being the major input for subsidiary choice.

The final driving force in the dynamic framework of subsidiary evolution is **the local environment** or what Birkinshaw *et al.* (1998b) call local environment determinism. This includes the subsidiary’s constraints and opportunities (Paterson and Brock 2002, p. 148). Subsidiary evolution is driven by the dynamism of the local business environment (see Porter 1990), on the other hand by the subsidiary’s ability to access resources from the MNC (Birkinshaw and Hood 1998b, p. 780). To conclude, the multinational subsidiary is seen to be growing as a combination of two types of forces – centripetal and centrifugal (see Zanfei 2000). While getting access to global technology changes through the parent, the subsidiary is expected to stick to the local environment via local supply and demand networks.

On a basis of Birkinshaw and Hood (1998b) Paterson and Brock (2002) later more precisely identified autonomy and related notions as both causes and effects of subsidiary development (see Appendix 4). Their main contribution here appears in presenting the driving forces and factors influencing the subsidiary mandate evolution in association with the head office, subsidiary and environmental effects. Paterson *et al.* rightly assume that a subsidiary’s relative desire for autonomy supports subsidiary evolution, thereby becoming more

responsive and embedded in the local environment. In its turn, subsidiary autonomy and network power tend to strengthen. Again, subsidiary autonomy might be judged as a cause or a desired effect of subsidiary development.

Birkinshaw herself as well as several other authors have sought to understand in a more detail the factors associated with subsidiary initiative and specialised resources (see, for example, Birkinshaw, Hood and Jonsson 1998; Andersson *et al.* 2001; Rugman and Verbeke 2001b; Cantwell and Mudambi 2005). Birkinshaw *et al.* (1998) identified associations with subsidiary initiative derived from subsidiary management factors (leadership and entrepreneurial culture), parent-subsidiary relationships (subsidiary autonomy and subsidiary-parent communication) and the business environment (local competition and industry globalisation). See Appendix 5. This work also aimed to determine the links between specialized resources (alternatively termed subsidiary strengths/competencies/firm-specific advantages – see Forsgren *et al.* 1999; Rugman and Verbeke 2001b) and subsidiary initiative, and between subsidiary initiative and contributory role. The figure in Appendix 5 presents autonomy as an enhancing factor or endogenous variable of specialized knowledge accumulation in a subsidiary.

Rugman and Verbeke (2001b) follow the original model of Birkinshaw and Hood (1998b) and intend to show contingent factors for subsidiary-specific advantage development (see Appendix 6). Internal knowledge mobility barriers, knowledge gaps with other branches, perceived absence of negative externalities and high synergy intensity with non location-bound firm-specific assets (FSA) contribute largely to subsidiary-specific advantage development and subsidiary performance. The information from this model helps us to see that subsidiary-specific advantages at least partly result from interactions with external networks specific to the subsidiary (Rugman and Verbeke 2001b, p. 246). Andersson *et al.* (2002) more strongly support this idea pointing out that network embeddedness can be viewed as a strategic resource that influences MNC subsidiaries' capability development. As the aim of the present work is predominantly to address MNC subsidiary evolution the next discussion will more deeply consider elements of subsidiary-specific resources in relation to the autonomy of MNC subsidiary.

Characteristics of the specialized resources of the multinational corporation's subsidiary

The first subsections dealt extensively with location sustainability and advantages (see subsection 1.1.1) as well as a national level approach to absorptive capacity and technology accumulation (see subsection 1.1.3) in the creation of externalities accompanying foreign direct investments. In the previous subsection, the general process of subsidiary development was mainly addressed. It was learnt that the degree of subsidiary autonomy reflects the general policies set by the parent in combination with subsidiary and country-specific

characteristics. The level of subsidiary-specific assets as a function of location strengths tends to be the key issue in determining the path of subsidiary development and the extent of autonomy or *vice versa*.

In the process of subsidiary development, a central role is played by an absorptive capacity creation and realisation, as well as interaction with external networks specific to the individual subsidiary. Or it may be more reasonable to say that the establishment of external network is part of the capability building of a multinational subsidiary. The processes of development and transfer of knowledge occur embedded in context, not within a social vacuum (see Granovetter 1973, 1985).

Referring to the subsection 1.1.3, in the seminal work of Cohen and Levinthal (1990), absorptive capacity was defined as the ability to recognise the value of new external information, assimilate and commercialise it. They stressed that such a capacity is something that develops over time, is path-dependent and therefore builds on prior knowledge of the capacity of other organisations. Absorptive capacity is assumed to be crucial for the firm's competitive advantage. Firms learn from other firms, and the efficiency of such a learning process is dependent on the characteristics of the relationships the focal organisation has with other organisations (see Andersson *et al.* 2001).

Lane and Lubatkin (1998) distinguished two types of learning among organisations. Passive learning means acquiring objective and observable facts of the other firm's capability. This learning occurs at arm's-length and only the most visible parts of the other firm's knowledge can be acquired. Active learning means also acquiring tacit knowledge embedded in a firm's social context and therefore also more difficult to imitate by others. From that Andersson *et al.* (2001, p. 8) concluded that: "If we assume that acquiring of tacit, non-imitable knowledge is crucial for a firm's competitive advantage, we can state that the quality of the relationships with other firms are of decisive importance. In order to be competitive, the firm needs at least some links with other organisations, which are more important than other links in terms of the characteristics above". This outcome had already been mentioned in earlier works. For example, Gupta and Govindarajan (2000) found that the absorptive capacity of the receiving unit is the most significant determinant of internal knowledge transfer in the MNC.

When subsidiaries differ in their absorptive capacity, this affects the level of knowledge transfer, not only from the mother company but also from other MNC units. In a paper by Manhke *et al.* (2003), the link between the higher absorptive capacity and growth of knowledge flows was analysed. In contrast to prior empirical studies, they were interested in intra-firm knowledge flows between MNC subsidiaries. Accordingly, they conceptualized a subsidiary's absorptive capacity and developed measures to capture the ability and motivation of employees to learn from other units in the MNC.

There is a further interest, then, in establishing more deeply the process of absorptive capacity building. In order to create absorptive capacity in the

subsidiary, both ability and motivation are needed (see Minbaeva *et al.* 2001; also Brooke 1984, p. 323). The motivation is need to initiate any new step moving towards mandate evolution within the corporation. On the other hand, the ability itself is critically dependent on the environment in which the subsidiary is located (Rosenzweig and Singh 1991). The interaction of ability and motivation could significantly facilitate transfer of knowledge from other parts of the MNC (see also subsections 1.2.1–1.2.2).

What is the mechanism by which autonomy and capacity building are connected? A recent subsidiary-level literature has strongly suggested that the greater the extent of subsidiary motivation and autonomy, the better is the ability of the subsidiary to form appropriate external network linkages with other companies and institutions in its own local environment (see, for example, Cantwell and Mudambi 2005; Birkinshaw *et al.* 1998; Andersson and Forsgren 2000). In its turn, the greater the local embeddedness of the subsidiary, the higher the likelihood that it will acquire a competence creating mandate (Cantwell and Mudambi 2005, p. 11). Thus, the link between subsidiary capacity development and the concept of embeddedness tends to be very close. It is emphasized by the scholars that it is not strategic independence *per se* that is important, but the manner in which freedom is used by the subsidiary in the context of competence-creating mandates (*Ibid.*).

The major idea of the embeddedness concept initially used by sociologists (see Granovetter 1973, 1985) emphasizes that economic transactions between two actors are embedded in a social and cultural context. This concept has been used intensively in discussions about the link between the environment and subsidiary–headquarters relationships in the MNC (Andersson and Forsgren 1996; Andersson *et al.* 2001). The link between the embeddedness and absorptive capacity of the subsidiary was implied by Cohen and Levinthal's (1990) notions that such a capacity develops over time, is path-dependent and therefore builds on prior knowledge of the other organisation's capacity. An excellent overview of the literature using the embeddedness concept in this area is presented by Andersson *et al.* (2001).

Therefore, network embeddedness can be considered as a strategic resource influencing subsidiaries' capability development. A closer relationship with local counterparts allows the subsidiary to gain better and more accurate knowledge about their operations and potential problems, which in turn can increase the autonomy and improve the performance of the subsidiary (Andersson and Persson 2005, p.5). Innovation processes within a firm, in general, tend to become faster, increasingly being implemented by intra- and inter-firm networking and face-to-face exchange of information and tacit knowledge (see, for example, Dosi 1988; Rothwell 1992; Dodgson and Rothwell 1996; Dosi, Nelson and Winter 2000; Lindqvist, Sölvell and Zander 2000, Freeman and Soete 2004). The innovation management literature strongly supports the establishment of effective linkages with external sources of scientific and technological know-how, as well as a willingness to take on

external ideas ensuring successful innovation (Rothwell 1992, p. 223). On the other hand, a high quality of management and a commitment to the development of human capital are critical success factors of planning and implementing innovation processes in a firm (see also subsection 1.1.2 where the network alignment issue was described).

Furthermore, capabilities and innovation needs across industries and firms are not homogenous. Innovation management research refers to the heterogeneous nature of innovation, being differentiated over industry types as well as influenced by firm size, age and ownership structure. The longer the pre-existence of a local firm and larger its size, the more capability it is assumed to possess of being linked to local production and other networks (see, for example, Dodgson and Rothwell 1996; Pavitt 1996). But as Dodgson and Rothwell argue, the role played in innovation by firms is strongly defined sectorally (1996, p. 310).

The relative roles of firms can vary over the industry depending on the nature of innovation processes in each sector, and secondly be determined by the industry structure and concentration as well as the industry lifecycle (see, for example, Christmann *et al.* 1999). Cantwell and Mudambi (2003) address the scope of local embeddedness of MNCs and subsidiary mandate evolution of being considerably influenced by cross-firm location clusters (p.1). Hence, industry clusters might encourage the creation of technology spillovers accompanying foreign presence in the industry.

By the nature of innovation processes is meant more or less intense innovation activities over industry sectors. Using the classic 'Pavitt (1984) classification' of industries, 'supplier-dominated' sectors (which include textiles, clothing, leather, printing and publishing, wood products) are assumed to possess relatively low appropriability of firm-specific technological capabilities (Dosi 1988, p. 231; see also Malerba 2005; von Tunzelmann and Acha 2005). Firms are typically not very big (with some exceptions). On the other hand, in 'scale-intensive' sectors (such as transport equipment, some electrical consumer durables, metal manufacturing, food products, part of the chemical industry, glass and cement) firms tend to be big and devote significant own resources to both process and product innovations. 'Specialized suppliers' (located in mechanical and instrument engineering) provide other sectors with product innovations. They are assumed to be relatively small and embodying a set of high-level specialized capabilities. Hence, their technological appropriability is very high based on firm-specific tacit knowledge and skills. Finally, 'science-based' firms (e.g. in the electronics and chemical industries) tend to be typically big, possessing their own R&D laboratories and serving other sectors with both product and process innovations.

In contemporary research, a wider spectrum of innovations has been proposed. It is argued by von Tunzelmann and Acha (2005) that the Pavitt grouping is too narrow by its nature. Innovation is taking place also in so-called low-tech industry sectors such as 'supplier-dominated' or 'scale-intensive'

sectors. “They do not lack for technological opportunities, nor indeed for appropriability and other factors associated with benefiting from technological innovation” (von Tunzelmann and Acha 2005, p. 429). The authors conclude that in the globalizing world there are no true “low-tech sectors”, rather integration between high-tech and low-tech sectors is to be seen, particularly from the viewpoint of national governments.

In conclusion, one could understand the heterogeneous nature of creating specialised resources at the level of a MNC subsidiary. Independence from the HQ tends to be crucial but much depends on the way it is used by the subsidiary management. High subsidiary autonomy is taken as an advantage through being involved in the local industry and other networks. Subsidiary external embeddedness or inter-firm communication, to follow the terminology used in the innovation management literature, enhance accumulation of subsidiary specialised resources, which in turn can result in a better performance and increasing innovation activities. However, innovation processes are industry- and firm-dependent. The three major driving forces influencing the subsidiary development and autonomy were currently figured out to appear as the parent assignment, subsidiary choice, and the local environment. The present thesis is only going to consider the two latter determinants focusing on the multi-dimensionality of the autonomy of the multinational corporation’s subsidiary and the impact on the performance in the five CEE countries. Hence, host country and firms’ capabilities are to be taken as inputs for determining the subsidiary autonomy and performance in the empirical research to be implemented in Part 2.

The next subsection 1.3.1 is organised with an aim of understanding the depth of the differentiated nature of subsidiary autonomy and performance through collecting various types of empirical studies from the subsidiary management literature over time. Regarding the research tasks of the present work, environment- and subsidiary-specific empirical studies will be primarily introduced.

1.3. Research framework to analysing the impact of the multidimensionality of the autonomy on the performance in the multinational corporation's subsidiary

1.3.1. The autonomy of the multinational corporation's subsidiary and the impact on the performance in the previous empirical research

The autonomy of the multinational corporation's subsidiary across business functions

A number of previous studies have attempted to explain the variations in subsidiary autonomy, though the research tradition here is not very long. The autonomy of multinational subsidiaries according to business functions is a rather complicated area of research, which has produced conflicting views (see for detailed discussion, Björkman 2003; and Young and Tavares 2004). The majority of studies have typically divided autonomy into strategic and operational autonomy across all business functions. The literature generally recognises these dimensions of autonomy (*Ibid.*, p. 229). Specific areas of investigation have related to manufacturing, financial control, marketing and human resource management (see, for example, Garnier *et al.* 1979; Hedlund 1981; Young *et al.* 1985; Beechler and Young 1994; Edwards, Ahmad and Moss 2002). Björkman (2003) used a sample of 121 Finnish and Chinese subsidiaries of Western multinational corporations where subsidiary autonomy resulted to compare variations across three distinctive dimensions: strategic autonomy, product autonomy and operational autonomy (p. 13). This implies that a division into strategic and operational autonomy as commonly adopted might be too simplified an approach to cover the different dimensions of autonomy.

Hedlund (1981) stressed the idea that headquarters centralise issues of a strategic nature and leave operational issues in the hands of the subsidiary. More specifically, Hedlund found that finance is the most strategic issue, while most operational issues are about the organisation and the personnel. A similar point had been made earlier by Garnier *et al.* (1979) who studied a total of 51 American firms operating in Mexico. But in addition they discovered that subsidiary autonomy tends to be highest in marketing issues. Manufacturing and organisation issues tend to flow between finance and marketing areas on the autonomy scale (Björkman 2003, p. 4). Results from the Young, Hood and Hamill study (1985) of 152 foreign subsidiaries in the UK indicated that decision areas that were most centralised were primarily financial (target return on investment, dividend and royalty policies), together with marketing decisions concerning markets supplied and entering new foreign markets, research and development (R&D) and technology choices. The research findings of Vachani

(1999) on a basis of a data from a questionnaire survey of 63 multinational subsidiaries (randomly chosen from Dun and Bradstreet in 1990) suggest a greater autonomy for marketing and personnel decisions than for R&D and finance. Hence, subsidiary autonomy as between financial, marketing, manufacturing and other decisions varied a great deal. Most probably the least autonomy is experienced in financing and technology decisions.

Edwards *et al.* (2002) explained this outcome rather convincingly by stating that integrated issues are highly centralised whereas locally responsive issues are more decentralised. Financial issues are highly integrated and relevant to the whole MNC. Marketing is often directed towards the local market and hence marketing issues could be decentralised. Personnel management is dependent on local legislation and consequently requires local operation, which gives higher autonomy to the subsidiary in these matters. Edwards *et al.* carried out the questionnaire among 527 subsidiaries of multinational subsidiaries in Malaysia. Other authors such as Martinez and Jarillo (1991) and Harzing (1999) noted that local-market-oriented subsidiaries tend to have greater autonomy. In general, subsidiaries have greater autonomy over decisions where they have superior information.

It is evident that researchers have begun to make progress in studying issues related to subsidiary autonomy within various functional areas. The conclusion drawn from the preceding discussion is that the functional autonomy of subsidiaries seems to be lowest in strategic issues such as finance and technology issues and highest in operational areas including domestic marketing and personnel management. Thus, if the subsidiary has reached a power position in the MNC, where it has obtained high autonomy in strategic issues, the subsidiary should have strong subsidiary-specific advantages and perform better than its counterparts.

Country-specific determinants of the autonomy of the multinational corporation's subsidiary

Referring to the theoretical part of the thesis, one could learn the essence of environmental factors, including the country or industry specificities, in causing the heterogeneous nature of subsidiary autonomy. The environment plays a role in the creation of capabilities of subsidiaries and allows obtaining subsidiary-specific advantages. Subsidiary performance outcome is the result of multifarious actions implemented in an environment or a system not in isolation. The literature, mostly conceptual in nature (see, for example, Cantwell 1989; Andersson and Forsgren 1996), shows that the more developed the country in which the subsidiary is located in the sense of demand, existence of potential sourcing partners and level of the national innovation system, the higher the likelihood that the subsidiary could develop an extensive external network, improve different capacities, and finally gain more autonomy (see also Männik, Hannula, Varblane 2006; Männik and von Tunzelmann 2005).

While environmental influences on subsidiary autonomy acquire tremendous importance in the initial role of multinational subsidiary, the number of studies about them is surprisingly limited. The major part of studies produced by Rugman, Verbeke and others mainly convey conceptual ideas about the subsidiaries' roles and driving forces of subsidiary development (see, for example, Birkinshaw and Hood 1998b, Birkinshaw, Hood and Jonsson 1998, Taggart 1997, Rugman and Verbeke 2001b). On the other hand, studies of subsidiary autonomy tend to be limited in their understanding of the nature of autonomy (see the previous discussion of studies about subsidiary functional autonomy). However, recent research on subsidiary management has been already more intense in introducing environmental effects into subsidiary autonomy research.

The majority of the existing empirical papers on the subject deal with the development of subsidiaries and their links with headquarters in the advanced market economies. Significantly less research has been undertaken into the subsidiaries of MNC that are operating in emerging economies or in transition economies. In the relatively early study of Garnier (1982) analysing subsidiaries of US multinational manufacturing corporations located in France and Mexico, factors external to the corporation such as the local environment⁹ were estimated to play a limited role in subsidiary autonomy (p. 893). Rather the factors internal to the MNC (characteristics of the multinational corporation, management's global philosophy and the subsidiary itself) were found to be predominantly predicting the degree of autonomy. The authors explain that neither France nor Mexico could be considered as really risky environments for MNCs, which would lead the contextual factors then to be safely ignored or the scales measuring the environmental effects could overlook them.

By contrast, Garnier *et al.* (1979) using only the Mexican data propose factors both internal and external to the multinational group to be effecting changes in subsidiary autonomy. The authors argue that the parent firm reactions at the level of subsidiary autonomy are to a large extent defined by the stimuli provided in the local environment (Garnier *et al.* 1979, p. 89). The perception of US MNC managers of the cultural differences between the US and Mexican customers, the legislation, as well as the attitude of the local government were as a result highly correlated with the autonomy granted to the Mexican branch. The most critical finding was about the cultural difference of customers, in which case the centralisation was increased by the parent. In practice, it shows the MNC orientation towards the US market and the great controlling power over subsidiaries. Similar results were received from a survey of 99 multinational subsidiaries in Canada, which highlights the fundamental role played by parent firm investments as well as the subsidiary's local

⁹ The environmental measure embodied perceptions: of local legislation on foreign investments, of attitudes of local government, of differences in attitudes, beliefs, and values of executives, of the value of local business education (Garnier 1982, p. 896).

environment via external organisations¹⁰ in the development of subsidiary capabilities (Frost, Birkinshaw and Ensign 2002). Frost *et al.* researched the opportunities for establishing centres of excellence by MNCs in Canada.

Christmann, Day and Yip (1999) found that country characteristics¹¹ are predominant factors in subsidiary performance, followed by industry structure, subsidiary strategy, and corporate characteristics (p. 241). They based their findings on a cross-country study consisting of 99 observations from subsidiaries of four MNCs in 37 countries covering the period 1980–1984. Country conditions might be seen as a very important determinant of subsidiary autonomy and performance. The study by Delios and Beamish (2001) on the financial performance among 3080 subsidiaries of 641 Japanese firms complements this argument. They concluded that host country experience¹² is what has a direct effect on subsidiary survival.

The study produced by Gates and Egelhoff (1986) is considerably important regarding the research task of the present paper. Gates *et al.* work on centralisation in 50 large US, UK and European multinational corporations estimating the influence of environmental change through product and competitive climate change via subsidiary level variables.¹³ They emphasise the specific influence of a dynamic environment on leading MNCs to decentralise decisions in the host economies (Gates and Egelhoff 1986, p. 85). They yielded results about subsidiary autonomy of showing a positive correlation with both product and competitive climate change within a local entity of a multinational corporation.

Drawing parallels with the emerging and transforming markets, which are economically fast-growing, though structurally volatile, the local managers are more favoured to take decisions compared to their counterparts in other more

¹⁰ Two types of external indicators were used: 1) the external environment was estimated by four dimensions: availability of supply material, quality of suppliers, demanding customers, level of competition based on constructing a composite index called “the local industry diamond”; 2) external sources of competence assessed the impact of various organisations outside the boundaries of the firm on their development (Frost *et al.* 2002, pp. 1006-1007).

¹¹ The set of country characteristics captured: level of development of a country by a dummy variable, population, inflation rate and exchange rate instability as showing macroeconomic stability, tax rate and political stability index as political conditions; performance indicator: gross margin as a percent of revenues, 1980-1984 average (Christmann *et al.* 1999, p. 261).

¹² The host-country experience was measured as a logarithmic transformation of the number of years of investment history a firm had in the host country in 1996 for surviving subsidiaries (Delios and Beamish 2001, p. 1032).

¹³ Product change within a subsidiary measured the degree to which new products were being introduced by the subsidiary to its local markets. Competitive climate change measured the extent to which a subsidiary experiences an increase in its local market competition due to new entrants, lower tariffs, etc. (Gates and Egelhoff 2001, p. 85).

stable countries. The external networks of subsidiaries in these countries are quickly changing, providing bases for much more rapid change in the capacities and also in their role in internal (corporate) networks (Hoskisson *et al.* 2000). This is especially true where the MNC's internal network mainly consists of subsidiaries that are located in countries with a stable economic environment. It is beyond the current study to compare different entities of the same MNC across five CEE countries as well as to estimate subsidiary autonomy in comparison to CEE and other more stable developed countries. But even in our case five CEE countries are rather different according to the length of the transition period, FDI inflow, domestic market, etc. In general, it is recognised in the majority of the studies that country-specific factors are part of the story about multinational subsidiary autonomy (see further subsection 1.3.2 and Part 2).

Industry-specific determinants of the autonomy of the multinational corporation's subsidiary

Industry characteristics tend to appear as one bundle of determinants changing the nature of multinational subsidiary autonomy and development. The main reasons behind this argument lie in the multifarious nature of industries, whether the subsidiary is located in high-, low- or medium-technology sectors (see previous subsection), as well as the industry structure and its life cycle. The two latter components are to a large extent dependent on the development level of a country where the subsidiary is performing. In the 'frontier-sharing' countries (see subsection 1.1.3), high technology, knowledge-based industry sectors are dominating, in opposition to the situation in catching-up economies, where production from low- and medium-tech industries is the main force responsible for the economy. However, in the research as well as among policy-makers considerable efforts are made to encourage the integration between these two technological extremes, referring to the non-existence of a "black and white" world.

Subsidiary autonomy tends to enhance the creation of tight partnerships with local organisations. The greater the autonomy of the subsidiary, the bigger the likelihood that it is embedded in the local environment. The innovation management research widely highlights the importance of communication, both internally within firms and externally taking place with other organisations for ensuring successful innovation in a firm. In these circumstances, stronger and systematic local cooperation between firms within a certain industry group and in partnership with other industries might stimulate foreign firms to gain from the production network structures. The presence and development of competitive local clusters should in turn give more decision-making power to local entities of multinational corporations.

Empirical studies of industry determinants as among the environmental factors behind multinational subsidiary autonomy are relatively rare, as was the

case of country-specific peculiarities. From a wide range of literature about multinational subsidiary management, only a few studies target influencing factors on a multinational subsidiary resulting from the environment. Country- and industry-specific characters of subsidiary autonomy are also sometimes combined to consider them jointly as environmental factors of subsidiary development and autonomy (see Frost *et al.* 2002). In general, Christmann *et al.* (1999) suggest that industry determinants, focusing on industry structure,¹⁴ follow country-level environmental effects on subsidiary performance. On the other hand, empirical research has proved the heterogeneous nature of the autonomy of multinational subsidiaries across industry sectors.

Gates and Egelhoff (1982) working with the 50 large US, UK and European multinational corporations, saw centralisation of decision-making between the head-office and subsidiaries differing significantly according to the primary industry group in which the MNC operated (p. 83). Over the dimensions of subsidiary autonomy, this argument received greater support for marketing centralisation. As has already been learnt from the autonomy pattern across business activities, the marketing area is more often related to local knowledge and skills than financing or technology issues (see Edwards *et al.* 2002). This fact tends to be valid also in the industry context. However, it would be necessary to estimate this argument here in comparison with countries with different FDI orientations, which could result in different implications for multinational subsidiary autonomy. Martinez and Jarillo (1991) and Harzing (1999) were exactly proposing this circumstance in their works, referring to the greater autonomy of subsidiaries among market-oriented subsidiaries. Gates and Egelhoff (1982) added that there is a greater variance between industries concerning local marketing decisions than concerning local manufacturing or financial decisions (p.83). The least centralised industries were defined, such as food processing and consumer packaged goods, in which case they are most significantly dependent on local tastes. On the other hand, the authors found that on average the automobile and industrial equipment industries were more centralised in marketing decisions relative to the chemical, electrical and telecommunications equipment, consumer packaged goods, and pharmaceutical industries. This observation explains the differences between industries influenced the rate of responsiveness required from the local environment.

Other studies on industry effects over subsidiary autonomy relate to the topic about industrial clusters and the question of subsidiary embeddedness initiated at the beginning of the present discussion. In the high-technology industries, corporate or internal embeddedness in the forms of intense, close and frequent relationships with suppliers, customers and R&D units might be expected to play a more important role than in low-technology industries. If this were the

¹⁴ An industry structure was measured capturing such variables as follows: market volume, market advertising intensity, market concentration, market growth (Christmann *et al.* 1999, p. 261).

case, it would be reasonable to predict that in these industries the autonomy of subsidiaries is lower, though depending on the opportunities provided by the local industry. Based on the literature, one might assume that the behaviour of high-tech subsidiaries in industrialised developed countries and in the catching-up countries may differ. Birkinshaw and Hood (2000, p. 141) found that subsidiaries of leading-edge industries¹⁵ located in industrialised countries were more autonomous, highly embedded in the local cluster as well as more internationally oriented than subsidiaries in other industrial sectors. They were using a sample of 229 subsidiaries from three countries (Canada, Scotland, and Sweden). Similar results were obtained by Frost *et al.* (2002) in Canada (see the previous discussion about country-specific effects on subsidiary autonomy). Frost *et al.* concluded that subsidiaries are more likely to become a centre of excellence¹⁶ the greater the strengths and dynamism of the local “industry diamond” (see also Porter 1990).

However, a rather different result was obtained in an earlier work by Garnier (1982) who found that US subsidiaries located in Mexico were more autonomous than their counterparts in France. Furthermore, he found that different factors affected subsidiary autonomy in those countries. The major factor affecting subsidiary autonomy in France was the degree of integration into the corporate network. It turned out that high cooperation especially in the area of technology caused low autonomy in France. The high autonomy of Mexican affiliates indicated a much lower level of cooperation in the technology area. These results might conform to the argument about different opportunities offered by the local environments.

This outcome could be explained by the strategy of the MNC to encourage subsidiaries to use knowledge flows from the rich host-country environment in developed national innovation systems. However, it can be assumed that in the catching-up or transition countries with relatively weak national innovation systems the knowledge acquisition of local subsidiaries from external networks is much more complicated.

Firm-specific determinants of the autonomy of the multinational corporation's subsidiary

Among other influencing factors, building up an appropriate level of autonomy Brooke in his pioneering work on subsidiary autonomy includes the size of a firm, experience (age), and ownership structure as well as resources and capabilities (1984, pp. 296, 331). Moves to greater autonomy favour small size, divided ownership, on the other hand also specialised resources and initiatives

¹⁵ According to Porter (1990), leading-edge industries capture all those clusters in which the share of world cluster exports is more than double the average for the country.

¹⁶ Centres of excellence are defined by strong capabilities, formal recognition, and greater-than-unit level contribution (Frost *et al.* 1999, p. 1005).

by the subsidiary's management. The case evidence by Roolaht (2004) based on five foreign-owned firms in Estonia found the great importance of subsidiary's capabilities and resources in defining the level of its autonomy. Even more, the author emphasises the role of business environment being less considerable impact on subsidiary power than firm's capabilities and experiences (Roolaht 2004, p. 1).

The impact of the size of the multinational subsidiaries on autonomy has produced mixed results. The size of the subsidiary might have a curvilinear (Hedlund 1981; Brooke 1984) or a mixed (Gates and Egelhoff 1986; Young *et al.* 1985, Taggart and Hood 1999) effect on subsidiary autonomy. In the former case the subsidiary has a lower level of autonomy at its foundation, then gains autonomy until a certain size and afterwards starts to lose autonomy again. Young *et al.* (1985) found that autonomy was lower in large subsidiaries and those with significant levels of exports to other group facilities. Taggart and Hood (1999) obtained conflicting results in studying subsidiary development patterns in 177 German and Japanese manufacturing subsidiaries in the British Isles. Their observation proved a positive relationship (nevertheless not statistically significant in this case) between employment and autonomy, but negative association (statistically significant) between sales and autonomy. This contradictory outcome raises the question about the appropriate measurement of a subsidiary's size. Young and Tavares refer to the local entities with highest sales, which might be the most vertically integrated within the MNC and thereby the least autonomous (2004, p. 217).

The age of a firm established as a multinational subsidiary may be regarded as a key issue in terms of subsidiary experience received during the years. It tends to be immediately related to subsidiary decision-making power in relation to the HQ as well as to capabilities and knowledge accumulation. Most of literature has found a generally positive association between subsidiary age and autonomy (see, for example, Gates and Egelhoff 1986; Harzing 1999; Taggart and Hood 1999; Delios and Beamish 2001). However, Gates and Egelhoff (1986) discovered that a subsidiary tends to gain manufacturing autonomy but lose marketing autonomy as it matures. Garnier (1982) found little support for subsidiary age and size, as did Young *et al.* (1985) and Björkman (2003).

In the early study by Garnier *et al.* (1979), the percentage of the subsidiary's capital held by the parent was introduced as playing a role in the latter's decision to decentralise (p. 89). The result found that larger foreign involvement in a firm did not favour the autonomy of a subsidiary. A similar conclusion has been reached by Garnier (1982) and Gates and Egelhoff (1986).

In conclusion, firm-specific effects (firm size, age, ownership, capabilities) on subsidiary autonomy are definitely present in an empirical research on subsidiary management. However, Christmann *et al.* (1999) did not find subsidiary-specific conditions on subsidiary performance to be as important as environmental ones. But this result is rather logical since a firm's capabilities tend to be a function of environmental advantages.

The impact of the autonomy on the performance of the multinational corporation's subsidiary

In subsidiary management research, there have been a number of empirical studies considering the influences upon and effects of multinational subsidiary autonomy. However, this tends to be a minor part out of a wide range of an entire research on the impacts of foreign direct investments (see also subsection 1.1.1 above). The majority of studies concentrate on comparative analysis or models of the impact of multinational subsidiaries on the domestic firms using macro or meso level data (see also studies on a basis of data from CEE countries, for example, Djankon and Hoekman 1998; Holland and Pain 1998; Barrell and Holland 1999; Knell 1999; Männik 2001; McGowan *et al.* 2004; Vahter 2004; Vahter and Masso 2005). More rarely are analyses of subsidiary performance based on micro level data to be found among empirical observations. The influences over subsidiary autonomy have already been introduced. The current discussion will continue with interesting empirical results on the effects of subsidiary autonomy.

Ghoshal and Bartlett (1988) discovered that there seems to be a positive effect of local subsidiary autonomy on innovation creation and diffusion. They carried out a survey questionnaire among 66 North American and European multinational corporations. Other works have suggested a positive influence of subsidiary autonomy on local responsiveness, the formation of global mandates for subsidiaries and on performance. The interrelatedness of variables, specifically subsidiary integration or embeddedness, autonomy and performance is suggested in various works. Swedish researchers have been main contributors on these latter issues. But the subject of subsidiary performance as a whole is very under-researched (Andersson, Forsgren and Pedersen 2001), and hence there is little work on the impact of autonomy on performance (Young and Tavares 2004, p. 226).

As learnt from previous chapters, integration tends to be distinguished between external and internal or corporate networks and relationships (see, for example, Andersson and Forsgren 1996). Using the concept of embeddedness (see also subsection 1.2.3) and data from 78 subsidiaries of major Swedish MNCs, Andersson and Forsgren (1996) showed that the more embedded the subsidiary was within its external relationships via local demand, sourcing and links with the local system of innovation, the lower was the control from the MNC. On the other hand, a stronger embeddedness within corporate relationships suggested greater MNC control over the subsidiary.¹⁷ This was found to be so especially in the case of the technological embeddedness¹⁸ of the

¹⁷ See also the results of Hedlund 1981; Garnier 1982; Holm *et al.* 1995; Harzing 1999; Edwards *et al.* 2002; Vachani 1999; Andersson 2003.

¹⁸ Technical embeddedness ought to reproduce the value of a business relationship in terms of the ability of the subsidiary at issue to absorb new technology through a relationship; in this case, a local external business relationship (Andersson and Persson 2005, p. 10).

subsidiary as this provides the subsidiary with external, tacit knowledge about new technology, and this in turn was found to be a key factor for the growth and creation of firm-specific advantages. Similar results were obtained from 97 subsidiaries belonging to 20 Swedish MNC divisions (whose divisional managements were located in Sweden) by Andersson in 2003.

The analysis of 196 MNC subsidiaries in China showed that a parent firm's control flexibility, resource commitment and local responsiveness exert strong and positive influences on subsidiary performance (measured by sales or profits) (Luo 2003, p. 290). Birkinshaw *et al.* (2005) on a basis of 24 subsidiaries in the Scottish manufacturing sector yielded results that external relations of a subsidiary strongly stimulated the degree of entrepreneurship but less or moderately the subsidiary's performance.¹⁹ In their work Andersson, Forsgren and Pedersen (2001) established the hypothesis that technological embeddedness is positively related to the subsidiary's market performance and organisational performance (see also Andersson, Forsgren and Holm 2002). Market performance was defined as that in the marketplace where the subsidiary competes with all other companies, while organisational performance is that in the political process inside the MNC, where the subsidiary aims to influence strategic decisions of relevance for the subsidiary. These analyses of 98 subsidiaries belonging again to Swedish MNCs supported their hypothesis according to which the subsidiary's technological embeddedness is positively related to its market performance. Interestingly, good market performance by subsidiaries did not lead to a high level of organisational performance. The findings from Andersson and Persson (2005) support a positive relationship between the degree of external embeddedness and a subsidiary's market performance²⁰ as well as its position within the MNC, though embeddedness as such does not trigger re-investments of MNCs (p. 15).

Marketing activities are another important area where corporate networks play an important role. Taggart and Hood (1999) found that globally integrated subsidiaries tend to have low marketing autonomy, and a significant negative link was found between export propensity and autonomy of the subsidiary. In a recent paper, Hewett, Roth and Roth (2003) set out to establish the extent to which conditions internal and external to the subsidiary affect the relationship between these roles in marketing activities, and how that is related to product performance (p. 567). Their findings suggested that the more closely HQ's and subsidiary's roles in marketing activities are aligned with relational, industry and market conditions, the greater the market share tends to be. In other words,

¹⁹ The former is proxied by the measures of autonomy, value-adding scope, and its level of upgrading; the latter as showing effectiveness by the measures of productivity, quality, supplier relationships, labour costs, productivity improvement, technology, and customer development (Birkinshaw *et al.* 2005, p. 237).

²⁰ Measured by increase in profitability, sales volume, and market share (Andersson and Persson 2005, p. 12).

they concluded that the more embedded the subsidiary is in external networks, the better the performance.

The subject of subsidiary performance is, in practice, particularly under-researched as regards the impact of autonomy on subsidiary performance. Empirical research on this issue is almost non-existent, in terms of including country, industry or firm-specific characters in the observations. There are studies to be found on the associations between subsidiary performance and environmental and/or firm-level variables (e.g. Delios and Beamish 2001; Christmann *et al.* 1999) in subsidiary management research, but not the integrated approaches on autonomy and performance of multinational subsidiary, particularly based on data from catching-up or more specifically from transition economies.

1.3.2. Research framework for analysing the impact of the multidimensionality of the autonomy on the performance in the multinational corporation's subsidiary

In the theoretical part of the present research, the movement from the multinational corporation towards the multinational corporation's subsidiary as a research subject was widely explored. Globalisation of technologies and more intense industrial integration over national boundaries has to a great extent changed the organisational strategies and structures of multinational corporations. MNCs are rather seen operating in the context of networks or approached as heterarchical organisations instead of conventional or hierarchical types of structures (see subsection 1.1.1). MNCs are more systematic in searching for complementary value-adding resources and capabilities from abroad. MNCs are not only transferring various kind of knowledge to other countries but also ought to gain from the local strengths and opportunities. The research has widely addressed the considerable role of MNCs in the process of innovation. Smaller entities within multinational corporations, on the other side, tend to become more autonomous, though depending on the appropriability of knowledge present in the host economy (see section 1.2).

Hence, from the host-country perspective, which is the main underlying focus here, the greater the location advantage, the more the MNCs are committed to the local environment. Referring back to Figure 2, this clearly showed the chances of host countries from the MNC presence in their economies. The local network is required to be challenging or cooperative enough to ensure tight relationships with MNC subsidiaries, which in their turn are expected to be applied to internal technology upgrading. Externalities or technology spillovers appearing in the domestic firms as a result of the partnerships with multinational subsidiaries (called external networks) are largely addressed in the host economy. However, at least some minimum level

of absorptive capacity is needed to assimilate foreign knowledge and to use it appropriately for further improvements (see subsections 1.1.3 and 1.2.3).

The increasing complexity of corporate networks has forced multinational corporations to overview their international strategies, as well as to turn serious attention to governance issues of how to manage network structures (see subsection 1.1.2). Frequency of decisions requiring balancing between country, functional and business demands has grown tremendously (see Figure 3). Technology transfer and upgrading has taken on the multi-level and multi-dimensional character of the process. Knowledge accumulation is heterogeneous by its nature. Considering these circumstances, the question of network alignment has arisen in the research. While taking different forms of networks, either functional, resource or spatial, the effective coupling between the evolution of local specific and global systems is also required (see Figure 4). Throughout the thesis, the functional networks in the context of the relationships between the parent and local units in catching-up economies receive the primary attention.

Regarding the aim of the dissertation, the main conclusion from the first theoretical part lies in the understanding that the MNC subsidiary is interposed between two (or more) different spatial levels: international markets on the one side and local resources and constraints on the other (Männik and von Tunzelmann 2005, p. 6). In the meantime, the MNC subsidiary is linked to the international and local technology, production, etc. networks – the former defined by Birkinshaw *et al.* (2005) as internal and the latter as the external competitive arena of the subsidiary (see Figure 8). The host government assumes the subsidiary to be appropriately responsive to the local conditions. From the side of the head-office, the profit of the corporation is maximised (see subsections 1.2.2 and 1.2.3).

The degree of integration of MNC subsidiaries is without doubt presented as a critical aspect of MNC subsidiary autonomy (see, for example, Brooke 1984; Björkman 2003; Young and Tavares 2004). This issue is specifically focused on in the research on MNC subsidiary roles and strategies (see subsection 1.2.2). Since subsidiary roles are defined by the parent assignment and/or assumed through subsidiary behaviour, it becomes rather complicated to conclude whether subsidiary integration is more influenced by one or the other. In practice, the autonomy accompanying the subsidiary mandate is shaped by both of them being mainly dependent on the locational advantages. Due to these circumstances, the autonomy of the MNC subsidiary is presently assumed to capture the integration by defining it across business activities. Subsidiary integration into corporate and/or external networks is taken as a key mechanism on subsidiary autonomy design. But autonomy *per se* is insufficient.

A general framework of MNC subsidiary development first presented by Birkinshaw and Hood (1998b) suggests the three interacting driving forces and respective influencing factors contributing to subsidiary evolution. These driving forces are as follows: head-office assignment, subsidiary choice and

local environment determinism (see Figure 12). Based on this and other propositions in the literature (see Appendix 2, 4–6, also subsection 1.2.3), the autonomy of a MNC subsidiary could be either approached as a cause or desired effect of multinational subsidiary development. However, the research progress achieved on the topic of subsidiary autonomy and its performance has been more conceptual than empirical. Hence, neither one nor the other argument is strongly supported by researchers in the international business area. In general, it is concluded in subsection 1.3.1 that the current field of research is under-examined. It is presently suggested to become more active in this field of research, particularly focusing on the peculiarities of MNC subsidiary autonomy and related topics such as MNC subsidiary performance. One of these first attempts will be made within the current dissertation.

Considering the main focus of the present thesis and within the limits of its dataset the empirical analysis to be included in Part 2 will concentrate only on the environmental and subsidiary-specific factors of MNC subsidiary autonomy and performance (see Figure 13). Hence, head-office determinism is out of range and not immediately included in the study to follow. By environmental variables are meant influences resulting from the nature of a country or a certain industry or industry group. The degree of MNC subsidiary autonomy, as well as environmental and firm-specific factors, is suggested to vary over time, thereby acquiring different roles within the MNC. The local authority is most highly appreciated in the case of Role N.

The subsidiary development process – gaining, increasing or sometimes losing mandates (see Appendix 3) within the corporation – tends to have a firm- and location-specific nature. The process is multifarious by definition in taking place at different levels and across a number of dimensions. It is a role of subsidiary managers to acquire the appropriate level of power and capacities to be able to bargain with the head-office. However, resources and capabilities owned by firms are defined to change as a function of local advantages. Considering this issue, it is inconceivable to derive perceptions of multinational subsidiary autonomy without looking at the environment where it is located. Not directly introducing head-office influences as an endogenous variable into the following analysis is not taken as a misleading approach by the author. Subsidiary development and autonomy scale are predominantly determined by the location effects, which tend to be the main motivating factor for choosing the investment target country.

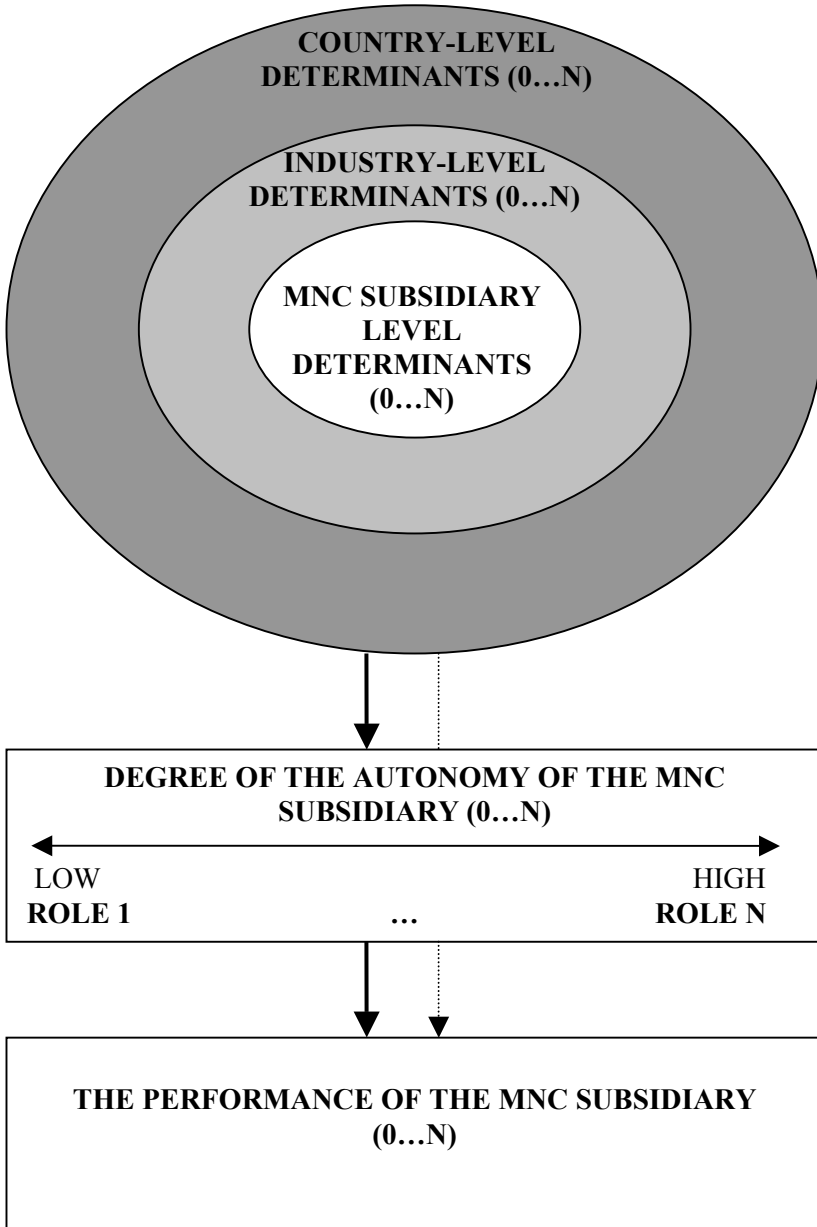


Figure 13. Research framework for analysing the impact of the autonomy on the performance in the MNC subsidiary (compiled by the author).

If the first part of the empirical research (see section 2.2) concentrates on the multidimensionality of the autonomy of MNC subsidiary and the country-,

industry- and firm-specific determinants on it, then in the section 2.3 it is followed by an integrated analysis between MNC subsidiary autonomy and its performance (see also Figure 13). The integrated analysis captures the impact of MNC subsidiary autonomy on its performance while controlling for environmental and subsidiary-specific determinism. In Table 2, there are included all key findings linked to the autonomy of MNC subsidiary from the previous conceptual type of research presented throughout the thesis.

Table 2. The previous theoretical and conceptual type of research findings of the features of the autonomy of the MNC subsidiary and the impact on the performance (compiled by the author)

<p>THE CHARACTER OF THE AUTONOMY OF THE MNC SUBSIDIARY ACROSS BUSINESS FUNCTIONS</p> <p>The autonomy of the MNC subsidiary is mostly defined at the level of business functions defined as strategic (e.g. finance, technology) and operational ones (e.g. marketing, personnel management). The functional autonomy of MNC subsidiaries tends to be lowest in strategic issues and highest in operational areas.</p>
<p>COUNTRY-LEVEL DETERMINANTS OF THE AUTONOMY OF THE MNC SUBSIDIARY</p> <p>Higher development level of a country (measures: e.g. GDP per capita, productivity, absorptive capacity) tends to encourage the higher level of autonomy of the MNC subsidiary.</p>
<p>INDUSTRY-LEVEL DETERMINANTS OF THE AUTONOMY OF THE MNC SUBSIDIARY</p> <p>Location in leading-edge and/or most value-adding industry or industry cluster tends to encourage a higher level of autonomy of the MNC subsidiary while it differs by business areas.</p>
<p>FIRM-LEVEL DETERMINANTS OF THE AUTONOMY OF THE MNC SUBSIDIARY</p> <ul style="list-style-type: none"> – Minority foreign ownership tends to encourage a higher level of autonomy of the MNC subsidiary; – Bigger firm size tends to encourage a higher level of autonomy of the MNC subsidiary; – Firm age tends to encourage a higher level of autonomy of the MNC subsidiary; – Higher capabilities of a firm tend to encourage the higher level of the autonomy of the MNC subsidiary.
<p>THE PERFORMANCE OF THE MNC SUBSIDIARY</p> <p>The impact of the autonomy on the performance in the MNC subsidiary tends to appear to be nonlinear (resulting from its relatedness to the corporation while performing in the host economy).</p>

Referring to the theoretical part of the work, the multidimensionality of the autonomy of the MNC subsidiary across business functions is emphasised. The autonomy of the MNC subsidiary is mostly recognised as a decision-making power on a level of business functions (strategic or operational). The functional autonomy of MNC subsidiaries tends to be lowest in strategic issues and highest in operational areas (see, for example, Hedlund 1981, Garnier *et al.* 1979, Edwards *et al.* 2002).

The literature is also strongly pointing out the importance of capabilities at all levels, macro, meso and micro, for being able to assimilate, develop and diffuse the knowledge channelled through either domestic or foreign sources. Therefore, following Table 2 the higher development level of a country is pointed out as encouraging a higher degree of multinational subsidiary autonomy. First, at least some minimum level of absorptive capacity is required by the host country to search for technology appropriate for local conditions (see subsection 1.1.3). Second, the more developed is the target country of foreign investments, the faster it moves towards the technology frontier. Third, the more developed the host country, the more responsive in terms of local environment the multinational subsidiary is foreseen to become, as well as higher mandates by the head-office likely to be granted (see subsection 1.1.1).

From the empirical literature, strong support can be found on this issue (see, for example, Garnier *et al.* 1979; Gates and Egelhoff 1986; Christmann *et al.* 1999; Delios and Beamish 2001; Frost *et al.* 2002). Yet, mainly industrialised countries have been observed. Of particular interest in the present context is the empirical test by Gates and Egelhoff (1986). The authors found growing dynamic markets to enhance improvements in the scale of MNC subsidiary autonomy.

Concerning industry-level context (see also subsection 1.2.3), one could draw parallels with the last discussion that suggested the higher level of subsidiary autonomy in the countries with more dynamic markets and higher economic level. Similarly, one might claim that more autonomous multinational subsidiaries are present in industries, which provide the relatively larger part of value-added compared to other industries or industry groups within a certain country. In principle, on a basis of both theoretical and empirical parts of the research it could be concluded that firms locating in industries or industry clusters providing specialised resources or possessing a status as a “leading-edge” industry tend to attract foreign investments or to perform new investments (see, for example, Birkinshaw and Hood 2000; Frost *et al.* 2002).

Furthermore, MNC subsidiary autonomy could take different shapes depending on the area of a business and industry. Based on empirical findings, the level of subsidiary autonomy diverges from the mean in terms of whether the subsidiary is more domestic-market or export oriented. Greater autonomy among market-oriented subsidiaries has been suggested by Martinez and Jarillo (1991) and Harzing (1999). In principle, it is argued that subsidiaries are more autonomous in activities where they possess superior information and

knowledge. The latter gets additional support from empirical works capturing the variation of subsidiary functional autonomy. Financial and technology autonomy tend to be most strategic fields of business in terms of MNC control.

