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EU OUTSOURCING TO THE EAST, GOVERNANCE AND INNOVATION SYSTEMS IN THE BALTIC COUNTRIES – A Three-Stage Approach

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ABSTRACT: This paper combines the features of outsourcing theory, the principal-agent model and institutional economics, and gives the guidelines how the firms in the Baltic countries might survive in the enlargened EU markets. Such guidelines are presented in three stages to demonstrate an institutional system framework connecting financial governance, the governance in production and the governance of innovation in order to enhance the principal and managerial incentives for higher innovative activity in the enlargened EU-Baltic industrial integration.

Keywords: outsourcing, innovation system, institutions, governance, EU enlargement

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TIIVISTELMÄ: Tämä paperi yhdistää ulkoistamisteorian, päämies-agenttimallin ja institutionaalisen taloustieteen tarjoamalla arvioita kuinka Baltian maiden yritykset selviävät laajenevilla EU:n markkinoilla. Nämä suuntaviivat esitetään kolmivaiheisena mallina demonstroimalla institutionaalinen järjestelmä, joka yhdistää rahoituksen, tuotannon ja innovaatioiden hallintojärjestelmät. Näiden tarkoituksena on kannustaa omistajia ja johtajia korostamaan innovaatioiden merkitystä laajenevassa EU:n ja Baltian maiden välisessä teollisuuden integraatiossa.

Avainsanat: ulkoistaminen, innovaatiojärjestelmä, instituutiot, hallinnointi, EU:n laajentuminen

Non-Technical Summary

When the Baltic countries are joining the EU the competition in both the Baltic consumer good and factor markets will tighten. The advantage of the lower labor costs in the Baltic countries might be lost if the institutional infrastructure to utilize the Baltic human capital is inoperative. It is essential to find out the guidelines for the EU-Baltic innovation system that combines the fruits of privatization and financial governance to the principal incentives and innovative activity and provides a workable institutional system framework for the governance in production, EU-Baltic industrial integration, and managerial incentives. It should also find suitable working methods to utilize the Baltic resource capabilities and form the organizational structure for the suitable governance of innovation and managerial incentives.

After stabilizing the macroeconomic environment, a sound structure for financial institutions is a cornerstone for the Baltic innovation activity. The functioning national banking sector and foreign investors are the main sources of funding for the Baltic firms. Finding the core investors abroad helps the Baltic firms to install the new methods of corporate governance and managerial incentives as well as EU market-based information, know-how and innovation networks.

Quality of legal system guarantees each other's legal obligations, and therefore it has a signaling effect to the integrating EU-Baltic firms. Moreover, a functional institutional framework decreases outsourcing costs and distance in expertise. The Baltic governments should be active in building the serviceable communication infrastructure that reduces the searching costs in contracting between parties. Finally, the success for reducing customization costs and distance in expertise rests on the workable education and R&D policy.

Skilled human capital acts as a key factor in the EU outsourcing process and this generates the final producers' incentives to search for their conceivable partners from the Baltic firms. This development should lead to the skill spillovers that need a critical mass and at least the Baltic capitals, Tallinn, Riga and Vilnius, fulfill such a purpose. Moreover, the technological regimes of the EU-Baltic innovation system might be fulfilled with the model that supports creative destruction with the technological regimes where cumulativeness and appropriability are low but the role of applied sciences and externalities from the EU is found to be remarkable. Externalities are required to maintain the rapid technological change in the Baltic countries where the innovations need interactive R&D co-operation with the EU firms and technological programs.

Contents

1 Introduction

This paper is intended to answer the question how several improvements in the institutional structure at the transition period in the Baltic countries promote industrial co-operation (outsourcing, FDI) and economic growth?

When we got acquainted with the transition literature in the Baltic countries we found that this literature is mostly concentrated on macroeconomic stabilization, privatization and main institutional arrangements or only financial governance called corporate governance. We found out that there is a lack of research about emerging innovations in transition and the upcoming EU-Baltic innovation system. Also the current literature neglects to separate principal and managerial incentives in transition circumstances. Therefore we claim that the current understanding about corporate governance is too narrow. We emphasize that the financial governance leans on the principal's incentives, and governance in production and innovation respectively managerial incentives, and such incentives are formed not only inside in firms but also through institutional arrangements exerted by the national innovation systems.