Finally, as seen from Table 2 some specified variables at a firm level are proposed as leading influences on the behaviour of subsidiary autonomy. Based on a wide variety of both international business and innovation management literature (see section 1.2 and subsection 1.3.1), firm capabilities, ownership, size and age played the major critical role in subsidiary autonomy, though sometimes conflicting ones (see previous empirical research from subsection 1.3.1). Firm-level variables such as minority foreign involvement, large, more experienced and older firms tend to encourage subsidiary independence in relations with the parent abroad (see, for example, Hedlund 1981; Young *et al.* 1985; Björkman 2003; Taggart and Hood 1999; Gates and Egelhoff 1986; Gariner *et al.* 1989). Most of them are also emphasised through innovation management research of having a critical role in any successful innovation process within the firm. Hence, the subsidiary could be taken as more powerful with these assumptions being fulfilled.

Addressing the relationship between multinational subsidiary autonomy and performance, the present author has found that the degree of integration into either corporate or external networks or both (in partnerships with local suppliers and clients and other organisations) or the balance between them also tend to become a key issue here. If these two conflicting considerations about subsidiary integration are combined, we might draw the conclusion about a nonlinear relationship between performance and autonomy. This can be seen in Figure 14 which combines of these two contradicting behaviours.

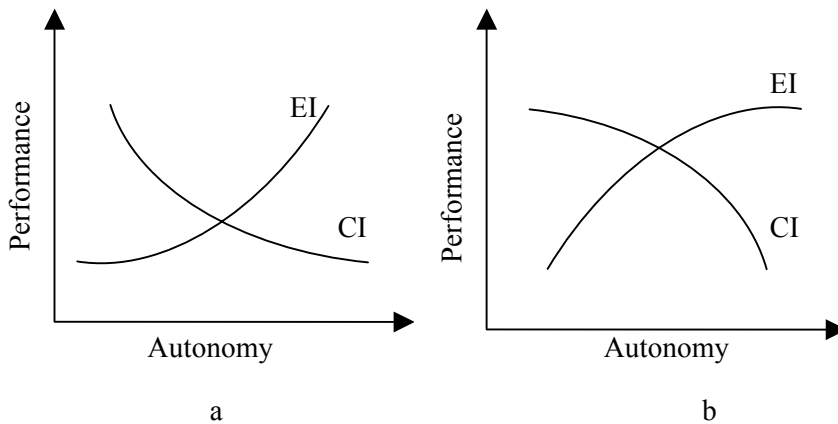


Figure 14. The behaviour of the autonomy of a MNC subsidiary in relation to performance within the framework of subsidiary corporate and external integration (EI – external integration, CI – corporate integration; compiled by the author).

Low autonomy maximises the global possibilities (depicted as CI in the figure), high autonomy maximises the local potentials (depicted as EI), and hence some kind of intermediate position might be expected to maximise (or possibly minimise) a combination of the two (see also the end of subsection 1.3.1 about empirical research and local embeddedness of a MNC subsidiary).

The relationship between MNC subsidiary autonomy and performance tends finally to appear to be nonlinear as expressed by a proper or improper U-shaped curve (see Figure 15 accordingly, the figures a and b), which means some intermediate position for autonomy might be expected to minimise or maximise subsidiary performance. “This conclusion is entirely in line with the papers of Granovetter (1973, 1985) about the ‘strength of weak ties’, which adds in the capacity for response of the agent caught in the middle – here the MNC subsidiary – which is fostered by its partial detachment from both sides” (Männik and von Tunzelmann 2005, p. 7). An associated position is that of Evans on ‘embedded autonomy’ (Evans 1995) – while Evans’s issue was rather different about the role of bureaucracies, it also seems applicable here, in terms of the latter point. Applied to the MNC subsidiary, it needs to be embedded in both international and local/regional networks but also partially autonomous from both. The position of the host country in terms of the benefits to be derived is then a reflection of the position of the MNC subsidiary, together with all other companies and productive units in the country.

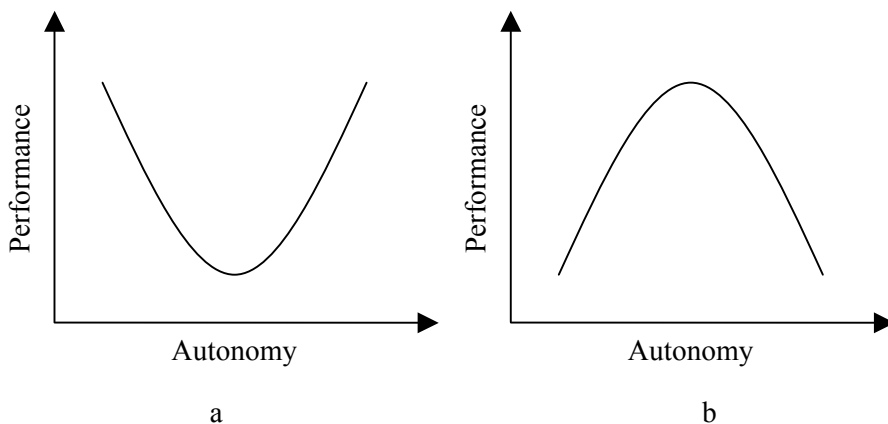


Figure 15. The derived relationship between MNC subsidiary autonomy and performance (compiled by the author).

In the empirical part of the thesis, the concept of MNC subsidiary autonomy and the impact on performance will be tested in the catching-up context, although this research approach is also applicable on other types of countries. It will be controlled for country-, industry- and firm-specific factors such as presented in the last discussion. As seen from the previous empirical research,

subsidiary autonomy might behave in a different way across all business activities. Thus, special attention will be turned on the nature of subsidiary autonomy, which may in principle take various shapes in relation to subsidiary performance while being influenced by a multifarious bundle of context-specific determinants. The hypotheses and research methodology will be developed and thoroughly introduced in subsection 2.1.2.

Countries defined as being catching-up or more specifically presently dealt with CEE transition countries are selected for the research as follows: Hungary, Estonia, Poland, Slovenia, and Slovakia. The sample is also heterogeneous as it is the nature of multinational subsidiary autonomy. Hungary and Slovenia are more developed compared to other countries; from the other perspective Poland and Hungary have larger domestic markets than others. Considering these facts, foreign investments might be motivated by the opportunity of either capacity-exploiting or capacity-building, either domestic or export markets, etc. The catching-up environment is adding its own specificities to the context of the research. In conclusion, the multiplicity is now carried into the empirical part of the thesis.

2. EMPIRICAL RESEARCH ABOUT THE IMPACT OF THE MULTIDIMENSIONALITY OF THE AUTONOMY ON THE PERFORMANCE OF THE MULTINATIONAL CORPORATION'S SUBSIDIARY IN FIVE CENTRAL AND EASTERN EUROPE TRANSITION COUNTRIES

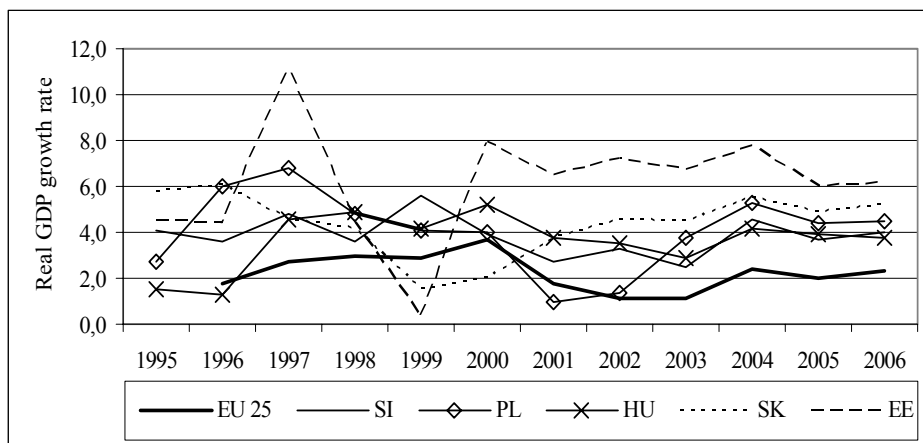
2.1. Rationale for the research of the five Central and Eastern Europe transition countries and description of the hypotheses and methodology

2.1.1. General economic profiles of the five Central and Eastern European transition countries

The analysis following in the empirical part of the dissertation will capture the peculiarities of multinational subsidiary autonomy and its influence on technology and export performance in five CEE catching-up countries. MNC subsidiaries of manufacturing industry in Hungary, Poland, Estonia, Slovenia and Slovakia will be taken as subjects for the empirical observations. The previous research into subsidiary autonomy in developing countries was understood to be very minor (see subsection 1.3.1). In general, the research capturing the relationship between subsidiary autonomy and performance is also under-developed. The empirical analysis of the present thesis will be one of the first attempts to initiate research in this area, based on the conceptual framework developed in subsection 1.3.2 and introducing empirical results on the five emerging CEE countries. All these observable countries became members of the European Union (EU) in 2003. Therefore, the economic success achieved during the 1990s received formal confirmation.

Before introducing the research hypotheses and methodology in the next subsection of the thesis, first the general shifts taking place during the economic transition since the beginning of the 1990s will be noted. The following empirical study will be dynamic in character. The dataset to be introduced in the next discussion enables us to learn about changes within MNC subsidiaries starting when they were established as foreign-owned firms prior to 2001. The present subsection will look at both the preceding and ensuing general economic trends by comparing the five countries. The latter, particularly, will reflect the expected further progress of the sample countries, in terms of both economic development and FDI performance.

In practice, all the sample countries have followed their own patterns of transition. The real GDP growth rates in 1995–2004 and the forecasts for 2005–2006 presented in Figure 16 show the most vulnerable journey to the highest economic growth for Estonia among five countries. Experiencing changes of the GDP growth between 0.3% and 11.1% during the years of the 1990s, it has entered a more stable period after 2000 (see also Appendix 7). Other countries meeting significant fluctuations during the observed time period are seen to be Poland (real GDP varying between 1.0% and 6.8%) as well as Slovakia (between 1.5% and 5.8%). The EU-25 average GDP growth has been more stable as well as much lower (around 2%) compared to all the emerging CEE countries. It is obvious that transition economies have been subject to swings during the transformation being dependent on both external and internal shocks occurring in the economy. On the other hand, these countries have survived industrial restructuring, which has resulted in an increase in efficiency and effectiveness of the production mechanisms and resources. The economic growth potential of the new EU member states has been estimated by Eurostat to continue being significantly higher (keeping around the 4–6% level) than the EU average. Estonia and Slovakia seem to show the greater dynamics in terms of economic development relative to the others.



Note: SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia (to be used with these abbreviations throughout the analysis).

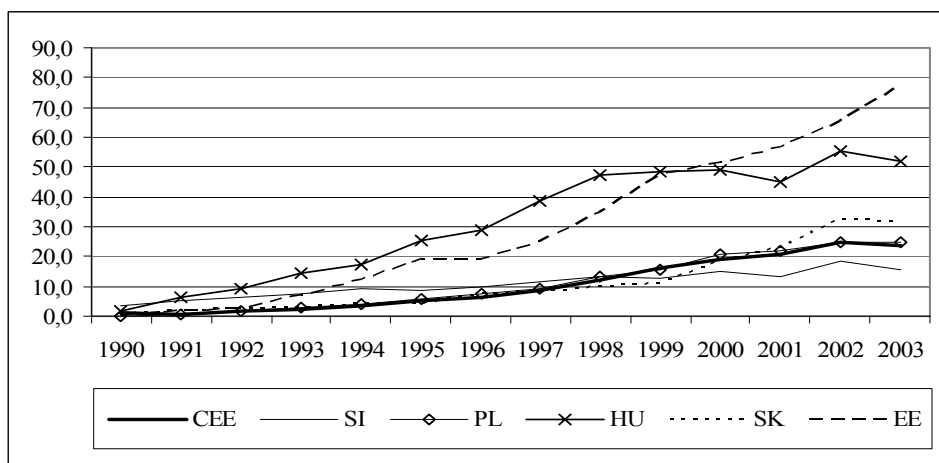
Figure 16. Real GDP growth rate in 1995–2006, % (at constant prices of 1995, for 2005–2006 forecast) (author’s figure on the basis of Eurostat 2005).

What tends to lie behind the economic growth of the five countries? In comparison with other CEE countries, Estonia started from the lowest level of GDP performance (GDP per capita) at the beginning of the 1990s (see Appendix 8). In 1995, its GDP per capita was estimated at only 35.3% of the

EU-25 level; in the meantime, Slovenia had already achieved 68.0% of the EU-25 average, while the others were Hungary 49.3%, Slovakia 44.3% and Poland 40.5%. In 2001, GDP per capita had been increasing by 9.1 percentage points in Estonia, by 6.7, 6.1, 5.0 and 4.2 percentage points respectively in Hungary, Slovenia, Poland and Slovakia. Therefore, the five countries started their transition processes from different economic levels, with Hungary and Slovenia being the most developed relatively. On the other hand, Estonia shows a tremendous economic progress; yet even though by 2006 Eurostat has predicted GDP per capita to increase up to 55.2% of the EU-25 average for Estonia, it will still be positioned behind Slovenia and Hungary.

Hence, a catching-up process was clearly seen to occur during the 1990s. The relatively faster economic progress in Estonia compared to the others tends to stem from its completely liberalised trade and openness to foreign investments, as well as an export focus on the manufacturing sector and a liberal economic regime in terms of business regulation (see also Trendchart 2004). Much of the growth of Estonia, as well as other CEE countries, has been driven by multinational corporations. Industrial integration via multinational corporations has supported technology upgrading of these countries.

The following Figure 17 presents FDI inward stock as a percentage of GDP for the five analysed countries and the CEE average (see also Appendix 9). Estonia and Hungary had the highest share of foreign investment to GDP (far above the CEE average) by 2003, though Estonia was a country of only modest FDI flows at the beginning of the 1990s.



Note: SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

Figure 17. Inward FDI stock as a percentage of GDP (author’s figure on the basis of UNCTAD 2003).

Slovenia enjoyed a very early inflow of FDI. The stock of FDI was 3.4% of GDP already in 1990. Hungary was another country that in the early 1990s started to attract FDI. An extremely rapid increase occurred between 1990 and 1994, when the stock of FDI in Hungary increased from 1.7% up to 17.1% of GDP. On the other hand, Estonia received its first FDI in 1991 and the rapid growth started only during the second half of the 1990s. Stocks of FDI in Slovakia started to show a more rapid increase after 2000. By 2001, the highest share of FDI stock to GDP was achieved by Estonia (56.4%), with Hungary (45%) and the others following it. Therefore, Estonia rivals Hungary in terms of the significance of FDI in its economy.

As seen in Table 3, the FDI sources of observable countries differ, but significantly in Estonia compared to the other four countries. Estonia is largely related to the economies in the Northern Europe with investing partners mostly originating from Sweden and Finland. The economies of Slovenia, Poland, Hungary and Slovakia get most of their technology and other knowledge impulses from Germany, Netherlands and Austria, as well as from France. Those economies are mainly integrated into the Western European industrialised countries.

Table 3. The top three investment partners in terms of FDI stock, 2000/2001

Country	2000/2001
SI (2000)	Austria (46%), Germany (12%), France (11%)
PL (2000)	Netherlands (25%), Germany (19%), France (20%)
HU (2000)	Germany (26%), Netherlands (23%), Austria (12%)
SK (2000)	Germany (28%), Netherlands (24%), Austria (14%)
EE (2001)	Sweden (39%), Finland (26%), United States (10%)

Note: SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

Source: World Investment Directory 2005.

The origin of foreign investments as well as FDI orientation must be viewed as other influencing factors on industrial upgrading of CEE countries. The data about the motives for foreign investments are not included at this point, but as regards the size of the five countries, Hungary and Poland are certainly characterised by larger domestic markets in comparison with the other three. Considering this fact that foreign investments tend to be more domestic market oriented in case of Hungary and Poland contrary to Estonia, Slovenia or Slovakia (see subsection 2.2.1 where the orientation of investments of the sample firms will be assessed). However, the motives of foreign investors might be also approached from the assets side, of whether foreign investments are more asset-seeking or asset-exploiting in their character.

In the literature, it is argued that multinational corporations are keen on locating various functions like marketing, management, R&D, etc. in their local-based firms based on superior knowledge in a certain area of business. Considering the economic stage of these five CEE countries, economic growth is mainly assumed to be based on lower value-added activities like subcontracting work in low- and medium-low tech sectors for Northern European firms in the case of Estonia, or for Western European firms in the other four countries. Analysis of the value-added structure of manufacturing industries of the observable countries indicates that it tends to differ across them. The role of high-tech industries in producing manufacturing value-added varies from 9.6% in Slovenia down to 1.8% in Estonia and 1.6% in Slovakia (see Appendix 10²¹). At the other end, the low-tech sectors were giving 58% of value-added in Estonia or 44% in Poland (respectively in 2001 and 2000).

Appendix 11 computes the productivity (value-added per employee) levels in the five countries and four industry groups in focus. First, the results clearly point to the presence in terms of productivity of the two leading countries, namely Hungary (total 18,993 USD in 2001) and Slovenia (18,753 USD) – the countries with relatively greater autonomy pre-1990. Hungarian and Slovenian firms were roughly 1.4 times more productive than firms in Poland, and compared to Estonia and to Slovakia their advantage was respectively 2.3 and 2.5 times. However, they differ from the others by surprisingly bigger dispersions of productivity levels (see the differences between low, medium-low and medium-high-tech industries). Examining the industry distinctions across all countries, the results show higher productivity among medium-high industries compared to high-tech industries. Poland is the only country where the high-tech sectors have the highest productivity (20 508 USD in 2000).

Technology in the modern era is knowledge-based and the national innovation systems, particularly in Estonia, Poland and Slovakia, seem to be still too weak for a transition from an investment-based stage of development to an innovation-based one. Nevertheless, in terms of innovation performance measured yearly by the European Commission, in general, Estonian as well as Slovenian indicators are estimated to be relatively strong. The Summary Innovation Index (SII) presented yearly in the European Scoreboard approves some advantages in innovation activities for Slovenia and Estonia relative to other CEE countries (see 2004 Innovation ... 2005)²². While Sweden and Finland remain the innovative leaders within the EU, Estonia and Slovenia lead

²¹ NACE industry codes are used, according to OECD classification. High-tech sectors (HT) are the following industries: 24.4, 30, 32, 33, 35.3; medium-high-tech (MHT): 24.0-24.3, 24.5-24.7, 29, 31, 34, 35.2, 35.4-35.5; medium-low-tech (MLT): 23, 25, 26, 27, 28, 35.0-35.1; low-tech (LT): 15, 16, 17, 18, 19, 20, 21, 22, 36, 37 (see 2003 European Innovation ... 2003).

²² For the methodology of SII, see the methodology report of the 2004 European Innovation Scoreboard (2004).

the EU-10 group of the new Member States. They approach the EU-25 average and rank above a number of EU-15 countries.

Following the pattern of innovation potential, Estonia exceeds the EU average in terms of five indicators and occupying the first position within the EU-15 in ICT expenditures (84%), in innovation cooperation in SMEs (59%) and in tertiary sector working population (44%) (see 2004 Innovation ... 2005). Slovenia has a crucial advantage in lifelong learning exceeding the EU average by 68% and in employment in high-tech manufacturing by 35%. Similarly to Estonia, Hungary is estimated to be rather strong in SME innovation cooperation (the indicator of 57% being higher than the EU average) and in ICT expenditures (50% higher) as well as in employment in high-tech manufacturing (25% higher). Slovakia surprises with innovation expenditures 276% higher than EU average as well as ICT expenditures higher by 42%. Poland stands in the most modest situation, with only ICT expenditures on average 23% higher than the EU average. Regardless of these strengths in certain countries, in general the real costs of product and process innovation as well as cooperation between business and the science sector remain rather low.

From the preceding information one could conclude that the five CEE countries are well suited for performing our analysis. Although they all fall into the category of transition economies, they show the multifarious nature of economic growth. Slovenia and Hungary are more developed in terms of GDP per capita and labour productivity. On the other hand, the Estonian economy can be characterised by more intense dynamics taking place in the transition processes including inward FDI flows relative to the other four. The Estonian industrial integration is to a great extent taking place with the Nordic countries, in case of others (Hungary, Poland, Slovenia, Slovakia) with the Western European industrialised countries (like Germany, Austria, France, Netherlands). In the end, Estonia as well as Slovenia is estimated by the European Commission to lead the other new EU member states in innovation performance of firms. The question needs to be answered through an empirical study of whether higher economic development will be attained by more autonomous roles for subsidiaries within the multinational corporation.

2.1.2. Introduction of the research hypotheses and methodology

Research hypotheses

The hypotheses to be developed in the current subsection result from the preceding discussion on the multifarious nature on the autonomy and development of the MNC subsidiary as well as the general role of multinational corporations and subsidiary autonomy in technology upgrading of the host economies. On the basis of a wide range of contemporary literature about the multinational corporations section 1.1 showed the increasing need for autonomy

on the part of MNC subsidiaries. Due to the increasing complexity of internal decision-making processes, smaller entities within the corporations are coming to be granted higher mandates by the parent firms, though the mandate gain is predominantly a location-dependent process (see section 1.2). The more various the kinds of knowledge the subsidiary are able to offer, the bigger the local authority will become. From the host country perspective, which is the main focus of foreign direct investments in the present work, the MNC subsidiary is expected to take part in the local business life. The MNC subsidiary is assumed to be locally responsive, but on the other hand, to follow the aims and tasks delegated by the parent firm abroad. Therefore, the subsidiary is influenced by both local advantages and corporate strategies. As presented in the conceptual part of the thesis (see section 1.3), the local and subsidiary-specific context of multinational subsidiary will here be the main focus.

In the conceptual part of the thesis, the research framework for analysing the peculiarities of the multinational subsidiary and its impact on subsidiary performance was developed (see Figure 13, Table 2). The framework included was based on both theoretical and empirical research on the current topic while in this subsection on hypothesis building it will take into account the specific context of catching-up countries in CEE. In the last subsection (2.1.1), the multifarious nature of transition process was also shown, as well as country-level differences among Slovenia, Hungary, Slovenia, Estonia and Poland. Therefore, different behaviour in the autonomy of MNC subsidiaries in comparing those countries is expected in the next analysis.

Proceeding from the conceptual frame of the thesis, five main hypotheses will be distinguished. The first four will cover special features (multi-dimensionality, country-, industry-, firm-level determinants) of the autonomy of MNC subsidiaries. The fifth hypothesis is to be related to the association between the autonomy of the multinational subsidiary and the subsidiary performance. It is worthy of remark that contextual (either country- or industry-level) and firm-specific factors are each to be separately analysed in terms of a multinational subsidiary autonomy in the first stage of the analysis. Later, in the second stage, which will evaluate the relationship between subsidiary autonomy and performance, all contextual and firm-specific determinants are included in the analysis as control variables. The latter circumstance is the main reason why it may still be necessary to see first the peculiarities of subsidiary autonomy caused by various context- and firm-specific characters.

The autonomy of the multinational corporation's subsidiary is presently defined as the result of the decision-making process between the parent and local branch and which is measured across all business functions (see also Taggart 1997, Björkman 2003). Hence, the autonomy of the MNC subsidiary is seen in the scale of value adding business functions such as R&D, production, marketing, etc. in the current thesis. In its turn, an individual business function is immediately related to the certain macro-level sector like science, financing, etc. As a result of the research analysis, we will draw generalisations from the

micro-level data to the meso/macro level of the economies. The MNC subsidiary is evolving over times influenced by environmental and firm-level factors through which it adds increasing levels of value to its performance within the corporation and the host economy. Based on the previous studies, it is generally recognised in the literature to distinguishing between the more strategic (e.g. technology, financing) and operational types of the business functions (e.g. personnel, domestic marketing) (see, for example, Garnier *et al.* 1979, Hedlund 1981, Young *et al.* 2004, Edwards *et al.* 2002, Björkman 2003). But taking into consideration very diverged results (sometimes contradicting) of the observations it might imply that a division into strategic and operational autonomy used in common is too simplified approach to cover the different aspects of the autonomy. The novelty of the present work is to go into the internal structure of the autonomy and to propose the heterogeneous nature of the autonomy of the multinational corporation' subsidiary across all business areas while not predetermining the strategic and operational business functions. It follows the first hypothesis:

H1: The autonomy of MNC subsidiaries is multidimensional across business functions

The researchers representing the evolutionary theory of multinational corporations (e.g. Cantwell, Narula, Kogut, Zander and others) are to a great extent supporting the character of foreign direct investments as being the main generator of international technology upgrading. Multinational corporations are not considered only from the perspective of technology transfer, they are rather contributing to innovation through networks of various kinds. Cooperation through international production networks has become the main opportunity for technology upgrading for catching-up countries. However, the scope and scale of influences accompanying foreign direct investments are obviously taken as a function of the host-country advantages. The knowledge and skills transferred to the local unit of the multinational corporation will require at least some minimum level of absorptive capacity for being able to adapt, further develop and disseminate the technology (see subsection 1.2.3). As seen from the theoretical part of the dissertation, the firm capabilities are dependent on the strengths of the local context (see subsection 1.1.3). Alongside the general shifts in corporate strategies and structures, these local entities providing a specialised knowledge to the whole organisation located across national boundaries have had the primary attention in the subsidiary management research. Subsidiaries acquiring specialised and locally related knowledge and skills in certain or several business areas tend to be assigned to the higher mandates relative to other entities within the corporation. The autonomy of the multinational subsidiary is assumed to take different shapes depending on the economic level of the target economy as well as differing across various business functions (see also previous empirical studies from the subsection 1.3.1). Subsection 2.1.1

demonstrated the different economic levels and degrees of economic dynamics of the five observed countries. Of these, Hungary and Slovenia show today bigger economic advantages in terms of the economic level and productivity compared to the others, although Estonia as well as Slovakia could be defined as being faster-growing economies under consideration. As a result of this argument, it is reasonable to assume the following hypothesis.

H2: MNC subsidiaries are relatively more autonomous in more developed Central and Eastern European transition countries

Thirdly, in Figure 13 industry-level determinism was presented as another driving force of multinational subsidiary autonomy. Referring back to the last discussion, the same logic might be developed in the case of industry-specific determinants. The more specialised the knowledge present and developed by firms in any industry or industry group, the keener on local responses the parent firms ought to become. From the literature (see subsections 1.1.3, 1.2.3), it can be concluded that tight interactions between the firms within a certain industry or industry cluster enhance knowledge accumulation, which in its turn results in better economic performance. Subsidiaries possessing superior knowledge and information in a certain industry context tend to be given more freedom to be locally responsive. Industry clusters are assumed to encourage the creation of interactions between foreign and domestic firms. Hence, the character of the local target industry tends to play a considerable part in designing multinational subsidiary autonomy, as could also be seen in the previous empirical studies (see subsection 1.3.1). Based on the experience of developed countries, there has resulted a greater autonomy of multinational subsidiaries located in leading-edge science-based industries in terms of the world technology frontier. It is obvious that these subsidiaries can provide appropriate knowledge and skills for the whole corporation. In reverse, in the context of catching-up economies this argument might not get supported. Or saying this in a different way, technologies used in the classical science-based industry sectors there are not typically the last word in the sense of technology development. On the other hand, following an argument of von Tunzelmann and Acha (2005) innovation activities are not only taking place in science-based or high-technology industry sectors. Innovation activities in low-tech industry sectors as well as the integration of high- and low-tech industry sectors are getting more attention in both the research and the policy-making process. Similarly, not only technology knowledge is needed for the subsidiary to survive. It may be concluded that the autonomy of the multinational subsidiary tends to be bigger in sectors of superior knowledge depending on the geographical location of a local unit. In the context of transition economies, the following hypothesis can be claimed.

H3: MNC subsidiaries are relatively more autonomous in manufacturing industries with bigger value-added contribution compared to other industries in Central and Eastern Europe transition countries

Technology performance of multinational subsidiaries is assumed to be a function of both location and firm-specific contexts. Based on the preceding theory-based discussions in section 1.2 and empirical research presented in subsection 1.3.1 one might strongly emphasise the capabilities of local entities of multinational corporations to determine the scope of their autonomous role. The more superior the knowledge that is acquired by the multinational subsidiary, the more independent in relation to the head-office it will become. Knowledge accumulation has a heterogeneous nature and each firm follows its own technology path. The knowledge accumulation as well as specifically the autonomy of the multinational subsidiary tends to be influenced by various firm-level variables. From the innovation management literature, it was observed that the bigger and more experienced the firm, the more capacities it has to be successful in innovation activities. In parallel, and based particularly on the previous empirical research on subsidiary autonomy, it is assumed that the subsidiary would experience more freedom also if it is large in size, more experienced in terms of age, as well as possessing minority foreign ownership in the firm. Although the empirical results about firm-specific features of multinational subsidiary autonomy are sometimes contradictory, these claims can be tested in the context of transition economies. Four different hypotheses are built up in establishing the firm-level factors of the autonomy of MNC subsidiary.

H4.1: Minority foreign-owned MNC subsidiaries are relatively more autonomous in comparison with majority-owned MNC subsidiaries

H4.2: Large MNC subsidiaries are relatively more autonomous in comparison with small and medium-sized MNC subsidiaries

H4.3: Older MNC subsidiaries are relatively more autonomous in comparison with younger MNC subsidiaries

H4.4: MNC subsidiaries with higher capabilities are relatively more autonomous

MNC subsidiary is already by definition interposed between two different worlds of business culture. On the one hand, the subsidiary is dependent on the strategy and structure of the head office; on the other, it is assumed to be locally responsive (see the conceptual framework in subsection 1.3.2). From the host-country perspective, by the local response is meant the extent to which the multinational subsidiary is embedded in the local business environment as well

as in the whole innovation system. Hence, internal and external embeddedness of the multinational subsidiary is distinguished. The first shows the degree of corporate integration, the latter captures predominantly the relationships of the subsidiary with local suppliers and clients as well as all R&D and other institutions. It is argued in the research that the more integrated the subsidiary is into corporate networks the less extensive is its decision-making power in terms of different business areas. By contrast, the larger the external relatedness of the subsidiary the more autonomy it will gain. Hence, local or external embeddedness is considered as being one of the main factors contributing to the capacity building of the subsidiary (see subsection 1.2.3). Regarding the literature review on the previous empirical research, technology as well as marketing embeddedness tends to be related to significantly better subsidiary marketing performance (see, for example, Andersson *et al.* 2001, 2002, 2005; Hewett *et al.* 2003). The conceptual framework of this work proposed a relationship between multinational subsidiary autonomy and performance as taking a non-linear shape. The relationship is going to be looked from the viewpoint of the MNC subsidiary autonomy, hence, exploring the impact of the MNC subsidiary autonomy on the performance while considering country-, industry- and firm-specific determinants. The claim particularly results from the various arguments developed in the present research on subsidiary corporate and external embeddedness as well as specialised resources of the subsidiary. From the perspective of the host country, higher subsidiary autonomy is more favoured in terms of the expected stronger local stickiness of foreign investment. On the other side, lower subsidiary autonomy might be compensated by appropriate world-class knowledge more effectively diffused via closer cooperation with the parent firm. This tends to be of great importance, especially in a catching-up context. Since the technology level is typically low in those countries, the knowledge and skills received through international industrial integration to a great extent support their production effectiveness. Therefore, neither low nor high autonomy of the multinational subsidiary can be presented as inherently a good or bad solution. The autonomy of the multinational subsidiary is proposed to achieve some intermediate position to maximise or minimise the performance resulting with the non-linear relationship between these two variables expressed by a U-shaped curve. Although the context of developed and developing or catching-up countries might be different; it is not likely that subsidiary autonomy would behave completely differently in terms of performance. However, depending on the business area some distinctions might be expected. Since there does not seem to be any strong theoretical argument supporting this idea only the following hypothesis is set up:

H5: The impact of the autonomy on the performance of MNC subsidiaries is non-linearly expressed by a U-shaped curve

All these hypotheses developed above are going to be addressed in the subsequent parts of the dissertation. First, the multidimensionality of the autonomy (H1) will be explored (subsection 2.2.1). Then the impact of country-, industry-, and firm-specific features of multinational subsidiary autonomy (H2-H4.4) will be seen separately across various business functions (see subsections 2.2.1–2.2.3). In the following part the hypothesised relationship between autonomy and performance of the multinational subsidiary (H5) will be thoroughly explored. In the latter phase of the analysis where contextual and firm-specific factors of subsidiary autonomy are used as controls (see subsections 2.3.1–2.3.2). In Figure 18, the hypothesised relations resulting in terms of multinational subsidiary autonomy and performance as an outcome of the entire process of subsidiary development are summarised as follows.

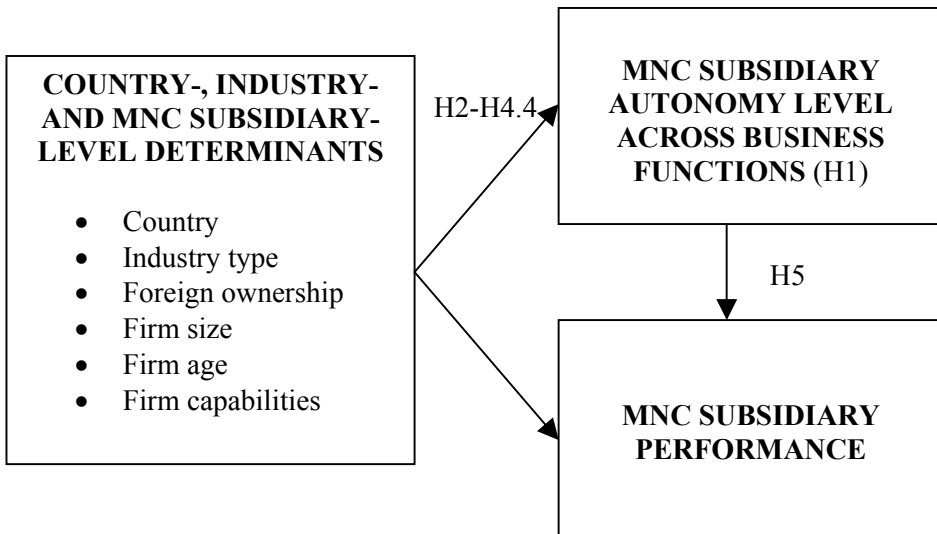


Figure 18. Hypothetical effects of the empirical research (compiled by the author).

Sample and data gathering

The following analysis will be based on the database created as the result of the work in the EU Fifth Framework Project: “EU Integration and the Prospects for Catch-Up Development in Central and Eastern European countries (CEEC): the Determinants of the Productivity Gap”. A special Survey Questionnaire for multinational subsidiaries was undertaken in 2001–2002²³. The author of the present thesis was one of the team members of the research project. The survey was an attempt to evaluate the changes in terms of technology upgrading occurring in multinational subsidiaries. Regarding the aim and limits of the

²³ The questionnaire is available from the author of the thesis.

present thesis, the following analysis will not capture the responses for the entire survey, though covering the majority of the questions (11 out of 15). The analysis will predominantly focus on functional autonomy and the performance of multinational subsidiaries.

The target group was manufacturing enterprises with foreign ownership in Estonia, Hungary, Poland, Slovakia and Slovenia. In Estonia and Hungary only firms with foreign majority ownership (51% or more foreign) were selected (although minority ownerships were also reported in the survey), in other countries minority foreign-owned firms (10–50% foreign ownership) were also included. The return rate was 19.7% amounting to 433 questionnaires. The highest response rate was in Slovenia (34.4%), followed by Slovakia (30.2%), Estonia (30.0%), Poland (18.8%) and Hungary (10.6%).

The biggest number of responses (153 or 35.5% of all) came from Poland, followed by Hungary with 80 firms or 18.5% of the responses, Slovakia 78 answers (18%), Slovenia 72 (16.6%) and Estonia 50 (11.5%) (see also Appendix 12). By industry²⁴, the biggest share in the total sample of responses is in the electrical and optical equipment branch (16.4% of the total) followed by metals and metal products (14.1%), food, beverages and tobacco (10.2%), non-metal mineral products (9.0%), chemicals and man-made fibres (8.5%), rubber and plastic products (6.9%), and clothing and textiles (6.5%).

Appendices 13–16 calculate the firm characteristics of the sample. The majority of firms represented in the sample are small and medium-size enterprises (26% of the whole sample are firms of up to 50 employees, 30% have 51–200 employees). Although larger companies are well represented in the sample, the share of responding firms with more than 200 employees is 24% and of those with more than 500 employees it is 21%. Comparing countries there are seen to be some important exceptions. The Polish and Hungarian subsidiaries are larger on average relative to the other three countries. The firms with more than 201 employees prevail in Poland (51%) and Hungary (59%). On the contrary in Estonia there are mainly present firms with 51–200 employees (45%). The size of a country obviously has a major role in firm size.

The sample includes only 15% of firms with minority foreign shareholding (see Appendix 14). The minority shareholding ranges from 6% in Estonia to 17% in Hungary. The latter fact has to be taken into account in hypothesis testing.

²⁴ According to NACE classification sectors 15–16 represent food products, tobacco; 17 – textiles; 18 – wearing apparel, dressing; 19 – tanning, dressing of leather; 20 – wood; 21 – paper products; 22 – publishing, printing; 23 – coke and petroleum; 24 – chemicals; 25 – rubber and plastics; 26 – other non-metallic minerals; 27 – basic metals; 28 – fabricated metals; 29 – machinery and equipment n.e.s.; 30 – office machinery; 31 – electrical mach. and app.; 32 – radio, TV sets; 33 – medical, precision and optical equipment; 36 – furniture, manufacturing n.e.s.; 37 – recycling.

Furthermore, 34% of the whole sample of firms was already established as foreign investment companies before 1990, although the major part of firms achieved this status in 1991–1995 (see Appendix 15). Across countries, Hungarian subsidiaries are relatively older than others, with almost a half of its firms (47%) originating before the 1990s. In Estonia, there prevail multinational subsidiaries established between 1991 and 1995 (83% of the total), which clearly indicates the intense inflow of FDI started from the beginning of the 1990s. The remarkable share of younger subsidiaries (established after 1996) is surprising; it is especially high in Slovenia (43%), Slovakia (41%) and Poland (42%). The further analysis to be performed later will also show differences in subsidiary autonomy and performance among older and younger subsidiaries in these five countries.

Subsidiaries included in the sample are mostly producing intermediate products, the share of such firms varying from 40% in Poland to 54% in Estonia (see Appendix 16). The share of firms only producing final products remains very modest, in Estonia their role is the lowest forming only 5% of the whole sample. The structure of product type well reflects the orientation of foreign investments, a large part of which is motivated by low-cost subcontracting. Estonia, which is smallest in terms of the domestic market, has been significantly targeted by investments oriented towards export markets rather than the Estonian market itself. The analysis to be included in the following chapters will show distinctions in subsidiary autonomy and performance by all firm characteristics handled concurrently.

Finally, Table 4 concerns the representativeness of the present sample. It collects data about the stock of FDI in the manufacturing industries of all five countries. In addition, the shares of individual countries in the total stock of FDI manufacturing of the five countries together were calculated. The last two columns give the share of individual countries in the total sample by number of firms and employment.

Table 4. Representativeness of the sample

Country	FDI stock 2001 (m USD, %)	FDI stock in manuf. 2001 (m USD, %)	Firms responding (number, % of total sample)	Employees of responding firms (no., % of total sample)
SI	2602 (3.5)	1235 (4.5)	72 (16.6)	17808 (8.1)
PL	41247 (54.9)	16412 (60.4)	153 (35.3)	154632 (70.3)
HU	23337 (31.0)	6362 (23.4)	80 (18.5)	30200 (13.7)
SK	4836 (6.4)	2672 (9.8)	78 (18.0)	n.a.
EE	3160 (4.2)	506 (1.9)	50 (11.5)	17206 (7.8)
Total	75182 (100)	27187 (100)	433 (100)	219846 (100)

Note: n.a. – not available;

SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

Source: author's calculations on the basis of World Investment Directory 2005 and sample data.

The comparison of the shares of individual countries in terms of employment is biased by the lack of data on FIE employment for Slovakia. Nevertheless, Table 4 indicates that Poland is most strongly represented in both the number of firms (35.3%) and employment (70.3%), which is in accordance with the high share of Poland in the total stock of FDI in manufacturing. Slovenia, Estonia as well as Slovakia are moderately over-represented and Hungary slightly under-represented in terms of the number of firms and employees.

Research methods

The analysis to be performed in the present dissertation is carried out in five sub-phases in terms of the analytical methodology. The database as already presented originates from the Survey Questionnaire thoroughly specified in the previous section. The Survey Questionnaire embodies questions related to the development of foreign subsidiaries since the firms were registered as foreign investment enterprises. Thus, the dynamic effects are certainly involved in the analysis of subsidiary autonomy and performance. The questions address subsidiary autonomy, subsidiary performance in terms of output and technology upgrading, their international integration focusing on sales and supply structures, as well as the importance of knowledge and technology areas and sources in subsidiary development. The research question of the thesis tends to determine the level of subsidiary autonomy and performance in the five Central and Eastern Europe countries distinguishing country, industry and firm specificities. The analysis will assess the heterogeneity of subsidiary autonomy and its impact specifically on subsidiary technology and export performance.

On the basis of the analysis, there will be a floor to implications for subsidiary managers as well as for policy-makers in the observed countries. Figure 19 exhibits the stages of the current empirical research while referring to the respective parts of the thesis.

The heterogeneity of subsidiary autonomy will be illustrated first using a descriptive method of analysis. Before starting specifying the character of subsidiary autonomy across the business areas the autonomy from the perspective of sales and supply structure and upgrading activities will be briefly examined. Analysis of variance (or ANOVA) will be used to compute the statistical significance of the results (see subsection 2.2.1).

Because the business functions used in the survey are closely interrelated, it is necessary to use methods that allow creating statistically independent factors describing the internal structure of autonomy. We may begin by compounding the autonomy areas of subsidiaries across the 13 originally stated business functions to get so-called clusters of business areas, which will be used as the starting point for the whole subsequent analysis. Therefore, the next stage of analysis involves principal component factor analysis to group the 13 business functions (see subsection 2.2.1).

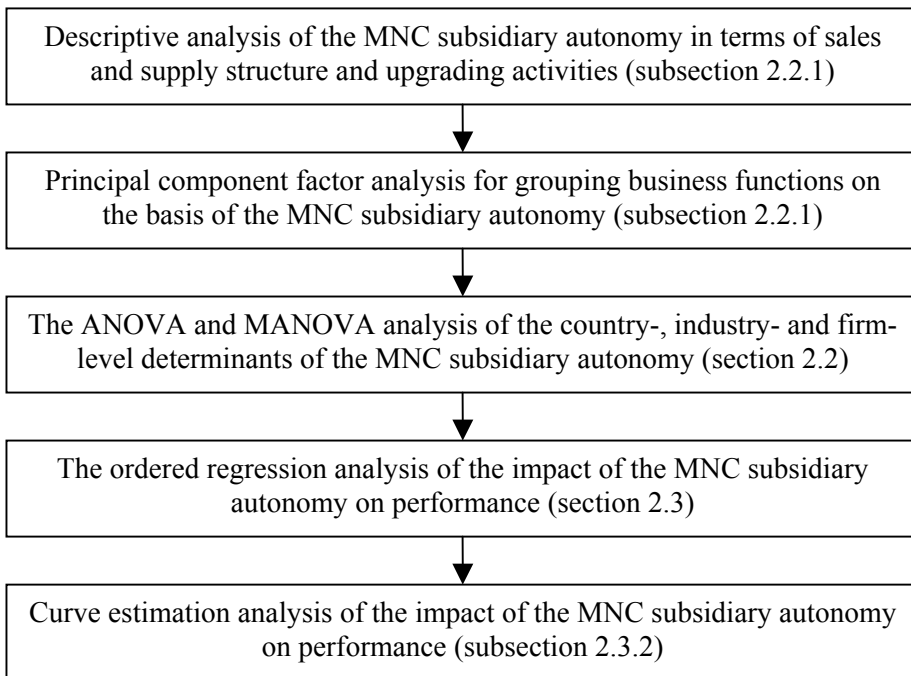


Figure 19. The components of the research methodology (compiled by the author).

This is followed by the ANOVA test as well as multivariate analysis of variance (or MANOVA), which will be used to identify significant differences among the four groups of the new factors (received through principal component factor analysis) and to distinguish country-, industry- and firm-specific features in the CEE manufacturing subsidiaries. The ANOVA test will be performed individually for each categorical variable and the MANOVA test in a compound way (all variables taken into the test) across all four factors (see subsection 2.2).

Then the impact of the four factor components reflecting different dimensions of autonomy at the level of subsidiary performance will be measured by using ordered regression models. This model is used as it is specially designed for cases where the dependent variable is measured by surveys and has values, which are in growing or declining order. In the survey, companies were asked to evaluate the magnitude of the changes of four categories: share of exports, productivity level in production, technology level of production equipment, and level of product quality, once the explored manufacturing companies had received foreign investment involvement. In the analysis, different country-, industry- and firm-specific dummy variables will also be included (see subsection 2.3).

Complementing the results received through ordered regression models, and finally as the fifth phase of the analysis, curve estimations will reveal the actual shape of the relationship between autonomy dimensions and the performance of subsidiaries (see subsection 2.3.2).

The research method of the present work differs from previous studies particularly in terms of the more accomplished approach on both MNC subsidiary autonomy and performance. The novelty of the method particularly lies in the more multifarious view on subsidiary autonomy and the impact on performance. The distinctions of subsidiary autonomy will be made in four areas of business, which are defined as: production and technology, sales and marketing, management and financing (see subsection 2.2). Secondly, the impact of the autonomy of multinational subsidiaries over the four areas will be viewed via four output variables instead of focusing on only one of them (see section 2.3). Therefore, the analysis will be characterised by multidimensionality throughout the subsequent parts of the empirical research.

Concerning the rationale behind the application of one or another research or analytical method first, the questionnaire survey was preferred to use in the present dissertation due to the need for generalisations of the autonomy and the impact on the performance in MNC subsidiaries as well as implications for policy-makers in CEE countries. For example, case-study analysis does not usually allow us to present general conclusions on industry, industry group or manufacturing sector as a whole. Currently, data of the MNC subsidiaries of manufacturing sector from five CEE countries gives an opportunity to generalise the analysis results to the level of countries. It is also worth to note that at the beginning of the transition period foreign investors started mainly to

enter the manufacturing sector in CEE countries, which gives a particular focus of the impacts of FDI in this sector in the first transition period.

Secondly, since the aim of the present research is to figure out the multi-dimensionality of the autonomy of the MNC subsidiary, the internal structure of the autonomy is required to determine. The principal component factor analysis is a commonly used method to group interrelated variables, which may result in new statistically independent factors. In the database of our survey questionnaire, the data about the decision-making process between the parent and local unit across 13 individual business functions is given. By assumptions, these 13 business functions might show the common patterns, which will lead us to compound the autonomy areas of subsidiaries across these originally stated business functions. The ANOVA and MANOVA tests will give us an opportunity to identify statistically significant differences among the new components of business functions and to distinguish country-, industry- and firm-specific determinants of the autonomy in the CEE manufacturing subsidiaries. The MANOVA tests will show us the compound impact of all the environmental and firm-level determinants on the MNC subsidiary autonomy, which will be taken as the value-adding factor of the present analysis. The ordered regression analysis is used in identifying the impact of the autonomy on the performance in the MNC subsidiary. This analytical method is specifically applied for cases where the dependent variable is measured by surveys and has ranked (ordered) values. The ordered regression model can be compared to the frequently used methods for binary and nominal data as having the advantage of making full use of ranked data. This method takes the original dataset of the present research very well into consideration. Finally, curve estimations are only included to complement the ordered regression analysis in terms of the illustrations. The curve estimations will draw out actual shapes of the relationships between the autonomy and the performance of the MNC subsidiary across the dimensions of the business areas.

Thirdly, it is necessary to point out the possible weaknesses of the selected sample and the research method. As said in the sample' description, the biggest number of responses came from Poland, which may give a significant influence on the final results. However, estimating the representativeness of the data for individual countries (indicators: number of firms, employment), Poland did not show particular over- or under-representation of the responded firms. Hungary is slightly under-represented in the sample. The second concern might be related to the selection bias of the sample. Although, the sample of the MNC subsidiaries was selected occasionally we could not guarantee the inclusion of the reasonable weight of any type of firms in the sample. The relatively big share of large firms in the sample may reflect the presence of more compatible subsidiaries in the sample. But this may also be reason of the Polish subsidiaries, which share is the biggest in the sample and which are larger by average (as well as Hungarian subsidiaries) compared to other three countries. Since the selection bias was not identified as a particular concern of the present

sample, it is not going to apply for a specific method. Finally, as noted earlier in case of Estonia and Hungary questionnaires only among the firms with foreign majority were sent out. However, even in then minority foreign ownerships were reported to us. In any case, this fact will lead us to be careful with testing certain hypotheses.

2.2. Research results: the multidimensionality and the determinants of the autonomy of the multinational corporation's subsidiary

2.2.1. The multidimensionality and country-specific determinants of the autonomy of the multinational corporation's subsidiary

Descriptive analysis of the multinational corporation's subsidiary autonomy in terms of sales' and supply structure and upgrading activities (subsidiary initiatives, mandate change)

The aim of the present section 2.2 is to understand the variety of MNC subsidiary autonomy across different business functions, countries, industry groups and firms. In the section, only the specific features of autonomy on the country level will be discussed. A start is made to describe the distinctions on the basis of information about the backward and forward linkages established through sales and purchases, as well as subsidiary development activities as far as initiatives for change and mandate development within the subsidiary are concerned. The latter will be used as complementary information on the further analysis on the multinational subsidiary autonomy and the impact on performance. This is followed by elaborating specificities of functional autonomy among the five CEE countries.

In Appendices 17–18 and 20–21, figures showing the diversity of subsidiary autonomy in the different aspects of business are included. From Appendix 17, there can clearly be seen the market orientation of foreign subsidiaries. Overall, foreign markets slightly outweigh the role of domestic markets in the five CEE countries. More than 50% of the production was sold to parent companies and/or other foreign buyers abroad in 2001. The structure of sales refers to the type of foreign investments entering those countries as well as showing the extent of subsidiary integration into corporate networks. Especially emphasized is the role of export-oriented investments in the cases of Estonia, Slovenia and Slovakia. Accordingly, export shares out of sales were around 60% in Estonia, 65% in Slovakia and as much as 70% in Slovenia. Slovakian subsidiaries are most extensively integrated into the parent company itself, as roughly 50% of sales depend on the parent company. Other subsidiaries within the corporation do not play a role of great importance in any of the observed countries. The

domestic markets in Hungary and Poland are bigger in size and foreign investors are much more oriented towards the host-country market instead of serving mainly surrounding foreign markets. Although FDIs are not only foreign-market oriented, around 30% of the production is sold in the domestic markets in Estonia, Slovakia and Slovenia, too.

Thus, on the basis of these illustrations there are seen to be specific patterns of sales structures of foreign subsidiaries in the five countries. The ANOVA test upholds these distinctions between the countries. Appendix 19 collects the data of the ANOVA tests performed to confirm the significance of distinctions about autonomy in the different aspects of the business. The test allows seeing differences between countries in the case of all marketing channels, though exceptionally sales to other domestic subsidiaries are excluded. Considering significant differences on the country level, Slovakian and Slovenian subsidiaries clearly show a more active cooperation with the parent company. Polish firms lead others regarding the sales orientation to the domestic market. On the basis of these results, it is obvious that Polish and Hungarian subsidiaries are more local market oriented while Slovakian, Slovenian and Estonian firms are estimated to be more export oriented, related either to the parent company or to other foreign partners.

Concerning another aspect of business partners, the supply structure of subsidiaries needs to be studied. The survey enables us to analyse the purchase structures across four types of channels as was done in defining the market structure of subsidiaries (see Appendix 18). On average, the foreign sources of purchases approach the 60% level out of total purchases by subsidiaries despite the fact that the parent firm plays a somewhat smaller role in deciding on the production input compared to the final production. The domestic suppliers offer roughly 40% of the production input, which is extremely important keeping in mind the strategic aim of foreign investments from the view of the host-country government. The tighter the links of foreign investors with the local economy, the more positive the effects accompanying FDI that may be expected to occur.

Taking into account the country effects, the role of domestic suppliers is very low or almost non-existent only in Slovakia, although other domestic subsidiaries of foreign owners are visible here. The opposite situation prevails in sales structure where the role of other subsidiaries of the same foreign owner was minor. In regard to other foreign suppliers, their share is highest in Hungary (around 45%), followed by Slovenia and Poland (around 40%) and Estonia (around 35%). Hungary has become less independent in purchases from the parent firm. Polish subsidiaries are highly oriented to the foreign parent but relatively less linked to other foreign supply chains. In terms of autonomy, subsidiaries seem to have more decision-making power in establishing the supply structure compared to the market structure.

The ANOVA tests again confirm the presence of distinctive patterns of supply structure among the five CEE countries with differences across the countries being statistically significant (see Appendix 19). The role of other

domestic subsidiaries is especially high in Slovakia (see the last column in the Appendix).

There are two other variables included in the questionnaire survey necessary to attend to. These are characterising subsidiary development and showing initiatives taken for changes as well as expectations about the future mandate (see also Appendices 20–21). Initiatives for changes have been estimated in three areas: 1) organisation of business functions, 2) number of lines of businesses (product diversification), and 3) sales and exports. Overall, the decisive role of the foreign owner is the smallest in changes related to organisation of business functions (see Appendix 20). The internal cooperation within the corporation is more active or the behaviour of subsidiary management more limited as far as product diversification or output (sales and exports) changes are concerned. But as seen from the figure in Appendix 20, subsidiaries themselves are main initiators of changes in all three aspects (evaluation rates remain below 0.5 on all issues) although Slovakian firms are exceptions here.

Considering country differences, Estonian subsidiaries definitely diverge from the average. Intervention by the foreign owner is certainly less usual in deciding about the decrease or increase in the number of product lines (indicator is 0.33) and output (0.31), as well as reorganisation of business functions (0.31). The initiative of subsidiary management is more appreciated relative to the other four countries. In contrast, subsidiaries in other countries seem to experience more intense cooperation with the parent firm, especially regarding the product diversification and output questions. Slovakian firms are extremely influenced by the initiatives generated by the foreign owner as far as changes in number of lines of business (indicator 0.61) and output (0.54) are concerned. Referring to the results from the ANOVA tests, the prevalence of initiatives taken by the foreign owner in Slovakian subsidiaries and vice versa by the subsidiary management in Estonian subsidiaries is confirmed (see Appendix 19). On average, foreign owners are relatively the most frequent initiator of change in Slovakia and the least frequent in Estonia. The situation favouring more the local management in Estonia might be explained by their reliable managerial capacities to realise the organisational purposes and new ideas, thus using their existing potential for subsidiary development.

The mandate loss or gain by the local management is the second question of concern in the current context of subsidiary development (see Appendix 21). The questionnaire asked about management expectations in any future mandate involvement. Again, three aspects of the business were proposed: 1) sales and exports, 2) number of other business functions undertaken independently, and 3) number of lines of business (or lines of products). On average, subsidiaries from all countries expect that their mandates will certainly increase in sales and exports (indicator 0.41) and the number of other business functions undertaken independently (0.38). Therefore, the mandate involvement is assumed to increase across all business functions performed.

In the context of each individual country, there are seen to be relatively big differences in expectations of charter change. Among Slovenian subsidiaries, there is no optimism for charter change in sales and exports (indicator 0.67) or in product diversification (0.70) in Poland and Slovakia (0.50). The expectations are certainly dependent on the current level of the mandate, which also determines the need for change. In Hungary and Poland, subsidiary managements clearly foresee the increase of power in sales and exports questions since foreign investors have been too domestic market oriented. The latter fact might continuously confuse the local governments for lack of international knowledge assumed to transfer via other international sources of knowledge like international trade. In comparison with the two most developed CEE countries, it is surprising that Slovenian subsidiaries are much more pessimistic in all aspects relative to subsidiaries located in Hungary. Instead, subsidiaries in Hungary and Estonia expect the same achievements. Again, it is not necessary to consider only the development level, the size of domestic market or some other influencing factor separately rather to combine the effects and to follow their co-effects. From the ANOVA tests, a multifarious picture in country comparisons in those three aspects is confirmed.

Having reviewed subsidiary autonomy through both corporate (or multinational) and external integration (estimating the backward and forward linkages), as well as examining the subsidiaries' expectations over their initiatives or mandate change main attention now turns to the patterns of functional autonomy across countries, industries and firms. The previous results will be also used as part of the input for further explanations.

Principal component factor analysis of the business functions of the MNC subsidiaries (testing H1)

Getting a confirmation on the hypothesis one (H1), the principal component factor analysis is to be performed to see the internal structure of the autonomy of the MNC subsidiary on an example of the five CEE countries. The autonomy of subsidiaries is measured by business functions in asking about the decision-making process between the local branch and the parent company: in which business area and to what extent the subsidiary is dependent on the parent company. There is started to compound the autonomy areas of subsidiaries across 13 originally included business functions to get so called clusters of business areas that will be used as the starting point for the whole sequent analysis.

Proceeding from the latter approach, there were four new statistically independent factors obtained, identified as: FACTMARK – related to the following business functions: determining the product price, market research, distribution and sales, after-sales services, advertising, marketing; FACTTECH – including product development, process engineering, supply and logistics; FACTMAN – including operational management, strategic management or

planning; and FACTFIN – including accounting and finance of operations, investment finance (see Table 5).

Although calling the new factors FACTMARK (marketing), FACTTECH (technology), FACTMAN (management), and FACTFIN (finance), the contents are not as straightforward as might be expected. It is necessary to be careful in interpreting the results. FACTMARK also covers decisions about sales. FACTTECH clearly indicates a strong link between the development and engineering issues and the purchase structure of subsidiaries. Thus, there is a need to focus on both technology development and production together. FACTMAN does not only intend to measure either the pattern of operational or the pattern of strategic management and planning, but will reflect both together.

Table 5. Rotated Component Matrix of the principal component factor analysis

Business functions	F1 FACTMARK	F2 FACTTECH	F3 FACTMAN	F4 FACTFIN
Product development	0.381	0.769	0.165	0.033
Process engineering	0.026	0.865	0.220	0.115
Determining product price	0.657	0.395	0.243	0.179
Supply and logistics	0.381	0.518	0.153	0.400
Accounting and finance operations	0.136	0.078	0.095	0.903
Investment finance	0.234	0.168	0.383	0.545
Market research	0.877	0.169	0.138	0.048
Distribution, sales	0.868	0.118	0.070	0.187
After sales services	0.836	0.120	0.075	0.138
Advertising	0.875	0.152	0.215	0.144
Marketing	0.866	0.153	0.237	0.142
Operational management	0.067	0.248	0.794	0.259
Strategic man. or planning	0.382	0.187	0.783	0.059

Note: F1 FACTMARK describes 49.977% of total variance (cumulatively 49.977%), F2 FACTTECH 12.548% (cumulatively 62.524%), F3 FACTMAN 7.485% (cumulatively 70.009%), F4 FACTFIN 5.790% (cumulatively 75.799%) based on initial eigenvalues.

Consequently, previous analyses differentiating strictly operational and strategic business functions of subsidiaries have involved somewhat biased tactics (see subsection 1.3.1). Using the same database, Majcen *et al.* (2003, 2004) have also made an attempt to focus mainly on operational and strategic aspects of multinational subsidiaries. They distinguished marketing and strategic aspects or between marketing, product and accounting & finance, but in terms of

subsidiary productivity they did not find any of the business functions autonomy variables to be significantly related to productivity growth.²⁵ In the present research, the focus is on the multidimensionality of the autonomy from the viewpoint of four different business areas instead of dividing them as operational and strategic functions. Moreover, not only productivity but also three other performance indicators will be introduced into the analysis.

The tests were controlled for univariate normality of the dependent variables (FACTTECH, FACTMARK, FACTMAN, FACTFIN) and a post-hoc procedure (Bonferroni, Tamhane's T2 tests) was adopted to get the appropriate answers for distinguishing significant differences between pairs of variables. As far as the normality test is concerned, the first and two latter factors showed similarities to the normal distribution. FACTMARK is positively skewed showing too many locally independent affiliates in the five CEE countries. This departure might create problems in further analysis. But it has to take into consideration that there is no test for multivariate normality and we could not make any serious conclusions of biases from the normality tests. It is usually argued that even if all variables passed the univariate test that would not guarantee that multivariate normality would also be satisfied.

Hence, it was clearly identified the autonomy of the multinational corporation's subsidiary to become multifarious over different business functions in five CEE countries. The hypothesis 1 has been confirmed now as proposed earlier. The structure of the autonomy of multinational corporation's subsidiaries comprises four distinctive groups of the new business areas which were defined to be as follows: production and technology, sales and marketing, financing and finally, management. These new statistically structured business areas based on 13 originally stated business functions from the questionnaire are to be used for figuring out the peculiarities of the autonomy and its impact on the performance in the multinational subsidiary's autonomy in five CEE countries.

ANOVA test of country-specific determinants of the autonomy of the multinational corporation's subsidiary (testing H2)

As learnt in the previous discussion, significant differences could be expected in subsidiary autonomy between the five CEE countries. The analysis will only concentrate on the autonomy determined by the four business areas. In the following analysis, first, country-, industry- and firm-specific features of the autonomy of the multinational corporation's subsidiary will be explored separately in sequential subsections (see also Figure 20). This is followed by a

²⁵ The authors also decided to exclude 2 variables – “operational management” and “strategic management and planning” – and test only for the remaining 11 variables, which could be regarded as the main weakness of the results in their drafted work (Majcen *et al.* 2004).

multivariate analysis of variance aiming to present the co-influence of all contextual effects on the autonomy of the MNC subsidiary.

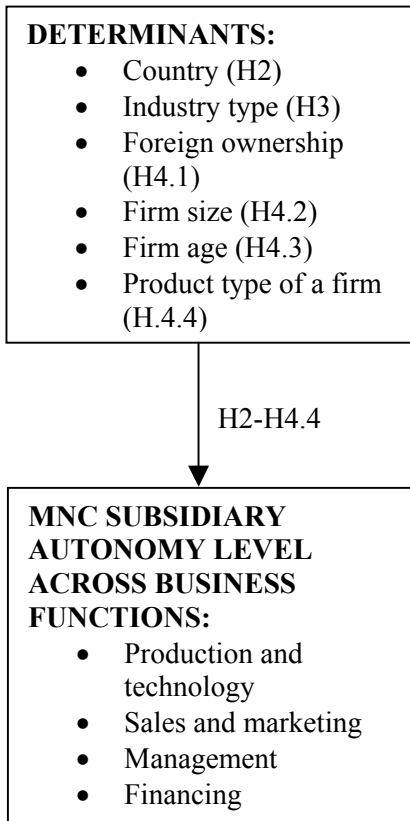
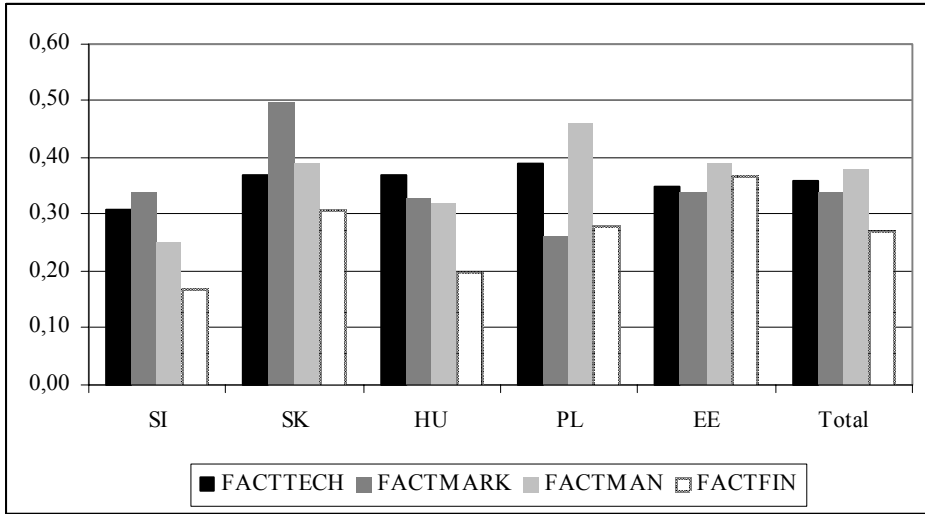


Figure 20. Hypothetical effects about the determinants of the autonomy of the multinational corporation’s subsidiary (compiled by the author).

In Figure 21, subsidiary autonomy ranges from 0, representing a complete independence from the foreign owner, to 1 as complete dependence. In the questionnaire, survey subsidiary managers had an option to choose between four types of answers as to whether business functions were being undertaken a) on your own only, b) mainly on your own, c) mainly by your foreign owner, or d) by your foreign owner only. Overall, the figure illustrates the highest independence of subsidiaries in financing questions (autonomy rate 0.27), which relates to accounting and finance of operations as well as to investment finance. (In addition to the figure, see the table in Appendix 22, which includes means of the autonomy for all countries, industries and firms.) The present subsection focuses only on the country distinctions of subsidiary autonomy.



Note: SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia;
 The vertical axis shows the mean value of the autonomy of the MNC subsidiary (0 – not autonomous, 1 – autonomous).

Figure 21. Comparison of means of countries across four factor groups (results of the ANOVA test).

The other three business areas show slightly similar levels of autonomy, though managerial decisions encompassing both sides of management – operational and strategic – are more intensively discussed with the parent firm (0.38). If the Estonian subsidiaries can be characterised by a relatively homogeneous structure of autonomy, the opposite is true for the rest. On the other hand, subsidiaries from Hungary and Slovenia as the two most developed CEE countries experience more independence compared to their rivals in Slovakia, Poland and Estonia.

The ANOVA test proved that the only differences in sales and marketing activities, management and financing received significant mean rankings in a comparison between the five analysed countries (see Appendix 23). Considering only the country-specific features, autonomy in production and technology does not seem to show differences between countries. From the data for financial autonomy, the most autonomous subsidiaries exist in Slovenia (0.17) and Hungary (0.20). Furthermore, in management autonomy Slovenian (0.25) and Hungarian (0.32) subsidiaries lead the others. Comparing other countries, management autonomy is lowest among Polish (0.46) and financial autonomy among Estonian (0.37) subsidiaries. It appears that marketing autonomy is relatively similar across all countries except in Slovakia (0.50). Subsidiaries in Slovakia have a very high dependence on the parent company in terms of marketing. In Poland, with a much bigger local market compared to the other

four CEE countries, the local subsidiaries have received the highest autonomy in marketing, whilst management autonomy has the lowest scores in all of the countries. This may indicate the complexity of management in the subsidiaries in Poland, but also signal the still low level of management skills in these subsidiaries. Although results about marketing autonomy between the four countries seem not to differ greatly, one could still support the argument of a stronger relationship between marketing autonomy and a large domestic market.

In conclusion, then, hypotheses H1 and H2 have been confirmed. First, the autonomy of the MNC subsidiary is multidimensional. Four distinguishing business areas across 13 originally presented business functions were identified: production and technology, sales and marketing, financing and finally, management. In overall, autonomy tends to be highest in financing (score rate 0.27) and lowest in technology (0.36) on the example of five CEE transition countries. Secondly, results at the country level showed that differences in subsidiary autonomy roles between the more and less developed CEE countries under consideration are statistically significant. In Slovenia and Hungary, the economically more developed countries, the foreign affiliates are more autonomous.

However, Estonia and Slovakia have less decision-making autonomy but the level is more balanced between the four factors of business functions. Referring back to the previous analysis, managers of the Estonian subsidiaries are very optimistic in terms of the future charter change, which obviously reflects their expectations and potential for gaining mandates in the future. The Polish subsidiaries show a relatively low autonomy in management (0.46) and, in reverse, high autonomy in marketing (0.26) decisions. The latter leads us to believe in the presence of a superior knowledge in marketing but not in the management area in the case of Poland. In opposite, marketing autonomy was detected to be very low in Slovakia (0.50) like the financing autonomy in Estonia (0.37) compared to other countries. Overall, there are no subsidiaries in any of the countries with a higher autonomy in all the four business activities compared to the others. Even taking into account the higher level of the economic development in Hungary and Slovenia, they do not diverge from the average in terms of technology questions. The technology area appears to be mostly supervised by the parent firms abroad. But it is necessary to remark that these results are only based on a single country data (see further analysis).

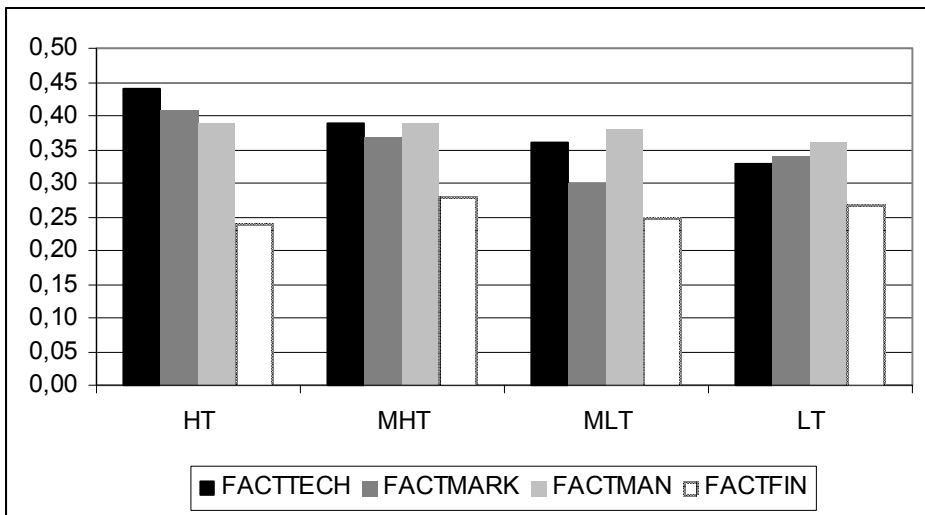
Based on the first results, it might be implied to various nature of the autonomy of the multinational corporation's subsidiary across countries depending on the knowledge and skills or even experience present in certain countries. In addition to the multifarious internal structure of the subsidiary autonomy, it tends to differ across countries. The degree of the autonomy assigned by the parent or gained by the subsidiary management is to be immediately linked to the orientation of foreign investments (domestic or export oriented) and to the strengths and weaknesses of sectors of the national innovation system. The mandate evolvement of subsidiaries in distinctive business areas is to be expected to occur but only being determined by the development of specialised

knowledge and skills. Since the level of technology of any observable countries is not high the less autonomous subsidiaries tend to be, primarily in technology questions.

2.2.2. Industry-specific determinants of the autonomy of the multinational corporation’s subsidiary

ANOVA test of industry-specific determinants of the autonomy of the MNC subsidiary (testing H3)

Next, the level of industry differences in subsidiary strategies by industry group can be seen in Figure 22. In grouping industry sectors throughout the analysis the classification worked out by OECD has been used (see references 21, 24).



Note: HT – high-technology sector, MHT – medium high-tech sector, MLT – medium low-tech sector, LT – low-tech sector;
The vertical axis shows the mean value of the autonomy of the MNC subsidiary (0 – not autonomous, 1 – autonomous).

Figure 22. Comparison of means of industry groups across four factor groups (results of the ANOVA test).

Overall, financial independence prevails by all industry groups as learnt in the previous subsection. It also appears that subsidiaries in high-tech sectors (HT) are least independent from the parent firm, especially in the case of technology (mean rank 0.44), marketing (0.41) and management factors (0.39). The means for each sector independently across the four business areas can be seen in

Appendix 22. In comparison with other sectors, subsidiary managers from the low-tech industries (LT) appear to enjoy more freedom in decision-making processes inside the subsidiary.

Back in subsection 2.1.1, the structure of value-added was measured on a basis of value-added labour productivity in the manufacturing sectors in all five countries. The major contribution to the value-added comes from the manufacturing firms in medium high-tech (MHT) and medium low-tech (MLT) sectors (see also table in Appendix 11). Since MHT and MLT firms are more productive relative to their counterparts in other sectors, one might expect more independence to be given to them. On the other hand, this might reflect the situation in CEE countries where the more valuable resources are present, the more control over them will be required to be performed by the parent firm.

But running ANOVA test, any statistically significant difference between the four industry sectors across autonomy areas was found. Thus, industry context alone does not affect subsidiary behaviour. This negative result will have very interesting implications in the further research. It will turn out that differences between industries are statistically significant only when combining country and industry categories.

MANOVA test of the country- and industry-specific determinants of the autonomy of the multinational corporation's subsidiary

Table 6 presents the results from the multivariate analysis of variance. In the model, two categorical variables – country and industry – are counted. After combining industry and country categories, industry sectors start to play a significant role in terms of all areas of autonomy (p-values 0.001 in technology and production, 0.065 in sales and marketing, 0.001 in management, 0.032 in financing). As seen from the Appendix, industry alone does not leave a significant effect on autonomy but jointly with the characteristics of countries helps determine the decision-making rules between the local subsidiary and the parent company.

Table 6. Results of the MANOVA test – statistically significant means for categorical variables by the four groups of functions

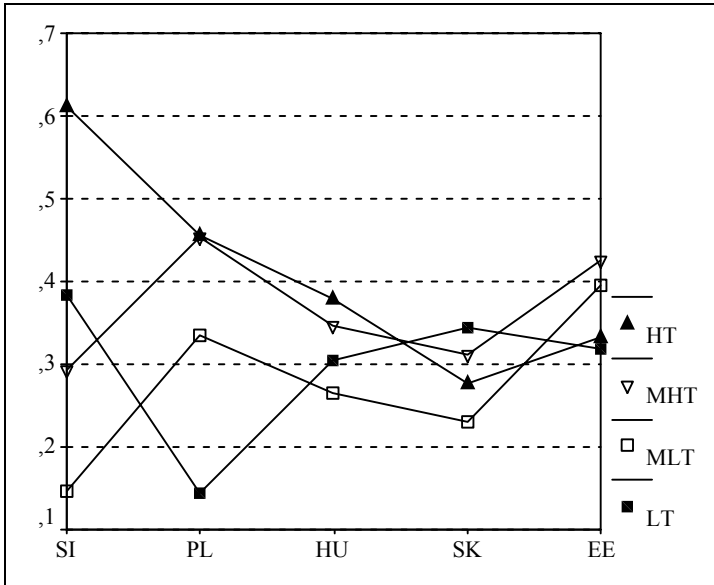
Variable	FACTTECH	FACTMARK	FACTMAN	FACTFIN
COUNTRY	–	F-stat: 8.603 p-value: 0.000 Differences: SK>SI, PL, HU, EE	F-stat: 2.794 p-value: 0.026 Differences: SI<PL, EE, SK; PL> HU	F-stat: 5.525 p-value: 0.000 Differences: SI<PL, SK, EE; PL>HU; HU<SK
COUNTRY* INDUSTRY	F-stat: 2.987 p-value: 0.001	F-stat: 1.698 p-value: 0.065	F-stat: 2.848 p-value: 0.001	F-stat: 1.913 p-value: 0.032

Note: “–“: no significant results, $R^2=17\%$;

„>” or „<” means the bigger or lower value, e.g. SK>SI, PL, HU, EE in the third column refers to the bigger mean value of FACTMARK (which means the lower autonomy level) in Slovakia relative to Slovenia, Poland, Hungary and Estonia. The F-statistics showing statistical significance of the results are also shown in the table.

From Figure 23, one can conclude that the biggest contributions (impact) by country are for Slovenia and Poland. In the figure, co-effects on technology and production autonomy (FACTTECH) generated in cooperation with countries and industries can be seen. Slovenian subsidiaries have the biggest differences among the four types of autonomy in terms of industry sectors. In the area of technology and production, their autonomy is lowest in the high-tech sector compared to other countries, highest in the medium-low-tech sector, lowest in the low-tech sector, and highest again in the medium-high-tech sector. Polish subsidiaries diverge from the other countries in the low-tech sector; subsidiaries are much more autonomous in low-tech industries in Poland. This may indicate that technology used is rather simple and standardised, which requires little intervention from the mother company. Contrary to the Slovenian results, among different industries Estonia has the lowest autonomy in the medium-high-tech and medium-low-tech sectors. This might show that subsidiaries in more developed countries have more autonomy at least in medium-tech industries and in terms of the technology component of the activities.

Referring to the earlier results, of all the countries Slovenia had one of the highest scores of autonomy especially in relation to management and financing. This shows that subsidiaries in Slovenia have an appropriate level of skills in management and financing to guarantee the performance of subsidiaries. Therefore, the Slovenian case indicates that a stronger economic base favours decisions made in subsidiaries, but autonomy is highly industry-specific.



Note: HT – high-technology sector, MHT – medium high-tech sector, MLT – medium low-tech sector, LT – low-tech sector;

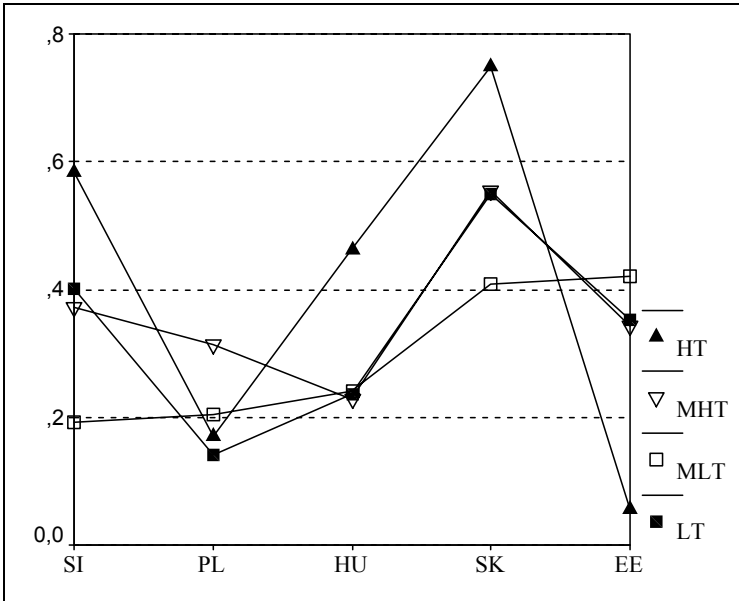
SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia;

The vertical axis shows the mean value of the autonomy of the MNC subsidiary (0 – not autonomous, 1 – autonomous).

Figure 23. Estimated marginal means between the country and industry factors by component factor FACTTECH.

In the pattern of autonomy in sales and marketing, Polish subsidiaries (as expected) refer to the highest independence among all industry groups and more significantly in low-tech industries (see Figure 24). If Polish subsidiaries are rather homogeneous in terms of autonomy areas, the same could not be said about the rest of the countries. The heterogeneous structure of autonomy is illustrated by a relatively small independence of high-tech subsidiaries in Slovakia, Slovenia and Hungary and, by contrast, by a very high autonomy level in Estonia. In general, Slovakian subsidiaries from different industry sectors experience very low autonomy in sales and marketing as already seen in Figure 21.

Figure 24 shows all industry effects influencing the low or high level of decision-making power in sales and marketing. In industry comparisons, the most interesting pattern of autonomy is presented by high-tech companies, which vary from almost complete independence in Estonia to almost complete dependence in Slovakia (and also a very high level of dependence in Slovenia). Thus, it is not only country effects that determine the behaviour between the parent firm and local subsidiaries.

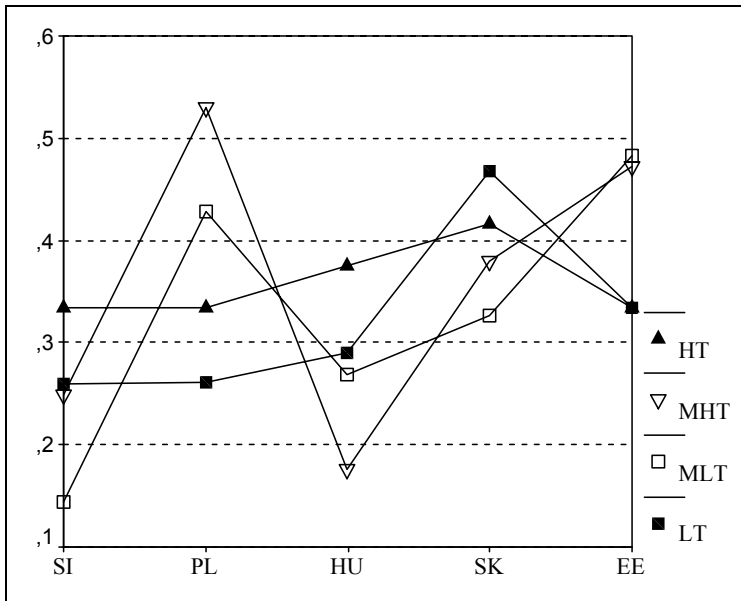


Note: HT – high-technology sector, MHT – medium high-tech sector, MLT – medium low-tech sector, LT – low-tech sector;
 SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia;
 The vertical axis shows the mean value of the autonomy of the MNC subsidiary (0 – not autonomous, 1 – autonomous).

Figure 24. Estimated marginal means between country and industry dummies by component factor FACTMARK.

There are certainly industry effects as well as the expected firm effects present in designating the final effects on subsidiary autonomy. The low or high level of marketing autonomy in one or another country with a bigger and smaller domestic market does not mean that autonomy behaves in a similar way in all industry groups.

Looking at the managerial autonomy in the three dimensional area (see Figure 25), the picture shows again the largest diversities between autonomy across the four areas of business functions in Slovenia and Poland, and in comparison with all industry groups inside medium-high-tech and medium-low-tech subsidiaries in the five countries. From Figure 21, it was seen that Poland diverges from the others in terms of very low management autonomy.



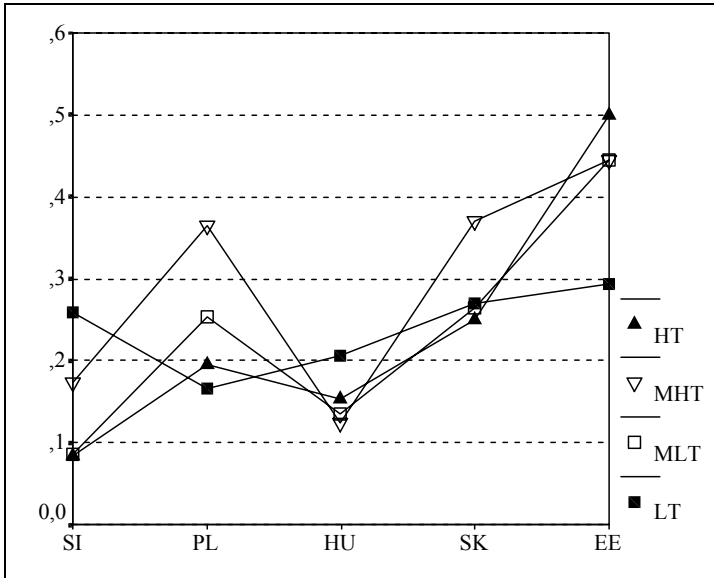
Note: HT – high-technology sector, MHT – medium high-tech sector, MLT – medium low-tech sector, LT – low-tech sector;
 SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia;
 The vertical axis shows the mean value of the autonomy of the MNC subsidiary (0 – not autonomous, 1 – autonomous).

Figure 25. Estimated marginal means between country and industry dummies by component factor FACTMAN.

It can be now seen more clearly that in general managerial decisions are made by the parent companies in medium-tech sectors. In case of Poland, the reason for a very low autonomy in the field of management is explained by medium-tech as the prevailing industry type. It is also understood that taking into account industry characteristics, the more economically developed is the country, the more autonomy it has at all levels of autonomy, especially in medium-tech sectors. Taking into focus Poland, Estonia and Slovakia, there is much lower autonomy compared to Slovenia and Hungary. Subsidiaries in Poland are most pronounced from the perspective of managerial dependence, especially in the medium-high-tech industry sector. Managerial skills play a crucial role in choosing the subsidiary strategy in CEE.

Finally, highlighting the joint country and industry effects in the financing area will show some complementary distinctions. The MANOVA test also resulted in statistically significant differences in financing questions as far as countries and industries together were examined. From the previous figures, we recall that financing was the area with the greatest mandate among the five CEE countries. In comparison with other autonomy fields, the financing questions

appear to reflect the smallest variation within the countries themselves (see Figure 26).



Note: HT – high-technology sector, MHT – medium high-tech sector, MLT – medium low-tech sector, LT – low-tech sector;
 SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia;
 The vertical axis shows the mean value of the autonomy of the MNC subsidiary (0 – not autonomous, 1 – autonomous).

Figure 26. Estimated marginal means between country and industry dummies by component factor FACTFIN.

The only industry group, which is more fluctuating, is shown to be the low-tech sector. In country comparisons, similar to managerial tasks, financing questions are more supervised by the parent firm in Poland, Slovakia and Estonia relative to the other two countries – Hungary and Slovenia. Therefore, considering the autonomy structure by the four areas of tasks – technology and production, sales and marketing, management, financing – the variations with which the different business areas seem to move are now clearer in the five CEE catching-up economies.

What can be concluded about the autonomy of multinational subsidiaries in terms of industry-specific factors? Industry factors independently do not show significant influences on the autonomy of the multinational subsidiary. Differences in autonomy by technology and production become statistically significant when combining country- and industry-level categories.

Although multinational subsidiaries in Hungary and Slovenia tend to be relatively more autonomous, the decision-making process between the parent

and local unit is largely industry-specific. This result is considerable in all autonomy areas over the four business functions. In comparing across countries, Slovenia and Poland seem to show the most heterogeneous nature of subsidiary autonomy over the four types of industry groups, particularly in production and technology. The latter could be regarded as being the most critical decision-making area between the parent and local subsidiary.

Overall, multinational subsidiaries in medium-high-tech and medium-low-tech industries have gained greater decision-making autonomy, particularly in Slovenia and Hungary. These sectors were also found to be more productive in terms of value-added (see also Appendices 10–11). The high-tech sector is the most reluctant to give autonomy to local subsidiaries in all countries. The only exception is a very high marketing independence among high-tech subsidiaries in Estonia (score close to 0), which may show the presence of very specific market knowledge reliably serving the corporation. Poland differs from other less developed CEE economies in having high technological autonomy in the low-tech sector, the lowest management and highest marketing autonomy in the medium-high-tech and medium-low-tech sectors. The Slovakian firms from high-tech and medium-high-tech industries experience rather low autonomy, especially in marketing decisions. The previous discussion showed that the Slovakian subsidiaries are more involved in parent firm networks (in major part capturing the automotive industry), which already by definition refers to lower subsidiary autonomy. The opposite case is found for Polish subsidiaries. The more locally oriented the subsidiary is, the more marketing autonomy is left by the parent. So-called “local implementers” (see Figure 9) might mostly dominate medium-tech sectors in Poland.

On the basis of the present results, one could support the claim presented in hypothesis H3 but predominantly in Hungary and Slovenia. Multinational subsidiaries in the industries prevailing in CEE countries (currently in terms of productivity) enjoy higher decision-making power compared to other sectors. However, subsidiary autonomy largely differs by the area of decisions. It is also dependent on the host-country context since the hypothesised effect found strongest support in Hungary and Slovenia. In less developed countries such as Poland, Estonia and Slovakia, it is obvious that medium-tech sectors also prevail in terms of the economic output but multinational subsidiaries are not as highly autonomous as expected, although it tends to be an area-specific question.

Therefore, the presence of local superior knowledge in various business areas generates a higher response by the parent firm abroad. Since the technology level is not as appropriate as required, multinational subsidiaries in high-tech sectors are relatively weakly positioned from the viewpoint of a whole multinational corporation. Industry clusters are not present in those sectors in CEE countries. Medium-tech industries are those providing specialised knowledge of various kinds for multinationals today.

2.2.3. Firm-specific determinants of the autonomy of the multinational corporation's subsidiary

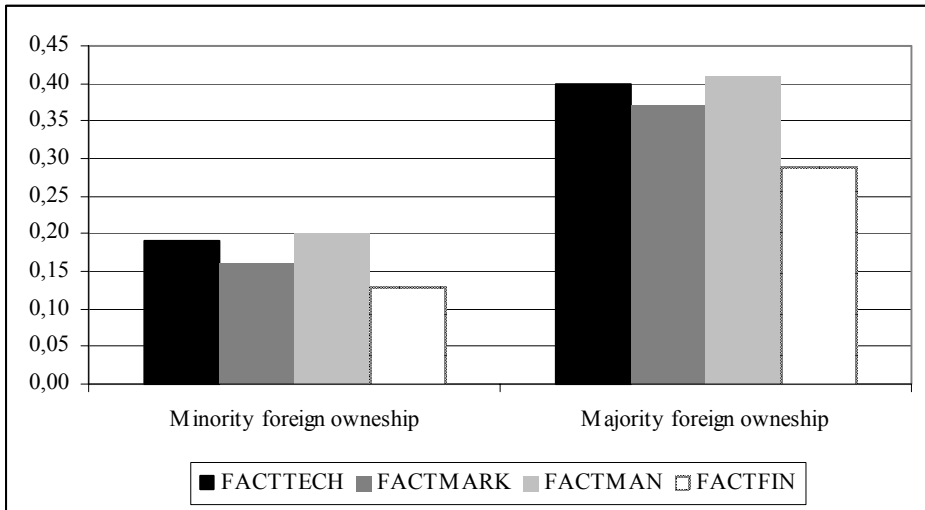
ANOVA test of firm-specific determinants of the autonomy of the multinational corporation's subsidiary (testing H4.1–4.4)

The previous subsections referred to the variation of subsidiary autonomy as depending on specific features of the environment in which firms are operating. In the present subsection we first turn attention only to the firms themselves considering their foreign involvement, size, year of establishment as foreign-owned firms and the product character as a proxy for the capability level of a subsidiary. Complementary, this is followed by a thorough analysis of the co-existence of all country-, industry- and firm-specific features using multivariate analysis of variance.

In the questionnaire survey, a total 433 firms responded. Out of them, 368 (86%) are majority foreign-owned (at and above 50% of ownership), 242 (56%) are firms with at least 200 employees, 320 (74%) were established as foreign-owned firms before 1995 and almost equally 208 (48%) produced only intermediate and 199 (46%) both types of products (see Appendixes 13–16). Therefore, majority foreign-owned SMEs prevail in the sample, although the role of large companies is still relatively high in our sample. Subsidiaries were mostly established before 1995 and are producing only intermediate or both types of products (intermediate, final).

The ANOVA and MANOVA tests assess the more common division of firms into small and medium-sized (below 250 employees) and large (more than 250 employees). Foreign ownership is distinguished by minority (below 50%) and majority involvement of the foreign owner. The year of establishment of the subsidiary is seen as having taken place either before or during 1990, from 1991 to 1995, or from 1996 onwards. Firms are seen as producing only intermediate goods, only final products, or both intermediate and final products.

Characterising the multidimensionality of autonomy, the majority foreign-owned firms are less autonomous compared to the firms with minority foreign involvement (see Figure 27 and Appendix 22).



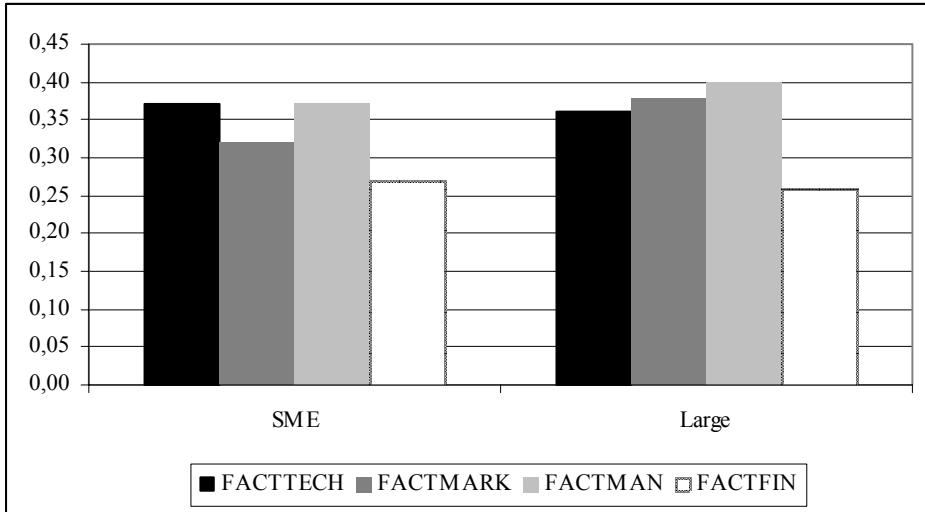
Note: The vertical axis shows the mean value of the autonomy of the MNC subsidiary (0 – not autonomous, 1 – autonomous).

Figure 27. Comparison of means of foreign ownership across four factor groups (results of the ANOVA test).

If in comparing three areas – technology and production, sales and marketing and management – the level of autonomy appears to achieve a similar position among both types of firms, in financing autonomy the picture is one of a divergence from the average. The autonomy level of majority-owned firms varies from 0.29 to 0.38, in minority-owned firms from 0.13 to 0.20.

Although the role of minority-owned firms is very small in the sample, the relatively higher level of autonomy among them is worth noting. The difference between minority- and majority-owned subsidiaries is also statistically significant (see Appendix 23) and might obviously cause significant effects in co-examining context- and other firm-specific effects. According to expectations, in subsidiaries where control by the foreign owner is minor the interest in the activities of subsidiaries seems to be relatively low. The bigger the involvement in the capital stock, the bigger responsibility the parent firms feel to carry.

From the database, it can be found that SMEs outweigh the share of large companies in the sample though the involvement of the latter is very high. From Figure 28, it can be seen that the differences between SMEs and large subsidiaries in the autonomy structure are not as considerable as it was in comparing minority- and majority-owned foreign firms.



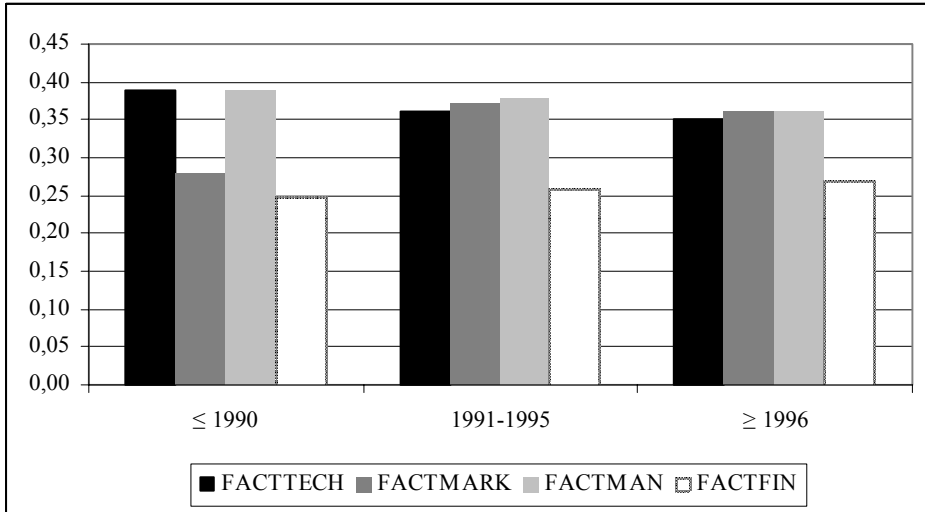
Note: The vertical axis shows the mean value of the autonomy of the MNC subsidiary (0 – not autonomous, 1 – autonomous).

Figure 28. Comparison of means of firm size across four factor groups (results of the ANOVA test).

Appendix 22 indicates variations in the level of autonomy between 0.27 and 0.37 among SMEs and between 0.26 and 0.40 in case of large firms. Contrary to the ownership pattern, firm size shows significant difference between the two types of firms only in sales and marketing questions (p-value 0.051), see Appendix 23. Thus, the bigger the subsidiary as far as employment is concerned the more intense is the decision-making process with the parent firm abroad. The size of the firm is one of the determining factors designing the relations between the parent and local firm in the five CEE countries being particularly critical in sales and marketing. The last result comes out opposite to the expectations proposed in H4.2.

The year of establishment of the subsidiary starts from the year it was established with foreign capital. The most aggressive time for foreign investors in entering the new emerging markets in Central and Eastern Europe was during 1991–1995 (see Appendix 15). Exceptionally, Hungary experienced an extensive expansion of foreign firms already before 1990. It is obvious from Figure 29 that the age of firms does not play as significant a role in their autonomy as expected (see also Appendix 22). The only circumstance to expect significant differences within or between age groups comes from the period before 1990. Marketing power (mean score 0.28) is much higher among subsidiaries established before 1990s compared to younger firms (0.37 and 0.36). The fact is also confirmed through an ANOVA test (see Appendix 23). It was found that firms established before 1990 and those in 1991–1995 differ

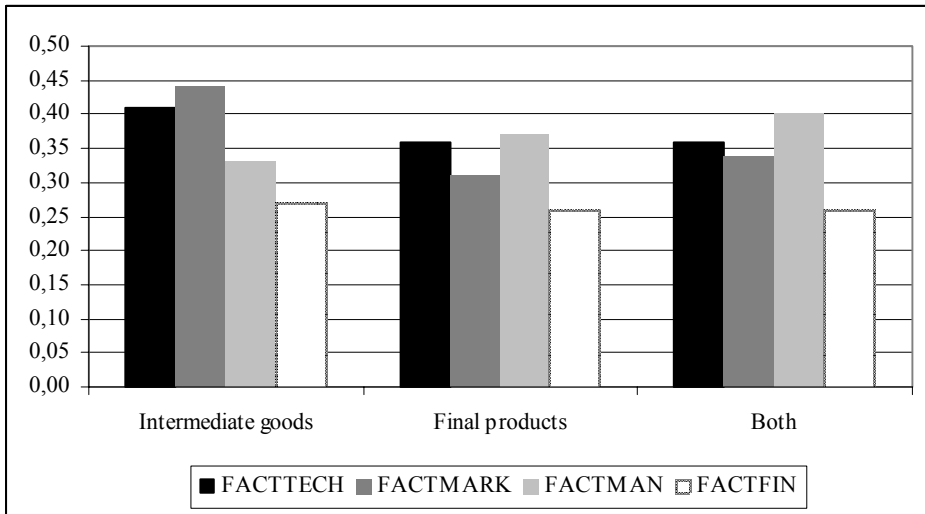
significantly, leaving less decision-making power to the latter. Obviously, older subsidiaries have an advantage over decisions in the technology upgrading and market segments.



Note: The vertical axis shows the mean value of the autonomy of the MNC subsidiary (0 – not autonomous, 1 – autonomous).

Figure 29. Comparison of means of establishment year of the MNC subsidiary across four factor groups (results of the ANOVA test).

Finally, in the firm-level indicators the survey results about the product type of subsidiaries is assessed in the next diagram (see Figure 30 and Appendix 22). This firm-specific character is taken somewhat as a proxy for showing the capability level within subsidiaries in CEE countries. On a basis of the sample description, only a few subsidiaries produced final products. Still, either the intermediate goods or both intermediate goods and final products determine the production structure, although in Appendix 16 24% of sample firms in Slovakia concentrated only on the production of final products, followed by Poland (22%) and Hungary (19%). The production resources are mainly exploited for producing intermediate goods. The share of intermediate goods is highest in Estonia (54%) and smallest in Poland (40%). The structure of the production again reflects the relevance of the size of the country or domestic market in determining the market orientation of foreign firms. In Estonia, Slovenia and Slovakia subsidiaries are more integrated into the international production networks (both corporate-specific and external ones) relative to Polish and Hungarian firms. Slovakia is particularly dominant with intense links with the corporate-specific networks.



Note: The vertical axis shows the mean value of the autonomy of the MNC subsidiary (0 – not autonomous, 1 – autonomous).

Figure 30. Comparison of means of product type of the MNC subsidiary across four factor groups (results of the ANOVA test).

In estimating the influence of the production structure on subsidiary autonomy, we realise that in firms only adapted to intermediary goods production and technology (mean score 0.41 from Appendix 22), sales and marketing (0.44) decisions are more intensively made by their parent firms. The mandates of local managers differ crucially by business areas in these firms. On the other hand, among firms producing either final or both types of products managerial questions (respectively 0.37 and 0.40) are more discussed with parent firms. By comparing autonomy areas, a significant difference between subsidiaries is only acceptable for sales and marketing (see Appendix 23). The ANOVA test enables us to confirm the influence of the production structure on the marketing autonomy (p-value 0.023). The degree of the autonomy in marketing decisions seems to be bigger in subsidiaries concentrated only on the production of final products compared to firms with only intermediate goods. The production of intermediate goods is more dictated by the parent firms though it does not seem to be a rule of the game. Thus, it is obvious that parent firms are more involved in determining the supply structure of subsidiaries in the case of these firms.

In conclusion, the analysis yielded the results of supporting three out of four proposed claims presented about the firm-specific factors of multinational subsidiary autonomy in hypotheses 4.1–4.4 (H4.1–H4.4). **First, the autonomy of multinational subsidiary autonomy is greater in firms with minority foreign involvement (H4.1).** Although, the representativeness of minority-owned foreign subsidiaries is not high on a basis of the current database, we

might imply to the logical results in terms of the relationship between the autonomy and foreign ownership. The multinational corporation's subsidiary with majority foreign involvement is highly controlled by the parent. **Second, contrary to hypothesis 4.2, large multinational subsidiaries enjoy less freedom from the parent firm abroad compared to their counterparts, small and medium-sized firms.** This fact is significantly emphasised in decisions related to sales and marketing. Hence, more capable firms need more control by the parents as resulted from the analysis. **Third, the autonomy of multinational subsidiaries is higher in older and more experienced firms (H4.3).** Older subsidiaries, whose share is relatively higher in Hungary compared to other countries, seem to have an advantage over decisions predominantly in the marketing and financing decisions. **In principle, the last claim (H4.4) is also approved. The autonomy (especially production and technology, sales and marketing) is lower in multinational subsidiaries that are only focused on producing intermediate goods relative to those of concentrating mainly on the production of final products.** The product type was introduced as a proxy for the capability level of subsidiary in the analysis (only producing intermediate goods refers to participation in lower value-added activities by multinational subsidiary).