That is why this paper aims to find answers to several questions: *i)* to demonstrate the role of privatization and financial governance to the principal incentives and innovative activity; *ii)* to provide an institutional system framework for the governance in production, EU-Baltic industrial integration, and managerial incentives; *iii)* to investigate a resource capability framework and organizational structure for the governance of innovation and managerial incentives. The research method used in this paper is comparable and it applies corporate governance, innovation and institutional theory to the Baltic examples. This paper is separated into three stages. It seems that the aim of stage I was to minimize risks (macroeconomic stabilization, privatization & financial governance), while the aim of stages II and III has been to maximize benefits (governance in production, governance for innovation, EU-Baltic innovation system, EU programs).

2 Overview of Baltic Industrial Base and Analysis of Outsourcing and FDI in 1990-2000

2.1 Industrial Integration, EU-Baltic Outsourcing and FDI

Before exploring the future prospects of the Baltic manufacturing industry in great depth we will briefly describe the background of developments during and after the transition period in the 1990s.

After the centrally planned period, industrial production was of key importance in the Baltic countries, accounting for around two thirds of the GDP and total employment. However, the composition of the Baltic industrial sectors seemed both typical and atypical for the centrally planned economy. The typical part was that the industries were based on natural resources such the food industry, or intermediate capital-intensive and labor-intensive metal industry and the highly labor-intensive textile industries. Also, energy production was in a crucial position for example in Estonia. The atypical part was that the highly human capital-intensive electronics sector played a significant role in the Baltic countries.

During the transition period, the collapse of industrial production was estimated to be on magnitude of 60 per cent in the food processing, machinery and consumer products industries. The decrease was less dramatic in metallurgy because the Baltic metallurgy products fared well in price competition and the exports to the Western markets in such basic products remained low. The decrease of the industrial production slowed down by 1994 and the manufacturing sector began to recover in 1995. By 1997, the high or average labor-intensive industries had bolstered their positions: after the transition period the food processing, textiles and metal industries including electronics appeared to be turning into the biggest industrial sectors in the Baltic countries.

The collapse of the Estonian manufacturing industry was dramatic during 1991-1994, and the growth in production volumes slowed down particularly in their core industries: electronics, metal industry, pulp and paper industries. After the collapse, the Estonian wood processing industry continued to produce mainly sawn wood and board products but also wood products (wooden doors, windows, houses) and spe-

cialized skills were found in furniture manufacturing. The forest industry consisted of four paper and pulp factories located in Kehra, Tallinn, Kohila and Räinä, but these were pressured to close down for environmental reasons before 1994. The metal industry was spearheaded by the average capital-intensive and labor-intensive machinery sector, but also the high human capital-intensive transport equipment industry had a focal role. Industrial production recovered after 1995 and by 1997 the main survivors included the chemical, wood processing and textile industries as well as the emerging information technology industry. At present, the international advantage of the wood industry is based on hand-made furniture and shows increasing demand, at least in Finland. The high R&D levels are not an answer in each industrial sector but instead the learning by doing approach can lead to enhanced competitiveness in the EU markets. The competitive advantage for the Estonian furniture industry can be found from the example of Italy, as Porter (1998) puts it, because the Italian furniture industry has found its innovativeness from modern design, flexible technology and learning by doing.

By the end of 1990s, the Estonian industry had three success stories: food processing, textiles and electronics. Food processing contained an important part through the planned product chain and it continued to produce meat and meat products, milk and milk products as well as soft drinks mostly for the domestic demand but also for foreign markets. Moreover, the textile industry started to attract foreign direct investments because of the low labor costs and skills related to hand-made products. The survival of the electronics and its reorientation to the IT sector had its roots in the large-scale electronics companies from the centrally planned period. Conceivably, the human capital-intensive electronics industry contains the clearest opportunities for industrial integration with the EU companies.