Based on the results of firm-specific patterns over the autonomy of multinational corporation's subsidiary, first, the firm-specific influences on the autonomy are clearly visible. But the results in terms of the firm size, age, ownership and capabilities are mixed as seen the same story from the previous studies (see subsection 1.3.1). Hence, other factors like country and industry determinants are expected to play a significant decisive role jointly with firm specificities in defining the control degree over local entities in host economies. Before presenting the final implication on the subsidiary autonomy in the manufacturing sector in five CEE countries it is necessary to finally look at the joint effects of countries, industries and firms on the autonomy in the observable countries.

The MANOVA tests of the country-, industry- and firm-specific determinants on the autonomy of the multinational corporation's subsidiary

Complementary to the effects (single or combined) appearing in the previous discussion, the next part of the analysis will combine all of them. If the first MANOVA test only showed co-evolution of country- and industry-specific factors on subsidiary autonomy, the second test will look at the co-effects of both context and firm-specific features. On the one hand, foreign investments are induced to enter the foreign markets by internationalisation and location forces; on the other hand ownership and other firm-specific motivations determine the competitiveness of each individual branch within the corporation.

Using MANOVA tests different types of relations can be tested specifically changing the character and/or a number of firm-level factors. Presently in the

dissertation there are only two other models with the most relevant results in terms of model significance included. In comparison with the first MANOVA test (see Table 6), the significance of the model has largely improved. In the first model, only 17 % (R²) of effects were described by two types of variables – country and industry groups. Now introducing firm-specific characters into the model the value of R² has increased up to 45%. Due to the limits of the analytical method applied via SPSS the product type of the firm will be excluded in the first MANOVA test as well as the age of the subsidiary in the second test. Significant results of the first model are supplied in Table 7.

Table 7. Results of the MANOVA test – statistically significant means for categorical variables by four group of functions

Variable	FACTTECH	FACTMARK	FACTMAN	FACTFIN
COUNTRY	–	F-stat: 3.626 p-value : 0.007 Differences : SK>SI, PL, HU, EE	–	F-stat: 3.204 p-value: 0.014 Differences: SI<PL, SK, EE ; PL>HU ; HU<SK
OWNER	F-stat: 7.169 p-value: 0.008 Difference: majority > minority	F-stat: 5.869 p-value: 0.016 Difference: majority > minority	F-stat: 12.228 p-value: 0.001 Difference: majority > minority	F-stat: 10.280 p-value: 0.002 Difference: majority > minority
COUNTRY* INDUSTRY	F-stat: 1.973 p-value: 0.032	–	–	–
COUNTRY* INDUSTRY* FIRM_SIZE	–	–	–	F-stat: 2.667 p-value: 0.008
COUNTRY* OWNER* ESTBL	–	–	F-stat: 3.869 p-value: 0.050	–
INDUSTRY* FIRM_SIZE* ESTBL	–	–	–	F-stat: 2.948 p-value: 0.013

Note: “–“: no significant results, R²=41%;
 „>” or „<” means the bigger or lower value, e.g. SK>SI, PL, HU, EE in the third column refers to the bigger mean value of FACTMARK (which means the lower autonomy level) in Slovakia relative to Slovenia, Poland, Hungary and Estonia. The F-statistics showing statistical significance of the results are also shown in the table.

Introducing firm-level effects in the model, there are also seen to be some changes in individual effects on autonomy. Marketing (p-value 0.007) and financing areas (0.014) of the business appear to play the strongest role in country comparisons. Thus, country characteristics are mostly on the scene in the decision-making process between the parent firm and the local unit in marketing and financing questions. The highest autonomy scores in marketing are among Polish and the lowest scores among Slovakian subsidiaries. Though, overall, financing questions are more under the control of local units in CEE countries, Slovenian and Hungarian firms are financially even more autonomous.

The appearance of statistically significant co-effects of countries and industries on autonomy only in the technology area (p-value 0.032) does definitely reflect the relevance of more intense supervision of local units in strategic business areas. Thus, by adding firm-specific features into the model the most influential effects are distinguished.

Concerning the other more powerful results, all three firm-specific indicators – firm ownership, size and establishment year – show their determining roles in the concrete circumstances. The exploitation of managers in solving the financial questions either from the head office or local unit is highly dependent on the geographical location, industrial classification and the size of the subsidiary (p-value 0.008). Similarly, the year of foreign involvement of the firm in combination with the industrial classification and firm size determine the degree of financial control by the parent firm (p-value 0.013). The autonomy in management tasks depends also on the degree of foreign ownership and the establishment year of the subsidiary.

The autonomy level in financial and management areas is relatively inconsistent across the five CEE countries, industries and firms. Through the ANOVA test we see largest variations between different types of firms only in marketing area (see Appendix 23). Despite the highest level of autonomy being in financial tasks it is very much designed by the firm-specific factors. The differences of subsidiary autonomy in comparison with countries and industries described in the subsection 2.2.2 are also partly shaped by the type of the firm.

In the second MANOVA test, there is the establishment year of the firm as a foreign-owned company is excluded and the product type of firm included. We change these two firm-specific variables instead of introducing all firm-specific factors in the model. Examining the results in the next Table 8 there are again present some specific differences compared to the previous model. In pure country and industry comparisons there are new elements present relative to the previous MANOVA and even ANOVA tests. The age of the firm did not bring out the relevant distinctions either for countries in managerial questions or industries in any areas of autonomy. The product type of the firm is obviously more influential in terms of managerial tasks as seen from the table below (p-value 0.034 for FACTMAN). This is also the first time we see statistically significant differences between industries in the technology area (p-value 0.091).

Table 8. The results of the MANOVA test – statistically significant means for categorical variables by four group of functions

Variable	FACTTECH	FACTMARK	FACTMAN	FACTFIN
COUNTRY	–	F-stat: 3.137 p-value : 0.015 Differences : SK>SI, PL, HU, EE	F-stat: 2.652 p-value: 0.034 Differences: SI<PL, EE, SK; PL> HU	F-stat: 3.735 p-value: 0.006 Differences: SI<PL, SK, EE ; PL>HU ; HU<SK
INDUSTRY	F-stat: 2.178 p-value: 0.091	–	–	–
OWNER	F-stat: 7.897 p-value: 0.005 Difference: majority > minority	F-stat: 5.356 p-value: 0.021 Difference: majority > minority	F-stat: 9.483 p-value: 0.002 Difference: majority > minority	F-stat: 8.959 p-value: 0.003 Difference: majority > minority
COUNTRY* INDUSTRY	F-stat: 2.507 p-value: 0.004	–	–	–
COUNTRY* PR_TYPE	–	F-stat: 1.974 p-value: 0.050	F-stat: 1.932 p-value: 0.056	–
COUNTRY* INDUSTRY* PR_TYPE	F-stat: 5.818 p-value: 0.003	F-stat: 5.469 p-value: 0.005	F-stat: 2.831 p-value: 0.061	F-stat: 4.892 p-value: 0.008
COUNTRY*FI RM_SIZE* PR_TYPE	–	–	–	F-stat: 2.726 p-value: 0.014
INDUSTRY*FI RM_SIZE*PR_ TYPE	F-stat: 3.111 p-value: 0.016	–	F-stat: 3.153 p-value: 0.015	–
OWNER* FIRM_SIZE* PR_TYPE	F-stat: 3.504 p-value: 0.062	–	–	F-stat: 3.394 p-value: 0.0067

Note: “–”: no significant results, R²=45%;

„>” or „<” means the bigger or lower value, e.g. SK>SI, PL, HU, EE in the third column refers to the bigger mean value of FACTMARK (which means the lower autonomy level) in Slovakia relative to Slovenia, Poland, Hungary and Estonia. The F-statistics showing statistical significance of the results are also shown in the table.

It turns out that the product type of the firm is more significantly driving the relations between the parent and local unit, as expected. However, it is arguable whether the product type of the firm could be taken as a cause or reason of a certain level of the autonomy, but on the basis of the results we see its influential role across autonomy areas. It is obvious now that industry distinctions are still emphasised in technology questions. The technology

decisions are more dictated in high-tech and medium-high-tech firms compared to firms in other sectors (see also Figure 22).

The character of subsidiary autonomy is continuing to change significantly between different types of firms. The product type also reflects the capability levels of firms. We see from Table 8 that product type outranks the relevant combinations with certain country and industry characters in all autonomy areas (p-value in technology autonomy 0.003, marketing autonomy 0.005, management autonomy 0.061, and financing autonomy 0.008). Thus, the product type is really showing an influence on subsidiary autonomy in certain country and industry contexts. Firm size and product type with certain country or industry specifications jointly determine the relations with the parent company in questions linked to financing (p-value 0.014) or production, technology (0.016) and management (0.015). Firm-level specifications together cause variations in technology and financing autonomy of subsidiaries.

As seen from the combined analysis of country, industry and firm-specific influences on the subsidiary autonomy, it is definitely a question of the context where the subsidiary is operating as well as what kind of resources and capabilities are exploited. Referring back to the previous parts of the analysis and complementarily using the latter it can be summarised as follows:

- All proposed country-, industry- and firm-specific impacts on multinational subsidiary autonomy are obvious. Furthermore, these effects are to a great extent dependent on the type of the autonomy: whether decisions are made in production and technology, sales and marketing, management or financing area.
- Industry-level factors of autonomy have to be dealt jointly with other context-specific effects such as the currently used country variable. Industry specificities alone do not seem to give significant results otherwise. Country and industry factors jointly point out the significance of the decision-making process between the parent and local unit in production and technology areas (the analysis did not yield similar results via ANOVA tests for countries).
- The significance of context-specific characters on design of multinational subsidiary autonomy is confirmed, and that primarily in decisions related to production and technology development.
- Finally, foreign ownership structure and also capability level of subsidiaries tend to determine most significantly the level of subsidiary autonomy relative to other firm-specific characters (based on the MANOVA tests).

On the basis of the preceding research on the internal structure and the country-, industry-, and firm-specificity of the autonomy of the multinational corporation's subsidiary, it might be concluded with two major implications. The autonomy of the multinational corporation's subsidiary could not be approached as a homogenous object. It is significantly diverges across business

functions and the low autonomy in its turn could not be taken as a disadvantage in the context of multinational corporations. Instead, it should be rather seen as a challenge of the multinational corporation's subsidiary to access specific knowledge in a certain field, e.g., technology, marketing, etc., through the parent firm. Although, the "right" balance between the local responsiveness and global integration of the subsidiary is apparently needed to find out to response the expectations of both the host economy and the corporation. Secondly, the character of the autonomy is completely country-, industry-, and firm-specific. Therefore, depending on the presence of certain knowledge and skills in a specific country, industry and firm the response by the parent in terms of the subsidiary autonomy is to be received. The final level of the subsidiary autonomy is a question of the environment where the subsidiary is performing, as well as what kind of specialised resources and capabilities are exploited. In the second major stage of the analysis, we will meet the results on the analysis about the impact of the autonomy on the performance in the multinational corporation's subsidiary against all environment and firm-specific characters in the five CEE countries.

2.3. Research results: the impact of the multidimensionality of the autonomy on the performance in the multinational corporation's subsidiary

2.3.1. Model specification

Description of dependent variable

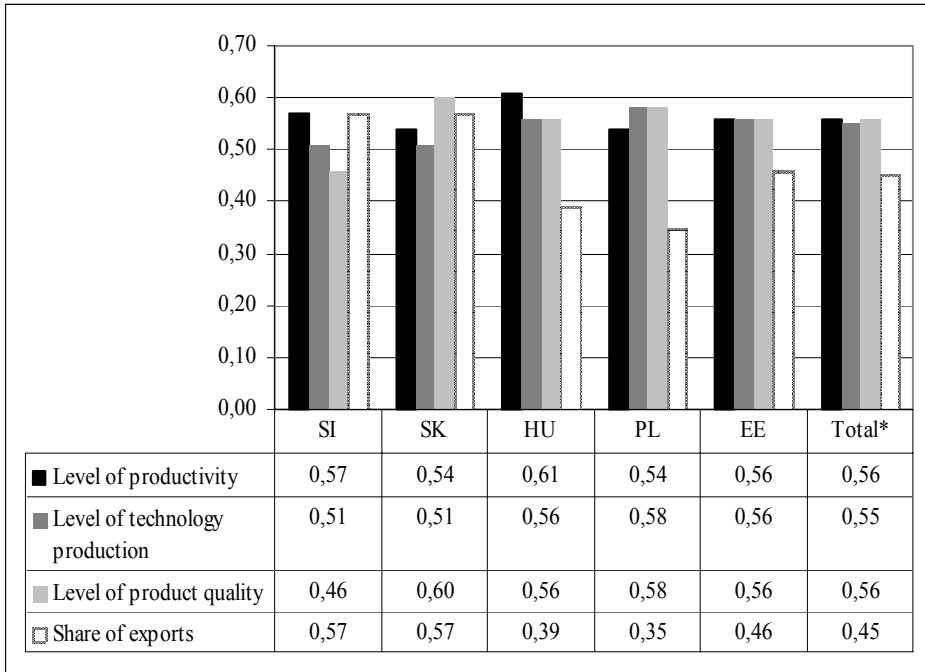
The present subsection aims to analyse the behaviour of subsidiary autonomy considering its impact on performance through technological improvements and export performance of the multinational subsidiary. It will be built on the hypothesis established in subsection 2.1.2 that too little autonomy (high control by the foreign owner) and too little control (high autonomy of the local subsidiary) are both likely to be "inferior" outcomes, and the relationship with the performance variables may be posited to be of an inverted U-shape (testing H5). This relationship may however vary from one function to another and, moreover, as noted earlier, a proper U-shape is possible, implying that the two extremes are "better".

Ordered regression methods are then used to scale the dependent variables, which will be presented in the current discussion. Dependent variables are categorical or multinomial, not continuous. The description of explanatory variables of the ordered regression models will be then presented. The definitions of all variables of the ordered regression analysis are summarised in Appendix 24.

Hence, the multidimensionality of the subsidiary functional autonomy (variables FACTTECH, FACTMARK, FACTMAN, FACTFIN) will be interrelated with some performance indicators characterising technological upgrading of subsidiaries and exports as a final output. Ordered regression models will be tested separately for each performance indicator. The Questionnaire Survey asked about the magnitude of the changes in five categories of performance: 1) value of total sales, 2) share of exports, 3) level of productivity in production, 4) level of technology of production equipment, 5) level of quality of produce since the registration of the firm as a foreign investment enterprise until 2001. Answers of the firms were scaled between 0 and 1 (considerable reduction ... considerable increase). Thus, the dynamics of subsidiary performance are built into the indicators and changes to be observed have been taking place approximately during the decade.

In the light of the research aim and limits of the dissertation, the behaviour of four out of five performance indicators will be examined in the following analysis (value of total sales is not included). The main research question of the thesis has dealt with the impact of subsidiary autonomy on technological upgrading. Three indicators – levels of productivity (the variable termed CHANGE_PROD), production technology (CHANGE_Tech) and product quality (CHANGE_PQUA) together will tend to reflect the technology performance of subsidiaries since their establishment mainly during the 1990s. The changes in the share of exports from output (CHANGE_EXP) will be included in the discussion for two reasons, to show the scope of complementary sources of international knowledge and technology flow into CEE countries as well as the output performance of subsidiaries. Thus, in the current context export performance is taken as an indirect measure of technological improvements in the five CEE countries.

In Figure 31, we can see the development of four performance indicators. The movement of the first three indicators characterising technology developments from different points of view is very similar, especially in Slovakia, Hungary, Poland and Estonia. All in all, improvements in productivity (score rate 0.56), technology production (0.55) and product quality (0.56) are obvious. The magnitude of change has not been so intense in export performance (0.45) in the five countries.



Note: magnitude of changes ranges from -1 =considerable reduction, -0.5 =reduction, 0 =no change, 0.5 =increase, $+1$ =considerable increase;

Total* – weighted average;

SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

Figure 31. Magnitude of changes since the registration of a firm as a foreign investment enterprise (author's calculations on the basis of Survey Questionnaire).

A significant difference in technological improvements appears only between Slovenian subsidiaries and the others in terms of product quality. The increase in product quality ranges from 0.46 in Slovenia to 0.60 in Slovakia. This might mean less work done with product development in Slovenia but it is clearly necessary to take into account the initial development stage of Slovenian companies when they were established as foreign investment firms at the beginning of 1990s or before. In the previous discussions we saw that Slovenian and Hungarian subsidiaries diverge from the others through generally a greater subsidiary autonomy, though industry and firm specificities are evident. Overall, countries do not differ very much as far as technology improvements are concerned, although the extent of the improvements case by case might vary. In principle, the lack of variation in the magnitude of technological changes between countries denotes that all five CEE countries, despite differing initial stages at the beginning of the 1990s, have experienced progress in the technology area comparable to other countries in the analysis. This suggests

subsidiary managers have been very much focused not only on efficiency as expected but also on the effectiveness of firms.

In terms of changes in export performance, the picture is more multifarious. The score rate for changes in export orientation varies between 0.35 in Poland and 0.57 in Slovenia and Slovakia. Thus, again the syndrome of small or large countries seems proved. The lower intensity of export performance appears related to the presence of a bigger domestic market in Poland or Hungary (0.39). The initial level of exporting should be also remembered here, especially in the case of Estonia (0.46). The orientation of foreign investments speaks for itself, which does not give much chance to subsidiaries to increase their export orientation rather than increasing export volumes. Nevertheless, the share of exports in output has been showing an increase in all countries.

Description of explanatory variables

The distinctions in the relationships between autonomy and performance are represented by different dimensions of autonomy (FACTTECH, FACTMARK, FACTMAN, FACTFIN). Only the functional dimension of multinational subsidiary is entered into the models. The measurement of subsidiary autonomy as well as country-, industry- and firm-specific factors influencing its behaviour was thoroughly demonstrated in section 2.2. In expectation of the presence of non-linearity in relations between subsidiary autonomy and performance, also squared values for four types of autonomy (FACTTECH_SQ, FACTMARK_SQ, FACTMAN_SQ, FACTFIN_SQ) in the regression analysis will be included. U-shapes are typically tested with a linear and quadratic term in the same variable.

Finally, country-, industry- and firm-specific characteristics will be added to the models as controls (see also section 2.1 where the sample was exhibited in detail). Control variables are entered for the individual country (variable COUNTRY) and for sector (INDUSTRY) as characteristics of the local environment, as well as for foreign ownership (OWNER), firm size (FIRM_SIZE), age of firm (ESTBL) and type of product (PRODUCT_TYPE). The four latter indicators pick up the subsidiary-level specificities regarding subsidiary autonomy (see also section 2.2) and performance. The explanations behind all independent variables are given in Appendix 24. Industries are grouped on the basis of the OECD classification at the 3-digit NACE level. Foreign involvement is distinguished by minority (below 50 per cent) and majority (equal to or above 50 per cent). By size, firms are divided into small and medium-size enterprises (below 250 employees) and large enterprises (250 and more). The year of establishment of the subsidiary is seen as having taken place either before or during 1990, between the years 1991–1995, or from 1996 onwards. Firms are seen as producing only intermediate goods, only final products, or both intermediate and final products.

In the ordered regression analysis, the determination of the so-called benchmarking variables is needed. Currently Estonia, the low-tech industry group, and firms with the majority foreign ownership, large, established after 1996 and producing both intermediate and final products are taken as benchmarking variables against the others (see further analysis). All dummy variables represent fixed effects on subsidiary performance resulting from subsidiary autonomy.

Basic model of the ordered regression analysis

The fifth proposition (H5) set up in the subsection 2.1.2 may be stated in the form of an ordered regression equation with the basic model as follows:

$$\begin{aligned} CHANGE_P = & \beta_0 + \beta_1 FACTTECH + \beta_2 FACTMARK + \beta_3 FACTMAN + \\ & \beta_4 FACTFIN + \beta_5 FACTTECH_SQ + \beta_6 FACTMARK_SQ + \\ & \beta_7 FACTMAN_SQ + \beta_8 FACTFIN_SQ + \beta_9 DUM1 + \beta_{10} DUM2 + \\ & \beta_{11} DUM3 + \beta_{12} DUM4 + \beta_{13} DUM5 + \beta_{14} DUM6 + \varepsilon \end{aligned}$$

where CHANGE_P denotes the change in performance variable (either CHANGE_PROD, CHANGE_TECH, CHANGE_PQUA or CHANGE_EXP)

FACTTECH – autonomy in production and technology decisions

FACTMARK – autonomy in sales and marketing decisions

FACTMAN – autonomy in management decisions

FACTFIN – autonomy in financing decisions

FACTTECH_SQ – squared value for FACTTECH

FACTMARK_SQ – squared value for FACTMARK

FACTMAN_SQ – squared value for FACTMAN

FACTFIN_SQ – squared value for FACTFIN

DUM1 – country dummy variable (COUNTRY)

DUM2 – industry dummy variable (INDUSTRY)

DUM3 – foreign ownership dummy variable (OWNER)

DUM4 – firm size dummy variable (FIRM_SIZE)

DUM5 – firm age dummy variable (ESTBL)

DUM6 – product type dummy variable (PR_TYPE)

ε – the random error term

β – the regression parameters

In practice, if the proper U-shape appears in the relationship between multinational subsidiary autonomy and a certain performance variable, the signs of the regression parameters for variables FACTTECH, FACTMARK,

FACTMAN AND FACTFIN will result in positive values, and for quadratic terms of the same variables (FACTTECH_SQ, FACTMARK_SQ, FACTMAN_SQ, FACTFIN_SQ) in negative values. On the other hand, if the inverse U-shape comes out for subsidiary autonomy in relation to subsidiary performance, the signs of the regression parameters for variables FACTTECH, FACTMARK, FACTMAN AND FACTFIN will result in negative values, and for quadratic terms of the same variables in positive values. If the association between subsidiary autonomy and performance does not take a non-linear shape, the quadratic terms of the four autonomy variables will drop out from the models.

As said earlier, dummy variables are benchmarked against each other within the same variable. The signs for dummy variables will depend on the relative difference (negative or positive) on subsidiary performance between a benchmarking variable and other counterparts of the same variable (like Estonia compared to Hungary, Slovenia, Poland, and Slovakia, etc.).

Ordered regression models will be run for each performance variable, which were noted as including change in productivity, in level of technology, in level of product quality, and in export share from output since the registration of a firm as a foreign investment company. As a total, the results from four separate ordered regression models will be presented, first only in the linear term for subsidiary autonomy (called Model 1), secondly in both linear and quadratic terms of the same variable over the four dimensions of subsidiary autonomy (Model 2). The distinctions in the relationships between autonomy and performance are represented by different dimensions of autonomy. Finally the country-, industry- and firm-specific characteristics will be discussed.

Hypothesised model of the ordered regression analysis

Finally, to be completely clear about the associations between dependent and independent, as well as dummy variables, all these links are depicted in Figure 32 for the ordered regression analysis. Therefore, the influences of the autonomy of multinational subsidiary will be viewed on the behaviour of subsidiary performance in principle during the single decade of the time period. The various dimensions of the autonomy capture the business areas as follows: production and technology, sales and marketing, management, and financing. Subsidiary performance is separately measured in level of productivity, level of technology production, level of product quality as well as share of exports in output. The relationship between multinational subsidiary autonomy and performance is controlled for country-, industry- and firm-specific features as shown in the figure below. Thus, fixed effects are explicitly included in the ordered regression analysis.

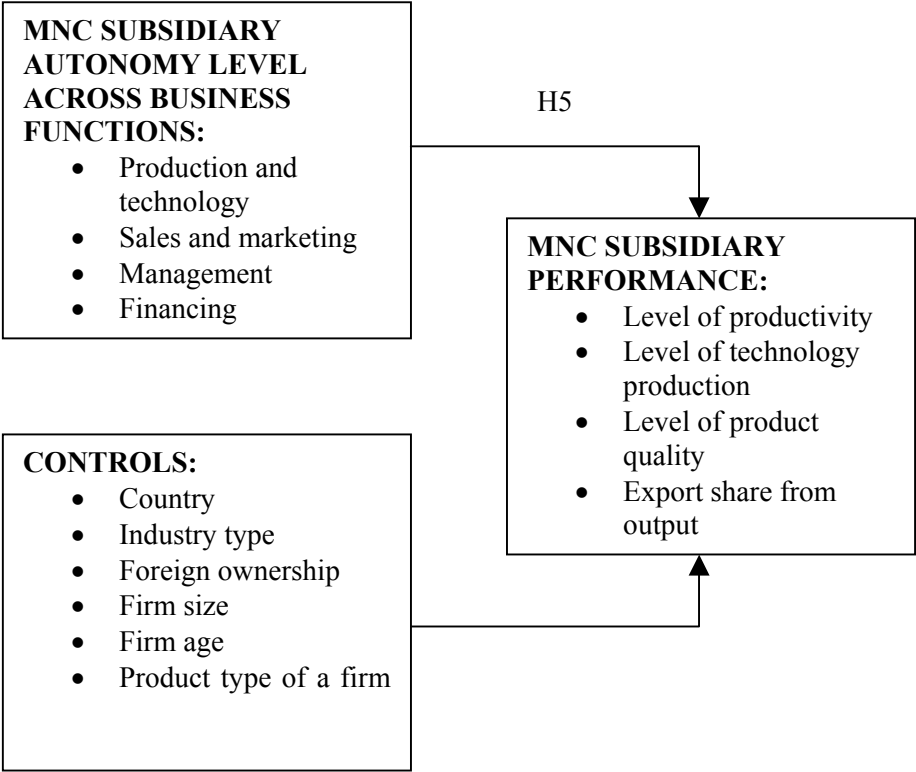


Figure 32. Hypothetical effects about the impact of the autonomy on the performance in the multinational corporation’s subsidiary (compiled by the author).

It is important to remark that the proposed relationship without fixed effects defined as country-, industry- or firm-specific characters was also tested, but the analysis did not give statistically significant results for such models. Hence, concerning the goodness of fit of the models those to be presented in the next subsection will in practice embody the most valuable results from the current empirical research.

2.3.2. The impact of the multidimensionality of the autonomy on the performance in the multinational corporation’s subsidiary

Appendix 25 presents a summary of the results for the ordered regression models for the full sample, with changes in technology or export performance respectively as dependent variables. All included models are statistically highly significant with the precise values for -2Log Likelihood Final and Chi-square shown in the last two rows of the Appendix. The table reports the results of two

types of ordered regression models. Of these, as already mentioned, Model 1 shows pure linear effects of subsidiary autonomy over all four performance indicators, while Model 2 consists of both linear and quadratic terms of a variable and implies the presence of non-linear relations between the four dimensions of subsidiary autonomy and technological and export performance. In this type of models, marginal effects for the original estimates of ordered regression analysis are often calculated. Presently, we are following the point estimates since our task is not to prove fixed effects in the model. Those are anyway included in the models. We are going to talk about the differences between categories of certain dummy variables (e.g. Hungary compared to Estonia) but we are not interested in coming out with the precise sizes of these differences. Calculating the marginal effects in the present analysis will not give any additional value.

In Appendix 25, all results whether statistically significant (at the 1%, 5% and 10% levels) or insignificant are entered. Appendices 26–33 yield a more explicit picture of the results from all the ordered regression models, additionally showing thresholds and giving information about standard errors, Wald statistics, 95% confidence intervals and degrees of freedom. In particular, Tables 9 and 10 below provide statistically significant results as far as the autonomy effects on subsidiary performance are concerned.

Table 9. Statistically significant results of ordered regression Model 1^{1 2}

Independent variable	Change in level of productivity	Change in level of technology production	Change in level of product quality	Change in share of exports in output
FACTECH	n.s.	n.s.	n.s.	n.s.
FACTMARK	n.s.	1.16**	1.27**	2.19**
FACTMAN	n.s.	n.s.	n.s.	n.s.
FACTFIN	n.s.	n.s.	-1.78**	-1.16*

Note: ¹ ** = significance at 5% level, * = significance at 10% level;

² n.s. = Not significant.

Table 10. Statistically significant results of ordered regression Model 2^{1 2}

Independent variable	Change in level of productivity	Change in level of technology production	Change in level of product quality	Change in share of exports in output
FACTECH	3.94**	4.79**	4.39**	n.s.
FACTMARK	n.s.	n.s.	n.s.	3.35**
FACTMAN	n.s.	n.s.	n.s.	n.s.
FACTFIN	n.s.	n.s.	n.s.	n.s.
FACTTECH_SQ	-4.67**	-4.52**	-4.30**	n.s.
FACTMARK_SQ	n.s.	n.s.	n.s.	n.s.
FACTMAN_SQ	n.s.	n.s.	n.s.	n.s.
FACTFIN_SQ	n.s.	n.s.	n.s.	n.s.

Note: ¹ ** = significance at 5% level, * = significance at 10% level;

² n.s. = Not significant.

Table 9 collects the results for each performance indicator in linear Model 1 and Table 10 for quadratic Model 2. By comparing the two models they provide almost completely different evidence about subsidiary autonomy regarding subsidiary technology and export behaviour. The only exception tends to be shown by marketing autonomy in terms of change in export orientation during the observed period. No doubt it is relevant to introduce both types of the models – linear and quadratic – in the present analysis, although the latter is assumed to be more complete. One might see the models as complementing each other in reporting the results. From a preliminary look at the models, the results refer to different patterns of subsidiary autonomy across the four defined business areas. The appearance of statistically significant results for marketing as well as financing autonomy in the linear model is likely to be reflecting the existence of a linear relationship with subsidiary performance. In contrast, the degree of control in production and technology questions is strongly represented in the quadratic model (see Table 10).

The following analysis will describe all points provided by the ordered regression analysis. The analysis will be first presented by the four areas of the autonomy. In subsection 2.3.3, environment and firm-specific determinants of the relationship between subsidiary autonomy and performance will be explained in detail.

The impact of the MNC subsidiary' autonomy on the performance in production and technology decisions

As predicted, the analysis suggests technology autonomy to have the expected relationship with the technology performance of multinational subsidiaries. If we take into account the country-, industry- and firm-specific characteristics then support can be seen for the hypothesis assuming the presence of a nonlinear relationship between effectiveness and autonomy of the subsidiary. The results from Model 2 (Table 10) illustrate a statistically significant pattern of non-linearity in the relations between technology autonomy and all three performance indicators specified as proxies for showing technology improvements. Statistically significant results for the autonomy in technology issue (variables FACTTECH, FACTTECH_SQ) are present in Model 2, which upholds the existence of an inverse U-shape relationship between autonomy and changes in productivity, technology level and product quality.

The presence of non-linearity in the relations between subsidiary autonomy and the respective technology development indicator is confirmed by illustrations included in Appendix 34 (a-d). In diagrams, the results are drawn from the curve estimation analysis. It might be noted that the curve estimation analysis does not include the fixed effects but explicitly shows us the behaviour of subsidiary autonomy regarding the four selected performance variables. Due to the abundance of results from the previous main part of the analysis the parameter estimates resulting from the curve estimation analysis are not currently considered to be important to explore. The aim of expressing the figures here is to explain visually the results coming from the ordered regression models.

Coming back to the diagrams themselves, non-linearity is certainly present as far as the degree of control by the parent firm in production and technology issues is concerned. The figure shows on the X-axis the autonomy and on the Y-axis the respective technology proxy. The figures present the observed and quadratic terms of relations. The relationships shown in Appendices 34 (a-c) are supported by the statistical significance (see Table 10).

Calculating these middle values for technology autonomy, we get three different results: 0.423 is the level of the autonomy for achieving the best performance in productivity, 0.529 for changes in technology production, and 0.510 for increasing the product quality.²⁶ Thus, the appropriate middle value for subsidiary autonomy is highest in the case of productivity and lowest for technology production issues. However, the value of subsidiary autonomy is not the primary question, but rather expressing the best value for autonomy in achieving the maximum level of productivity, technology production or product quality.

²⁶ These values are calculated as the roots of a quadratic equation formulated from the coefficients of each regression with squared terms.

It might be concluded that technology autonomy has a certain intermediate value for achieving the maximum level of performance in a combination of both local and international corporate-specific knowledge. This does mean that neither high nor low technology autonomy of subsidiaries represents the best solution for technology upgrading in the observed transition countries. Neither the local technology potential nor the global possibilities are maximised, but rather some intermediate position has been developed to maximise the subsidiaries' performance. Thus, despite the low expectations in terms of technology and innovation potential in catching-up economies, foreign firms have been still using the local sources of knowledge, while in the meantime opening up corporate knowledge and practices to the local units.

The impact of the MNC subsidiary' autonomy on the performance in sales and marketing decisions

Similarly to technological autonomy, marketing autonomy has a strong influence on the performance of multinational subsidiaries, either from estimating changes in technology upgrading or from export shares over roughly the last two decades in CEE economies. But different patterns of autonomy in sales and marketing decisions emerge. High marketing autonomy affects negatively the technological upgrading of the company (implementation of new technology, quality improvements) and also hinders exports. For example, the results from Model 1 in Table 10 indicate that for an increase of the variable FACT-MARK by one unit (which means a reduction of marketing autonomy), the technology level grows by 1.16 units (significance at the 5% level). Hence, there is present a linear and positive impact of lower marketing autonomy on the level of technology of production equipment. Low marketing autonomy is also associated with positive changes in product quality and export share of the turnover. This can be seen also in figures a-d from Appendix 35, where a statistically significant outcome in relations between marketing autonomy and technology as well as export performance is reflected in the three last cases.

This seems to imply that subsidiaries with a high marketing autonomy were not supported by their parent firms to create firm-specific competencies, especially technological competencies. Only for autonomy in marketing has its high level hindered the growth in technology level of the subsidiaries. Furthermore, subsidiaries with high marketing power were mainly oriented toward the domestic market, which in turn constrained the development of links with foreign countries and impeded additional access to international knowledge flows. Such might be the case of foreign subsidiaries in Poland and Hungary where domestic markets are much bigger in comparison with countries like Estonia or Slovenia. Too much domestic orientation of marketing in the case of transition countries could not be seen as the best solution in the catching-up process.

The impact of the MNC subsidiary' autonomy on the performance in financing decisions

The opposite results are received for financing autonomy, particularly in examining the relationships with changes in level of product quality and export shares (see the results from Table 9). We can reasonably conclude that the bigger the autonomy in financing, the greater the improvement experienced in the quality level of products. The sign of the parameter estimate is negative (–1.78 with 5% significance level) as shown in the table. This indicates that higher financial autonomy reflects a subsidiary that has already obtained a solid level of production technology combined with strong improvements in the quality of products. Similarly, for a decrease of the variable FACTFIN by one unit (which means an increase of financing autonomy), the share of exports from output grows by 1.16 units (significance at the 10% level). Or the lower the autonomy in financing issues the better the export performance that is experienced by subsidiaries in CEE countries. The appropriate diagrams visualising the entire story about financing autonomy are introduced in Appendix 36 (a–d), though we already know that reasonable results are only present in case of figures 36c–d.

It is clear that marketing and financial autonomy are somewhat reciprocal to each other. Low marketing autonomy induces positive changes in the technology competency building of foreign subsidiaries. Subsidiaries with high marketing autonomy have limited resources for technology upgrading and they are presumably involved in the production of relatively low-tech products. From another side, high autonomy in financing is an advantage for capacity growth, both through increasing product quality and from more active export performance.

The impact of the MNC subsidiary' autonomy on the performance in management decisions

The results of subsidiary autonomy in the management dimension do not report statistically relevant relationships with subsidiary performance. This suggests that considering the management autonomy one might not be completely sure of the form of relationship between the observed variables. Or it may be already appropriately represented horizontally across the other areas of subsidiary autonomy. In exploring the information received from the analysis it might be worth looking at Appendices 25 and 37 (a–d) where two-dimensional diagrams give us some hints as to the likely behaviour of management autonomy. On the basis of the figures one could predict linear relations existing between management autonomy and subsidiary performance. But in the analysis there are not results with statistical relevance to see the appropriate outcomes from the view of management autonomy.

The following sections conclude the research results on the impact of the multidimensionality of the autonomy on the performance in the multinational corporation's subsidiary. **First, in exploring influences of multinational subsidiary autonomy on its technology and export performance we also learnt about the multifarious nature of autonomy.** Therefore, the degree of control by the parent firm does not only differ across business areas by countries, industries and firms, it also behaves similarly in terms of subsidiary technology improvements and export orientation. The relationship between subsidiary autonomy and performance depends on the capacities provided by countries and/or foreign firms.

Second, the proposed relationship in H5 that assumes the relationship between subsidiary autonomy and performance to take a non-linear shape was only supported in one decision-making area, production and technology. The perspective of other areas like sales and marketing and financing subsidiary autonomy explicitly showed a linear pattern of the relationship.

In more explicitly, in terms of technology autonomy subsidiaries are in practice interposed between two different environments, of which one is related to parent firm strategy, another links subsidiary to the specific host-country context. Some intermediate position is to be found for subsidiary autonomy while in the meantime gaining both from international-level knowledge and skills transferred through the head-office and local technology opportunities. Hence, from the host-country perspective the analytical results are rather promising. On the other hand, marketing and financing autonomy seem to be predominantly location-specific characters at least in CEE countries. Subsidiary marketing and financing autonomy are immediately related to the superior knowledge present in the host economies. However, these two dimensions of autonomy show different relations with subsidiary performance. The higher the marketing and lower the financing autonomy the less subsidiaries gain in terms of technology improvements and export performance. Hence, Poland and Hungary might in practice lose to other countries considering the extent and scope of effects assumed to be created either through foreign investments or exports as another opportunity to access foreign knowledge. In direct contrast, low marketing autonomy for Estonia, Slovakia and Slovenia seem to be taken as their advantage from the viewpoint of international technology transfer (see also country-specific effects on subsidiary performance in subsection 2.3.3). Marketing autonomy of the Slovakian subsidiaries was estimated to be particularly low. This reflects their relatively higher integration into the corporate networks but on the other hand they obviously get better access to more competitive knowledge developed elsewhere.

2.3.3. The impact of the country-, industry- and firm-specific determinants on the performance of the multinational corporation's subsidiary

In the present subsection, attention will be given to the impact of country-, industry- and firm-specific effects on subsidiary performance. However, it is important to note that these effects appear as a result of introducing respective specifications in the models jointly with the four autonomy dimensions. Thus, the results provide evidence of the same nature already seen in the previous subsection. The detailed results are reported in Appendices 25–33. Of these, Appendix 25 summarises the results from both Model 1 (linear model) and Model 2 (quadratic model). The variables of Estonia and low-tech manufacturing are taken as a reference group in the analysis of country (variable COUNTRY) and industry (INDUSTRY) effects on subsidiary performance. Concerning firm-level specifications having the same base role are the following: majority foreign-owned (OWNER), large (FIRM_SIZE), established from 1996 onwards (ESTBL), offering both types of products – intermediate and final (PR_TYPE). Appendices 26–30 provide more explicit statistical information on the basis of results received separately from each ordered regression model. The whole set captures four different models running two types of regression for all the four performance indicators. Tables 11 and 12 present only statistically significant results from Model 1 and Model 2.

Table 11. Statistically significant results of ordered regression Model 1^{1 2}

Independent variable	Change in level of productivity	Change in level of technology production	Change in level of product quality	Change in share of exports in output
[COUNTRY=SI]	n.s.	n.s.	-1.24**	n.s.
[COUNTRY=PL]	n.s.	n.s.	n.s.	-0.86**
[COUNTRY=HU]	n.s.	n.s.	-0.78*	-1.01**
[COUNTRY=SK]	n.s.	n.s.	n.s.	n.s.
[COUNTRY=EE]	0 ³	0 ³	0 ³	0 ³
[INDUSTRY=HT]	-1.15**	-0.85*	-0.83*	n.s.
[INDUSTRY=MHT]	n.s.	n.s.	n.s.	n.s.
[INDUSTRY=MLT]	n.s.	0.50*	n.s.	0.58**
[INDUSTRY=LT]	0 ³	0 ³	0 ³	0 ³
[OWNER=MIN.F.]	-0.63**	n.s.	n.s.	n.s.
[OWNER=MAJ.F.]	0 ³	0 ³	0 ³	0 ³
[FIRM_SIZE=SME]	-0.81***	-0.70**	-0.53**	-1.08***
[FIRM_SIZE=LARGE]	0 ³	0 ³	0 ³	0 ³
[ESTBL ≤ 1990]	-0.59*	n.s.	n.s.	n.s.
[ESTBL=1991-1995]	n.s.	n.s.	n.s.	n.s.
[ESTBL ≥ 1996]	0 ³	0 ³	0 ³	0 ³
[PR_TYPE=INTERM]	0.76**	n.s.	n.s.	0.63*
[PR_TYPE=FINAL]	9.54**	n.s.	n.s.	n.s.
[PR_TYPE=BOTH]	0 ³	0 ³	0 ³	0 ³

Note: ¹ *** = Significance at 1% level, ** = significance at 5% level, * = significance at 10% level;

² n.s. = Not significant;

³ This parameter is set to zero because it is redundant.

Table 12. Statistically significant results of ordered regression Model 2^{1 2}

Independent variable	Change in level of productivity	Change in level of technology production	Change in level of product quality	Change in share of exports from output
[COUNTRY=SI]	n.s.	n.s.	-1.31**	n.s.
[COUNTRY=PL]	n.s.	n.s.	n.s.	-0.88**
[COUNTRY=HU]	n.s.	n.s.	-0.73*	-0.94**
[COUNTRY=SK]	n.s.	n.s.	n.s.	n.s.
[COUNTRY=EE]	0 ³	0 ³	0 ³	0 ³
[INDUSTRY=HT]	-1.28**	-0.97**	-0.87*	n.s.
[INDUSTRY=MHT]	n.s.	n.s.	n.s.	n.s.
[INDUSTRY=MLT]	n.s.	0.54*	n.s.	0.59**
[INDUSTRY=LT]	0 ³	0 ³	0 ³	0 ³
[OWNER=MIN.F.]	n.s.	n.s.	n.s.	n.s.
[OWNER=MAJ.F.]	0 ³	0 ³	0 ³	0 ³
[FIRM_SIZE=SME]	-0.76***	-0.62**	-0.51**	-1.10***
[FIRM_SIZE=LARGE]	0 ³	0 ³	0 ³	0 ³
[ESTBL ≤ 1990]	-0.55*	n.s.	n.s.	n.s.
[ESTBL=1991–1995]	n.s.	n.s.	n.s.	n.s.
[ESTBL ≥ 1996]	0 ³	0 ³	0 ³	0 ³
[PR_TYPE=INTERM]	0.69*	n.s.	n.s.	0.68*
[PR_TYPE=FINAL]	0.58**	n.s.	n.s.	n.s.
[PR_TYPE=BOTH]	0 ³	0 ³	0 ³	0 ³

Note: ¹ *** = Significance at 1% level, ** = significance at 5% level, * = significance at 10% level;

² n.s. = Not significant;

³ This parameter is set to zero because it is redundant.

Drawing parallels between the two tables, the results appear relatively similar with only one exception. This is represented by an insignificant difference in the comparison between minority and majority foreign-owned subsidiaries in productivity improvements. In Model 1, the variable is seen to appear statistically significant (parameter estimate with the value -0.63 at the 5% significance level). However in the tables, differences in signs of the parameter estimates are not present. One could assume that with these minor differences it is reasonable to produce conclusions and implications on the basis of both models as far as the variations of subsidiary autonomy and performance are concerned. The subsection will find several peculiarities generated by countries, industries and the firm themselves, which currently show evidence on the level of subsidiary performance.

Country as a control variable of the analysis

From the tables, it can be seen that country differences do not affect the results obtained in the case of productivity and production equipment. But statistically significant conclusions are that in Slovenia and Hungary improvement in the quality of products was weaker compared to Estonia (e.g. estimates of -1.24 in Model 1, -1.31 in Model 2 for Slovenia). Above all, the difference between Slovenia and Estonia, as well as between Hungary and Estonia, could be explained by differences in the development level of the countries as reflected in the different starting position of the subsidiaries as foreign-owned firms. In Slovenia and Hungary, the general economic development level and also productivity level were much higher than in Estonia in the early and mid nineties.

There is also seen to be a smaller change in export orientation in subsidiaries in Poland (estimate -0.86 in Model 1, -0.88 in Model 2) and in Hungary (-1.01 , -0.94) in comparison with Estonia. The latter result supports the idea of different influences on subsidiary performance depending on the size of the domestic market and FDI orientation. Relative to the Polish and Hungarian subsidiaries, the Estonian rivals are really more foreign rather than domestically oriented.

The other preceding stages of the analysis demonstrated a relatively greater subsidiary autonomy in Hungary and Slovenia in 2001. On the other side Estonia, which is one of the less developed CEE countries though strongly emerging (up to 8% annual economic growth), the smallest by domestic market size, and opened up for foreign investors later than others though following a very liberal foreign-oriented economic policy, has experienced considerable improvements in terms of technology during the first decade of the transition period. These changes explicitly show how catching-up processes take place in CEE countries. But the rapid growth of Estonia does not result only from its relatively low starting position in comparison with other states at the beginning of the 1990s. Estonia rivals Hungary in terms of FDI stock from GDP. Foreign investments are to a great extent export-oriented, the supply dependency on the parent firm is not high, expectations of subsidiary managers about subsidiary initiatives and charter changes are very optimistic. Regardless of the relatively lower autonomy degrees of multinational subsidiaries, Estonia shows a great potential considering the future developments in indigenous technology upgrading. Participation in international industrial networks largely supports Estonia as well as other countries in getting access to the appropriate world-class knowledge unless countries limit these opportunities themselves.

Industry as a control variable of the analysis

Multinational subsidiaries in high-tech sectors make a significantly smaller contribution to the growth of the productivity (estimate -1.15 in Model 1, -1.28

in Model 2), technology level (-0.85 , -0.97) as well as level of product quality (-0.83 , -0.87) compared to low-tech industries as the benchmark sector of the analysis. It can already be seen from the previous analysis that high-tech industries in CEE countries are less productive (measured by value-added, see Appendix 11) compared to medium-high, medium-low or even low-tech industries (an exception is Poland). The result from the ordered regression model supports this fact. Thus, technology upgrading has more largely taken place among low-tech and medium-low-tech firms.

Compared to low-tech or even other medium-tech sectors, subsidiaries in medium-low-tech sectors have experienced higher improvement in production technology (estimates 0.50 in Model 1, 0.54 in Model 2) and in the share of exports (0.58, 0.59). This means that the high-tech sector in those economies did not experience the most rapid improvements in the technologies of production growth. This could be explained by a much lower level of production technology in the low- and medium-high-tech industries, which could therefore achieve much more rapid growth in the technology of production over time. But it may also indicate that foreign firms have used much more new technology in the production of low- and middle-tech products, reaping benefits of factor cost differentials in labour costs. Or external links of subsidiaries in the technology area could be relatively weak. The inflow of technological knowledge from the mother company is weak because it is taken to be a misuse of resources to invest in these subsidiaries in an environment of underdeveloped national innovation systems.

In practice, it might then be true that medium-low- and medium-high-tech industries in CEE countries are given a major focus by foreign investors. They enter the market where they can find access to appropriate levels of knowledge and skills for parts or an entire production value chain. CEE countries seem to provide such resources in lower-tech industry sectors today, on the other side, to gain from the presence of foreign capital in terms of technology improvements.

Firms as a control variable of the analysis

The firm-specific influences on multinational subsidiary autonomy were obvious over the five CEE countries (see previous findings). Here, estimating the influences of autonomy on subsidiary performance, firm-level specificities are most pronounced in productivity changes. Subsidiary productivity is considered to be more intense in majority-owned compared to minority-owned firms (estimate is -0.63 in Model 1) and in large compared to SMEs (e.g. estimate -0.81 in Model 1). Aside from these characteristics, productivity capabilities seem to have been bigger in those subsidiaries established in 1996 or later relative to the ones established at the beginning of the 1990s or before (-0.55 in Model 1). Thus, younger subsidiaries have been much more productive during the observed years. Finally, one could see a bigger influence on productivity growth among firms producing intermediate goods (0.69 in

Model 1) as well as final products (0.58 in Model 1) compared to those offering both types of products. Therefore, from the perspective of the host economy, the establishment of new foreign investment enterprises should be stimulated, as well as those with larger numbers of employees and foreign involvement.

As one might predict, large foreign subsidiaries have also contributed more to the level of production technology and product quality improvements, as well as to the growth in export orientation compared to small and medium-size firms. In particular, an extensive production of intermediary goods affects the size of export shares in output. From Table 11, one could conclude that countries relatively bigger in size or with stronger concentration of large foreign subsidiaries perform better in terms of export markets, as well as firms participating in international production networks.

The last results indicate that neither high, nor low level of subsidiary autonomy could be expected to give positive or negative impulses to the host environment. We saw that large, majority-owned as well as younger firms and those oriented towards intermediate goods are in practice bigger contributors to the productivity increase than their counterparts. Earlier, it was found that these firm-specific factors showed a negative relationship with subsidiary autonomy. Transition countries such as the CEE countries might gain today from mandate loss rather than attempting to gain mandates bargained with the head-office.

To summarise the analysis part of the research we will refer to the two major conclusions which then follow with the synthesis of the research results throughout the present thesis. **First, from the analysis of the impact of subsidiary autonomy on performance we saw the multifarious character of the relationship between these two variables.** The behaviour of multinational subsidiary autonomy does follow knowledge and capacities provided by both parent and domestic country across various business fields (technology, marketing, financing, etc.). Some minimum level of absorptive capacity is required to search, adapt, develop and finally diffuse appropriate knowledge that is competitive in terms of product quality and production systems. Technology autonomy tends to be strongly influenced by knowledge provided by both sides of the environment. Marketing and financing autonomy are more local context-specific variables. From the perspective of indigenous technology improvements, the success will be greater the lower the marketing and the higher the financing autonomy of multinational subsidiaries. **Secondly, various fixed effects introduced in the ordered regression models supported the presence of environment- and firm-specific influences on subsidiary autonomy, as well as performance.** Based on different parts of the empirical research, the most conflicting results emerge for firm-level data. The low level of autonomy and higher performance of the multinational subsidiary are estimated to appear as a strong relationship in CEE countries.

2.4. Synthesis of the research results and implications for the management of the multinational corporation's subsidiary and policy-makers

2.4.1. Synthesis of the research results

Summary of the research results

In the conceptual part of the thesis in section 1.3, the framework for the present empirical study carried out in Part 2 was set up. The research framework for analysing the MNC subsidiary autonomy and the impact on performance against environmental and firm-specific determinants was summarised in Figure 13. The framework for the empirical research was proposed on the basis of the previous theoretical and empirical research focusing on the evolutionary approach of technology development, multinational corporations and subsidiaries. The autonomy of the multinational subsidiary was suggested to be designed by various country-, industry-, and firm-level factors. In its turn, one could think of the impact of multinational subsidiary autonomy on its performance taking a non-linear shape while considering all context- and firm-specific characters. The non-linearity of the association between subsidiary autonomy and performance was predicted due to its two-phase nature as interposing between two kinds of actors – the parent firm and the host country.

The key issue of the present work intended to draw distinctions on multinational subsidiary autonomy and to see its multifarious influence on subsidiary performance as regards technology improvements, as well as export propensity. A specific context of the current work was related to the Central and Eastern European region capturing a dataset on multinational subsidiaries in the manufacturing sector from five countries: Hungary, Poland, Slovenia, Estonia, and Slovakia.

Regarding the hypotheses (H1-H5) defined in subsection 2.1.2, their validity was tested in sections 2.2–2.3. While H1-H4 were established or received contradictory results in section 2.2, H5 was dealt with in section 2.3. This subsection aims to synthesise all empirical results (see Table 13) and is similar to Table 2 in subsection 1.1.3. The same approach helps drawing parallels with the previous and the present results of the empirical study more easily. Reporting on the actual results, five distinctive topics will be addressed as follows.

Table 13. Summary of the research results from the hypotheses for the five CEE transition countries (based on the analyses of principal component factor, ANOVA, MANOVA, ordered regression)*

<p>THE CHARACTER OF THE AUTONOMY OF THE MNC SUBSIDIARY ACROSS BUSINESS FUNCTIONS (H1)</p> <p>The autonomy of the MNC subsidiary is multidimensional. Four distinguishing business areas across 13 originally stated functions were identified: production and technology (incl. product development, process engineering, supply and logistics), sales and marketing (determining product price, market research, distribution and sales, after sale services, advertisement, marketing), management (operational management, strategic management or planning), financing (accounting and finance operations, investment finance). Overall, autonomy tends to be highest in financing (score rate 0.27), lowest in technology (0.36) on an example of the five CEE transition countries.</p>
<p>COUNTRY-LEVEL DETERMINANTS OF THE AUTONOMY OF THE MNC SUBSIDIARY (H2)</p> <p>Higher development level of Hungary and Slovenia encourages the higher level of MNC subsidiary autonomy (score rates for FACTTECH – 0.37, FACTMARK – 0.33, FACTMAN – 0.32, FACTFIN – 0.20 in Hungary; FACTTECH – 0.31, FACTMARK – 0.34, FACTMAN – 0.25, FACTFIN – 0.17 in Slovenia). The differences between countries are statistically significant only for FACTMARK, FACTMAN and FACTFIN, jointly with industry determinants for all business functions. In country comparisons, autonomy tends to be highest in marketing (0.26) and lowest in management (0.46) in Poland, lowest in marketing (0.50) in Slovakia, lowest in financing (0.37) in Estonia.</p>
<p>INDUSTRY-LEVEL DETERMINANTS OF THE AUTONOMY OF THE MNC SUBSIDIARY (H3)</p> <p>Location in prevailing industry group (medium-technology sectors in CEE) encourages a higher level of MNC subsidiary autonomy (e.g. score rates for FACTTECH – 0.36, FACTMARK – 0.30, FACTMAN – 0.38, FACTFIN – 0.25 in MLT sector), but predominantly in Hungary and Slovenia. Country and industry factors jointly determine the differences in industry comparisons over all business dimensions. These two variables together tend to be most critical in production and technology autonomy (based on the compound analysis with the firm-specific features).</p>
<p>FIRM-LEVEL DETERMINANTS OF THE AUTONOMY OF THE MNC SUBSIDIARY (H4.1–4.4)</p> <ul style="list-style-type: none"> – Minority ownership encourages a higher level of MNC subsidiary autonomy (score rates for FACTTECH – 0.19, FACTMARK – 0.16, FACTMAN – 0.20, FACTFIN – 0.13) over all business dimensions; – Smaller firm size encourages a higher level of MNC subsidiary autonomy (score rates for FACTTECH – 0.37, FACTMARK – 0.32, FACTMAN – 0.37, FACTFIN – 0.27 in SME-s) over all business dimensions (solely in FACTMARK, jointly with other variables in FACTTECH, FACTMAN, FACTFIN); – Firm age (which also means more experience) encourages a higher level of MNC subsidiary autonomy, particularly in marketing (score rate 0.28 in the MNC subsidiaries established before 1990) and financing (0.25) (solely in FACTMARK, jointly with

other variables in FACTMAN, FACTFIN);

– Higher capabilities of a firm (measured by product type) encourage the level of MNC subsidiary autonomy (e.g. score rates for FACTTECH – 0.36, FACTMARK – 0.31, FACTMAN – 0.37, FACTFIN – 0.26 in case of final products) over all dimensions (solely in FACTMARK, jointly with other variables in all FACTTECH, FACTMARK, FACTMAN, FACTFIN);

– Foreign ownership and product type tend to be the most critical firm-level factors of MNC subsidiary autonomy (based on the MANOVA test).

THE PERFORMANCE OF THE MNC SUBSIDIARY (H5)

The impact of the autonomy on the performance of the MNC subsidiary tends to be nonlinear expressed by an inverse U-shaped curve only in production and technology autonomy (only for productivity – linear estimate 3.94, non-linear estimate –4.67, technology production – estimates 4.79, –4.52, product quality – estimates 4.39, –4.30), and linear in sales and marketing (only for technology production – linear estimate 1.16, product quality – 1.27 and export's share from output – 2.19) and financing autonomy (only for product quality – (–1.78) and export's share from output – (–1.16). The low marketing and high financing autonomy encourage technology improvements and export propensity.

Note: * score rates (ordinary means from Appendix 22) behind the results show the level of the autonomy of the MNC subsidiary varying between 0 (complete independence from the HQ) and 1 (complete dependence on the HQ).

The multidimensionality of the autonomy of the multinational corporation's subsidiary (H1)

Referring back to various kinds of previous studies (see subsection 1.3.1), operational and strategic aspects of multinational subsidiary autonomy were mostly distinguished. However, some more specific studies have made further attempts to divide autonomy by areas such as manufacturing, financial control, marketing and human resource management (see, for example, Garnier *et al.* 1979; Hedlund 1981; Björkman 2003; and others). Overall, it is largely supported in the literature that the parent firms tend to centralise issues of a strategic nature and delegate more operational questions to local managers. Based on the literature review, it is assumed that the autonomy of local units is lower more often in financing and technology decisions, whilst on the other hand, higher in more operational areas such as marketing and personnel management. However, exceptions are met in the previous empirical evidence. It is suggested that in terms of financing and technology, subsidiaries are more related to the parents or more integrated into corporate networks. The opposite is true for marketing or personnel questions, of which the former is immediately directed towards the local market (see, for example, Edwards *et al.* 2002). This is argued to be a nature or motive of foreign investment, which obviously will determine the balance between more strategic and operational activities of the subsidiary.

The current empirical study has attempted to assess the autonomy of the multinational subsidiary from another point of view. It was not an immediate aim to differentiate between the strategic and operational areas of autonomy at the level of the multinational subsidiary. The key issue of the study was to detect distinctions of subsidiary autonomy in terms of common patterns of certain groups of business functions. Four distinguishing business areas across 13 originally stated functions were identified: production and technology (incl. product development, process engineering, supply and logistics), sales and marketing (determining product price, market research, distribution and sales, after sale services, advertisement, marketing), management (operational management, strategic management or planning), financing (accounting and finance operations, investment finance).

The analysis yielded somewhat contradictory results in comparison with the previous studies. Autonomy for decisions varied a great deal. Although production and technology areas were regarded as the most critical decision-making area in relation to the parent firms as giving the lowest scores for subsidiary autonomy (score rate 0.36) in the five CEE economies, the opposite was true for financing (score rate 0.27). Financing questions are to a great extent left in the hands of local managers, at least on the example of those countries. Before looking into the reasons behind these results in case of CEE countries, it is worth to understand the country distinctions of the autonomy of the multinational corporation's subsidiary.

Country-specific determinants of the autonomy of the multinational corporation's subsidiary (H2)

The more the superior resources (knowledge, skills) are present in the host economy or a certain industry, the more locally responsive the multinational subsidiaries are suggested to be. Therefore, in assessing the nature of the autonomy one must consider the specific context where an entity of larger corporation is located (see previous studies on country-specific aspects of autonomy in subsection 1.3.1). Multinationals are keen on being "sticky", particularly in countries where they see opportunities and value-adding activities or resources in one or another area of business (see, for example, Cantwell 1989; Andersson and Forsgren 1996).

On average, as predicted, local subsidiaries in Hungary and Slovenia tend to be more autonomous compared to their counterparts in Poland, Estonia, or Slovakia. However, this is so in only three out of four decision-making areas: sales and marketing, management and financing if country-specific effects solely are estimated. Jointly with industry-specific characters, the differences between countries are becoming significant over all business areas. Relative to other countries, local managers in Poland and Hungary enjoy the highest independence in sales and marketing, while experiencing the lowest freedom in

the management area in Poland. Subsidiary managers in Slovakia are least independent in sales and marketing issues, managers in Estonia in financing.

In conclusion about H1 and H2, one might not just see various areas of business in a conventional framework of strategic and operational activities. The degree of control over the subsidiary performance appears to be dependent on the specific context of multinational units. Drawing parallels with the network alignment approach (see subsection 1.1.3), the decision-making power assigned by the parent or assumed through the subsidiary's behaviour is very much dependent on the development level of the entire and/or certain sectors of the national innovation system. The motive of foreign investments could be either asset-seeking or only asset-exploiting, domestic- or export-market oriented. To move from the investment-based to innovation-based economic development, the governments of CEE countries must make considerable efforts (in the fields of R&D and innovation) to motivate more strategic investments.

The technology opportunities provided by local entities are not as attractive as wanted in the present CEE systems. This is not only the case for less developed CEE countries such as Poland, Slovakia and Estonia, of which the last is showing the fastest economic growth, as well as a very good innovation potential among other CEE countries. The situation is the same in Hungary and Slovenia as economically more developed countries. On the other hand, other sectors, such as financing, seem to provide appropriate levels of knowledge and skills, leaving more decision-making freedom to the local level. Marketing autonomy is largely defined by the motive of FDI being oriented towards either local or export markets. Larger countries could be characterised as having the greatest marketing autonomy (Poland, Hungary) different from the smaller countries (Slovakia) but sometimes with the lowest management power (Poland) due to an insufficient level of management skills. Slovakia had the highest integration level into the corporate networks as compared to the others. The results received for management immediately reflect the level of managerial skills and experience in less developed CEE countries. Therefore, superior knowledge available in the host economies determines the nature of multinational subsidiary autonomy over distinctive business areas.

Industry-specific determinants of the autonomy of the multinational corporation's subsidiary (H3)

Both theoretical and empirical research on innovation activities (see, for example, Pavitt 1984; Dosi 1988; Dosi, Nelson and Winter 2000), as well as subsidiary management (see, for example, Gates and Egelhoff 1982) show remarkable differences in firm behaviour, including decision-making power in relation to the parents over various types of industry sectors. For example, Gates and Egelhoff (1982) received supportive results for marketing autonomy defined as the key issue regarding the nature of the host industry. Manufacturing and financial decisions tend to be less industry-specific issues. The

least centralised industries were not surprisingly found to be locally oriented. However, recent innovation management research has not addressed very strictly the difference between, e.g., low- and high-tech sectors. In principle, innovation could occur in all types of sectors, whether a firm belongs to a less or more technology-intensive industry or industry cluster.

Concerning the decision-making authority of multinational subsidiaries, the strengths existing in the local industries are to a large extent emphasised in the literature. This appears to be a crucial determinant in empirical observations characterising subsidiary behaviour (see, for example, Christmann *et al.* 1999). On the one hand, subsidiary autonomy tends to support the creation of local network structures, such as industry clusters. More subsidiary power is assumed to result in subsidiary external embeddedness particularly in terms of local partnerships with suppliers and clients. On the other hand, already existing tight links between local entities lead head offices to give greater mandates to subsidiary managers for being appropriately responsive to locally provided knowledge and skills.

Previous empirical studies, specifically those based on observations from developed countries (see, for example, Birkinshaw and Hood 2000; Frost *et al.* 2002), have found that subsidiaries locating in leading-edge industries tend to be more autonomous, highly embedded in the local production systems and industry clusters. This argument might be true for subsidiaries located in highly industrialised countries. The local industry system has to exhibit appropriateness at a sufficient level to attract more strategic types of investments from abroad. In introducing the catching-up context into the topic, it was proposed by the author of this thesis that more autonomous roles of subsidiaries could be seen to appear in industries, which prevail in a certain country in an observable period since leading-edge industries predominantly exist in frontier-sharing economies by their nature (see subsection 1.1.3). However, multinational corporations are entering the new market if they estimate the target country is attractive because of some superior knowledge in one or another area of business.

Results from the present survey principally confirmed the claim introduced in hypothesis 3 suggesting more autonomous subsidiaries exist in the prevailing industries of CEE countries. In general, subsidiaries in medium-high-tech and medium-low-tech industries have gained greater decision-making authority, predominantly in Hungary and Slovenia. It is remarkable that industry factors alone do not act on the autonomy of the multinational subsidiary. Distinctive variations in autonomy are jointly defined by country- and industry-level specificities (see Table 6). Furthermore, production and technology areas tend to be the most critical aspects in identifying the degree of autonomy of multinational subsidiaries (see Tables 7, 8).

Slovenia, as well as Poland, showed the most heterogeneous character of the autonomy within its structure across the four industry groups, especially in technology questions. The latter fact confirms the multifarious nature of

manufacturing industries and in practice refers to large divergences in terms of subsidiary autonomy within any country. In Slovakia, marketing decisions are largely dependent on the parent firms in high-tech and medium-high-tech subsidiaries. Opposite results were obtained from the Polish firms (high marketing autonomy as well as low management autonomy in medium-tech sectors). Estonian-specific subsidiaries from high-tech sectors enjoy high marketing independence.

In conclusion, subsidiaries are predominantly more autonomous in more developed CEE countries. As far as the less developed countries are concerned, subsidiaries in prevailing industry sectors in practice tend to be dependent on the motive of foreign investments, whether oriented towards local or export markets.

Firm-specific determinants of the autonomy of the multinational corporation's subsidiary (H4.1-4.4)

From the innovation management research, one might conclude that larger, more experienced, and older firms might achieve relatively greater success compared to their counterparts (small and medium-sized, younger firms). This in turn gives complementary advantages for firms acquiring an appropriate level of capabilities. Referring to the subsidiary management literature, subsidiary autonomy is concluded to be greater in firms larger by size, sharing ownership with foreign investors, older and more experienced. The absorptive level of firms is emphasised as the key issue of the initial assignment of subsidiary role by the parent firm. The degree of subsidiary autonomy is addressed as a firm- and location-specific concern. Subsidiary-level capabilities are determined by the changes occurring in the surrounding local environment. The more opportunities the local environment is able to provide, the more locally responsive subsidiaries tend to be.

Preceding empirical studies were found to be a little mixed in terms of the impact of the firm size, ownership or age on subsidiary autonomy, particularly in case of the first factor (see, for example, Hedlund 1981; Gates and Egelhoff 1986; Taggart and Hood 1999). Subsidiary size might be an advantage of a firm, above all at its foundation. Most of the researchers have found a generally positive association between subsidiary age, its experience and autonomy level (see, for example, Harzing 1999, Taggart and Hood 1999), as well as the majority foreign ownership (see, for example, Garnier *et al.* 1979; Garnier 1982, Gates and Egelhoff 1986).

This study found support for greater autonomy in case of firms possessing minority foreign involvement, older and more experienced, as well as carrying out higher value-added activities (proxied as producing final products). Although, there were some variations across business functions detected depending on the firm-level variable. Firm age seems to be a key issue in marketing, financing and management areas. Statistically significant difference

between SME-s and large firms were not found in technology area. Contrary to the proposed claim, large subsidiaries measuring employment enjoy less freedom from the parent firm relative to small and medium-sized firms. Hence, the hypotheses H4.1 and H4.4 got a confirmation through the analysis. On the other hand, the hypothesis H4.2 was not approved, whilst the hypothesis H4.3 got mixed results about the autonomy over four business areas. Foreign ownership structure and also product type of a subsidiary jointly tend to be key firm-level determinants of subsidiary autonomy. This result stems from the integrated analysis of all context- and firm-specific determinants of subsidiary autonomy.

The impact of the autonomy on the performance in the multinational corporation's subsidiary (H5)

The last and conclusive argument for subsidiary autonomy was constructed for its influence on subsidiary performance while considering environment and firm-specific characters in this relationship (see section 2.3). Based on the theoretical discussions on multinational corporations and subsidiaries (see Part 1), it was concluded that the association between subsidiary autonomy and performance might result in a non-linear form. On the one hand, a high level of corporate integration referred to a relatively low degree of subsidiary autonomy and that in turn was expected to show weaker subsidiary performance. On the other hand, a too high local autonomy of subsidiary was not estimated to be a better solution either. A high local response of subsidiaries might be good from the view of industrialised countries but not in the case of catching-up economies. This argument resulted in the claim suggesting some intermediate position for subsidiary autonomy maximising or minimising opportunities provided by both sides – the parent and host country, to achieve the best performance level. However, our perceptions were complemented by the fact that the relationship between subsidiary autonomy and performance in catching-up economies might be an issue specific to the business area.

After searching for preceding empirical studies, very few on this topic were finally collected. In principle, this field is rather under-researched, particularly considering links between subsidiary autonomy and its performance. Mostly, the interrelatedness of variables such as subsidiary integration or embeddedness, autonomy and performance has been viewed in various works (see, for example, Andersson *et al.* 2001; Andersson *et al.* 2002; Andersson and Persson 2005). Some key issues are important to remember. Resource commitment and local embeddedness, particularly in technology and marketing activities were found to give strong positive impulses to subsidiary performance (Luo 2003; Andersson *et al.* 2001; Andersson *et al.* 2002). Hence, greater autonomy of the multinational subsidiary or a parent firm's control flexibility has been defined as a positive influence on subsidiary performance.

Based on the dataset from five CEE countries, the results yielded different types of relationships between subsidiary autonomy and technology improvements, as well as export propensity (export share in output) over four groups of business functions. As proposed, a non-linear form of relationship in production and technology decision-making area was discovered. We did not find greater or lower subsidiary autonomy influencing improvements in either technology level or export share in output. Decisions in production and technology are highly committed to the both sides of the subsidiary – the parent strategy and host-country environment. Subsidiaries in CEE countries aim at a level of autonomy maximising the knowledge and skills received through the parent while using technology and production opportunities provided by the host economies. Hence, the subsidiary is in a kind of mediating position but able to implement the aims of all interest groups. The analysis confirmed the result in terms of technology upgrading of subsidiaries, which to date reflects changes in the level of productivity, technology production and product quality. The analysis did not show significant results for the export performance of multinational subsidiaries in terms of technology autonomy (see Table 10). Hence, the link between decision-making autonomy in production and technology performance tended to be non-linear in nature and that in productivity, technology production and product quality.

Completely opposite findings were received for marketing and financing areas of business among multinational subsidiaries performing in CEE. High authority in marketing tends to act negatively on subsidiary technology improvements (technology production, product quality), as well as export propensity (see Table 9). Hence, we have reached an understanding that in terms of subsidiary effectiveness and export opportunities high marketing autonomy does not provide this challenge. Countries with larger domestic markets, such as Hungary and Poland, might lose to others from the perspective of technology transfer either through the parent firm or export channels. In the longer term, it might appear as a disadvantage for Hungary and Poland or an advantage for Slovakia in terms of indigenous economic development. We did not see the autonomy effects on productivity of subsidiaries but results at the level of technology production, product quality and export propensity explicitly showed this pattern.

On the other hand, getting financing questions solved by the local managers is highly appreciated from the viewpoint of improvements in product quality, as well as in export performance. Overall, financing autonomy appears to be the highest compared to other autonomy dimensions. This is generally good news for all the observed countries in CEE. The better opportunities and more trust the financing sector in a particular country provides, the better subsidiary performance is found to be. However, in previous studies financing decisions were strongly suggested as being integrated into the corporation. From this study, it is concluded that financing tends to be rather a local-capability specific area for decisions made at the level of subsidiaries. In principle, marketing

autonomy is found to be the most critical issue of the assumed effects accompanying foreign investments in terms of subsidiary performance. Multi-national subsidiaries in Estonia, Slovakia and Slovenia are suggested to perform technologically relatively better in comparison with Hungarian and Polish counterparts.

Looking at the fixed effects introduced in the last stage of the analysis, the latter arguments might not be completely neglected in any case. Compared to Hungary and Poland, Estonia has experienced larger improvements in terms of export propensity as well as achieving more in product quality level relative to Hungary and Slovenia. Positioning Estonia as one of the most emerging markets, as well as showing relatively better innovation performance compared to other CEE countries, Estonia might be predicted to overtake more developed CEE countries during the next decade. Hence, low autonomy of subsidiaries today could not be immediately taken as a negative side of foreign involvement in the industry. In addition, as expected, location in high-tech manufacturing sector contributes least to subsidiary technology performance. Low-tech and medium-low-tech sectors in practice show their dominance in terms of technology improvements in subsidiaries. Host-country indigenous technology development gets impulses of foreign knowledge and skills presently through these sectors of the economy. Finally, large, majority-owned, younger firms and those only producing final or only intermediate goods tend to show a greater impact on subsidiary performance. Regardless of the low autonomy level, it might not lead to lower technology or export performance in CEE countries. Instead, more effective and capable firms (e.g., in terms of size) by definition seem to have greater foreign control and to be less autonomous, which also does reflect the interest of foreign investors in CEE countries.

Taking into consideration all aspects of the analysis performed in the present thesis, the proposed research hypotheses were supported, not supported or received mixed results across four business areas over country-, industry-, and firm-specific determinants. Table 14 below collects the information about the validity of the hypotheses about the autonomy of the MNC subsidiary and the impact on the performance in five CEE countries: Hungary, Slovenia, Slovakia, Estonia, and Poland.

Table 14. Validity of the hypotheses about the autonomy of the MNC subsidiary and the impact on the performance in five CEE countries

The character of the autonomy of the MNC subsidiary and the impact on performance	Hypotheses	Result
The multidimensionality of the autonomy of the MNC subsidiary across business functions	H1	Supported
Country-level determinants of the autonomy of the MNC subsidiary	H2	Supported
Industry-level determinants of the autonomy of the MNC subsidiary	H3	Mixed results
Firm-level determinants of the autonomy of the MNC subsidiary (foreign ownership, firm size, firm age, firm capabilities)	H4.1	Supported
	H4.2	Not supported
	H4.3	Mixed results
	H4.4	Supported
The impact of the autonomy on the performance of the MNC subsidiary	H5	Mixed results

The main research aim of the present thesis was to figure out the impact of the multidimensionality of the autonomy on the performance in multinational corporation's subsidiary in Central and Eastern European countries. In terms of the performance, a particular focus was intended to give on the technology upgrading of multinational corporation's subsidiaries in manufacturing sector in Hungary, Slovenia, Poland, Estonia, and Slovakia. Summarising the entire package of the research results we first identified the multidimensionality of the autonomy of the multinational corporation's subsidiary across four business areas – production and technology, sales and marketing, management and financing (supporting H1). It was also learnt that production and technology area is defined to be the most critical or strategic one compared to other decision-making areas in the five CEE countries. The decision-making power in production and technology questions tend to be lowest in MNC subsidiaries in those countries. Secondly, it was learnt that besides its own heterogeneous structure, the autonomy of the MNC subsidiary is varying across countries, industries and firms. Higher development level of Hungary and Slovenia encourages the higher level of MNC subsidiary autonomy (supporting H2). Location in prevailing industry group (medium-technology sectors in CEE) enhances a higher level of MNC subsidiary autonomy but predominantly in Hungary and Slovenia, thus results about the industry effects on the autonomy of the MNC subsidiary are mixed (multifarious results for H3). Minority foreign owned and the firms possessing higher capabilities in terms of the product type (final or intermediate) show bigger decision-making power compared to their counterparts (supporting H4.1 and H4.4). Contrary to the expectations large firms experience less autonomous roles (not supporting H4.2). Concerning firm

age, results are mixed favouring older subsidiaries only in marketing, management and financing (multifarious results for H4.3). Regarding the structure and nature of the autonomy over countries, industries and firms it shows the heterogeneous character as well as significant influences on it largely resulting from the development level of certain countries and industries under consideration. The lower autonomy in certain firms do not also immediately refer to the poorer performance of subsidiaries, it is often appearing in opposite.

The impact of the autonomy of the MNC subsidiary on the performance regarding such measures like the level of productivity, technology production, product quality and export's share from output appears to vary across business areas, thereby also supporting the presence of the multidimensionality of the autonomy. However, depending on the business area the impact of the autonomy on the performance is non-linear or linear (mixed results for H5). In terms of production and technology, the impact of the autonomy is non-linear (inverse U-shape curve) contrary to sales and marketing and financing where the relationship appears to result in a linear form. On the one hand, high autonomy in marketing impedes and the other high autonomy in financing supports the subsidiary' upgrading.

The main research results from the present thesis refer to the multidimensionality of the autonomy of the multinational corporation's subsidiary and its multifarious influence on the performance, particularly focusing on the technology upgrading in manufacturing sector in five CEE transition countries. Subsidiary autonomy and upgrading are dependent on the country-, industry-, and firm-specific resources and capabilities over various business areas and immediate sectors of the national innovation system. Production and technology decisions made in multinational corporation's subsidiaries are strongly linked to both the local environment and the parent firm. The non-linearity between the autonomy and performance of the subsidiary was detected considering the environment- and subsidiary-specific characters. Hence, the more opportunities the host countries could provide, the more strategic foreign investments are expected to arrive in a specific economy, as well as access to more novel knowledge is guaranteed. On the other hand, the clear linear relation between the marketing or financing autonomy and subsidiary performance was found out. The lower the marketing autonomy and higher the financing autonomy, the larger the positive effects on the performance in terms of technology upgrading activities tend to be. It could be concluded that multinational corporation's subsidiaries in the CEE countries acquiring relatively higher marketing or lower financing autonomy might experience relatively lower technology upgrading processes compared to other CEE countries. It is worth to repeat that compared to Hungary and Poland (experiencing more domestic-market oriented foreign investments), Estonia as a small opened economy has experienced larger improvements in terms of export propensity as well as achieving more in product quality level relative to Hungary and Slovenia. Positioning Estonia as one of the most emerging

markets, as well as showing relatively better innovation performance compared to other CEE countries, Estonia might be predicted to overtake more developed CEE countries during the next decade. These results refer to some implications at the level of the multinational corporation's subsidiary management and policy-makers.

2.4.2 Implications for the managers of the multinational corporation's subsidiaries and policy-makers

The results of the analysis support the basic idea concerning the heterogeneity of autonomy. The relationship between subsidiary autonomy and its performance (efficiency) differ function by function. Autonomy in marketing and financing appear as reciprocal processes that influence technology upgrading and export performance in CEE countries. A low level of marketing autonomy and, on the other side, a high level of financing autonomy give positive impulses for technology improvement and export orientation. High marketing autonomy therefore signals that the subsidiary is not in a strong position to create subsidiary-specific competencies, nor to benefit from access to complementary foreign knowledge transferred through exports. By their nature, larger domestic markets (Poland, Hungary) might become rather disadvantageous for international knowledge flows.

Autonomy in technology issues appears to have different "rules" in terms of subsidiary performance compared with other types of functional autonomy. Having neither too much autonomy from nor too much dependence on the parent company positively affects the increase in productivity, the level of technology and product quality. Some intermediate position of technological autonomy satisfies the parent company for achieving the maximum performance in the subsidiary in such countries. It was demonstrated that the precise trade-off depends on which objective was under consideration (maximum productivity growth, increase in product quality, etc.), although the outcomes are similar for all the objectives discussed. The subsidiary uses both the local potential and international sources for technology upgrading in CEE region. From the perspective of international knowledge flows, the subsidiary located in technologically underdeveloped transition countries maintains deep corporate links and this implies the presence of additional knowledge inflow. From another side, the subsidiary exploits the local knowledge sources, which in turn are expected to develop local innovation potential.

Moreover, the degree of control by the parent company is also country-, industry- and firm-dependent. In general, majority-owned, large subsidiaries in medium-low-tech sectors, which were established later than 1996 and producing only intermediate or only final products have achieved more extensive positive effects in regard to the performance of subsidiaries. Although autonomy was estimated to be lower in large, majority-owned and younger subsidiaries, in

practice it does not show the real performance of these firms. These firms rather seem to be more effective and under stronger control of the parent firm. FDI in these economies is largely oriented to medium-tech sectors, which also provide the majority of value-added today. In fact, this might indicate that foreign firms have used more new technology in the production of low- and medium-tech products, or that parent companies develop more sophisticated technology in their home or in other advanced economies. In terms of country distinctions Estonia, which is one of the smallest by local market, one of the less developed among the examined CEE countries and one receiving foreign investments later than others, has achieved more significant effects in export orientation compared to Poland and Hungary, and in the improvement of the level of product quality compared to Slovenia and Hungary.

What could these results imply from the view of subsidiary managers or policy-makers? It is commonly understood that technology transferred through multinational corporations is assumed to give considerable input for indigenous technology development of CEE countries. Foreign investments are regarded as one of the most important technology transfer channels specifically for less developed countries. However, the role of multinational corporation lies not only in the knowledge and skills transfer to the target economies of investments. The more superior knowledge is located in certain geographical area the keener the parent firms are shown to be to get access to these valuable resources. Therefore, from the host-country perspective a question such as “why are foreign investors in our country?” should not arise but instead it should be asked “how to increase the scope and scale of effects accompanying foreign firms in our economy?” The more intensive embeddedness of multinational subsidiaries in the local environment ensures greater opportunities for technology upgrading. However, closer and more intense partnerships with domestic firms and other institutions (called external networks of subsidiaries) will require strong efforts by the host government to guarantee at least a minimum level of absorptive capacity (see also subsection 1.1.3). It was also clearly shown through the results that multinational corporations are well known for the resources provided by one or other CEE country. At the present stage of economic development, the main impulses of foreign technology are received through medium-low-tech and low-tech industry sectors.

At the subsidiary level, it is the role of managers to combine different areas of autonomy to gain maximally from the relation with the parent company located in some more advanced countries. In the case of transition countries, it might be appropriate to have lower autonomy in fields of shortages of specific knowledge (e.g. in technology). Excessive dependence on the parent company might impede the development of its own technology capacity while excessive independence might leave the local unit in a circle of ‘internationally uncompetitive’ knowledge. The management in subsidiaries should be enhanced to be more or less actively related to parent firms on the basis of the subsidiaries’ capabilities.

Acquiring more valuable knowledge and skills at firm level in turn generates the host-country indigenous technology and innovation potential. The internal technology development of a country could not be delegated or managed by international corporations. The importance has to be understood by the domestic institutions of their own contributions and opportunities for longer-term technology upgrading, moving towards innovation-based economic growth. Today, the economic growth of CEE countries tends to be too much investment- rather than innovation-driven. The key issue from the viewpoint of local managers lies with their capabilities while being to a great extent influenced by the general knowledge and production infrastructure in the host economy. If the production outcome finally appears at the firm level, the assumptions for less or more value-added production are created at the country level. The firm is not determined to be a single actor in the national innovation system. It is involved in local as well as foreign networks of production, technology, etc. The level of external integration of a multinational subsidiary is induced by the superior knowledge acquired by the firm.

In terms of innovation policy, it was expected to find that the level of autonomy granted to the CEE subsidiaries is too low to be “optimal”, even though too much autonomy may also be undesirable (e.g. too little engagement with foreign technologies). Such findings, or indeed modifications of them, can be transferred into the broader context of national and regional systems of innovation for economic progress.

Firms have to build their strategies on combining technological, production and market capabilities with other functions such as financial resources. Host nations have to consider the interactions among the firms that constitute them (see Figure 4). Just as firms have to promote dynamic capabilities in production and suppliers in technology, so policy-makers at regional or national level have to promote dynamic capabilities in respect of the institutional and economic environment in which the firms can best emerge.

Absorption may require the promotion of greater mobility of the personnel involved, particularly to absorb the more tacit or currently uncodified aspects of the new products, processes, policies, etc. (Männik and von Tunzelmann 2005, p. 17). There has been much debate about whether this ought to be done by bringing in experts from outside to guide the process or instead sending one's own experts elsewhere to learn from the experience of others. The general consensus is that experts from outside will aim to ‘teach’ the region's firms what to do, whereas sending one's own people to leader regions may be a better way to ‘learn’, and the latter is evidently preferable. However, in practice some ‘mixing’ of the two may be desirable. Either way, organisations will have to build such mechanisms into their regular procedures, possibly including formal external linkages.

Another human resource question relates to the level of cooperation between science and industry sectors. These two sectors of a society tend to be too far from understanding each other. Various policy analyses (see, for example, de

Jager *et al.* 2002; Innovation Policy ... 2001; Innovation Policy ... 2003) strongly emphasise, besides other innovation impediments of CEE countries, the weakness and rarity of partnerships between these two sectors. This in turn is defined as a main limiting factor on more intense innovation activities in the new EU member states. More intensified cooperation itself could generate appropriate levels of capacities of firms. The local context is assumed to sufficiently attractive to enhance external embeddedness of multinational subsidiaries in the CEE region.

The latter discussion is mainly associated with the alignment of various networks, whether domestic or international, whether production, technology or marketing, etc. (see subsection 1.1.3). Alongside the global shifts in technology development and in the role of multinational corporations in technology transfer as well as technology creation across national boundaries, the complexity of managing these networks both from the parent and host-country viewpoint has introduced governance issues into the technology development literature (see, for example, von Tunzelmann 2003, 2004). Government policy is suggested to focus on network failures in the national innovation system by attempting to encourage generation of appropriate knowledge of various kinds, as well as diffusion of this knowledge between defined sectors of economy and a society. The effective interactions are the main success factor of those observed in other CEE countries in a longer perspective. As learnt from the present empirical research, already existing assets create sequential ones. Therefore, knowledge is accumulating over time periods, as it is heterogeneous by its character. The governance of networks related to more than one innovation system requires significant attention by local governments. The governments are predominantly responsible for their country's internal technology upgrading.

The traditional approach of policy-makers to promoting high-tech activities occurred through 'mission-oriented' programmes (Männik and von Tunzelmann 2005, p. 15). These drew on the notion of a linear model of innovation policy according to which more expenditures on scientific research fed through into more invention, which when commercialised resulted in greater diffusion of innovations and ultimately higher rates of economic growth. The linear model of innovation policy was induced by supply side of technology and termed 'supply-push'. This linear model was later supplanted by the demand-pull model and recently non-linear types of so-called 'coupling' models. Policy emphasis on letting the market decide has further promoted 'diffusion-oriented' programmes, in which the main emphasis is placed on dissemination and bottom-up determination of policies, rather than top-down, science-led structures. According to the original investigations by Ergas (1987), the 'diffusion-oriented' countries had been more successful than those espousing 'mission-oriented' approaches. The changes in assessment of policy success in the 1990s tipped the balance to the 'coupling' view, that the 'linear model' was not forgotten but had to co-exist and, in practice, interact with demand-pull,

diffusion-oriented policy formulations. In other words, rather than top-down vs. bottom-up, there needed to be a fruitful dialogue between the two.

The same logic may be approached in considering low- and high-tech industries of manufacturing sector where their coupling is foreseen as a critical success factor of economic development. Also, more intense interactions between manufacturing and service sector actors can be forced by the government. Therefore, key issues of indigenous technology development in CEE countries might not be associated with only a very high involvement of foreign firms in the economy nor just resources directed towards high-tech sectors. The major challenges for CEE countries lie with their capabilities to absorb foreign knowledge over a variety of industry sectors.

CONCLUSION

This dissertation aimed to create a framework for analysing the impact of the multidimensionality of the autonomy on the performance in the multinational corporation's in manufacturing sectors of Central and Eastern European countries. The results of the analysis support the basic proposition of the heterogeneity of autonomy of the multinational subsidiary. The relationship between subsidiary autonomy and its performance as a final outcome of subsidiary development differ function by function. Having neither too much autonomy from, nor too much dependence on the parent company positively affects the increase in productivity, the level of technology and product quality. Some intermediate position of technological autonomy satisfies the parent company for achieving the maximum performance in the subsidiary in such countries. Autonomy in marketing and financing appear as reciprocal processes that influence technology upgrading and export performance in CEE countries. The low level of marketing autonomy and, on the other side, the high level of financing autonomy give positive impulses for technology improvement and export orientation. Furthermore, the degree of control by the parent firm is also environment- (country, industry) and firm-dependent.

The dissertation consists of two major parts. The first part is theoretical, reviewing the main theoretical concepts that are used for identifying the role of multinational corporations and the nature of subsidiary autonomy in technology upgrading of host economies. The second part includes the empirical evidence on environment- and firm-specific influences on multinational subsidiary autonomy and performance in manufacturing sector of the five CEE countries. The analysis presented in this dissertation is based on a uniform survey questionnaire on multinational subsidiaries' technological behaviour since their registration as foreign investment firms up to 2001 (approximately one decade). The present section will first summarise briefly the main concepts leading to the formulation of the analytical framework. This is followed by an overview of the research hypotheses and presentation of data and then the results of the empirical study. At the end, suggestions for future research in the area of the autonomy of multinational subsidiaries are proposed.

The theoretical concepts leading to the formulation of a framework for analysing the impact of the multidimensionality of the autonomy on the performance in the multinational corporation's subsidiary

To develop the theoretical basis for analysing the multifarious nature of multinational subsidiary autonomy and the impact on performance over country-, industry- and firm-specificities, evolutionary theories of international business, capturing the level of both multinational corporations and subsidiaries, as well as literature about the co-evolution of technology and governance were predominantly used in the present dissertation. An integrated view based on the theoretical fundamentals resulting from these realms is proposed.

Evolutionary theory of foreign direct investment emphasises the accumulation of technology within the corporation as a path-dependent corporate learning process (Cantwell 2001). The competence building on the level of both multinational corporations and subsidiaries have received primary attention in the present international business research (see, for example, Cantwell 1989; Chesnais 1988; Hagedoorn and Narula 1996; Cantwell and Piscitello 2000, 2005; Birkinshaw 2001). According to Cantwell, successful learning establishes technological competence or organisational capabilities (1991, 2001; see also Teece 1991). Learning within the MNC develops through international networks, which have given a reason to increasingly view the MNC as an international network organisation (see, for example, Hedlund 1986, 1996; Bartlett and Ghoshal 1989; Ghoshal and Bartlett 1990; Hedlund and Rolander 1990; Prahalad and Doz 1987a; Ghoshal *et al.* 1994; Holm *et al.* 1995; Zander 1999; von Tunzelmann 1995, 2004). The present thesis took a deeper view on the functional networks in the context of the multinational corporations and subsidiaries (see von Tunzelmann 1995). The innovation management literature takes another view focusing on multinational corporations as facilitators of innovation processes occurring across national boundaries (see, for example, Granstrand and Sjölander 1990; Granstrand, Håkanson and Sjölander 1992; Granstrand, Patel and Pavitt 1997).

The tacit knowledge is that of designing firm-specific competitive advantages and relying heavily on internal group learning processes of the MNC (see, for example, Cantwell 1991, 1994, 2001; Kogut and Zander 1993, 1995, 2003). Secondly, tacit knowledge is restricted to the local environment (see Porter 1990). The productive knowledge (or “combinative capabilities” as they are called by Kogut and Zander 1992) are developed and distributed throughout the whole corporate system (see, for example, Kogut and Zander 1992; Zander 1997; Cantwell and Piscitello 1996).

Multinational subsidiaries are increasingly engaged in the creation, use and dissemination of knowledge and skills (see, for example, Zanfei 2000; Zander 1997). The role of foreign branches in local contexts has particularly grown due

to the increasing need for gaining access to external knowledge sources and application abilities. So, individual branches are not only seen as absorbers of technology diffused through internal corporate channels. Instead, they are also obtaining a new status as developing external networks of relationships with local counterparts. Local units of the corporation are expected to contribute to competence building within the corporation, as well as in the local environment. The significant externalities or technology spillover effects from the presence of foreign investments are particularly expected to appear in the developing and catching-up economies.

There are numerous studies performed to see the technological spillovers created in domestic firms by the entry of foreign-owned firms to the local markets. The earliest studies addressed the technological spillover effect were carried out by MacDougall (1960), Corden (1967), Caves (1971, 1974), Hymer (1976) and Globerman (1979). Within the earlier research, there are contradictory findings about the impacts of FDI on the local firms. Studies performed by Caves (1974), Globerman (1979), Blomström and Persson (1983), Blomström and Wolff (1994), Lipsey and Sjöholm (2001), and Dimelis and Louri (2002) confirm the expected benefits from FDI presence. On the other hand, there are also opposite results with no significant or even negative FDI effects found in the research carried out by Cantwell (1989), Haddad and Harrison (1993), and Aitken and Harrison (1999). Perez (1998) and Cantwell (1989) show that positive technology spillover effects take only place in some industries.

The researchers strongly support the technological capacity of domestic firms as being a major factor in determining FDI success in the host economy (see, for example, Cantwell 1989; Wang and Blomström 1992; Kokko 1994). The scope and competence of multinational subsidiaries themselves and the absorptive capacity of domestic firms tend to determine the embeddedness of subsidiaries in the local economy (see, for example, Cohen and Levinthal 1989, 1990; Andersson *et al.* 1996, 2000; Birkinshaw *et al.* 2005). The absorptive capacity of firms is found to be a function of local weaknesses and strengths (see, for example, Rugman and Verbeke 2001a; Narula 2003a; Lall *et al.* 2004). Firm-level knowledge creation is embedded in localised innovation systems. The latter arguments predominantly determine the motives of foreign investors to enter the new markets, as well as the degree of control over local units.

The multi-level and multi-dimensional nature of international technology transfer and upgrading through foreign investments is to a large extent emphasised in the literature. Thus, knowledge accumulation is heterogeneous by the nature; it is created and diffused as well as production taking place in a certain community by various actors. The development processes within the international corporations could be characterised to have non-linear rather than linear features. Contemporary studies in the international business literature are more arguing about “network failures” (instead of “market failures” or “government failures”) determining the success of failure of the economy or

some certain sector of the economy (see, for example, Lundvall 1992, Nelson 1993, Edquist 1997, 2005; McGowan *et al.* 2004; Narula 2003b).

Von Tunzelmann (1995, 2003, 2004), McGowan *et al.* (2004) as well as Radosevic (1999) are concerned about the governance of industrial upgrading via both internal and external sources of knowledge and skills in CEE transition economies. The transition process that has experienced dramatic change mainly since the beginning of the 1990s was not only involved in ownership but in resource, functional and spatial terms (Männik and von Tunzelmann 2005, p. 2). Multinational corporations have considerably supported the integration of CEE countries into international production systems, and thereby with the new knowledge and skills providing ways forward for the transition. Thus, multinational subsidiaries themselves exist between so-called centrifugal and centripetal forces (Zanfei 2000). The complexity of managing these international networks is the main reason behind widespread discussion about the governance logic and methods in international business research. In the catching-up context, the interface between the internal and foreign knowledge is becoming a key issue to be addressed.

The “network alignment approach” appropriate in the context of multinational corporations and subsidiaries in CEE countries explicitly recognises the likely heterogeneous nature of multinational subsidiary autonomy (see von Tunzelmann 1995, 2003, 2004). The concept takes a macro perspective on governance, distinguishing between structure (the form in which decisions are made), control (the power to make decisions through structures) and process (the implementation of structure and control) (von Tunzelmann 2004). The alignment model incorporates local and international networks through production systems as well as immediate linkages (or network tools) between the firm and a certain sector of the economy, in level of functions or in resources. Therefore, the model comprises links between the micro and macro perspective of the business activities. Effective coupling between the evolution of local specific systems and the global production networks in the alignments of the networks is emphasised as having great importance (see also Radosevic *et al.* 2004). The national aspect of the networking is suggested to be a main base for indigenous growth (von Tunzelmann 2004).

The multinational subsidiary is proposed to be in a mediating position satisfying needs of the parent firm as well as the local business context on the other side. The multinational subsidiary is already by definition related to corporate and external competitive arenas (Birkinshaw *et al.* 2005). Based on the latter arguments, in principle four types of subsidiary role are defined in subsidiary management research (see, for example, White and Poynter 1984; Bartlett and Ghoshal 1986; Birkinshaw 1996). Terms applied to autonomous subsidiaries by these authors include, e.g., product specialist (White and Poynter 1984), strategic leader (Bartlett and Ghoshal 1989), autonomous subsidiary (Jarillo and Martinez 1990), global subsidiary mandate (Roth and Morrison 1992), as well as later more commonly world mandate (Birkinshaw

and Morrison) or militant (Taggart 1997). In terms of subsidiary autonomy a balance between the degrees of integration into either corporate or external networks needs to be discovered by subsidiary level management. Specialised resources and subsidiary initiatives tend to determine the mandate evolution.

Subsidiary roles are assigned by the parent or assumed by subsidiary management (Birkinshaw 1996). Subsidiary roles might change over time. Thus, a subsidiary mandate across business functions might be gained and increased which, in practise, reflects the evolutionary processes taking place at level of subsidiary (Birkinshaw 1998). Subsidiary development research has increased significantly during the last decade. It is relatively rich in conceptual works about determining factors of subsidiary evolution (see, for example, Birkinshaw and Hood 1998b; Paterson and Brock 2002; Birkinshaw *et al.* 1998; Rugman and Verbeke 2001b; Andersson *et al.* 2002). Three key factors are claimed to determine the level of subsidiary autonomy and development: parent firm factors, subsidiary factors (specialised resources) and host-country factors.

On the basis of these literature streams, the conceptual framework of the dissertation was proposed. It is limited to location- and subsidiary-specific factors of subsidiary development and autonomy. The main mechanism for design of autonomy of the multinational subsidiary appears in the corporate or external embeddedness of a firm.

The research data and methodology

The empirical analysis is based on the database created as a result of the work in the EU Fifth Framework Project: “EU Integration and the Prospects for Catch-Up Development in Central and Eastern European countries (CEEC): the Determinants of the Productivity Gap”. A special survey questionnaire for multinational subsidiaries was undertaken in 2001–2002. The author of the current dissertation was one of the team members of the research project. The survey was an attempt to evaluate the changes (since the registration of firms as foreign investment firms) in terms of technology upgrading occurring in multinational subsidiaries. The questions addressed subsidiary autonomy, subsidiary performance in terms of output and technology upgrading, their international integration focusing on sales and supply structures, as well as the importance of knowledge and technology areas and sources in subsidiary development.

The target group of the survey was manufacturing firms with foreign ownership in Estonia, Hungary, Poland, Slovakia and Slovenia. In Estonia and Hungary only firms with foreign majority (51% and more foreign ownership) were selected (although minority ownerships were also reported in the survey), in other countries minority foreign-owned firms (10–50% foreign ownership) were also included. The return rate was 19.7% or 433 questionnaires. The highest response rate was in Slovenia (34.4%), followed by Slovakia (30.2%),

Estonia (30.0%), Poland (18.8%) and Hungary (10.6%). Regarding the aim and limits of the present thesis the analysis does not capture responses for the entire survey, though covering the majority of the questions (11 out of 15). The analysis is predominantly focused on the functional autonomy and performance of multinational subsidiaries.

Empirical research on the country-, industry- and firm-specific factors of multinational subsidiary autonomy and the impact on technology and export performance in CEE countries is performed in five phases in terms of the research methodology. The autonomy of subsidiaries is measured by business functions, asking about the decision-making process between the local affiliate and the parent company: in which business area and to what extent the subsidiary is dependent on the parent company.

The components of the research methodology are explained in detail by introducing five phases of the empirical research. The multidimensionality of subsidiary autonomy will be illustrated first using a descriptive method of analysis in terms of sales and supply structures and some selected upgrading activities. It is followed by the principal component factor analysis for grouping 13 originally stated business functions on the basis of multinational subsidiary autonomy. Based on the results the heterogeneous nature of functional autonomy is discovered among subsidiaries in CEE manufacturing sector. Third, the tests using univariate analysis of variance (ANOVA) and multivariate analysis of variance (MANOVA) are carried out in learning about the environment- and firm-specific features of multinational subsidiary autonomy. Fourth, the ordered regression model is assembled and the impact of multinational subsidiary autonomy on subsidiary performance is analysed. As a complementary analysis to the ordered regression models curve estimation analysis of the relationship between subsidiary autonomy and performance concludes our research results.

Validity of hypotheses and generalisation of findings

The hypotheses result from the preceding discussion on the role of multinational corporations and subsidiary autonomy in technology upgrading of the host economies, while considering the context of catching-up countries. A whole set of hypotheses developed in subsection 2.1.2 consists of seven distinctive proposals related to the nature of autonomy of multinational subsidiaries and the impact on subsidiary performance. They cover the internal structure, country-, industry- or firm-specific characteristics of the autonomy of multinational subsidiaries as well as the association between the autonomy of the multinational subsidiary and the impact on subsidiary performance. It is remarkable to note that contextual (either country- or industry-level) and firm-specific factors are each separately analysed in terms of multinational subsidiary autonomy in the first stage of the analysis. Later in the second stage, which evaluates the impact of the autonomy of the multinational subsidiary on

performance, all contextual and firm-specific determinants are included in the analysis as control variables. The latter circumstance is the main reason why it is still necessary to see first the peculiarities of subsidiary autonomy caused by various context- and firm-specific characters. All these hypotheses and the main results of the empirical analysis are presented in the following paragraphs.

H1: The autonomy of MNC subsidiaries is multidimensional across business functions.

The current empirical study has attempted to assess the autonomy of the multinational subsidiary from another point of view compared to previous ones. It was not an immediate aim to differentiate between the strategic and operational areas of autonomy at the level of the multinational subsidiary. The key issue of the study was to detect distinctions of subsidiary autonomy in terms of common patterns of certain groups of business functions. Four distinguishing business areas across 13 originally stated functions were identified: production and technology (incl. product development, process engineering, supply and logistics), sales and marketing (determining product price, market research, distribution and sales, after sale services, advertisement, marketing), management (operational management, strategic management or planning), financing (accounting and finance operations, investment finance). The analysis yielded somewhat contradictory results in comparison with the previous studies. Autonomy for decisions varied a great deal. Although production and technology areas were regarded as the most critical decision-making area in relation to the parent firms as giving the lowest scores for subsidiary autonomy in the five CEE economies, the opposite was true for financing. Financing questions are to a great extent left in the hands of local managers, at least on the example of those countries. In conclusion about H1, one might not just see various areas of business in a conventional framework of strategic and operational activities. The degree of control over the subsidiary performance appears to be dependent on the specific context of multinational units.

H2: MNC subsidiaries are relatively more autonomous in more developed Central and Eastern European transition countries.

On average, as predicted, local subsidiaries in Hungary and Slovenia tend to be more autonomous compared to their counterparts in Poland, Estonia or Slovakia. Relative to other countries, local managers in Poland and Hungary enjoy the highest independence in sales and marketing, while in Poland experiencing the lowest freedom in the management area. Subsidiary managers in Slovakia are least independent in sales and marketing issues, managers in Estonia in financing. Overall, the technology opportunities provided by local entities are not as attractive as wanted in the present CEE systems. On the other hand, other sectors such as financing seem to provide appropriate levels of knowledge and skills, leaving more decision-making freedom to the local level. Marketing autonomy is largely defined by the motive of FDI, being oriented towards either local or export markets. Larger countries could be characterised as having greatest marketing autonomy (Poland, Hungary), different from

smaller countries (Slovakia), but sometimes with lowest management power (Poland) due to an insufficient level of management skills. Slovakia had with the highest integration level into the corporate networks relative to the others. The results received for management immediately reflect the level of managerial skills and experiences in less developed CEE countries. Therefore, superior knowledge available in the host economies determines the nature of multinational subsidiary autonomy over distinctive business areas. Drawing parallels with the network alignment approach, the decision-making power assigned by the parent or assumed through the subsidiary's behaviour is very much dependent on the development level of the entire and/or certain sectors of the national innovation system. The motive of foreign investments could be either asset-seeking or only asset-exploiting, domestic- or export-market oriented. To move from the investment-based to innovation-based economic development, the governments of CEE countries must make considerable efforts (in the fields of R&D and innovation) to motivate more strategic investments.