Latvia's success in competition and reorientation to the international markets rested mainly on the human capital-intensive electronics but also on the capital-intensive and labor-intensive industries such as in the food processing, machinery and wood industries. The machinery sector produced diesel engines, vehicles as small buses, trams and electric trains. Furthermore, the Latvian industry produced machines for agriculture, the steel industry and railway reconstruction workshops. The Latvian wood processing sector included the sawn wood and board industry, in which the pulp and paper industry showed moderate growth. The possibilities for the higher

quality seemed realistic because Latvian forest resources were extensive. This augmented the export potential of the furniture industry, and facilitated a more modern sawn wood and pulp industry because of its sound influence on employment and low intensiveness in energy (Van Arkadie – Karlsson 1992, Hyvärinen – Hernesniemi 1995).

In the beginning of the 1990s, industrial production generated half of Lithuania's total GDP and therefore it had a slightly smaller role than in other Baltic countries. Moreover Lithuania had the lowest industrial capacity and it leaned on the natural resource-based industries such as the food processing industry because the country boasted a large raw material base and enjoyed access to enormous markets located in the CIS countries. The share of food processing remained significant also after the transition period and 30 per cent of the industrial production consisted of the food and soft drinks. While the heterogeneous transportation services sector continued to play a significant role, the Lithuanian share of the chemical industry within total industrial output remained extensive also after the transition period. The metal industry was estimated to be one of the future cornerstones because it had specialized toward the electronics industry and machinery in the centrally planned period (Hernesniemi - Hyvärinen 1995). In spite of such estimates, the development of the metal industry has remained more moderate than expected and its share of the total industrial production has decreased sufficiently during the transition period.

Outsourcing to Baltic Countries

The exports of intermediate products from the new applicant countries to the EU have almost tripled from 3.1 billion EUR in 1995 to 12.5 billion EUR in 2000. As displayed in appendixes 1 and 2, the leading three Visegrad countries (Czech Republic, Hungary, Poland) provide the largest trade shares of intermediate and final products in manufacturing. In 2000, almost 10 per cent of the intermediate imports to the EU flowed from these countries to the EU while the Baltic countries achieved only a half percent share of the EU total imports in intermediate products. In addition, the EU is a net exporter because their intermediate exports exceeded the intermediate imports from the new applicant countries almost by 5.4 billion EUR in 2000.

Table 1: Share of CEE Exports to EU in Intermediate Products, %

1995	Finland	Austria	Italy	Germany	Sweden
Czech Republic	0,00	0,06	0,03	0,79	0,01
Estonia	0,70	0,00	0,00	0,05	0,22
Hungary	0,00	0,21	0,04	0,58	0,01
Lithuania	0,07	0,00	0,00	0,59	0,06
Latvia	0,05	0,00	0,00	0,85	0,04
Poland	0,01	0,03	0,05	0,66	0,07
2000	Finland	Austria	Italy	Germany	Sweden
Czech Republic	0,00	0,08	0,02	0,66	0,01
Estonia	0,57	0,00	0,00	0,10	0,31
Hungary	0,00	0,11	0,04	0,63	0,01
Lithuania	0,07	0,00	0,01	0,54	0,12
Latvia	0,22	0,00	0,00	0,36	0,17
Poland	0,01	0,03	0,11	0,53	0,05

Source: COMTRADE

When considering industrial outsourcing in general, the neighboring effect seems significant. The German industry has formed strong linkages to the Czech Republic, Hungary and Poland. Austria has outsourced especially to the Czech Republic and Hungary, and Finland and Sweden to the Baltic countries. The study of Marin and Lorentowicz (2002) investigates that especially lower wages have been a driving force when German firms have been outsourcing to the Eastern Europe. Table 1 shows that the Estonian industry had its strongest outsourcing linkages with Finland in 1995. Between 1995-2000, the role of Finnish industry has slightly decreased and instead the linkages to Sweden and Germany have strengthened. As found from these figures, the Estonian main outsourcing industries are telecommunications, transport and machinery.

More than two-thirds of the Estonian intermediate exports to Finland consist of telecommunications equipment parts. Other Estonian parts and components exported to Finland include machinery: parts of lifting and loading machines, rotating electric motors, switchgear, and paper mill and paper making machinery.

Lithuanian industrial linkages are mostly connected to Germany but outsourcing activity especially with the Swedish industry has increased since 1995. Latvian industry has lost its position in Germany but increased its industrial integration with Sweden and Finland. German outsourcing to Lithuania and Latvia is concentrated on electronics because Lithuania's main intermediate exports to Germany consist of

telecommunications equipment parts, but also inputs for machinery such as parts of carriages and cycles from Lithuania, and parts of cultivating equipment as well as parts of harvesting machinery from Latvia have an essential role. Moreover, Swedish outsourcing to Lithuania includes intermediate products for transport and electronic machinery: parts of switchgear, parts of office and adding machinery and parts of aircraft and helicopters are the main exported inputs from Lithuania to Sweden. Latvian exports of intermediate products to Sweden consist the parts of switchgear, cultivating equipment, motor vehicles and accessories, and lifting and loading machines. Finland is the second largest intermediate importer from Latvia after Germany. The main products are parts of switchgear (64 % of imports), office and adding machinery, motor vehicles and accessories as well as telecommunications equipment.

The outsourcing success of the Baltic telecommunication industry rests firmly on the significant role of the Baltic electronics industry during the centrally planned period. In Estonia, the electronics products were geard toward military equipment and various other kinds of machinery as well as for intermediate products in the fuel industry. The metal industry consisted of large-scale manufacturers such as Dvigatel, Tondi Elektroniika, Elektrotehnika and Volta. They produced nuclear plants and parts for space ships (Dvigatel), vintergarted circuits and medical hearing aids (Tondi), transformers (Elektrotehnika), electric motors and electric radiators (Volta). These engineering and electronics firms were discovered as flagships in the centrally planned period by including the skilled human capital-intensive and labor-intensive resources, and with the low labor costs they fostered the possibilities of exporting high-quality intermediate products to the high-wage countries. For this reason, they are destined to play a key role in the Estonian industrial policy. In Latvia, the high human capital-intensive electrical industry played a significant role and also as a regional center because the large-scale electronics firms employing more than 5000 person such as VEF, RAR (Rigas autoelekroaparatu rupnica) and RER (Rigas elektromasinbuves rupnica) located near Riga. They manufactured telecommunication products; electronic parts are for the automotive industry and electronic parts for trains. Furthermore, firms producing consumer electronics, computers and military electronics were also located near Riga. Therefore, Riga and its neighboring area have fulfilled their high potential by developing into a regionally strong and internationally competitive electronics cluster.

In sum, the Baltic industrial basis as well as its success in competition and reorientation to the international markets leans largely on the high human capital-intensive electrical and information technology industry or transport equipment and average capital- and labor-intensive sectors such as the metal industry and the high labor-intensive textile and furniture industries. The industries based on natural resources such as the food industry and wood processing mainly had a domestic role.

Behavior of FDI Stock and Inflows

To conclude this section, we briefly compare the role of FDI inflows in the CEE and the Baltic countries. As found from EBRD (2000), the Visegrad countries collected most of the FDI inflows directed to the CEE and Baltic countries. The difference was influenced by the direction of the big investor countries – the United States and Germany – whose firms were seeking the joint ventures from the thicker CEE markets. During the 1990s, the FDI have been mainly directed towards the Czech Republic, Hungary and Poland, which have received two thirds of all CEE and Baltic country FDI. By comparing absolute net statistics, we find that the amount of the FDI was growing in the early 1990s especially in Hungary but slowed down in the mid-1990s when the Czech Republic and Poland took the leading role.

When considering the industrial FDI to the Visegrad countries, mostly these FDI belonged to the operations of the multinational companies (MNE), and the strategies of the MNEs such as Nestle and Phillip Morris undoubtedly utilized the internalization advantage to expand their activities in the CEE markets, because in consumer goods it was more advantageous to produce near to consumers than export these products from the Western markets. The electronics companies such as General Electric and automotive industrial companies (Volkswagen-Audi, Suzuki Motor Co., General Motors) had a traditional production idea of the vertical multinationals and intermediates (Zhang – Markusen, 1999), and their eagerness to invest in CEE countries was dependent on the advantageous availability of local skilled labor and lower production costs. Their behavior seems plainly to follow two foreign investment advantages examined by Markusen (1995): an ownership advantage, in which these firms redeemed the production processes and therefore retarded the access of other firms; and a location advantage because it was more profitable to produce in the CEE countries than in Western countries. Moreover, Marin and Lorentowich (2002) show in their empirical analysis that the host country in the Eastern Europe benefit from the

German FDI because most innovative and dynamic firms are able to look for the new markets from the Eastern Europe. These firms are also the most active in corporate governance but they avoid to bring most advanced technology to the target country.