H3: MNC subsidiaries are relatively more autonomous in manufacturing industries with bigger value-added contribution compared to other industries in Central and Eastern Europe transition countries.

Results from the present survey confirmed the proposed claim. In general, subsidiaries in medium-high-tech and medium-low-tech industries have gained greater decision-making authority, although predominantly in Hungary and Slovenia. It is remarkable that industry factors alone do not act on the autonomy of multinational subsidiary. Distinctive variations in autonomy are jointly defined by country- and industry-level specificities. These factors together give the most influential effect on autonomy in the production and technology area. Slovenia as well as Poland showed the most heterogeneous character of autonomy within its structure across four industry groups, especially in technology questions. The latter fact confirms the multifarious nature of manufacturing industries and in practice refers to large divergences in terms of subsidiary autonomy within any country. In Slovakia, marketing decisions are largely dependent on the parent firms in high-tech and medium-high-tech subsidiaries. Opposite results were obtained for the Polish firms (high marketing autonomy as well as low management autonomy in medium-tech sectors). Estonian-specific subsidiaries from high-tech sectors enjoy high marketing independence. In conclusion, subsidiaries are predominantly more autonomous in the more developed CEE countries. As far as less developed countries are concerned, subsidiaries in prevailing industry sectors in practice tend to be dependent on the motive of foreign investments, whether oriented towards local or export markets.

H4.1: Minority foreign-owned MNC subsidiaries are relatively more autonomous in comparison with majority-owned MNC subsidiaries.

H4.2: Large MNC subsidiaries are relatively more autonomous in comparison with small and medium-sized MNC subsidiaries.

H4.3: Older MNC subsidiaries are relatively more autonomous in comparison with younger MNC subsidiaries.

H4.4: MNC subsidiaries with higher capabilities are relatively more autonomous.

This study found support for greater autonomy in the case of firms possessing minority foreign involvement, older and more experienced, as well as carrying higher value-added activities (proxied as producing final products). Contrary to the proposed claim, large subsidiaries measured by employment enjoy less freedom from the parent firm relative to small and medium-sized firms. Does this result reflect something in terms of efficiency of firms? The results for H5 answer that question. Firm age seems to be a key issue in marketing, financing and management areas, whilst other firm-specific features do not show significance in one or other area of business. However, foreign ownership structure and also product type of a subsidiary tend to be key firm-level determinants of subsidiary autonomy. This result comes from an integrated analysis of all context- and firm-specific determinants of subsidiary autonomy.

H5: The impact of the autonomy on the performance of MNC subsidiaries is non-linear expressed by a U-shaped curve

Based on the dataset from the five CEE countries, the results yielded different types of relationships between subsidiary autonomy and technology improvements as well as export propensity (export share in output) over the four groups of business functions. As proposed, a non-linear form of relationship in production and technology decision-making area was discovered. Decisions in production and technology are highly committed to the both sides of the subsidiary – the parent strategy and host-country environment. Subsidiaries in CEE countries aim at a level of autonomy maximising the knowledge and skills received through the parent while using technology and production opportunities provided by the host economies. Hence, the subsidiary is in a kind of mediating position but able to implement the aims of all interest groups. The analysis confirmed the result in terms of technology upgrading of subsidiaries, which to date reflects changes in the level of productivity, technology production and product quality. The analysis did not show significant results for the export performance of multinational subsidiaries in terms of technology autonomy.

Completely opposite findings were received for marketing and financing areas of a business among multinational subsidiaries performing in CEE. High authority in marketing tends to act negatively on subsidiary technology improvements as well as export propensity. Hence, we have reached the understanding that in terms of subsidiary effectiveness and export opportunities high marketing autonomy does not provide this challenge. Countries with larger domestic markets such as Hungary and Poland might lose to others from the perspective of technology transfer either through the parent firm or export channels. In the longer term it might appear as a disadvantage of Hungary and

Poland or an advantage of Slovakia in terms of indigenous economic development. We did not see the autonomy effects on productivity of subsidiaries but results at the level of technology production, product quality and export propensity explicitly showed this pattern.

On the other hand, solving financing questions by the local managers is highly appreciated from the point of view of improvements in product quality as well as in export performance. Overall, financing autonomy appears to be highest compared to other autonomy dimensions. This is generally good news for all observed countries in CEE. The better opportunities and more trust the financing sector in a particular country provides, the better subsidiary performance is obtained. From this study, it can be concluded that financing tends to be a specific area for local capabilities for decisions made at the level of subsidiaries.

In conclusion, marketing autonomy is found to be the most critical issue of the assumed effects accompanying foreign investments in terms of subsidiary performance. Multinational subsidiaries in Estonia, Slovakia and Slovenia are suggested as performing technologically relatively better in comparison with Hungarian and Polish counterparts. Looking at the fixed effects introduced in the last stage of analysis the latter arguments might not be completely neglected in any case. Compared to Hungary and Poland, Estonia has experienced larger improvements in terms of export propensity as well as achieving more in product quality level relative to Hungary and Slovenia. Positioning Estonia as one of the most emerging markets, as well as showing relatively better innovation performance compared to other CEE countries, Estonia might be predicted to overtake more developed CEE countries during the next decade. Hence, low autonomy of subsidiaries today could not be immediately taken as a negative side of foreign involvement in the industry.

In addition, as expected, location in the high-tech manufacturing sector contributes least to subsidiary technology performance. Low-tech and medium-low-tech sectors in practice show their dominance in terms of technology improvements in subsidiaries. Host country indigenous technology development gets its impulses of foreign knowledge and skills at present through these sectors of the economy. Finally, large, majority-owned, younger firms and those producing only final or only intermediate goods tend to show a greater impact on subsidiary performance. The low autonomy level might not lead to lower technology or export performance in CEE countries. Instead, more effective and capable firms (e.g. in terms of a size) by definition seem to have greater foreign control and to be less autonomous, which also does reflect the interest of foreign investors in CEE countries.

Hence, the proposed research hypotheses were supported, not supported or received mixed results across four business areas over country-, industry-, and firm-specific determinants. **The main research results from the present thesis refer to the multidimensionality of the autonomy of the multinational corporation's subsidiary and its multifarious influence on the performance,**

particularly focusing on the technology upgrading in manufacturing sector in five CEE transition countries. Subsidiary autonomy and upgrading are dependent on the country-, industry-, and firm-specific resources and capabilities over various business areas and immediate sectors of the national innovation system. Production and technology decisions made in multinational corporation's subsidiaries are strongly linked to both the local environment and the parent firm. The non-linearity between the autonomy and performance of the subsidiary was detected considering the environment- and subsidiary-specific characters. Hence, the more opportunities the host countries could provide, the more strategic foreign investments are expected to arrive in a specific economy, as well as access to more novel knowledge is guaranteed. On the other hand, the clear linear relation between the marketing or financing autonomy and subsidiary performance was found out. The lower the marketing autonomy and higher the financing autonomy, the larger the positive effects on the performance in terms of technology upgrading activities tend to be. It could be concluded that multinational corporation's subsidiaries in the CEE countries acquiring relatively higher marketing or lower financing autonomy might experience relatively lower technology upgrading processes compared to other CEE countries (like Hungary and Poland). These results refer to some implications at the level of the multinational corporation's subsidiary management and policy-makers.

Recommendations for future research

Overall, the area of research, particularly the topic related to multinational subsidiary autonomy and performance is under-researched in the literature. More conceptual types of studies prevail in subsidiary management research. Considering this situation, the main advantage of further studies could be to turn more crucial attention to empirical studies instead of solely conceptual ones. However, the researchers here usually meet with problems of the availability of the data at a firm level, while it was a great opportunity in the present work to use a firm-level dataset of manufacturing subsidiaries in the Central and Eastern Europe region.

In contextual terms, various niches of the multinational subsidiary for further research could be proposed but greater success might be achieved by analysing the link between subsidiary-specific knowledge and skills, or specialised knowledge and subsidiary autonomy and performance. Both the nature and sources of subsidiary-specific knowledge could be tested against subsidiary autonomy and performance. As additional dimensions, there is strong support for using environment- and firm-specific determinants for getting appropriate results.

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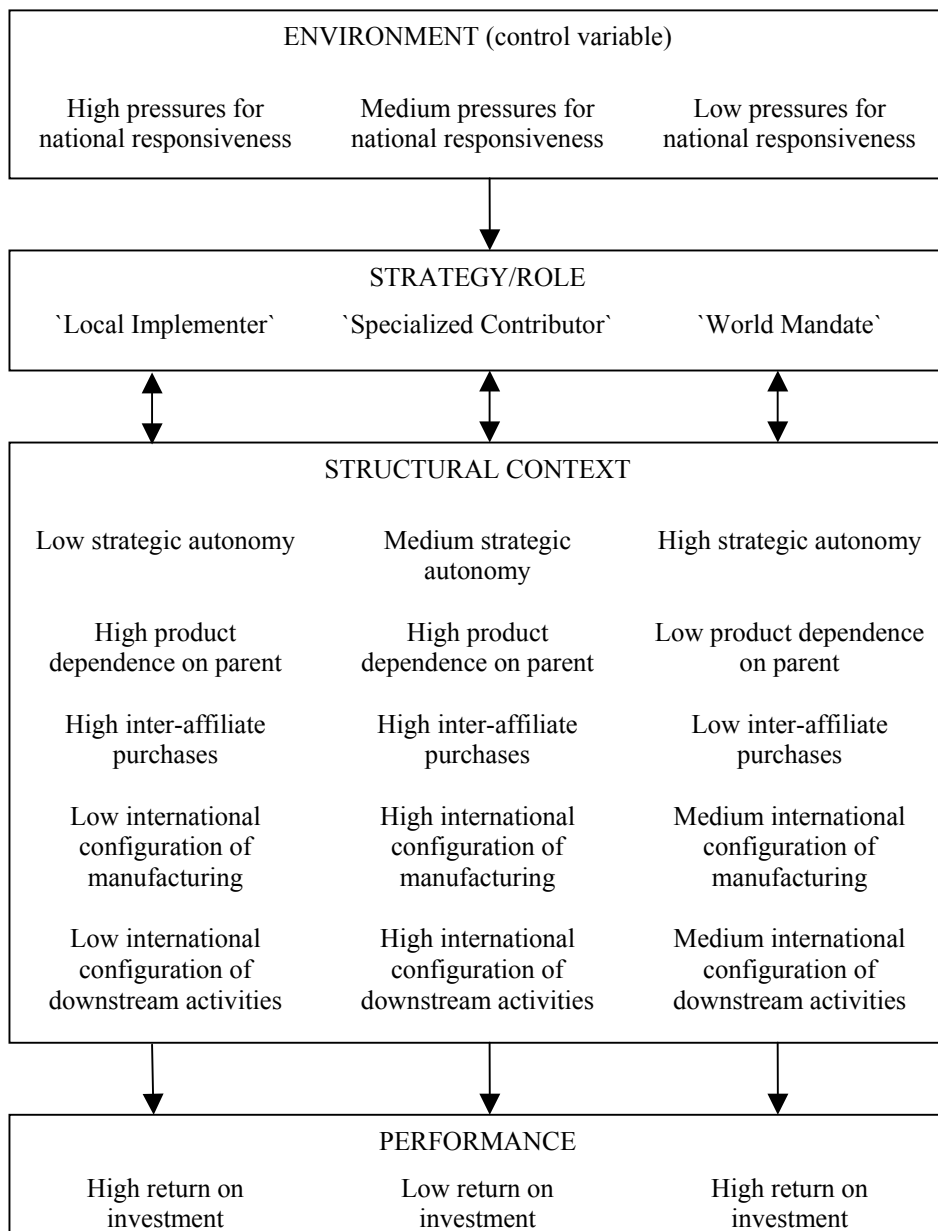
APPENDICES

Appendix 1. Typologies of MNC subsidiary roles/strategies and “autonomous” subsidiaries

Authors	“Autonomous” subsidiary role/strategy	Variables
White and Poynter (1984)	Miniature replica (innovator) Product specialist	Low market scope; high product scope; variable value-added scope High market and value-added scope; low product scope
Bartlett and Ghoshal (1989)	Strategic leader	High subsidiary competence; high strategic importance of local environment
Jarillo and Martinez (1990)	Autonomous subsidiary	High localization, low integration
Gupta and Govindarajan (1991)	Global innovator	High need for autonomous initiative; corporate-subsidiary decentralisation; global responsibility scope
Roth and Morrison (1992)	Global subsidiary mandate	Expertise in managing interdependencies (-) and strategic flexibility (+)
Birkinshaw and Morrison (1995)	World mandate	High strategic autonomy
Taggart (1997)	Militant	High autonomy, low procedural justice

Source: adapted from Young and Tavares 2004, p. 222.

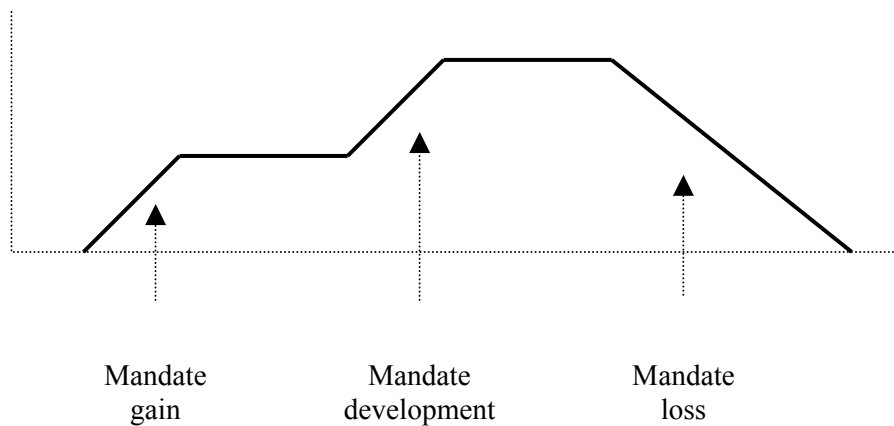
Appendix 2. Linkages between MNC subsidiary roles and performance in an environmental and structural context



Source: Birkinshaw and Morrison 1995, p. 748.

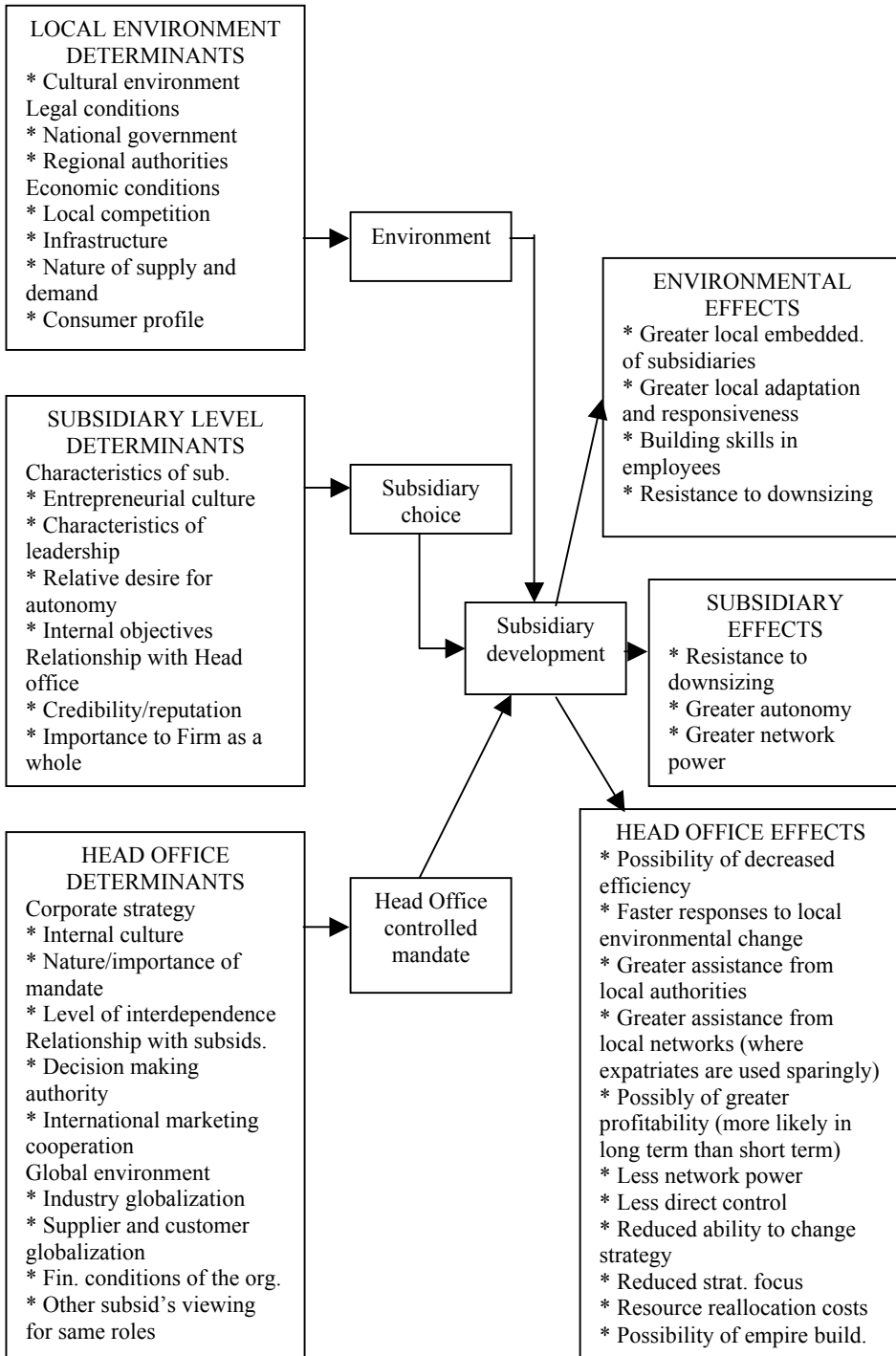
Appendix 3. Mandate Life Cycle Framework

Vertical axis:
Extent of international
responsiveness



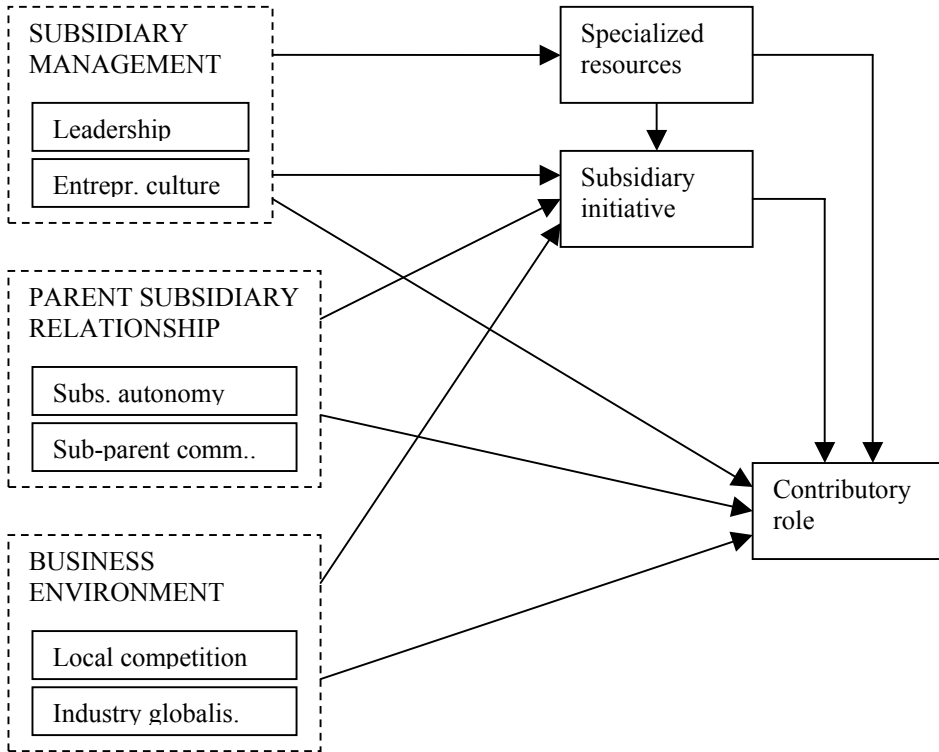
Source: adapted from Birkinshaw 1996, p. 472.

Appendix 4. MNC subsidiary development: cause and effect



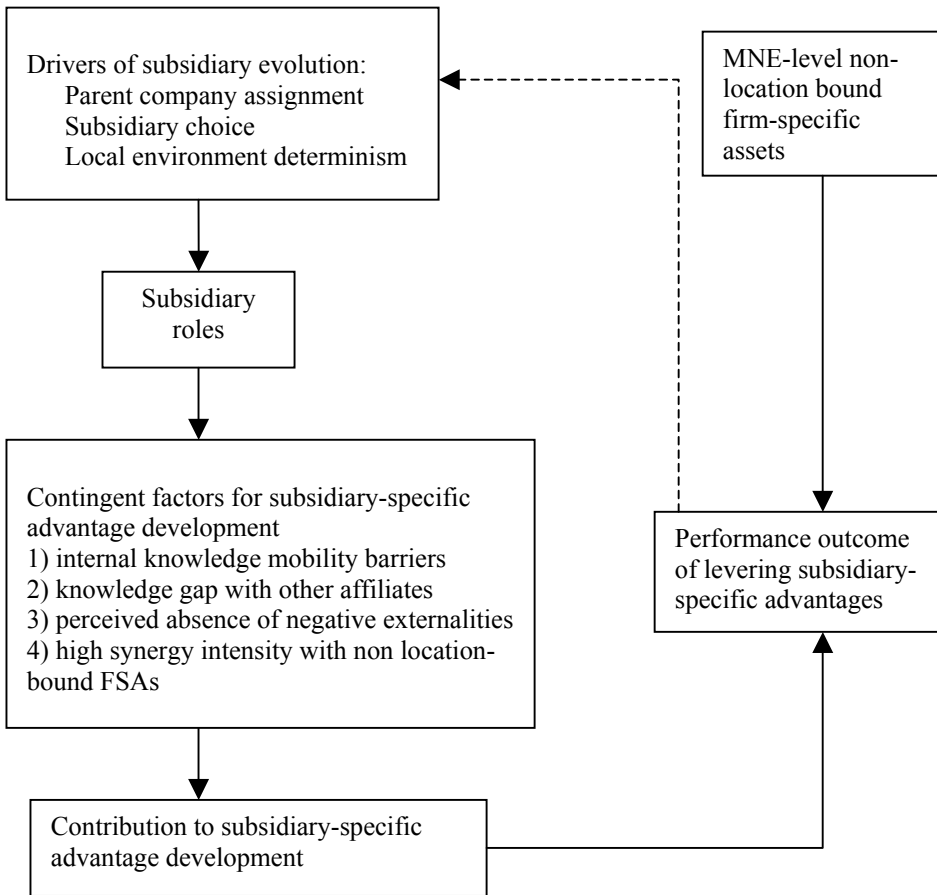
Source: Paterson and Brock 2002, p. 149 based on Birkinshaw and Hood 1998b.

Appendix 5. Drivers of MNC subsidiary development



Source: Birkinshaw, Hood, Jonsson 1998, p. 226.

Appendix 6. The development of MNC subsidiary-specific advantages



Source: Rugman and Verbeke 2001b, p. 245.

Appendix 7. Real GDP growth rate, 1995–2006 (%)

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
SI	4.1	3.6	4.8	3.6	5.6	3.9	2.7	3.3	2.5	4.6	3.7	4.0
PL	2.7	6.0	6.8	4.8	4.1	4.0	1.0	1.4	3.8	5.3	4.4	4.5
HU	1.5	1.3	4.6	4.9	4.2	5.2	3.8	3.5	2.9	4.2	3.9	3.8
SK	5.8	6.1	4.6	4.2	1.5	2.0	3.8	4.6	4.5	5.5	4.9	5.2
EE	4.5	4.4	11.1	4.4	0.3	7.9	6.5	7.2	6.7	7.8	6.0	6.2
EU25	n.a.	1.8	2.7	3.0	2.9	3.7	1.8	1.1	1.1	2.4	2.0	2.3

Note: calculations based on constant prices of 1995, 2005–2006 – forecasts, n.a. – not available;

SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia, EU25 – the average of 25 EU Member States.

Source: Eurostat online database 2005.

Appendix 8. GDP per capita in PPS, EU25=100, 1995–2006 (%)

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
SI	68.0	69.3	70.9	71.6	73.6	72.7	74.1	74.8	76.2	77.9	79.2	80.6
PL	40.5	42.2	43.9	44.8	45.4	45.9	45.5	45.4	45.6	46.7	47.9	49.1
HU	49.3	49.2	50.2	51.4	52.3	53.1	56.0	58.2	59.6	60.9	62.2	63.4
SK	44.3	46.1	46.9	47.5	46.9	47.5	48.5	51.0	51.9	52.1	53.6	55.2
EE	35.3	36.8	40.4	41.4	41.0	43.2	44.4	46.3	48.7	50.7	52.9	55.2
EU25	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: 1995–1998 – estimated values, 2005–2006 – forecasts;

SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia, EU25 – the average of 25 EU Member States.

Source: Eurostat online database 2005.

Appendix 9. FDI inward stock, 1990–2003 (% of GDP)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Central Europe	1.3	0.9	1.6	2.6	3.6	5.4	6.1	8.4	12.3	16.3	19.2	20.8	24.8	23.7
SI	3.4	5.3	6.2	7.5	9.2	8.9	10.0	11.5	13.4	12.7	15.3	13.3	18.7	15.6
PL	0.2	0.6	1.6	3.0	3.8	5.8	7.5	9.5	13.3	15.9	20.6	22.2	25.0	24.9
HU	1.7	6.3	9.2	14.4	17.1	25.3	28.9	38.9	47.0	48.5	49.3	45.0	55.3	51.8
SK	0.5	1.5	2.3	3.2	4.1	4.2	7.7	7.9	9.6	11.2	18.5	23.2	32.2	31.5
EE	0.0	1.5	2.6	6.9	12.3	19.3	19.2	24.9	34.9	47.5	51.4	56.4	65.0	77.6

Note: SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

Source: UNCTAD ... 2003.

Appendix 10. The role of industry sectors in the creation of total manufacturing value added (as % of total value added)

Industry group	SI (2001)	HU (2001)	SK (1999)	EE (2001)	PL (2000)
HT	9.6	8.4	1.6	1.8	2.4
MHT	29.5	29.7	27.1	13.1	24.0
MLT	25.2	26.8	20.5	21.2	29.0
LT	35.7	34	31.2	58.2	44.4
Not ident.	0.0	1.1	19.6	5.7	0.0
TOTAL	100	100	100	100	100

Note: HT – high-tech, MHT – medium high-tech, MLT – medium low-tech, LT – low-tech;

SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

Source: author's calculations on the basis of UNIDO ... 2004.

Appendix 11. Value added per employee in the manufacturing industries of five accession countries (in thsd USD annually)

Industry group	SI (2001)	HU (2001)	SK (1999)	EE (2001)	PL (2000)
HT	18849	14750	5290	6897	20508
MHT	23485	30446	8395	10198	13360
MLT	18210	18383	8029	9746	14954
LT	15870	10128	6970	7334	12063
TOTAL	18993	18753	7687	8263	13451

Note: HT – high-tech, MHT – medium high-tech, MLT – medium low-tech, LT – low-tech;

SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

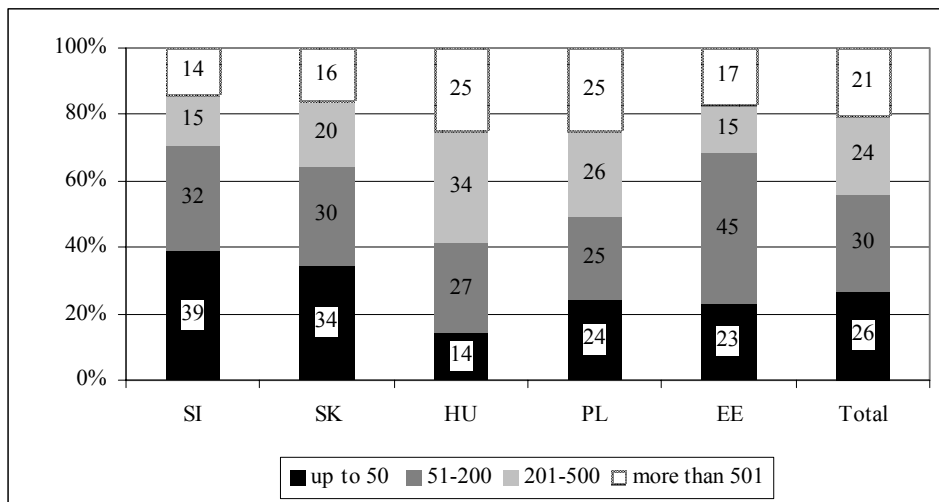
Source: author's calculations on the basis of UNIDO ... 2004, Statistical Office of the Republic of Slovenia 2004, Eurostat ... 2004.

Appendix 12. Structure of the sample by manufacturing branches in total and by individual countries

NACE 2	SI		HU		SK		EE*		PL		TOTAL	
	Firms	Share, %	Firms	Share, %	Firms	Share, %	Firms	Share, %	Firms	Share, %	Firms	Share, %
15–16	2	2.8	14	17.5	3	3.8	9	18.0	16	10.5	44	10.2
17–18	3	4.2	8	10.0	5	6.4	7	14.0	5	3.3	28	6.5
19	2	2.8	2	2.5	2	2.6	0	0.0	0	0.0	6	1.4
20	1	1.4	2	2.5	4	5.1	5	10.0	1	0.7	13	3.0
21–22	2	2.8	1	1.3	4	5.1	4	8.0	3	2.0	14	3.2
23	0	0.0	1	1.3	0	0.0	4	8.0	0	0.0	5	1.2
24	8	11.1	7	8.8	6	7.7	0	0.0	16	10.5	37	8.5
25	5	6.9	9	11.3	4	5.1	2	4.0	10	6.5	30	6.9
26	5	6.9	4	5.0	6	7.7	4	8.0	20	13.1	39	9.0
27–28	16	22.2	6	7.5	13	16.7	5	10.0	21	13.7	61	14.1
29	11	15.3	5	6.3	8	10.3	1	2.0	12	7.8	37	8.5
30–33	11	15.3	16	20.0	10	12.8	5	10.0	29	19.0	71	16.4
34–35	5	6.9	4	5.0	1	1.3	0	0.0	14	9.2	24	5.5
36–37	1	1.4	1	1.3	0	0.0	4	8.0	6	3.9	12	2.8
Unknown	0	0.0	0	0.0	12	15.4	0	0.0	0	0.0	12	2.8
Total	72	100.0	80	100.0	78	100.0	50	100.0	153	100.0	433	100.0

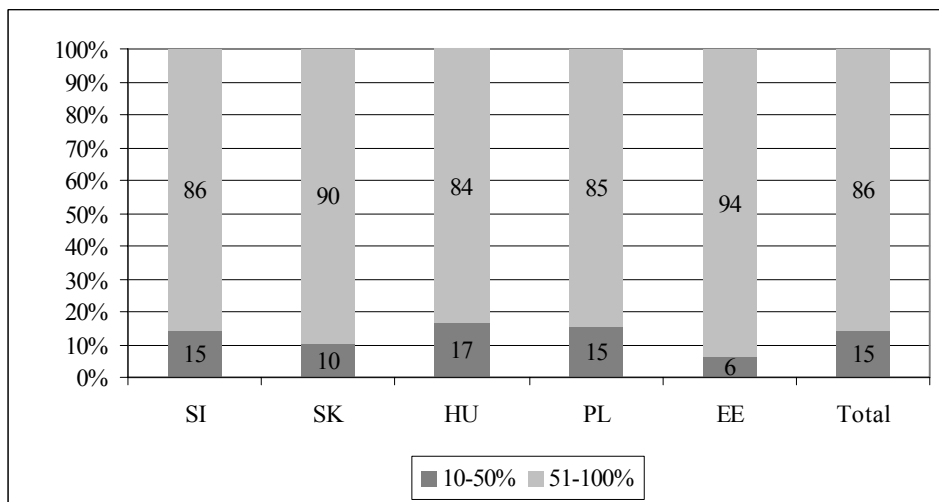
Note: * 23 and 24 combined; for specific sectors responding to numbers see reference 24;
SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.
Source: author's calculations on the basis of Survey Questionnaire.

Appendix 13. Distribution of sample firms by number of employees (%)



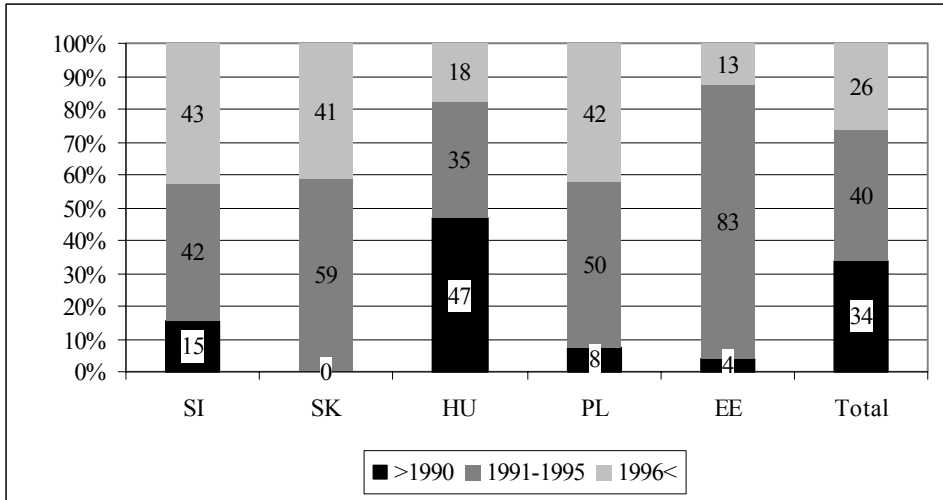
Note: SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.
Source: author's calculations on the basis of Survey Questionnaire.

Appendix 14. Distribution of sample firms by foreign share (%)



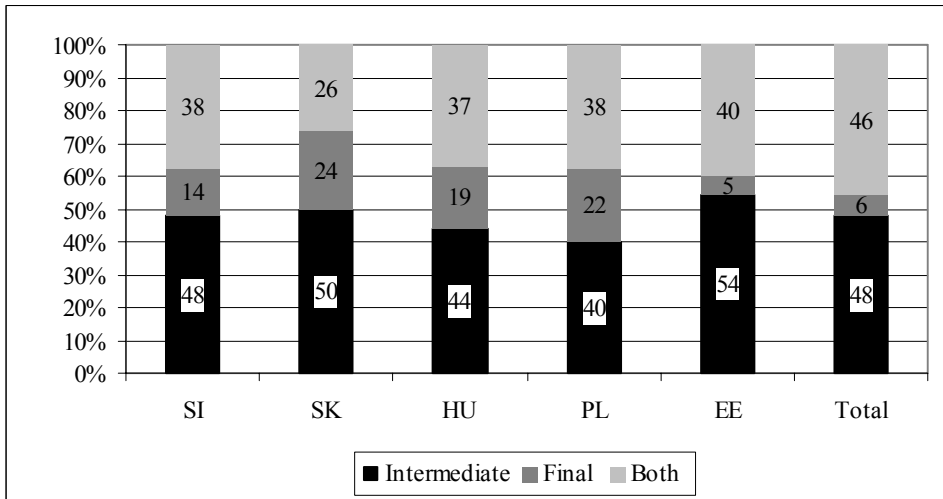
Note: SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.
Source: author's calculations on the basis of Survey Questionnaire.

Appendix 15. Distribution of sample firms by establishment year as foreign investment firm (%)



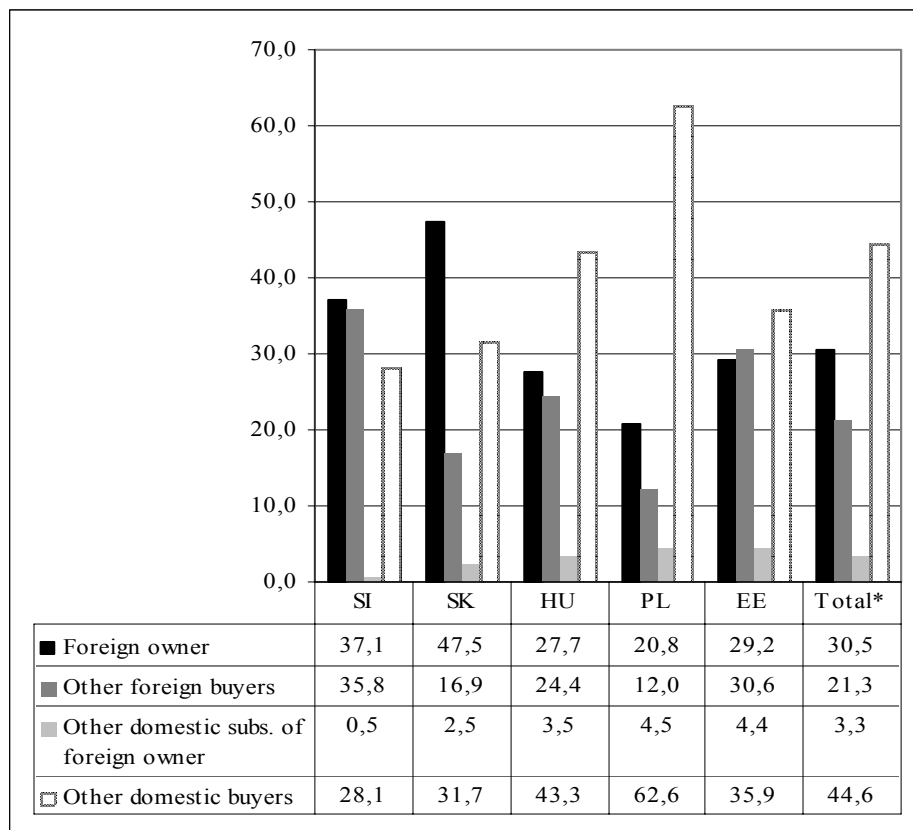
Note: SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.
 Source: author’s calculations on the basis of Survey Questionnaire.

Appendix 16. Distribution of sample firms by type of product (%)



Note: SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.
 Source: author’s calculations on the basis of Survey Questionnaire.

Appendix 17. Sales structure of sample firms (%)

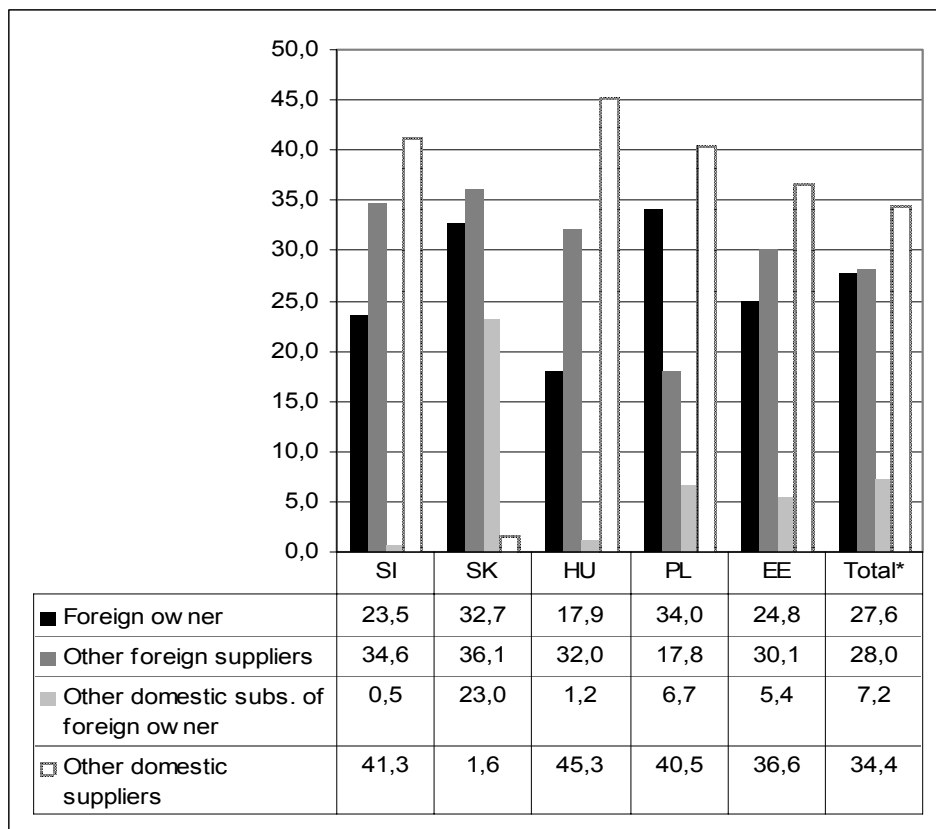


Note: * – weighted average;

SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

Source: author's calculations on the basis of Survey Questionnaire.

Appendix 18. Purchases structure of sample firms (%)



Note: * – weighted average;

SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

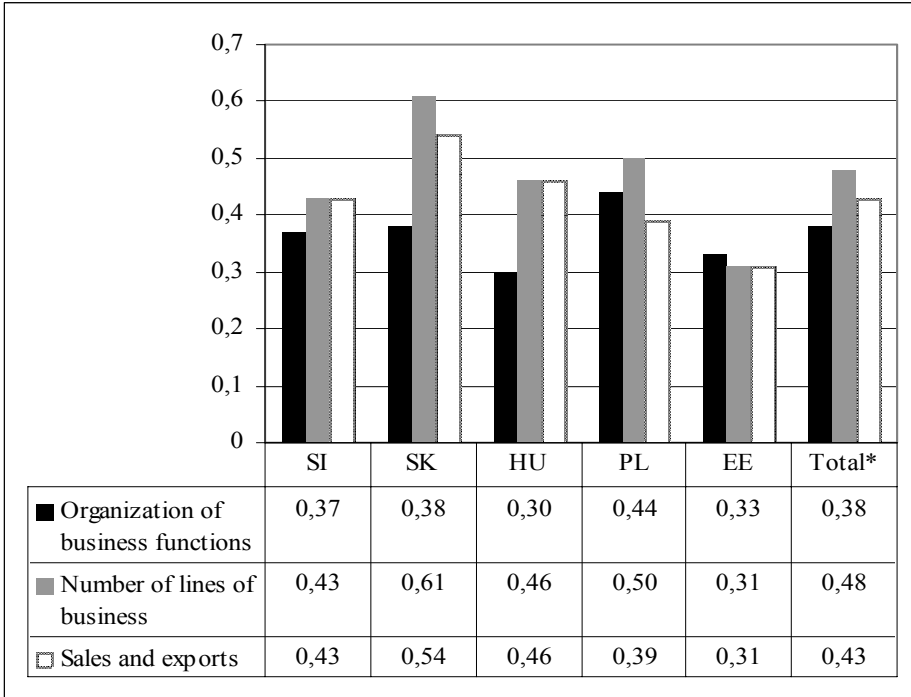
Source: author's calculations on the basis of Survey Questionnaire.

Appendix 19. The ANOVA tests for sales and purchases structures, upgrading activities of MNC subsidiaries

	F-stat.	P-value of between-subjects effects	Stat. significant differences between countries
Sale to:			
Foreign owner	10.748	0.000	SK>PL, HU, EE; PL<SI
Other foreign buyers	11.205	0.000	PL<SI, HU, EE; SK<SI, EE
Other domestic subsidiaries	1.220	0.302	–
Other domestic buyers	17.557	0.000	PL>SI, HU, SK, EE; SK<HU
Supply from:			
Foreign owner	3.759	0.005	PL>HU
Other foreign suppliers	6.830	0.000	PL<SI, HU, SK
Other domestic subsidiaries	22.977	0.000	SK>SI, PL, HU, EE; SI<PL
Other domestic suppliers	24.762	0.000	SK<HU, PL, SI, EE
Initiative for changes in:			
Organisation of business functions	3.525	0.001	PL>HU
Number of lines of businesses	4.532	0.000	SK>HU, EE, PL, SI; EE<PL, HU
Sales and exports	0.553	0.000	SK>PL, EE; HU>EE
Mandate evolution in:			
Sales and exports	5.662	0.000	SI>PL, HU, EE
Number of other business functions undertaken independently	4.796	0.001	HU<PL, SK
Number of lines of businesses (line of products)	9.730	0.000	PL>SI, HU, EE; SK>HU

Note: SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia;
 > or < means the bigger or lower value, e.g. SK>PL in the latter column refers to the bigger share of “Foreign owner” in sales’ structure in Slovakia relative to Poland.

**Appendix 20. Initiatives of MNC subsidiaries
for changes in three areas**

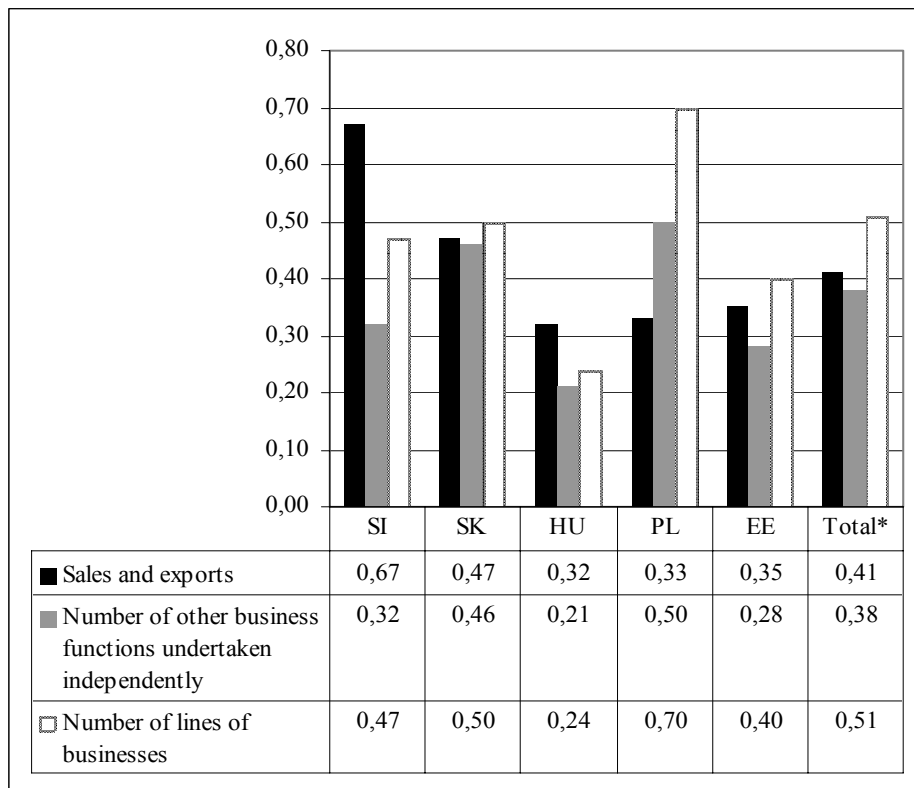


Note: the values of the individual answers: 0=only subsidiary itself, 0,33=mainly subsidiary, 0,66=mainly foreign owner, 1=only foreign owner;

* – weighted average;

SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

Appendix 21. Development of future mandate of MNC subsidiaries



Note: the values of the individual answers: 0=increase, 0,5=decrease, 1=unchanged;

* – weighted average;

SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

Appendix 22. Means of categorical variables by four group of functions

Variable	FACTTECH	FACTMARK	FACTMAN	FACTFIN
Country:				
SI	0.31	0.34	0.25	0.17
SK	0.37	0.50	0.39	0.31
HU	0.37	0.33	0.32	0.20
PL	0.39	0.26	0.46	0.28
EE	0.35	0.34	0.39	0.37
Total	0.36	0.34	0.38	0.27
Industry:				
HT	0.44	0.41	0.39	0.24
MHT	0.39	0.37	0.39	0.28
MLT	0.36	0.30	0.38	0.25
LT	0.33	0.34	0.36	0.27
Total	0.36	0.34	0.38	0.26
Foreign ownership:				
Minority	0.19	0.16	0.20	0.13
Majority	0.40	0.37	0.41	0.29
Total	0.36	0.34	0.38	0.26
Firm size:				
SME	0.37	0.32	0.37	0.27
Large	0.36	0.38	0.40	0.26
Total	0.36	0.34	0.38	0.26
Establishment year:				
≤ 1990	0.39	0.28	0.39	0.25
1992–1995	0.36	0.37	0.38	0.26
≥ 1996	0.35	0.36	0.36	0.27
Total	0.36	0.34	0.38	0.26
Product type:				
Intermediate	0.41	0.44	0.33	0.27
Final	0.36	0.31	0.37	0.26
Both	0.36	0.34	0.40	0.26
Total	0.36	0.34	0.38	0.26

Note: HT – high-tech, MHT – medium high-tech, MLT – medium low-tech, LT – low-tech;

SI – Slovenia, PL – Poland, HU – Hungary, SK – Slovakia, EE – Estonia.

Appendix 23. The ANOVA tests – statistically significant means for categorical variables by four group of functions

Variable	FACTTECH	FACTMARK	FACTMAN	FACTFIN
Country	–	F-stat: 7.617 p-value: 0.000 Differences: SK>SI, PL, HU, EE	F-stat: 10.234 p-value: 0.000 Differences: SI<PL, EE, SK; PL> HU	F-stat: 9.273 p-value: 0.000 Differences: SI<PL, SK, EE; PL>HU; HU<SK
Industry	–	–	–	–
Foreign ownership	F-stat: 37.279 p-value: 0.000 Difference: majority > minority	F-stat: 24.778 p-value: 0.000 Difference: majority > minority	F-stat: 38.128 p-value: 0.000 Difference: majority > minority	F-stat: 27.288 p-value: 0.000 Difference: majority > minority
Firm size	–	F-stat: 3.843 p-value: 0.051 Difference: Large > SME	–	–
Establishment year	–	F-stat: 3.060 p-value: 0.060 Difference: ≤ 1990 < 1991- 1995	–	–
Product type	–	F-stat: 3,593 p-value: 0.023 Difference: intermediate goods > final products	–	–

Note: “–” – no significant results;

> or < means the bigger or lower value, e.g. SK>SI, PL, HU, EE in the third column refers to the bigger mean value of FACTMARK (which means the lower autonomy level) in Slovakia relative to Slovenia, Poland, Hungary and Estonia. The F-statistics showing statistical significance of the results are also shown in the table.

Appendix 24. Definition of the variables

Variables	Definition of variable
DEPENDENT VARIABLE	
CHANGE_PROD	Measures magnitude of changes in level of productivity since the registration of a firm as foreign investment enterprise. Magnitude of changes ranges from 0=considerable reduction to 1=considerable increase
CHANGE_TECH	Measures magnitude of changes in level of technology production since the registration of a firm as foreign investment enterprise. Magnitude of changes ranges from 0=considerable reduction to 1=considerable increase
CHANGE_PQUA	Measures magnitude of changes in level of product quality since the registration of a firm as foreign investment enterprise. Magnitude of changes ranges from 0=considerable reduction to 1=considerable increase
CHANGE_EXP	Measures magnitude of changes in share of exports from output since the registration of a firm as foreign investment enterprise. Magnitude of changes ranges from 0=considerable reduction to 1=considerable increase
INDEPENDENT VARIABLES: characteristics of MNC subsidiary autonomy	
FACTTECH	Measures subsidiary autonomy in production and technology area across three business functions: product development, process engineering, supply and logistics in 2001; continuous variable which varies between 0 (complete autonomy of subsidiary) and 1 (complete control by the parent firm)
FACTMARK	Measures subsidiary autonomy in sales and marketing area across six business functions: determining product price, market research, distribution and sales, after sale services, advertisement, marketing in 2001; continuous variable which varies between 0 (complete autonomy of subsidiary) and 1 (complete control by the parent firm)
FACTMAN	Measures subsidiary autonomy in management area across two business functions: operational management, strategic planning or planning in 2001; continuous variable which varies between 0 (complete autonomy of subsidiary) and 1 (complete control by the parent firm)
FACTFIN	Measures subsidiary autonomy in financing area across two business functions: accounting and finance of operations, investment finance in 2001; continuous variable which varies between 0 (complete autonomy of subsidiary) and 1 (complete control by the parent firm)

Variables	Definition of variable
FACTTECH_SQ	Square value of FACTTECH
FACTMARK_SQ	Square value of FACTMARK
FACTMAN_SQ	Square value of FACTMAN
FACTFIN_SQ	Square value of FACTFIN
	INDEPENDENT VARIABLES: characteristics of local environment (controls)
COUNTRY	Categorical variable which controls for country effects across five countries: Slovenia (SI), Poland (PL), Hungary (HU), Slovakia (SK), Estonia (EE); Estonia is determined as a reference group in the model
INDUSTRY	Categorical variable which controls for industry effects across four types of manufacturing industries: high-tech, medium high-tech, medium low-tech, low-tech; using the OECD classification high-tech sectors involve following industries (HT): 24.4, 30, 32, 33, 35.3; medium high-tech sectors (MHT): 24.0–24.3, 24.5–24.7, 29, 31, 34, 35.2, 35.4–35.5; medium low-tech sectors (MLT): 23, 25, 26, 27, 28, 35.0–35.1; low-tech sectors (LT): 15, 16, 17, 18, 19, 20, 21, 22, 36, 37; low-tech industry group is determined as a reference group in the model
	INDEPENDENT VARIABLES: characteristics of firm (controls)
OWNER	Categorical variable which controls for a size of foreign ownership across two types of firms: minority foreign ownership (50% and less foreign capital), majority foreign ownership (51–100% foreign capital); majority foreign owned group is determined as a reference group in the model
FIRM_SIZE	Categorical variable which controls for a firm size across two types of firms: small and medium-sized (250 and less number of employees), large (more than 250 employees); large firms' group is determined as a reference group the model
ESTBL	Categorical variable which controls for a firm age across three types of firms: established in 1990 or before, established in 1991–1995, established in 1996 or later; the youngest firms' group is determined as a reference group in the model
PR_TYPE	Categorical variable which controls for a product type of firms across three types of firms: producing only intermediary goods, producing only final products, producing both types of products; firms' group producing both types of products is determined as a reference group in the model

Appendix 25. Results of the ordered regression analysis – summary of parameter estimates ^{1 2}

Independent variables	Change in level of productivity in production		Change in level of technology of production equipment		Change in level of product quality		Change in share of exports from output	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
FACTTECH	-0,09	3,94**	0,77	4,79**	0,55	4,36**	-0,84	0,63
FACTMARK	0,79	-0,52	1,16**	-0,90	1,27**	1,32	2,19**	3,35**
FACTMAN	-0,08	1,54	-0,78	-0,93	-0,77	-2,66	0,06	-0,47
FACTFIN	-0,46	0,45	-0,75	1,16	-1,78**	-1,86	-1,16*	0,08
FACTTECH_SQ		-4,67**		-4,52**		-4,30**		-1,74
FACTMARK_SQ		1,39		2,26		0,09		-1,27
FACTMAN_SQ		-2,00		-0,04		1,74		0,45
FACTFIN_SQ		-1,80		-3,03		-0,13		-2,38
[COUNTRY=SI]	0,13	-0,19	-0,59	-0,62	-1,24**	-1,31**	-0,14	-0,17
[COUNTRY=PL]	0,10	0,09	0,09	0,13	0,05	0,10	-0,86**	-0,88**
[COUNTRY=HU]	0,26	0,38	-0,10	-0,01	-0,78*	-0,73*	-1,01**	-0,94**
[COUNTRY=SK]	-0,20	-0,22	-0,60	-0,64	-0,37	-0,40	0,08	0,08
[COUNTRY=EE]	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³
[INDUSTRY=HT]	-1,15**	-1,28**	-0,85*	-0,97**	-0,83*	-0,87*	0,32	0,26
[INDUSTRY=MHT]	-0,37	-0,43	-0,03	-0,06	-0,02	-0,06	0,32	0,30
[INDUSTRY=MLT]	0,33	0,35	0,50*	0,54*	0,41	0,39	0,58**	0,59**
[INDUSTRY=L]	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³
[OWNER=MIN.F.]	-0,63**	-0,39	-0,12	0,11	-0,19	-0,05	-0,39	-0,27
[OWNER=MAJ.F.]	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³
[FIRM_SIZE=SME]	-0,81***	-0,76***	-0,70**	-0,62**	-0,53**	-0,51**	-1,08***	-1,10***

Independent variables	Change in level of productivity in production		Change in level of technology of production equipment		Change in level of product quality		Change in share of exports from output	
	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³
[FIRM_SIZE=LARGE]								
[ESTBL ≤ 1990]	-0,59*	-0,55*	-0,29	-0,28	-0,42	-0,47	0,26	0,26
[ESTBL=1991-1995]	-0,13	-0,07	0,07	0,08	0,02	0,01	0,26	0,26
[ESTBL ≥ 1996]	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³
[PR_TYPE=INTERM]	0,76**	0,69*	0,23	0,19	0,41	0,40	0,63*	0,68*
[PR_TYPE=FINAL]	9,54**	0,58**	0,30	0,29	0,12	0,13	0,13	0,18
[PR_TYPE=BOTH]	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³	0 ³
Obs. (A)	426	426	426	426	426	426	426	426
Correct cases (B)	348	348	349	349	348	348	350	350
-2Log Likelihood Final	719,79***	705,86***	738,35**	726,14***	716,46***	709,69***	850,94***	846,49***
Model fitting: Chi-Square	45,84***	59,77***	31,93**	44,14***	39,32***	46,09***	78,55***	83,002***

Notes:

¹ Link function: Logit;

² *** Significance in 1% level; ** significance in 5% level; * significance in 10% level;

³ This parameter is set to zero because it is redundant.

Appendix 26. Results of the ordered regression Model 1
(dependent variable – change in level of productivity in production)¹

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	V29=0,00	-6,53	1,11	35,00	1	0,00	-8,70	-4,37
	V29=0,25	-4,91	0,66	56,11	1	0,00	-6,19	-3,63
	V29=0,50	-2,05	0,49	17,61	1	0,00	-3,00	-1,10
	V29=0,75	0,17	0,47	0,12	1	0,72	-0,76	1,10
Location	FACTTECH	-0,09	0,58	0,03	1	0,87	-1,23	1,04
	FACTMARK	0,79	0,51	2,43	1	0,12	-0,20	1,78
	FACTMAN	-0,08	0,59	0,02	1	0,89	-1,24	1,08
	FACTFIN	-0,46	0,61	0,56	1	0,46	-1,66	0,74
	[COUNTRY=SI]	-0,13	0,43	0,10	1	0,76	-0,97	0,71
	[COUNTRY=PL]	1,00	0,42	0,05	1	0,82	-0,72	0,92
	[COUNTRY=HU]	0,26	0,42	0,37	1	0,54	-0,57	1,08
	[COUNTRY=SK]	-0,20	0,42	0,24	1	0,63	-1,03	0,62
	[COUNTRY=EE]	0 ²	,	,	0	,	,	,
	[INDUSTRY=HT]	-1,15	0,48	5,81	1	0,02	-2,10	-0,22
	[INDUSTRY=MHT]	-0,37	0,29	1,65	1	0,20	-0,92	0,19
	[INDUSTRY=MLT]	0,33	0,28	1,33	1	0,25	-0,23	0,88
	[INDUSTRY=LT]	0 ²	,	,	0	,	,	,
	[OWNER=MIN.F.]	-0,63	0,32	4,00	1	0,05	-1,26	-0,01
	[OWNER=MAJ.F.]	0 ²	,	,	0	,	,	,
	[FIRM SIZE=SME]	-0,81	0,23	12,10	1	0,00	-1,26	-0,35
	[FIRM SIZE=LARGE]	0 ²	,	,	0	,	,	,
	[ESTBL ≤ 1990]	-1,00	0,31	3,61	1	0,06	-1,20	0,02
	[ESTBL=1991–1995]	-0,13	0,25	0,26	1	0,61	-0,63	0,37
	[ESTBL ≥ 1996]	0 ²	,	,	0	,	,	,
[PR_TYPE=INTERM]	0,76	0,36	4,42	1	0,04	0,05	1,46	
[PR_TYPE=FINAL]	0,54	0,23	5,63	1	0,02	0,09	0,98	
[PR_TYPE=BOTH]	0 ²	,	,	0	,	,	,	

Notes:

¹ Link function: Logit;

² This parameter is set to zero because it is redundant.

Appendix 27. Results of the ordered regression Model 1
(dependent variable – change in level of technology of production equipment)¹

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Thres- hold	V30=0,25	-5,13	0,74	47,89	1	0,00	-6,58	-3,68
	V30=0,50	-1,55	0,47	10,71	1	0,00	-2,48	-0,62
	V30=0,75	0,34	0,47	0,54	1	0,46	-0,57	1,25
Location	FACTTECH	0,77	0,57	1,80	1	0,18	-0,36	1,89
	FACTMARK	1,16	0,50	5,35	1	0,02	0,18	2,14
	FACTMAN	-0,78	0,58	1,80	1	0,18	-1,92	0,36
	FACTFIN	-0,75	0,61	1,53	1	0,22	-1,93	0,44
	[COUNTRY=SI]	-0,59	0,42	1,93	1	0,17	-1,42	0,24
	[COUNTRY=PL]	0,09	0,41	0,05	1	0,82	-0,72	0,90
	[COUNTRY=HU]	-0,10	0,41	0,06	1	0,81	-1,00	0,71
	[COUNTRY=SK]	-0,60	0,41	2,08	1	0,15	-1,41	0,21
	[COUNTRY=EE]	0 ²	,	,	0	,	,	,
	[INDUSTRY=HT]	-0,85	0,47	3,24	1	0,07	-1,77	0,08
	[INDUSTRY=MHT]	-0,03	0,28	0,01	1	1,00	-0,57	0,52
	[INDUSTRY=MLT]	0,50	0,28	3,25	1	0,07	-0,04	1,05
	[INDUSTRY=LT]	0 ²	,	,	0	,	,	,
	[OWNER=MIN.F.]	-0,12	0,31	0,14	1	0,71	-0,73	0,49
	[OWNER=MAJ.F.]	0 ²	,	,	0	,	,	,
	[FIRM SIZE=SME]	-0,66	0,23	8,48	1	0,00	-1,10	-0,22
	[FIRM SIZE=LARGE]	0 ²	,	,	0	,	,	,
	[ESTBL ≤ 1990]	-0,29	0,31	0,89	1	0,35	-0,88	0,31
	[ESTBL=1991–1995]	0,07	0,25	0,07	1	0,79	-0,42	0,56
	[ESTBL ≥ 1996]	0 ²	,	,	0	,	,	,
	[PR_TYPE=INTERM]	0,23	0,35	0,44	1	0,51	-0,46	0,92
[PR_TYPE=FINAL]	0,30	0,22	1,87	1	0,17	-0,13	0,74	
[PR_TYPE=BOTH]	0 ²	,	,	0	,	,	,	

Notes:

¹ Link function: Logit;

² This parameter is set to zero because it is redundant.

Appendix 28. Results of the ordered regression Model 1
(dependent variable – change in level of quality of product)¹

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Thres hold	V31=0,25	-6,88	1,11	38,42	1	0,00	-9,06	-4,71
	V31=0,5	-2,14	0,48	19,55	1	0,00	-3,08	-1,19
	V31=0,75	-0,32	0,47	0,46	1	0,50	-1,24	0,60
Location	FACTTECH	0,55	0,57	0,93	1	0,33	-0,57	1,68
	FACTMARK	1,27	0,51	6,33	1	0,01	0,28	2,26
	FACTMAN	-0,77	0,59	1,71	1	0,19	-1,92	0,38
	FACTFIN	-1,78	0,61	8,46	1	0,00	-3,00	-0,58
	[COUNTRY=SI]	-1,24	0,43	8,34	1	0,00	-2,08	-0,40
	[COUNTRY=PL]	0,05	0,42	0,01	1	0,91	-0,77	0,86
	[COUNTRY=HU]	-0,78	0,42	3,54	1	0,06	-1,60	0,03
	[COUNTRY=SK]	-0,37	0,42	0,78	1	0,38	-1,19	0,45
	[COUNTRY=EE]	0 ²	,	,	0	,	,	,
	[INDUSTRY=HT]	-0,83	0,47	3,11	1	0,08	-1,76	0,09
	[INDUSTRY=MHT]	-0,01	0,28	0,00	1	1,00	-0,56	0,53
	[INDUSTRY=MLT]	0,41	0,28	2,16	1	0,14	-0,14	0,95
	[INDUSTRY=LT]	0 ²	,	,	0	,	,	,
	[OWNER=MIN.F.]	-0,19	0,31	0,38	1	0,54	-0,81	0,42
	[OWNER=MAJ.F.]	0 ²	,	,	0	,	,	,
	[FIRM_SIZE=SME]	-0,53	0,23	5,31	1	0,02	-0,97	-0,08
	[FIRM_SIZE=LARGE]	0 ²	,	,	0	,	,	,
	[ESTBL ≤ 1990]	-0,42	0,31	1,92	1	0,17	-1,02	0,18
	[ESTBL=1991–1995]	0,02	0,25	0,01	1	0,93	-0,47	0,52
	[ESTBL ≥ 1996]	0 ²	,	,	0	,	,	,
[PR_TYPE=INTERM]	0,41	0,36	1,32	1	0,25	-0,29	1,10	
[PR_TYPE=FINAL]	0,11	0,22	0,23	1	0,63	-0,33	0,54	
[PR_TYPE=BOTH]	0 ²	,	,	0	,	,	,	

Notes:

¹ Link function: Logit;

² This parameter is set to zero because it is redundant.

Appendix 29. Results of the ordered regression Model 1
(dependent variable – change in share of exports)¹

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Thres- hold	V28=0,00	-4,71	0,61	60,61	1	0,00	-5,90	-3,53
	V28=0,25	-3,11	0,50	38,17	1	0,00	-4,09	-2,12
	V28=0,50	-1,13	0,47	5,80	1	0,02	-2,05	-0,21
	V28=0,75	0,07	0,47	0,02	1	0,88	-0,84	0,98
Location	FACTTECH	-0,84	0,57	2,13	1	0,15	-1,96	0,29
	FACTMARK	2,19	0,52	17,53	1	0,00	1,16	3,21
	FACTMAN	0,06	0,59	0,01	1	0,92	-1,09	1,21
	FACTFIN	-1,16	0,61	3,63	1	0,06	-2,36	0,03
	[COUNTRY=SI]	-0,14	0,43	0,11	1	0,73	-0,98	0,70
	[COUNTRY=PL]	-0,86	0,41	4,35	1	0,04	-1,66	-0,05
	[COUNTRY=HU]	-1,01	0,41	6,00	1	0,01	-1,82	-0,20
	[COUNTRY=SK]	0,08	0,42	0,04	1	0,84	-0,74	0,91
	[COUNTRY=EE]	0 ²	,	,	0	,	,	,
	[INDUSTRY=HT]	0,32	0,48	0,44	1	0,51	-0,63	1,26
	[INDUSTRY=MHT]	0,32	0,28	1,33	1	0,25	-0,23	0,87
	[INDUSTRY=MLT]	0,58	0,28	4,38	1	0,04	0,04	1,13
	[INDUSTRY=LT]	0 ²	,	,	0	,	,	,
	[OWNER=MIN.F.]	-0,39	0,31	1,59	1	0,21	-1,00	0,22
	[OWNER=MAJ.F.]	0 ²	,	,	0	,	,	,
	[FIRM_SIZE=SME]	-1,08	0,23	21,25	1	0,00	-1,53	-0,62
	[FIRM_SIZE=LARGE]	0 ²	,	,	0	,	,	,
	[ESTBL ≤ 1990]	0,26	0,31	0,72	1	0,40	-0,34	0,86
	[ESTBL=1991–1995]	0,26	0,25	1,05	1	0,31	-0,24	0,76
	[ESTBL ≥ 1996]	0 ²	,	,	0	,	,	,
[PR_TYPE=INTERM]	0,63	0,36	3,13	1	0,08	-0,07	1,33	
[PR_TYPE=FINAL]	0,13	0,22	0,32	1	0,57	-0,31	0,56	
[PR_TYPE=BOTH]	0 ²	,	,	0	,	,	,	

Notes:

¹ Link function: Logit;

² This parameter is set to zero because it is redundant.

Appendix 30. Results of the ordered regression Model 2
(dependent variable – change in level of productivity in production)¹

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Thres- hold	V29=0,00	-5,87	1,13	27,01	1	0,00	-8,09	-3,66
	V29=0,25	-4,25	0,70	37,87	1	0,00	-5,60	-2,90
	V29=0,50	-1,35	0,54	6,29	1	0,01	-2,40	-0,30
	V29=0,75	0,10	0,54	3,08	1	0,08	-0,11	1,99
Location	FACTTECH	3,94	1,62	5,92	1	0,02	0,77	7,12
	FACTMARK	-0,52	1,43	0,13	1	0,72	-3,32	2,29
	FACTMAN	1,54	1,71	0,82	1	0,37	-1,81	4,90
	FACTFIN	0,45	1,53	0,08	1	0,77	-2,56	3,45
	FACTTECH SQ	-4,67	1,71	7,46	1	0,01	-8,02	-1,32
	FACTMARK SQ	1,40	1,44	0,93	1	0,33	-1,43	4,21
	FACTMAN SQ	-2,00	1,65	1,47	1	0,23	-5,22	1,23
	FACTFIN SQ	-1,80	2,25	0,64	1	0,42	-6,21	2,61
	[COUNTRY=SI]	-0,19	0,44	0,18	1	0,67	-1,04	0,67
	[COUNTRY=PL]	0,09	0,42	0,04	1	0,84	-0,75	0,92
	[COUNTRY=HU]	0,38	0,43	0,80	1	0,37	-0,45	1,22
	[COUNTRY=SK]	-0,22	0,42	0,28	1	0,60	-1,05	0,61
	[COUNTRY=EE]	0 ²	,	,	0	,	,	,
	[INDUSTRY=HT]	-1,28	0,48	7,010	1	0,01	-2,22	-0,33
	[INDUSTRY=MHT]	-0,43	0,29	2,248	1	0,13	-1,00	0,13
	[INDUSTRY=MLT]	0,35	0,29	1,460	1	0,23	-0,22	0,91
	[INDUSTRY=LT]	0 ²	,	,	0	,	,	,
	[OWNER=MIN.F.]	-0,39	0,33	1,41	1	0,24	-1,03	0,25
	[OWNER=MAJ.F.]	0 ²	,	,	0	,	,	,
	[FIRM_SIZE=SME]	-0,76	0,24	10,44	1	0,00	-1,22	-0,30
	[FIRM_SIZE=LARGE]	0 ²	,	,	0	,	,	,
	[ESTBL ≤ 1990]	-0,55	0,31	3,07	1	0,08	-1,17	0,07
	[ESTBL=1991–1995]	-0,07	0,26	0,08	1	0,78	-0,58	0,44
	[ESTBL ≥ 1996]	0 ²	,	,	0	,	,	,
	[PR_TYPE=INTERM]	0,69	0,36	3,58	1	0,06	-0,03	1,40
	[PR_TYPE=FINAL]	0,58	0,23	6,22	1	0,01	0,12	1,03
[PR_TYPE=BOTH]	0 ²	,	,	0	,	,	,	

Notes:

¹ Link function: Logit;

² This parameter is set to zero because it is redundant.

Appendix 31. Results of the ordered regression Model 2
(dependent variable – change in level of technology of production)¹

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Thres -hold	V30=0,25	-4,69	0,77	36,9	1	0,00	-6,20	-3,18
	V30=0,50	-1,08	0,53	4,19	1	0,04	-2,10	-0,05
	V30=0,75	0,87	0,52	2,73	1	0,10	-0,16	1,89
Location	FACTTECH	4,79	1,60	9,02	1	0,00	1,66	7,91
	FACTMARK	-0,90	1,41	0,40	1	0,53	-3,66	1,87
	FACTMAN	-0,93	1,67	0,31	1	0,58	-4,21	2,34
	FACTFIN	1,16	1,51	0,60	1	0,44	-1,79	4,12
	FACTTECH SQ	-4,52	1,68	7,29	1	0,01	-7,81	-1,24
	FACTMARK SQ	2,26	1,43	2,50	1	0,11	-0,54	5,06
	FACTMAN SQ	-0,04	1,61	0,00	1	0,98	-3,21	3,12
	FACTFIN SQ	-3,03	2,22	1,86	1	0,17	-7,38	1,32
	[COUNTRY=SI]	-0,62	0,43	2,08	1	0,15	-1,46	0,22
	[COUNTRY=PL]	0,13	0,42	0,10	1	0,75	-0,69	0,95
	[COUNTRY=HU]	-0,01	0,42	0,00	1	1,00	-0,83	0,80
	[COUNTRY=SK]	-0,64	0,42	2,34	1	0,13	-1,46	0,18
	[COUNTRY=EE]	0 ²	,	,	0	,	,	,
	[INDUSTRY=HT]	-0,97	0,47	4,19	1	0,04	-1,90	-0,04
	[INDUSTRY=MHT]	-0,06	0,28	0,05	1	0,82	-0,62	0,49
	[INDUSTRY=MLT]	-0,54	0,28	3,60	1	0,06	-0,02	1,09
	[INDUSTRY=LT]	0 ²	,	,	0	,	,	,
	[OWNER=MIN.F.]	0,11	0,32	0,12	1	0,73	-0,52	0,74
	[OWNER=MAJ.F.]	0 ²	,	,	0	,	,	,
	[FIRM_SIZE=SME]	-0,62	0,23	7,28	1	0,01	-1,07	-0,17
	[FIRM_SIZE=LARGE]	0 ²	,	,	0	,	,	,
	[ESTBL ≤ 1990]	-0,28	0,31	0,83	1	0,36	-0,89	0,32
	[ESTBL=1991–1995]	0,08	0,25	0,11	1	0,75	-0,42	0,58
	[ESTBL ≥ 1996]	0 ²	,	,	0	,	,	,
	[PR_TYPE=INTERM]	0,19	0,36	0,29	1	0,59	-0,51	0,89
	[PR_TYPE=FINAL]	0,29	0,23	1,62	1	0,20	-0,15	0,73
[PR_TYPE=BOTH]	0 ²	,	,	0	,	,	,	

Notes:

¹ Link function: Logit;

² This parameter is set to zero because it is redundant.

Appendix 32. Results of the ordered regression Model 2
(dependent variable – change in level of quality of product)¹

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Thres -hold	V31=0,25	-6,72	1,13	35,2	1	0,00	-8,94	-4,50
	V31=0,5	-1,94	0,53	13,2	1	0,00	-2,99	-0,90
	V31=0,75	-0,10	0,52	0,04	1	0,84	-1,13	0,92
Location	FACTTECH	4,39	1,60	7,56	1	0,01	1,26	7,51
	FACTMARK	1,32	1,41	0,88	1	0,35	-1,44	4,09
	FACTMAN	-2,66	1,69	2,47	1	0,12	-5,97	0,66
	FACTFIN	-1,86	1,52	1,49	1	0,22	-4,84	1,13
	FACTTECH SQ	-4,30	1,68	6,59	1	0,01	-7,59	-1,02
	FACTMARK SQ	0,09	1,42	0,00	1	0,95	-2,68	2,87
	FACTMAN SQ	1,74	1,64	1,13	1	0,29	-1,47	4,95
	FACTFIN SQ	-0,13	2,22	0,00	1	0,95	-4,49	4,22
	[COUNTRY=SI]	-1,31	0,43	9,12	1	0,00	-2,15	-0,46
	[COUNTRY=PL]	0,10	0,42	0,06	1	0,81	-0,72	0,92
	[COUNTRY=HU]	-0,73	0,42	3,09	1	0,08	-1,55	0,08
	[COUNTRY=SK]	-0,40	0,42	0,89	1	0,35	-1,22	0,43
	[COUNTRY=EE]	0 ²	,	,	0	,	,	,
	[INDUSTRY=HT]	-0,87	0,47	3,35	1	0,07	-1,79	0,06
	[INDUSTRY=MHT]	-0,06	0,28	0,05	1	0,82	-0,62	0,49
	[INDUSTRY=MLT]	0,36	0,28	1,86	1	0,17	-0,17	0,94
	[INDUSTRY=LT]	0 ²	,	,	0	,	,	,
	[OWNER=MIN.F.]	-0,05	0,32	0,03	1	0,87	-0,69	0,58
	[OWNER=MAJ.F.]	0 ²	,	,	0	,	,	,
	[FIRM SIZE=SME]	-0,51	0,23	4,94	1	0,03	-0,97	-0,06
	[FIRM SIZE=LARGE]	0 ²	,	,	0	,	,	,
	[ESTBL ≤ 1990]	-0,47	0,31	2,30	1	0,13	-1,08	0,138
	[ESTBL=1991–1995]	0,01	0,26	0,00	1	0,96	-0,49	0,512
	[ESTBL ≥ 1996]	0 ²	,	,	0	,	,	,
	[PR_TYPE=INTERM]	0,40	0,36	1,27	1	0,26	-0,30	1,11
[PR_TYPE=FINAL]	0,13	0,23	0,32	1	0,57	-0,31	0,57	
[PR_TYPE=BOTH]	0 ²	,	,	0	,	,	,	

Notes:

¹ Link function: Logit;

² This parameter is set to zero because it is redundant.

Appendix 33. Results of the ordered regression Model 2
(dependent variable – change in share of exports)¹

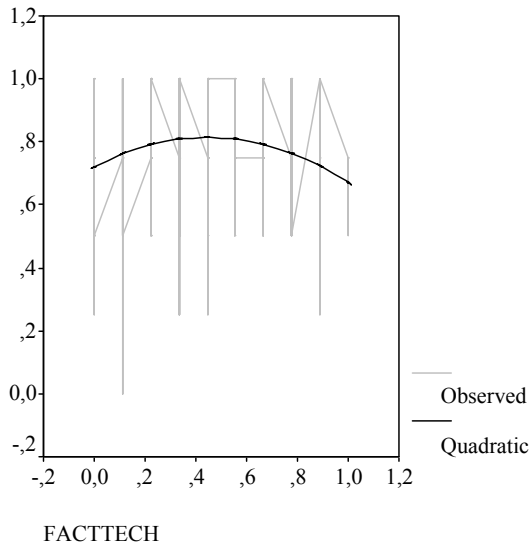
		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Thres- hold	V28=0,00	-4,43	0,64	47,38	1	0,00	-5,69	-3,17
	V28=0,25	-2,82	0,55	26,46	1	0,00	-3,90	-1,75
	V28=0,50	-0,83	0,52	2,53	1	0,11	-1,85	0,19
	V28=0,75	0,39	0,52	0,55	1	0,46	-0,63	1,40
Location	FACTTECH	0,63	1,57	0,16	1	0,69	-2,45	3,71
	FACTMARK	3,35	1,43	5,52	1	0,02	0,56	6,15
	FACTMAN	-0,47	1,66	0,08	1	0,78	-3,71	2,78
	FACTFIN	0,08	1,50	0,00	1	1,00	-2,86	3,02
	FACTTECH_SQ	-1,74	1,66	1,10	1	0,30	-5,00	1,51
	FACTMARK_SQ	-1,27	1,47	0,76	1	0,38	-4,15	1,60
	FACTMAN_SQ	0,45	1,61	0,08	1	0,78	-2,71	3,61
	FACTFIN_SQ	-2,38	2,21	1,16	1	0,28	-6,70	1,95
	[COUNTRY=SI]	-0,17	0,43	0,17	1	0,68	-1,01	0,66
	[COUNTRY=PL]	-0,88	0,41	4,50	1	0,03	-1,70	-0,07
	[COUNTRY=HU]	-0,94	0,42	5,10	1	0,02	-1,76	-0,12
	[COUNTRY=SK]	0,08	0,42	0,03	1	0,86	-0,75	0,91
	[COUNTRY=EE]	0 ²	,	,	0	,	,	,
	[INDUSTRY=HT]	0,26	0,48	0,30	1	0,59	-0,68	1,21
	[INDUSTRY=MHT]	0,30	0,28	1,08	1	0,30	-0,26	0,85
	[INDUSTRY=MLT]	0,60	0,28	4,45	1	0,04	0,04	1,14
	[INDUSTRY=LT]	0 ²	,	,	0	,	,	,
	[OWNER=MIN.F.]	-0,27	0,32	0,75	1	0,39	-0,89	0,35
	[OWNER=MAJ.F.]	0 ²	,	,	0	,	,	,
	[FIRM SIZE=SME]	-1,10	0,24	21,67	1	0,00	-1,56	-0,64
	[FIRM SIZE=LARGE]	0 ²	,	,	0	,	,	,
	[ESTBL ≤ 1990]	0,26	0,31	0,69	1	0,41	-0,35	0,86
	[ESTBL=1991–1995]	0,26	0,26	1,07	1	0,30	-0,24	0,77
	[ESTBL ≥ 1996]	0 ²	,	,	0	,	,	,
	[PR_TYPE=INTERM]	0,68	0,36	3,55	1	0,06	-0,03	1,39
	[PR_TYPE=FINAL]	0,18	0,23	0,62	1	0,43	-0,26	0,62
[PR_TYPE=BOTH]	0 ²	,	,	0	,	,	,	

Notes:

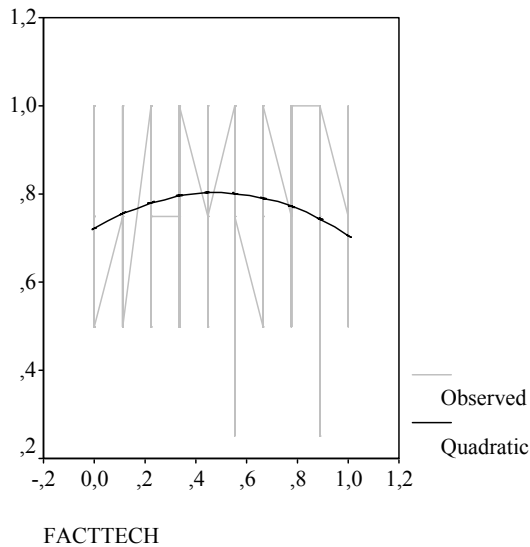
¹ Link function: Logit;

² This parameter is set to zero because it is redundant.

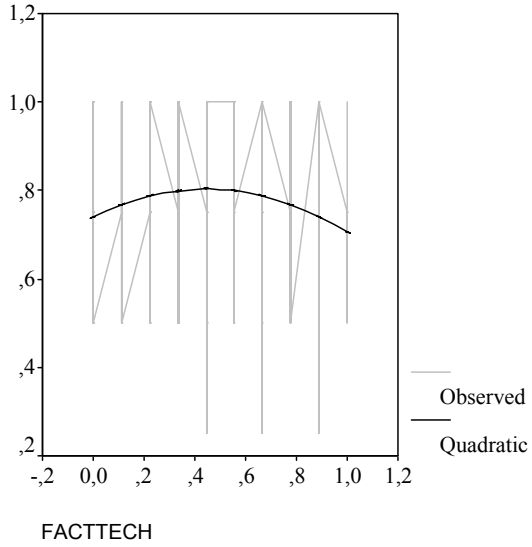
Appendix 34. Results of the curve estimation analysis for variable FACTTECH



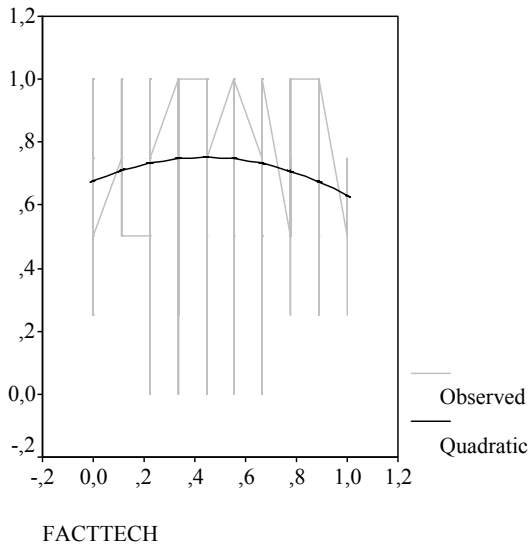
a (change in productivity)



b (change in technology production)

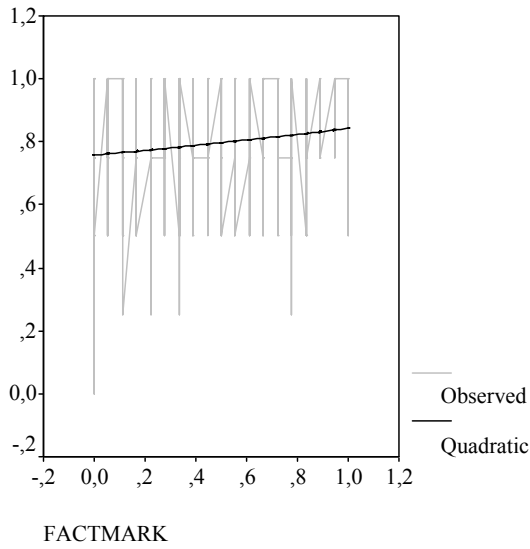


c (change in product quality)

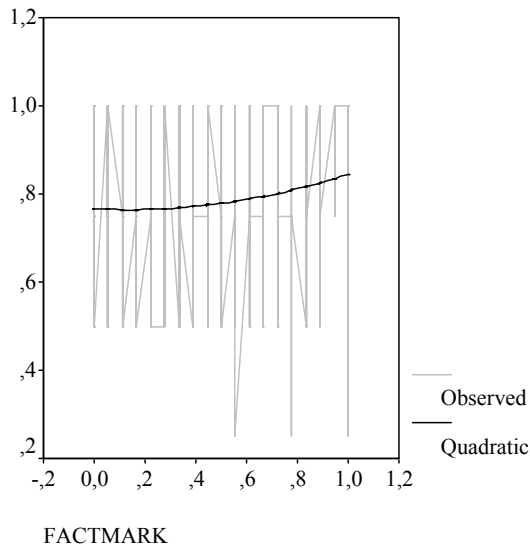


d (change in share of exports from output)

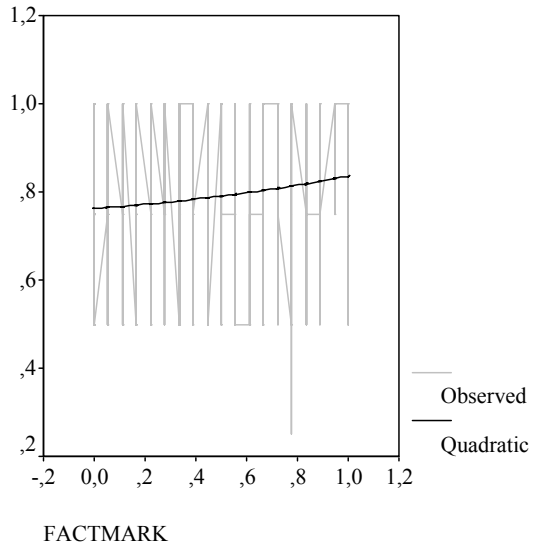
Appendix 35. Results of the curve estimation analysis for variable FACTMARK



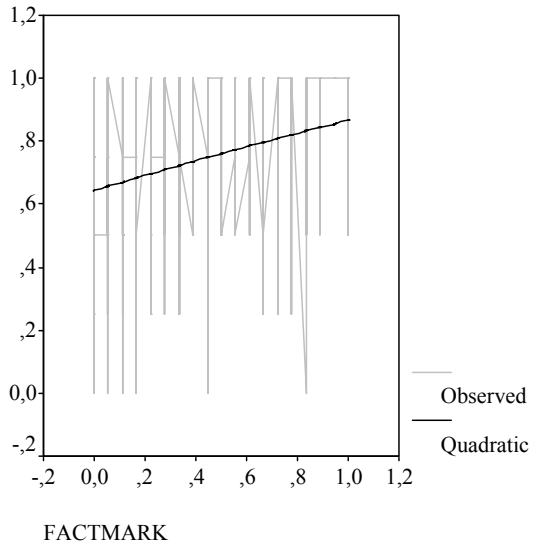
a (change in productivity)



b (change in technology production)

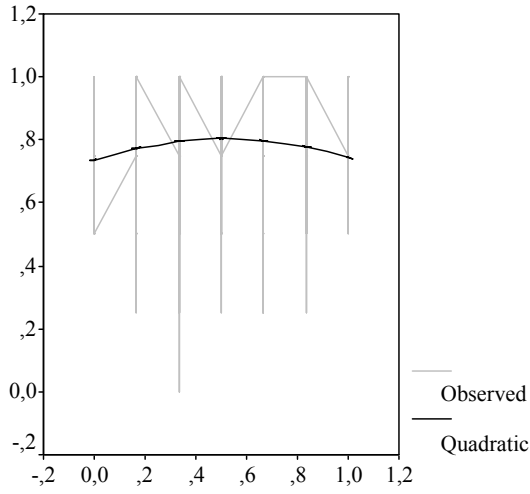


c (change in product quality)

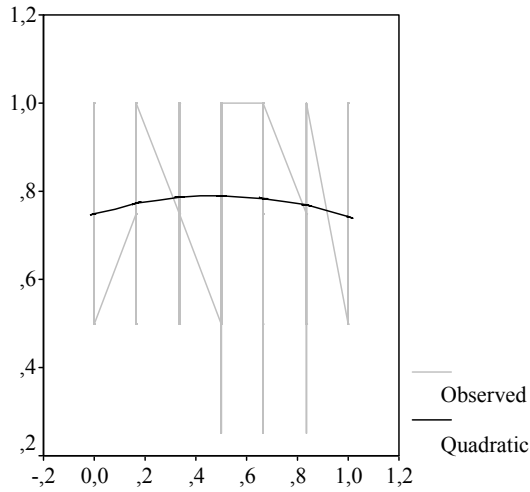


d (change in share of exports from output)

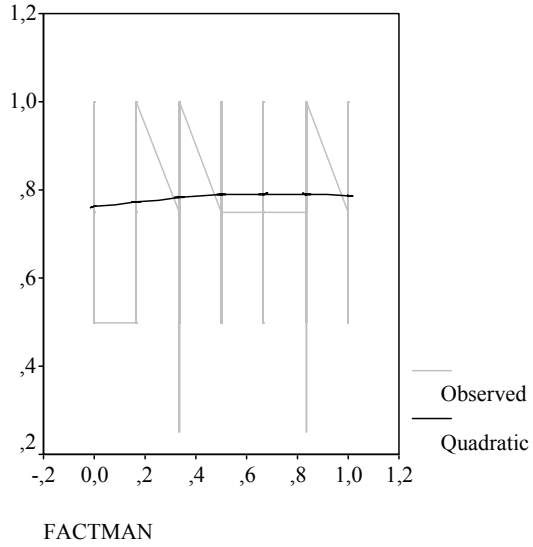
**Appendix 36. Results of the curve estimation analysis for variable
FACTMAN**



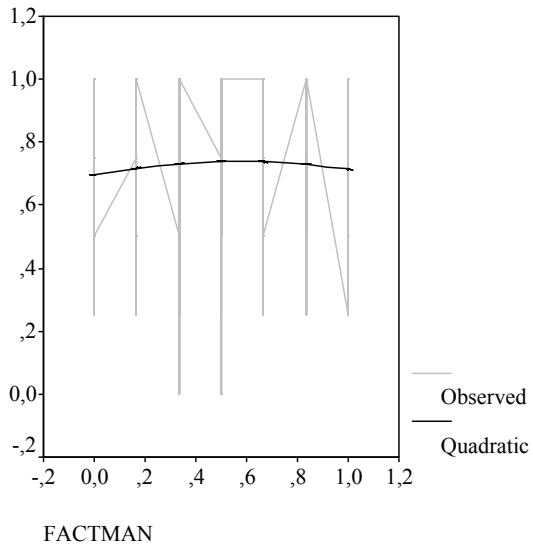
FACTMAN
a (change in productivity)



FACTMAN
b (change in technology production)

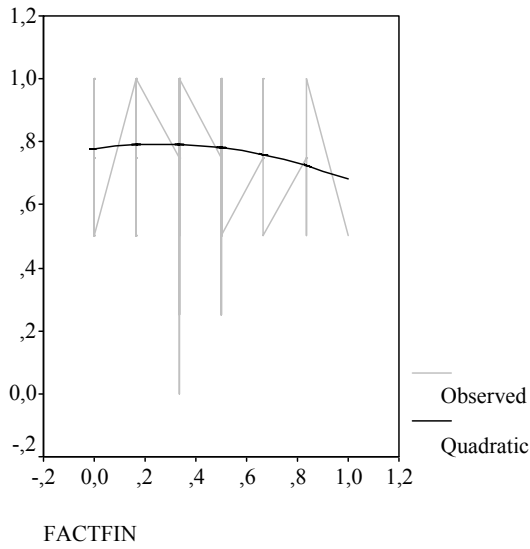


c (change in product quality)

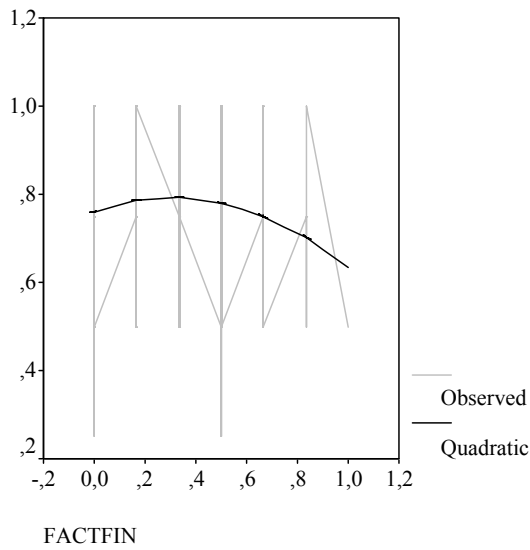


d (change in share of exports from output)

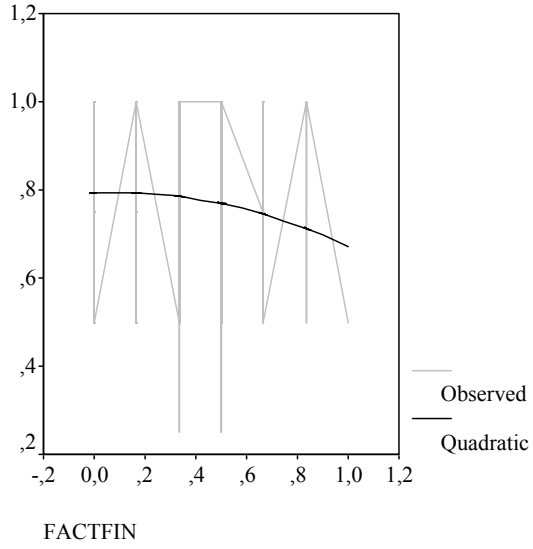
**Appendix 37. Results of the curve estimation analysis –
for variable FACTFIN**



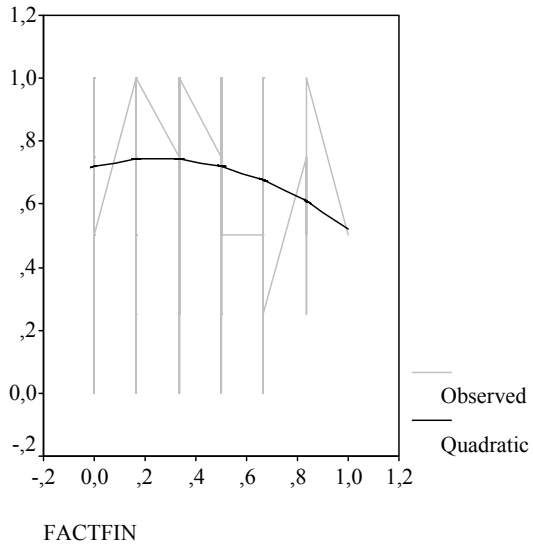
a (change in productivity)



b (change in technology production)



c (change in product quality)



d (change in share of exports from output)

SUMMARY IN ESTONIAN – KOKKUVÕTE

AUTONOOMIA MÕJU TULEMUSLIKKUSELE MULTINATSIONAALSE ETTEVÕTTE ALLÜKSUSES SIIRDERIIKIDE NÄITEL

Töö aktuaalsus

Otseste välisinvesteeringute roll rahvusvahelises tehnoloogiasiidres (ingl. k. *technology transfer*) ja tehnoloogilises arengus (ingl. k. *technology upgrading*) on kasvanud märkimisväärselt viimaste aastakümnete jooksul, seda nii arenenud kui vähemarenenud riikide kontekstis. Otsesed välisinvesteeringud aitavad oluliselt kaasa eelkõige üleminekuriikide (ingl. k. *catching-up countries*) või spetsiifilisemalt siirderiikide (ingl. k. *transition countries*) tehnoloogilisele arengule ning konkurentsivõime kasvule läbi rahvusvahelistesse koostöövõrkudesse integreerumise. Multinatsionaalseid ettevõtteid (MNE) ei peeta üksnes peamisteks rahvusvahelise tehnoloogiasiidre, vaid ka tehnoloogilise arengu ning laiemalt intensiivsema innovatsioonitegevuse allikateks.

Tulenevalt multinatsionaalsete ettevõtete üha kasvavast rahvusvahelisest tegevusulatusest on hakatud neid erialases kirjanduses käsitlema kui rahvusvahelisi koostöövõrgustikke, mis aitavad oluliselt kaasa uute tehnoloogiliste, organisatsiooniliste jm. teadmiste ning oskuste levikule ning arengule (vt. nt. Hedlund 1986, 1996; Bartlett ja Ghoshal 1989; Prahalad ja Doz 1987a; Kogut ja Zander 1992). Kiirete globaalsete arengute taustal on enam tähelepanu hakatud pöörama sihtriigis tegutsevate multinatsionaalsete ettevõtete allüksuste rollile juurdepääsus kohalikele spetsiifilistele ressurssidele ning nende arengule. Kohalikud allüksused on saavutamas enam tegutsemisvabadust või autonoomsust kõikide või valitud otsustusvaldkondade (nt. müük ja marketing, tehnoloogiline areng, finantsid) lõikes panustamaks ühelt poolt ematettevõtte arengusse kuid samal ajal kasutades ning arendades sihtriigi tehnoloogilisi võimalusi (vt. nt. Björkman 2003; Young ja Tavares 2004). Kohalike allüksuste otsustusõigus on aga suuresti sõltuvuses sihtriigi ja selle ettevõtete tehnoloogilisest võimekusest (vt. nt. Cantwell 1989, 2001; Chesnais 1988; Hagedoorn ja Narula 1996).

Antud uurimisvaldkonnas on alates 1960-ndatest tähelepanu koondunud peamiselt otsestest välisinvesteeringutest tulenevale mõjule sihtriigis ning sihtriigi ja ettevõtete võimekusele väljastpoolt tulevat uut tehnoloogiat absorbeerida ning edasi arendada. Uurimisfookus on kahel viimasel aastakümnel kandunud

multinatsionaalsetelt ettevõtetelt kui organisatsioonidelt enam kohalikele allüksustele sihtriigis, nende ressurssidele ning võimekusele jätkusuutlikult areneda ning teiste kohalike institutsioonidega strateegilisi partnerlussuhteid luua. Samuti tuleb täheldada uurimisküsimuste püstitamises enam ettevõtete (mikro) kui riigi (makro) või sektorite (meso) tasandil. Uuringute huviorbiidis on multinatsionaalsete ettevõtete allüksuste areng, seda mõjutavad tegurid ning nende mõju kohalikele ettevõtetele sihtriigis (vt. nt. Birkinshaw ja Hood 1998a, b).

Multinatsionaalse ettevõtte allüksuse arengu eduteguriks on vaieldamatult sihtriigi ning selle ettevõtete arengutase ning absorbeerimisvõime²⁷. Otseste välisinvesteeringute motivatsioon ning mõju sihtriigi tehnoloogilisele arengule sõltub selle kohalikust teadmiste ja oskuste pagasist erinevate valdkondade lõikes ning üldisest teadmiste infrastruktuurist (s.h. ülikoolid, teised teadus- ja arendusasutused). Rahvusvahelise tehnoloogiasiirde ulatus ning selle mõju sihtriigile on nii ettevõtte- kui ka keskkonna-spetsiifiline. Otsestest välisinvesteeringutest tekivad tehnoloogia ülekandefeektid (ingl. k. *technology spillover effects*) kohalikes ettevõtetes on enamoodatud multinatsionaalsete ettevõtete tegevuse väljundid sihtriigis. Mida tugevamalt on multinatsionaalse ettevõtte allüksus kinnistunud kohalikku ärikeskkonda või laiemalt kohalikku innovatsioonisüsteemi, seda suurem ning pika-ajalisem on kasu otsestest välisinvesteeringutest sihtriigile. Ühelt poolt on seega multinatsionaalse ettevõtte allüksus läbi emaaetvõtte integreeritud globaalsesse koostöövõrgutikesse (ingl. k. *global integration*) ning teisest küljest peab allüksus vastama sihtriigi ootustele (ingl. k. *local responsiveness*). Olles samal ajal integreeritud nii multinatsionaalse ettevõtte sisesesse kui välisesse koostöösse (s.h. sihtriigis) tegutseb kohalik allüksus nii emaaetvõtte kui ka sihtriigi huvides.

Eeltoodud arengute tulemusena on nii erialases kirjanduses kui ka praktilises poliitikategemises võetud kasutusele rahvusliku innovatsioonisüsteemi (ingl. k. *National Innovation System - NIS*) raamistik loomaks süsteemset lähenemist innovatsiooniprotsesside riiklikuks toetamiseks (vt. nt. Lundvall 1992; Nelson 1993; von Tunzelmann 1995, 2004). Huvitava innovatsioonisüsteemi käsitluse on uurimisvaldkonda sisse toonud von Tunzelmann (1995), kelle lähenemine („*network alignment*”) seob innovatsioonisüsteemi mikro- ja makrotasandid erinevate ärivaldkondade ja sektorite lõikes ning näitab nende omavahelist seotust (vt. joonis 4 alapunktis 1.1.2). Nii von Tunzelmann kui ka teised innovatsioonisüsteemi käsitlejad (nt. Lundvall, Nelson jt.) peavad esmatähtsaks süsteemi erinevate osaliste (nii era- kui avalikust sektorist) omavahelise koostöö efektiivset toimimist. Nii turu- kui ka süsteemitõrked on need innovatsioonisüsteemi nõrkused, millele valitsuse süstemaatilist toetust eeldatakse. Süsteemi tugevusest ning vastavatest ressurssidest sõltub suuresti multinatsionaalsete ettevõtete huvi sihtriigi vastu. Von Tunzelmann'i käsitluse kohaselt

²⁷ Võimekus leida „õigeid” tehnoloogiaid ning neid kohandada vastavalt vajadustele. Vt. nt. Narula 2003a, b; Lall ja Narula 2004; Andersson *et al.* 2002, 2004.

tuuakse välja institutsioonidevahelised koostöömudelid lähtuvalt nende omavahelisest funktsionaalsest (ärivaldkondade lõikes), ressursside-põhisest või geograafilisest seotusest rahvuslikus innovatsioonisüsteemis. Käesoleva doktoritöö fookuses on funktsionaalsed koostöövõrgustikud, mis tekivad multinatsionaalse ettevõtte allüksuse ja emaettevõtte vahel erinevate ärivaldkondade lõikes ning erinevate innovatsioonisüsteemide koostöös. Olenevalt sihtriigi ja selle ettevõtete võimekusest ning ressurssidest kujunevad kohaliku allüksuse otsustusõigused vastavates ärifunktsioonides.

Multinatsionaalse ettevõtte allüksuse autonoomsus sõltub ühelt poolt emaettevõtte strateegiast ning teisalt allüksuse kohaliku juhtkonna motivatsioonist ning võimekusest (vt. nt. Birkinshaw 1996, 2001; Birkinshaw ja Hood 1998a, b). Paralleelselt üldiste tehnoloogiliste arengutega nii sihtriigis kui ka rahvusvaheliselt toimub kohaliku allüksuse areng. Mida kiiremini areneb sihtriik, mida spetsiifilisemat ressursi see omab, seda olulisema rolli ning suurema autonoomsuse vastav kohalik allüksus multinatsionaalses ettevõttes omandab. Rahvusvahelise ettevõtluse alases kirjanduses tuuakse emaettevõtte strateegia, kohaliku allüksuse ning sihtriigi võimekus välja kolme peamise kohaliku allüksuse arengu ja autonoomia mõjutegurina (vt. nt. Birkinshaw ja Hood 1998b).

Käesoleva doktoritöö eesmärgi ja uurimishüpoteeside püstitamise impulsid on saadud nii vastava eriala kirjanduse (evolutsiooniline majandusteooria, rahvusvahelise ettevõtluse teooria s.h. otsesed välisinvesteeringud, multinatsionaalse ettevõtte ja selle allüksuse areng) teoreetilistest ja empiirilistest kirjutistest kui ka praktilisest poliitikast. Tulenevalt teema aktuaalsusest ja seda eelkõige siirderiikides, keskendub doktoritöö multinatsionaalse ettevõtte allüksuse autonoomia multidimensionaalsuse ning selle mõju avastamisele allüksuse tulemuslikkusele (ingl. k. *performance*). Töös määratletakse multinatsionaalse ettevõtte allüksuse autonoomia sisemine struktuur ärifunktsioonide lõikes, samuti riigi-, tööstusharu- ja ettevõttespetsiifiline mõju ning autonoomia seos kohaliku allüksuse tulemuslikkusega viies Kesk- ja Ida-Euroopa riigis. Autonoomiat nähakse antud töös sisendina ettevõtte tulemuslikkusele, mis omakorda on kohaliku allüksuse arengu lõplik tegevuse väljund. Töö empiirilises osas keskendutakse multinatsionaalse ettevõtte allüksuse tulemuslikkuse osas järgmistele tehnoloogilise arengu näitajatele: tootlikkuse tase, tootmistehnoloogia tase, tootekvaliteedi tase, samuti ekspordi osakaal käibest (kui kaudne tehnoloogilise arengu näitaja).

Multinatsionaalse ettevõtte allüksuse autonoomia eripärad ning selle mõju ettevõtte tulemuslikkusele on võrdlemisi vähekasitletud ning uudne uurimisvaldkond. Antud töö uudsus seisneb kohaliku allüksuse autonoomia multidimensionaalsuse uurimises ning selle mõju määratlemisel allüksuse tehnoloogilisele tulemuslikkusele. Tuginedes uurimistulemustele autonoomia mitmekülgsest käsitlest tehakse järeldused nii allüksuste juhtidele kui ka poliitika-tegijatele. Töö spetsiifiline kontekst on seotud Kesk- ja Ida-Euroopa riikides (Ungaris, Sloveenias, Poolas, Eestis, Slovakkias) alates siirdeperioodi algusest

1990-ndatel kuni 2001. a. toimunud arengutega. Otseste välisinvesteeringute roll viie riigi tööstuslikus restruktureerimises ning tehnoloogilises arengus on olnud märkimisväärne. Samal ajal on viie riigi puhul alustatud siirdeprotsessiga erinevatel aegadel ning erinevatelt arengutasemetelt. Uurimistöö toob välja nii riikide, tööstusharude kui ka ettevõttespetsiifilised mõjud multinatsionaalse ettevõtte allüksuse autonoomiale, samuti selle tulemuslikkusele viies Kesk- ja Ida-Euroopa riigis.

Uurimuse eesmärk ja ülesanded

Käesoleva doktoritöö eesmärk on määratleda multinatsionaalse ettevõtte allüksuse autonoomia multidimensionaalsuse mõju allüksuse tulemuslikkusele Kesk- ja Ida-Euroopa riikides. Tulemuslikkuse all peetakse töös eelkõige silmas allüksuste tehnoloogilist arengut ning uurimus teostatakse töötleva tööstussektori näitel Ungaris, Sloveenias, Poolas, Eestis ja Slovakkias. Eesmärgi täitmiseks vajalikud uurimisülesanded on järgmised:

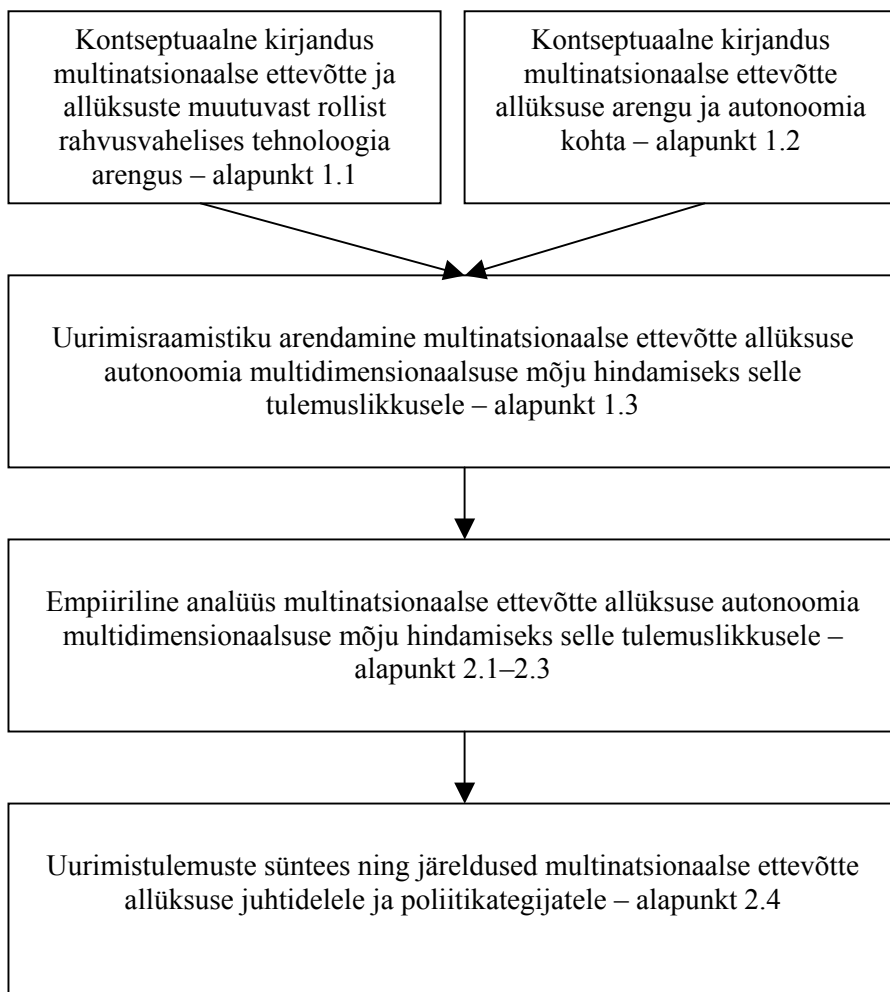
- 1) arusaamaks multinatsionaalsete ettevõtete ning kohalike allüksuste muutuvas rollist rahvusvahelises tehnoloogia arengus tuuakse välja evolutsiooni-teooriate esindajate seisukohad majanduskasvust, multinatsionaalsetest ettevõtetest ja allüksustest ning rahvuslikust innovatsioonisüsteemist kui süsteemsest lähenemisest innovatsioonitegevuse riiklikuks toetamiseks;
- 2) järgnevalt on uurimisfookuses multinatsionaalse ettevõtte allüksuse arengut ning autonoomia eripärasid käsitlevad teoreetilised ja kontseptuaalsed rahvusvahelise ettevõtluse kui uurimisvaldkonna esindajate seisukohad;
- 3) tuginedes eelnevalt käsitletud teoreetilistele ja kontseptuaalsetele seisukohtadele ning teostatud empiirilistele uurimustele luuakse käesoleva uurimistöö kontseptuaalne raamistik multinatsionaalse ettevõtte allüksuse autonoomia multidimensionaalsuse mõju hindamiseks selle tulemuslikkusele viies Kesk- ja Ida-Euroopa riigis;
- 4) viie Kesk- ja Ida-Euroopa riigi multinatsionaalsete ettevõtete allüksuste autonoomia multidimensionaalsuse mõju hindamiseks nende tulemuslikkusele esitatakse viie riigi arenguprofiilid;
- 5) eelneva alusel formuleeritakse uurimishüpoteesid multinatsionaalse ettevõtte allüksuse autonoomia sisemise struktuuri, riigi-, tööstusharu- ning ettevõttespetsiifiliste eripärade ning autonoomia mõju kohta tulemuslikkusele;
- 6) seejärel tutvustatakse töös kasutatavat uurimismetoodikat;
- 7) järgnevalt analüüsitakse multinatsionaalse ettevõtte allüksuse autonoomia multidimensionaalsust ning riigi-, tööstusharu- ja ettevõttespetsiifilisi mõjusid autonoomiale;
- 8) seejärel analüüsitakse multinatsionaalse ettevõtte allüksuse autonoomia multidimensionaalsuse mõju selle tulemuslikkusele samal ajal riigi-, tööstusharu- ja ettevõttespetsiifilisi eripärasid arvesse võttes;

- 9) doktoritöö uurimistulemused sünteesitakse, esitatakse uurimistulemuste üldistused ja järeldused nii multinatsionaalse ettevõtte allüksuste juhtidele kui ka poliitikategijatele.

Doktoritöö teoreetiline taust

Käesolevas töös esitatud uurimuse kontseptuaalne raamistik ning uurimishüpoteesid tuginevad peamiselt majanduse uue kasvuteooria ning rahvusvahelist ettevõtlust käsitlevate teooriate (otsesed välisinvesteeringud, multinatsionaalsed ettevõtted, multinatsionaalse ettevõtte allüksused) kontseptsioonidele. Töö alapunktis 1.3 sünteesitakse olemasolevad teoreetilised seisukohad ja eelnevate empiiriliste uurimuste tulemused ning esitatakse uurimistöö raamistik hindamaks multinatsionaalse ettevõtte kohaliku allüksuse autonoomia multidimensionaalsuse mõju tulemuslikkusele siirderiikide näitel. Väljatöötatud uurimisraamistik ei ole piiritletud vastava riigikontekstiga.

Töö koosneb kahest põhiosast, millest esimene katab erinevaid teoreetilisi ja kontseptuaalseid seisukohti, samuti sisaldab käesoleva töö uurimisraamistikku. Töö teine osa keskendub empiirilisele uurimusele viie Kesk- ja Ida-Euroopa näitel (vt. samuti järgnevat joonist 1). Töö esimene teoreetiline alapunkt 1.1 keskendub multinatsionaalse ettevõtte ja selle allüksuste rolli kirjeldamisele rahvusvahelises tehnoloogiasiidres ning -arengus. Töös rõhutatakse multinatsionaalsete ettevõtete muutuvat rolli rahvusvahelises tegevuses, kus tähelepanu koondub enam rahvusvahelise tehnoloogia arengu kui tehnoloogiasirde ümber. Otsesed välisinvesteeringud peetakse tänapäeva kiirelt muutuv konkurentsikeskkonnas üheks peamiseks tehnoloogiasirde kuid samuti tehnoloogiaarengu allikaks. Ettevõttesisesed teadmised ja oskused levivad üle riigi piiride, mis aitab oluliselt kaasa kiiremale tehnoloogia arengule ning laiemalt innovatsiooni-tegevusele vastavates riikides ettevõtete koostöös. Enam on hakatud tähtsustama välisriikides asuvate MNE allüksuste rolli kompetentside arendamisel nii suurte multinatsionaalsete ettevõtete siseselt kui siseriiklikult. Kasvamas on kohalikele allüksustele emaetevõtete poolt antav tegutsemisvabadus erinevate ärivaldkondade lõikes. Samas tuleb tõdeda, et kohalike allüksuste autonoomsus on suuresti sõltuvuses kohaliku keskkonna iseärasustest, selle tugevustest ja nõrkustest. Mida spetsiifilisemaid teadmisi ja oskusi suudab sihtriik pakkuda, seda strateegilisema suunitlusega on otsesed välisinvesteeringud, seda enam tehakse koostööd kohalike institutsioonidega nii ettevõtlus- kui ka teadus-sektoris. Seda suurem on otseste välisinvesteeringute mõju sihtriigi majanduse arengule. Multinatsionaalse ettevõtte allüksus on läbi emaetevõtte seotud rahvusvaheliste tootmis- jm. alaste koostöövõrkudega ning teisest küljest sõltuvuses sihtriigi tehnoloogilistest võimalustest. Sihtriigi arengu mõttes on MNE allüksuses oluline leida kompromiss riigivälise ja -sisese koostöö ning võimaluste vahel.



Joonis 1. Doktoritöö struktuur.

Multinatsionaalseid ettevõtteid on erialases kirjanduses hakatud käsitlema rahvusvaheliste koostöövõrkudena, mis on peamiseks rahvusvaheliseks teadmiste ja tehnoloogia leviku allikaks. Multinatsionaalse ettevõtte roll on kombineerida erinevaid teadmisi ning neid vastavas riigikontekstis kasutada ning sihtriigi roll pakutavad teadmised ja kogemused vastu võtta (absorbeerida) ning edasi arendada. Teadmised ja oskused levivad üle riigi piiride ning multinatsionaalse ettevõtte erinevate üksuste vahel äriefunktsioonide lõikes. Käesolev töö fookuseerib eelkõige funktsionaalseid koostöövõrgustikke multinatsionaalse ettevõtte ning selle allüksuste vahel. Von Tunzelmann'i (1995) "network alignment" lähenemine illustreerib multinatsionaalse ettevõtte allüksuse seotust ühelt poolt emaaetevõttega läbi erinevate äritegevuste (nt. müük ja marketing, toote arendamine) ning teisest küljest sihtriigi innovatsioonisüsteemi vastavate

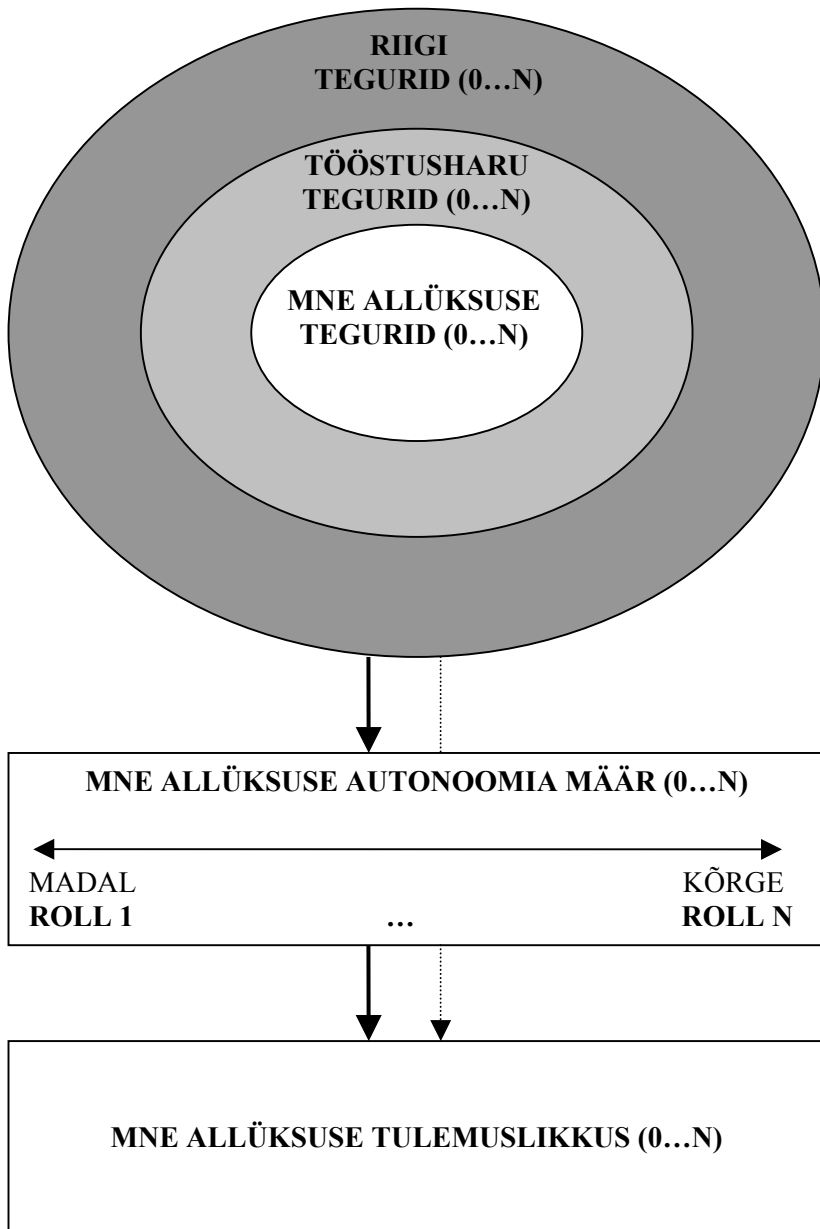
sektoritega (nt. toote arendamine on otseses seoses sihtriigi ettevõtete ja teadusasutuste vahelise koostöö tugevusega, teadussektori poolt pakutavate võimalustega). ”*Network alignment*” lähenemine seob majanduse mikro- ja makrotasandi. Multinatsionaalse ettevõtte allüksuse tegutsemisvabadus tootmise lisandväärtusahelas sõltub sihtriigi spetsiifilistest teadmistest ja oskustest. Otseste välisinvesteeringute eesmärk seondub sihtriigi spetsiifilise ärikeskkonnaga, selle tehnoloogilise võimekusega. Mida suurem absorbeerimisvõime on sihtriigil, seda tugevam on otseste välisinvesteeringute strateegiline seotus vastava riigiga. Kuna käesoleva doktoritöö uurimisfookus on üleminekuriikidel, sisaldab alapunkti 1.1 viimane osa eriala kirjanduses vastavat konteksti käsitlevaid kontseptsioone.

Töö järgmise alapunkti 1.2 eesmärgiks oli keskenduda multinatsionaalse ettevõtte allüksuse autonoomia ning arengu erisuste väljatoomisele erialases kirjanduses. Alapunkt 1.2 defineerib käesolevas töös kasutatava multinatsionaalse ettevõtte allüksuse autonoomia mõiste. Antud töös keskendutakse funktsionaalsele autonoomiale erinevate ärivaldkondade lõikes. Seega saame rääkida allüksuse otsustamisõigusest eraldi nii tehnoloogilistes, organisatsioonilistes jm. küsimustes. Autonoomia on määratud otsustusprotsessiga emaaetevõtte ja kohaliku allüksuse vahel. Allüksus võib omandada erinevaid rolle või positsioone korporatsiooni-siseselt. Allüksus võib teenindada korporatsiooni alates toote arengust kuni selle distributsioonini, kuid võib olla ka ainult marketingile orienteeritud. Olenevalt investeeringu eesmärgist ning sihtriigi arengutasemest võib allüksuse tegutsemisulatus erineda oluliselt. Allüksus võib olla suunatud ainult kohalikule ja/või välisturgude teenindamiseks. Samal ajal on allüksuse roll pidevas muutuses. Allüksuse arenedes oodatakse sellelt suuremat lisandväärtust, mis tagab järk-järgulise mandaadi kasvu nii korporatsioonisiseselt kui sihtriigi tehnoloogilise arengu tähenduses. Mida rohkem allüksus kinnistub sihtriigi ärikeskkonda, seda suurem on oodatav otseste välisinvesteeringute mõju sihtriigi tehnoloogilisele arengule.

Multinatsionaalse ettevõtte allüksuse arengu määravateks teguriteks on emaaetevõtte strateegia, allüksuse kompetents ja sihtriigi ettevõtluskeskkond (vt. joonis 12 alapunktis 1.2.3). Otseste välisinvesteeringute motivatsioon ning allüksuste areng on otseses funktsionaalses seoses sihtriigi tehnoloogilise taseme ja arenguga. Mida kiiremini toimub riigi tasandil areng, seda tõenäosem on allüksuse positsiooni tugevnemine korporatsioonisiseselt. Käesolev töö keskendus teadlikult kahele viimasele allüksuse arengutegurile uurimistöö eesmärgist tulenedes. Töö määratles allüksuse autonoomia erinevad dimensioonid ning selle mõju allüksuse tulemuslikkusele investeeringu sihtriigis. Sihtriigi tingimusi tuleb pidada peamiseks sisendiks emaaetevõtte strateegia valikul konkreetse allüksuse suhtes.

Tuginedes töö teoreetilisele osale arendati alapunktis 1.3 välja uurimistöö kontseptuaalne raamistik. Teoreetilistele väidetele lisaks võeti arvesse eelnevate empiiriliste uurimuste tulemusi (vt. alapunkt 1.3.1). Uurimuse kontseptuaalne raamistik on esitatud joonisel 2.

Töö eesmärgiks oli määratleda multinatsionaalse ettevõtte allüksuse autonoomia multidimensionaalsuse mõju tulemuslikkusele Kesk- ja Ida-Euroopa riikides. Esmalt hinnati multinatsionaalse ettevõtte allüksuse autonoomia multidimensionaalsust äriefunktsioonide lõikes ning seejärel analüüsiti autonoomia eripärasid riigi, tööstusharu ning ettevõtte spetsiifikast lähtuvalt. Allüksuse areng ja autonoomia on otseses sõltuvuses keskkonnast, kus ta tegutseb, samuti ettevõtte enda võimekusest, suurusest jm. ettevõttespetsiifilistest teguritest. Teise peamise empiirilise uurimuse ülesandena hinnati multinatsionaalse ettevõtte allüksuse autonoomia mõju selle tulemuslikkusele erinevate autonoomia dimensioonide lõikes samal ajal riigi, tööstusharu ning ettevõtte tasandi erisustega arvestades. MNE allüksuse autonoomia mõju hindamisel selle tulemuslikkusele lähtuti arusaamast, et allüksus tegutseb nii emaaetevõtte kui ka sihtriigi huvides, mistõttu seos autonoomia ja tulemuslikkuse vahel on mittelineaarne. MNE allüksuse tulemuslikkust kas maksimeeritakse või minimeeritakse autonoomia teatud kesksel tasemel. Seega ei nähtud töö uurimisraamistikus ette nimetatud suuruste (autonoomia, tulemuslikkus) vahelist positiivset või negatiivset korrelatsiooni. Kuna MNE allüksuse tulemuslikkust nähakse allüksuse lõpliku tootmisväljundina, hinnati antud töös MNE allüksuse autonoomia ning riigi, tööstusharu ja ettevõtte tasandi spetsiifika mõju tulemuslikkusele.



Joonis 2. Doktoritöö kontseptuaalne raamistik MNE allüksuse autonoomia multidimensionaalsuse mõju hindamiseks tulemuslikkusele.

Uurimismetoodika ja kasutatavad andmed

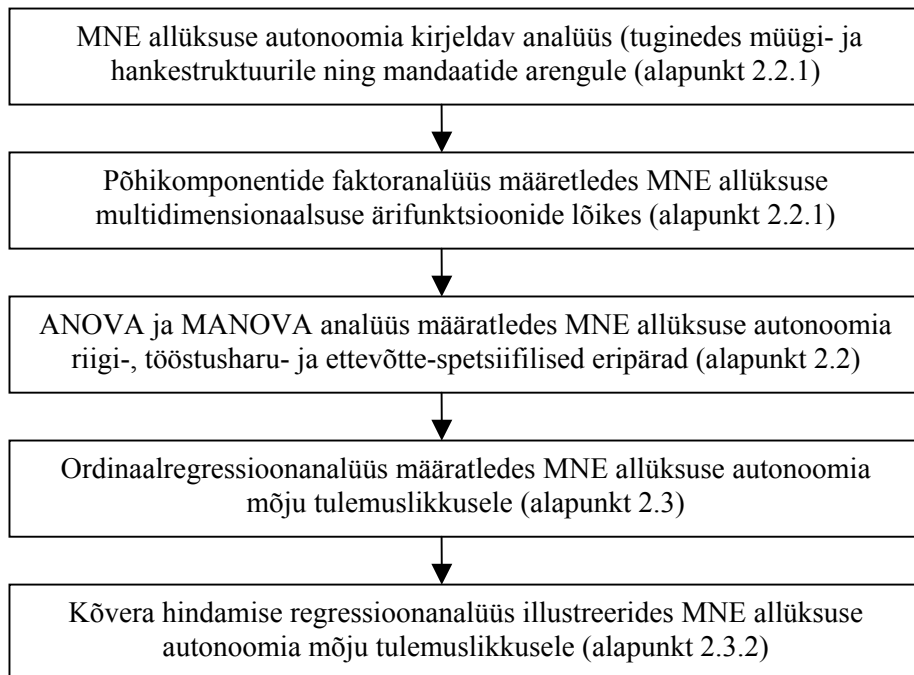
Käesoleva uurimistöö empiirilises osas multinatsionaalse ettevõtte allüksuse autonoomia multidimensionaalsuse mõju hindamiseks selle tulemuslikkusele viies Kesk- ja Ida-Euroopa riigis kasutati peamiselt ühte andmebaasi. Andmed koguti EL V Raamprogrammi projekti “*EU Integration and the Prospects for Catch-Up Development in Central and Eastern European countries (CEEC): the Determinants of the Productivity Gap*” raames viies riigis: Ungaris, Sloveenias, Poolas, Eestis ja Slovakkias. Käesoleva töö autor osales nimetatud projektis Tartu Ülikooli uurimisrühmas. Projekti eesmärgiks oli hinnata multinatsionaalsete ettevõtete allüksuste tehnoloogilist arengut ja nende rahvusvahelist integreerumist alates nende asutamisest kuni 2001. a. Projekti raames viidi läbi küsitlus 2001. – 2002. a. jooksul. Kokku koguti andmed 433. multinatsionaalse ettevõtte allüksuse tegevuse kohta töötlevas tööstussektoris viies riigis. Uuringu valim kirjeldati töö alapunktis 2.1.2. Lisaks nimetatud andmebaasile kasutati töö kirjeldavas analüüsis riikide statistikaametite vm. Organisatsioonide (nt. Eurostat) andmebaase, esitades ülevaate erinevate riikide arengust 1990-ndatest alates.

Alapunktis 2.1.2 töötati välja kaheksa uurimishüpoteesi multinatsionaalse ettevõtte allüksuse multidimensionaalsuse, autonoomia riigi-, tööstusharu- ja ettevõttespetsiifiliste erisuste ning autonoomia mõju kohta allüksuse tulemuslikkusele. Töös püstitatud eesmärgi ja uurimisülesannete täitmiseks teostati analüüs viies etapis (vt. joonis 3).

Esmalt teostati kirjeldav analüüs MNE allüksuse autonoomia hindamiseks, tuginedes küsitluse tulemustele allüksuste müügi- ja hankestruktuuri ning otsustusmandaatide kohta. Seejärel hinnati põhikomponentide faktoranalüüsile (ingl. k. *principal component factor analysis*) tuginedes allüksuste autonoomia sisemist struktuuri 13. algselt esitatud ärifunktsiooni lõikes. Küsitluses paluti allüksuste juhtidel hinnata nende ja emaettevõtte vahelist otsustusõigust (täielikult emaettevõtte otsustusvaldkond ... täielikult allüksuse otsustusvaldkond) 13. ärifunktsiooni lõikes. Tulemusena saadi neli uut komponenti, mis näitasid autonoomia sarnast käitumist või otsustusmehhanismi emaettevõtte ja allüksuse vahel neljas ärivaldkonnas: tootmine ja tehnoloogia, müük ja marketing, juhtimine ja finantsid. Edasine analüüs, mis hindas MNE allüksuse autonoomia riigi-, tööstusharu- ning ettevõttespetsiifilisi erisusi, tugines nimetatud neljale autonoomia valdkonnale.

Ühefaktorilise (ingl. k. *univariate analysis of variance – ANOVA*) ja mitmefaktorilise dispersioonanalüüsi (ingl. k. *multivariate analysis of variance – MANOVA*) abil hinnati MNE allüksuse autonoomia nelja dimensiooni riigi-, tööstusharu- ja ettevõttespetsiifilisi erisusi. Ordinaalregressioonanalüüs (ingl. k. *ordered regression analysis*) andis vastuse MNE allüksuse autonoomia mõju kohta tulemuslikkusele nelja autonoomia dimensiooni lõikes viies Kesk- ja Ida-Euroopa riigis. Täiendavalt viimasele analüüsifaasile kasutati kõvera hindamise regressioonanalüüsi (ingl. k. *curve estimation regression analysis*) vastavate

seoste illustreerimiseks. Uurimistöös rakendatud metoodika põhjendused ning vastavad puudused kirjeldati alapunktis 2.1.2.



Joonis 3. Doktoritöö uurimismetodoloogia.

Töös püstitatud uurimiseväited ja nende analüüsi tulemused

Käesolevas töös püstitati kaheksa uurimishüpooteesi MNE allüksuse autonoomia multidimensionaalsuse, selle riigi-, tööstusharu- ning ettevõttespetsiifiliste eripärade ning mõju kohta allüksuse tulemuslikkusele. Töö eesmärgist lähtuvalt fookuseeriti MNE allüksuse tulemuslikkuse puhul tehnoloogilisi näitajaid. Järgnevalt on toodud vastavad uurimishüpooteesid ning empiirilise analüüsi tulemused viie Kesk- ja Ida-Euroopa riigi näitel.

H1: MNE allüksuse autonoomia on multidimensionaalne ärifunktsioonide lõikes.

Esimene hüpootees leidis kinnitust Kesk- ja Ida-Euroopa riikide töötleva tööstuse MNE allüksuste näitel. MNE allüksuse autonoomsus on oma sisemiselt struktuurilt heterogeenne näidates selle erisusi neljas ärivaldkonnas: tootmine ja tehnoloogia, müük ja marketing, juhtimine, finantsid. MNE allüksuse autonoomsust mõõdeti lähtuvalt allüksuse otsustusõiguse tugevusest ärifunktsioonide lõikes. Erinevalt eelmistest empiirilistest uuringutest ei olnud antud töös eesmärgiks eristada autonoomia operatiivset ja strateegilist tasandit.

Uurimiseesmärgiks oli välja tuua MNE allüksuse autonoomia eripärad erinevate ärifunktsioonide lõikes olenemata nende rohkem või vähem operatiivsest või strateegilisest käitumisest ettevõttes. Viie Kesk- ja Ida-Euroopa riigi näitel omavad MNE allüksused töötlevas tööstussektoris enam autonoomsust finantsküsimustes ning kõige vähem tehnoloogia ja tootmisküsimustes. Erinevalt eelnevatest empiirilistest uuringutest on finantsautonoomsus vaadeldud riikides suhteliselt kõrge, mis näitab sihtriikide ning kohalike allüksuste juhtide kompetentsust antud ärivaldkonnas. Tulenevalt KIE riikide võrdlemisi madalast tehnoloogilisest arengutasemest on toodete ja tehnoloogia arengu küsimused rohkem emaaettevõtte pädevusse jäetud. Toodete ja tehnoloogia arendamine on seega strateegilisim ärivaldkond MNE allüksuste autonoomsuse määratlemisel viies KIE riigis.

H2: MNE allüksused on suhteliselt autonoomsemad enamarenenud Kesk- ja Ida-Euroopa siirderiikides.

Teine hüpotees leidis samuti kinnitust viidates MNE allüksuste suhteliselt suuremale autonoomsusele enamarenenud Kesk- ja Ida-Euroopa riikides (Ungaris, Sloveenias). Mida arenenum on otsese välisinvesteeringu sihtriik, seda suurem otsustusõigus kohalikule allüksusele jäetakse. Küll aga näitas tehnoloogia autonoomsus teatud varieeruvust sõltuvalt sellest, kas analüüsis arvestati üksnes riigi või ühiselt riigi- ja tööstusharu erisusi. Esimesel juhul ei andnud tehnoloogia autonoomia erisused riikide lõikes statistiliselt olulisi tulemusi. Seega mängivad keskkonna eripärade esiletoomisel sarnaselt märkimisväärset osa nii tervikuna riigi kontekst kui ka tegutsemine konkreetsetes tööstusharus. Ärifunktsioonide lõikes on marketingi ja müügi autonoomsus suurim Poola ja Ungari MNE allüksuste seas ning väikseim Slovakkias, juhtimise autonoomsus aga vastupidiselt madalaim Poolas ning finantsautonoomsus Eestis. Tuginedes saadud tulemustele tuleb tõdeda, et MNE allüksuse autonoomsus on lisaks multidimensionaalsusele riigispetsiifiline. MNE allüksuse autonoomsus sõltub konkreetsest ettevõtluskeskkonnast, selle tugevustest ja nõrkustest. Suhteliselt madal tehnoloogia autonoomsus peegeldab selgelt KIE riikide madalat tehnoloogilist taset suhtes arenenud tööstusriikidega, seda samuti Ungaris ja Sloveenias. Kõrge marketingi ja müügi autonoomsus on suuresti määratletud tootmise orientatsiooniga suuremahulisele kohalikule turule Poolas. Madal juhtimise autonoomsus Poolas näitab aga MNE allüksuste juhtide madalat juhtimisvõimekust vastupidiselt peadele kohalikele marketingialastele teadmistele. Otsesed välisinvesteeringud on suunatud üksnes kohalike ressursside ekspluateerimisele ja/või samuti nende arendamisele, kohalikule või eksporditurgudele jm. Olenevalt sihtriigi spetsiifilistest teadmistest on OVI-d rohkem või vähem strateegilise iseloomuga ning kinnistunud sihtriigi ärikeskkonda. Liikudes investeeringupõhiselt innovatsioonipõhise majanduse poole tuleb KIE riikides panustada jõudsalt ettevõtete tehnoloogilisse arengusse ning koostöösse kohalike teadusasutustega meelitamaks ligi kohalikku teaduslikku ja tootmispotentsiaali rakendavaid ning edasiarendavaid multinatsionaalseid ettevõtteid.

H3: MNE allüksused on suhteliselt autonoomsemad enam lisandväärtust andvates tööstusharudes võrreldes teiste tööstusharudega Kesk- ja Ida-Euroopa siirderiikides.

Kolmas hüpotees leidis osalist toetust. MNE allüksused on suhteliselt autonoomsemad enam lisandväärtust andvates tööstusharudes, KIE riikide puhul *medium high-tech* ja *medium low-tech* tööstusharudes, kuid analüüsi tulemusel ainult Ungaris ja Sloveenias kui enamarenenud KIE riikides. Statistiliselt olulised erisused MNE allüksuse autonoomia dimensioonide lõikes saadi riigi- ja tööstusharu spetsiifikat samal ajal arvesse võttes. Kriitiliseimaks riigi ja tööstusharu spetsiifikast lähtuvaks autonoomia valdkonnaks kujunes tootmine ja tehnoloogia. Antud valdkond näitas statistiliselt olulist keskkonna mõju MNE allüksuse autonoomia kujunemisel. Riikide võrdluses nägime, et Ungaris ja Sloveenias on uuringu tulemuste alusel MNE allüksused autonoomsemad. Tööstusharu mõju MNE allüksuse autonoomiale hinnates tuleb tõdeda, et tööstusharuti võivad autonoomia erisused oluliselt varieeruda. Suurimad MNE allüksuse autonoomia erisused tööstusharuti on Sloveenia ja Poola töötlevas tööstuses. Veelgi spetsiifilisemalt saab uurimistulemuste põhjal väita, et MNE allüksused *high-tech* ja *medium high-tech* sektorites Slovakkias omavad suhteliselt vähem ning MNE allüksused *medium high-tech* ja *medium low-tech* sektorites Poolas ja *high-tech* sektorites Eestis suhteliselt rohkem marketingi autonoomsust, Poola puhul samuti vähem juhtimisalast autonoomsust nimetatud sektorites. Seega näeme sarnaselt eelnevatele uuringutele, et tööstusharu mõjud MNE allüksuse autonoomiale on eelkõige määratud investeeingu orientatsiooniga kas kohalikule või välisurule. KIE riikide lisandväärtuse allikateks täna on peamiselt *medium-* või *low-tech* tööstusharud, kus olenevalt investeeingu eesmärgist, kohaliku ärikeskkonna tugevustest ja nõrkustest jäetakse kohalikule allüksusele vähem või rohkem otsustusvabadust. Näitena ekspordile orienteeritud Slovakkias hoiavad emaaettevõtted *high-tech* ja *medium high-tech* allüksustel suuremat kontrolli võrreldes kohalikule turule orienteeritud Poola MNE allüksustega.

H4.1: Vähemusosalusega MNE allüksused on suhteliselt autonoomsemad enamusosalusega MNE allüksustega võrreldes.

H4.2: Suured MNE allüksused on suhteliselt autonoomsemad väikeste ja keskmise suurusega MNE allüksustega võrreldes.

H4.3: Vanemad MNE allüksused on suhteliselt autonoomsemad nooremate MNE allüksustega võrreldes.

H4.4: Võimekamad MNE allüksused on suhteliselt autonoomsemad.

Hüpoteesid 4.1 kuni 4.4 käsitlesid ettevõttespetsiifilisi mõjusid MNE allüksuse autonoomiale selle erinevate dimensioonide lõikes. Uuringu tulemusena leidsid kinnitust hüpoteesid 4.1 ja 4.4 vastavalt MNE allüksuse välisosaluse suuruse ning võimekuse mõjude kohta MNE allüksuse autonoomiale. Mida suurem on MNE allüksuse välisosalus, seda väiksem on MNE allüksuse otsustusõigus ning teisest küljest mida võimekam (hinnatud tootetüübi – vaheja/või lõpptoote alusel) on MNE allüksus, seda suurem tegutsemisvabadus

kohalikule juhtkonnale jäetakse. Tulemused on mõneti vastuolulised, suur välisosalus vähendab ning enam lisandväärtust andev tootmine teisest küljest suurendab MNE allüksuse autonoomsust. Kinnitust ei leidnud hüpotees 4.2 MNE allüksuste suuruse kohta. Vastupidiselt eeldustele on suured MNE allüksused vähem autonoomsemad väikeste ja keskmise suurusega ettevõtetega võrreldes. Hüpotees 4.3 leidis kinnitust osaliselt kolme MNE allüksuse autonoomia dimensiooni (müük ja marketing, juhtimine, finantsid) lõikes. Kriitiliseimateks ettevõttespetsiifilisteks mõjuteguriteks MNE allüksuse autonoomiale kujunesid ettevõtte omandistruktuur ning tootetüüp ettevõtte võimekuse näitajana. Ettevõtte tasandi mõju MNE allüksuse autonoomiale on uuringu tulemuste põhjal varieeruv ja mõneti vastuoluline sarnaselt eelnevatele empiirilistele töödele erialases kirjanduses. Ettevõtte mõju MNE allüksuse autonoomiale on märgatav kuid mitte ühene ei erinevate näitajate ega autonoomia dimensioonide lõikes. Eelduste kohaselt avaldavad ettevõtte arengule ja autonoomiale määravat mõju eelkõige riigi ja tööstusharu spetsiifika.

H5: MNE allüksuse autonoomia mõju tulemuslikkusele avaldub mitte-lineaarse seosena (U-kujulise kõverana).

Viimane hüpotees leidis osalist kinnitust viie Kesk- ja Ida-Euroopa riigi kontekstis. Hüpotees toetus arusaamale, et MNE allüksuse areng ja autonoomia sõltuvad ühelt poolt emaettevõtte strateegiast ning teisest küljest sihtriigi võimalustest ja ootustest, mistõttu ei eksisteeri lineaarset seost MNE allüksuse autonoomia ja tulemuslikkuse vahel. MNE allüksuse autonoomia ja tulemuslikkuse vaheline kombinatsioon avaldub mittelineaarsena saavutades MNE allüksuse autonoomia teatud keskse positsiooni tulemuslikkust samal ajal minimeerides (korrapärase U-kõver) või maksimeerides (ümberpööratud U-kõver). See tähendab, et ei liigne emaettevõttest sõltuvus ega kinnistumine sihtriiki ei ole hea MNE allüksuse tulemuslikkuse seisukohalt. Leida tuleb optimaalne MNE allüksuse autonoomia tase, mis ühelt poolt katab emaettevõtte ärihuvid ning samuti rakendab sihtriigi tehnoloogilist jm. potentsiaali. Mittelineaarne seos MNE allüksuse autonoomia ja tulemuslikkuse vahel leidis kinnitust ainult tehnoloogia autonoomia puhul, mis peegeldab selgelt nii sihtriigi kui ka emaettevõtte huvidega ning võimalustega arvestamist tehnoloogia arengu küsimustes üldiselt KIE riikides. Seos kehtib eelkõige MNE allüksuse autonoomia ning tootlikkuse, tootmistehnoloogia taseme ja tootekvaliteedi muutuste vahel. Vastupidised tulemused saadi marketingi- ja finantsautonoomia osas. Mida suurem on MNE allüksuse tegutsemisvabadus marketingi-alastes otsustes või väiksem finantsküsimustes, seda väiksem on MNE allüksuse tulemuslikkus. Esimesel juhul kehtib hüpotees kolme tulemusindikaatori – tootmistehnoloogia ja tootekvaliteedi taseme ning ekspordiorientatsiooni, ning teisel juhul tootekvaliteedi ning samuti ekspordiorientatsiooni puhul. Seega võib uurimistulemustele toetudes väita, et riikides, kus MNE allüksused omavad kõrget marketingi autonoomsust nagu Poolas ja Ungaris, võivad pikas perspektiivis kaotada teistele riikidele tehnoloogilises arengus. Otseste välisinvesteeringute siseturule orienteeritus ei soosi sihtriigi tehnoloogilist arengut ei

otseselt läbi tootlikkuse, tootmistehnoloogia või tootekvaliteedi kasvu ega kaudselt ekspordi kaudu. Kõrge finantsautonoomsus teisalt soodustab sihtriigi tehnoloogilist arengut. MNE allüksuse autonoomia on mitmedimensionaalne. Juhtimis-alane autonoomia ei näidanud statistiliselt olulist resultaati. Tuginedes analüüsile tuleb rõhutada tehnoloogia küsimuste paralleelset sõltuvust nii globaalsetest arengutest läbi emaaettevõtte kui ka sihtriigi innovatsioonisüsteemist. Marketingi- ja finantsautonoomia erisused riikide lõikes tulenevad eelkõige sihtriigi eripäradest, tugevustest ja nõrkustest.

MNE allüksuse autonoomia ja tulemuslikkuse vahelist seost hinnates arvestati samuti riigi-, tööstusharu- ning ettevõttespetsiifilise kontekstiga (rakendades vastavaid suurusi kontrollmuutujatena). Oluline on märkida, et siirdeperioodiga hiljem, samuti madalaimalt arengutasemelt alustanud Eesti on empiirilise uuringu põhjal olnud edukam teiste riikidega võrreldes (nt. kogedes alates 1990-ndatest suuremat tootekvaliteedi kasvu võrreldes Ungari ja Sloveeniaga, ekspordikasvu võrreldes Ungari ja Poolaga). Vaatamata riikide erisustele (suurus jm.) võib Eestit selle dünaamilisusest ning samuti suhteliselt kõrgemast innovatsioonipotentsiaalst (tuginedes ülevaatlikule analüüsile alapunktis 2.1.1) ja ekspordile orienteeritusest lähtuvalt pidada üheks kiiremini arenevaks KIE riigiks järgneval aastakümnel. Seega ei tähenda MNE allüksuste madal autonoomia tase veel suhteliselt madalamat tulemuslikkuse taset. Lisaks, suured, enamusosalusega, noored ning ainult vahe- või lõpp-tooteid tootvad MNE allüksused *low-tech* ja *medium low-tech* tööstusharudes on olnud KIE riikides tulemuslikumad. Tulemused viitavad multinatsionaalse ettevõtte huvidele hoida suuremat kontrolli enam tulutooval ettevõtmisel.

Ülaltoodud tulemuste alusel saab väita, et mitmed hüpoteesid leidsid, mitmed ei leidnud ning mõned vaid osaliselt kinnitust püstitatud teeside osas. Seejuures tuleb rõhutada, et uurimistöö eesmärk hinnata MNE allüksuse autonoomia multidimensionaalsuse mõju selle tulemuslikkusele on täidetud. MNE allüksuse autonoomia on multidimensionaalne viie KIE riigi näitel eristudes otsustusõiguse ulatuses emaaettevõtte ja allüksuse vahel nelja ärivaldkonna (tootmine ja tehnoloogia, müük ja marketing, juhtimine, finantsid) lõikes. Teiseks, MNE allüksuse autonoomia ja areng on riigi-, tööstusharu- ning ettevõttespetsiifilised nähtused, olles vahetus seoses sihtriigi tugevuste ja nõrkustega innovatsioonisüsteemi erinevates sektorites (teadussektor, finantssektor jm). Kolmandaks, MNE allüksuse autonoomia multidimensionaalsuse mõju tulemuslikkusele on varieeruv olenevalt otsustusvaldkonnast. Mittelineaarne seos MNE allüksuse ja tehnoloogilise tulemuslikkuse vahel avaldub üksnes tehnoloogia-alastes otsustes emaaettevõtte ja allüksuse vahel.

Esitatud tulemused viitavad sellele, et KIE riikide MNE allüksuste juhtidel tuleb pöörata senisest enam tähelepanu erinevate kompetentside kombineerimisele ärivaldkondade lõikes. MNE allüksuste madal autonoomsuse tase ei ole alati halvim lahendus. MNE allüksuste juhtidel tuleb osata õiglaselt hinnata ettevõtte võimekust ja ressursse ning kombineerida neid läbi emaaettevõtte kättesaadavate rahvusvaheliste teadmiste ja oskustega. Madal tehnoloogia auto-

noomsus KIE riikide MNE allüksustes viitab ühelt poolt nimetatud riikide madalale tehnoloogia tasemele, teisest küljest annab sihtriigi ettevõtetele ning sihtriigile tervikuna võimaluse integreeruda rahvusvahelistesse koostöövõrgustikesse. Selle tulemusena kasvab ettevõtete tehnoloogiline potentsiaal. MNE allüksuste juhtide kompetentsist ja motivatsioonist sõltuvad läbi-rääkimisoskused ja -tulemused emaettevõttega.

Sihtriigi valitsusel tuleks senisest enam fokuseerida ettevõtete juhtide moti-veeritust aktiivsemaks ning süsteemseks innovatsioonitegevuseks nii ettevõtete-siseselt kui koostöös teiste ettevõtete ja teadusasutustega. MNE allüksuste kinnistumine kohalikku ärikeskkonda ja laiemalt innovatsioonisüsteemi saab alguse ettevõtete juhtide huvidest ning olemasolevatest ressurssidest. Inno-vatsiooniteadlikkuse suurendamine ettevõtete tippjuhtide seas kasvatab sihtriigi innovatsioonipotentsiaali. Teiseks oluliseks sihtriigi valitsuse ülesandeks on soodustada teadmiste levikut innovatsioonisüsteemi erinevate osaliste (s.h. ette-võtted, teadusasutused) vahel. Riikide innovatsioonipoliitika peab olema horisontaalselt erinevaid poliitikaid (teaduspoliitika, konkurentsipoliitika, keskkonnapoliitika jm.) läbiv kogum, mis tagab innovatsiooniteadlikkuse kasvu ning teadmiste leviku erinevates innovatsioonisüsteemi sektorites ning nende vahel. Prioriteetseks ei saa seejuures pidada üksnes kõrgetehnoloogia sektorite arendamist vaid pigem nende integratsiooni madal-tehnoloogiliste tööstus-harude ning samuti teenusesektoriga. Kolmandaks riiklikul tasandil ülesandeks on vaieldamatult vastava ettevõtetus-, teadus- jm. kompetentsi tagamine läbi inimressursi arendamise motiveerimaks multinatsionaalseid ettevõtteid stra-teegilisteks investeringuteks KIE riikides. Spetsiifiline sihtriigi-põhine ressurss tagab pika-ajaliste otsuste välisinvesteringute sissevoolu ja nende jätku-suutlikkuse.

Soovitusi tulevasteks uuringuteks

Antud uurimisvaldkond, eelkõige seonduvalt MNE allüksuse autonoomia ja tulemuslikkusega, on suhteliselt uus ning vähekasitletud erialases kirjanduses. Enamus olemasolevaid uurimistöid käsitleb vastavat teemat rohkem kont-septuaalsel pinnal. Käesoleva töö autori soovitus on lähitulevikus panustada rohkem antud uurimisvaldkonna empiirilisele analüüsile tuginedes juba olemas-olevatele kontseptsioonidele või nende edasiarendustele. Teema sisulise arenda-mise osas on soovitav analüüsida ettevõttespetsiifilisi ressursse ning nende seoseid (põhjusi ja tagajärgi) MNE allüksuse autonoomia ja/või tulemuslikkuse vahel. Oluline on jälgida nii erinevate ettevõttespetsiifiliste ressursside indi-viduaalset arengut, nende omavahelist seotust, samuti vastavate ressursside allikaid (ettevõttesisesed või -välised) ning nende mõju MNE allüksuse tulemuslikkusele. Seejuures tuleks arvestada keskkonna mõjudega uurimis-objektile.

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DISSERTATIONES RERUM OECONOMICARUM UNIVERSITATIS TARTUENSIS

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