The infrastructure investments to telecommunications or transport utilities (Amertech, Deutsche Bundespost Telecom, US West International, CGE Telecom Division, UTS, Nokia) followed the investment strategies of the location advantage but also the horizontal multinationals contexts by Markusen – Venables (2000) because the integration to the CEE telecommunication networks seemed to lead to the higher firm-level scale economies.

Similarly, the Baltic countries started to reap the fruits of the transition period when the FDI inflows begun to grow steadily, even if at a slower rate than in the other CEE countries (EBRD 2000). However, in Estonia both the FDI inflows per capita and the ratio of FDI to GDP are among the region's highest. Based on the UNCTAD (2003) statistics, Estonia's inward FDI stock has doubled in 1998-2001, reaching 4.1 billion EUR in 2001. The FDI inflows have been channeled from Finland and Sweden mostly to the finance, trade, transport and telecommunications sectors but also to labor-intensive manufacturing sectors such as the textiles, wood and food industries. The FDI inflows to Latvia had a increasing trend from 1990 to 2000 but a slump in 2001, and an inward stock totaling 2.6 billion EUR has accumulated. The FDI has been directed to trade, finance and business activities but also to the energy sector, especially to gas, from the United States, Germany and Denmark. In Lithuania, the FDI inflows have grown appreciably during the 1990s and reached a stock valued as 3 billion EUR in 2001. The FDI stock is mainly directed toward trade, telecommunications and financial intermediation, and when considering the industrial sectors, the main targets are the fuel and chemical industry. The main FDI partners come from Denmark, Sweden and Estonia.

3 Industrial Reorganization and institutional evaluation in Baltic Countries – A Three-Stage Approach

The objective of this section is to explain the industrial reconstruction of the Baltic countries as a *three-stage approach* focusing on the objectives of the privatization

and macroeconomic stabilization as well as to the functioning interrelation of restructured firms and innovation in the EU-Baltic system after EU enlargement to the East. Stage I describes firstly the process of privatization mainly in Estonia, Latvia and Lithuania but also in comparison with Poland, Hungary and Czech Republic in the early 1990s. It covers both the Baltic and Visegrad countries because they acted as a bellwether with their broader experience in the privatization process already in the 1980s. In the end of the stage I, we emphasize the relation between financial governance and innovation activity. Stage II analyzes the industrial reorganization and institutional structure, that is, the role of government as well the leading mechanisms of governance structures in production as found from Grossman – Helpman (2002b) – especially the significance of the outsourcing costs and the quality of the legal system. Stage III finally investigates how the resource capabilities might be in a key position in order to form the governance for innovation between firms themselves. The purpose of the last stage is therefore to explore human capital and R&D in the innovation system from the perspective of the industrial integration between the EU and Baltic firms.

4 Stage I: Macroeconomic Stabilization, Privatization and Financial Governance

4.1 Macroeconomic Stabilization during Transition Period

The traditional studies of transition economies typically emphasize that the stabilization of the macroeconomic environment can play a key role in solving many of the problems in the production sector. In other words, the best way to achieve a sound macroeconomic environment is to stabilize the prices and exchange rate fluctuations in order to guarantee conditions for transition firms that are equal to those found in the Western countries. The analysis of such a concept as the “first step” during the transformation process can be found from several studies (see, for example, Lipton and Sachs 1990, Blanchard 1991) that the stable macroeconomic environment acted as the basic factor before the structural reorganization in production. For example, Lipton and Sachs (1990) maintained that “a working price system cannot be put in

place without ending excess demand and creating a convertible currency; and a credit squeeze and tight macroeconomic policy cannot be sustained unless prices are realistic, so that there is a rational basis for deciding which firms should be allowed to close." Such a citation described conclusively the guidelines for discussion by the western economists about the transition paradigm in the early 1990s. Therefore, one can see the main message: the first step was to stabilize the macroeconomic environment but after this was done, more attention should be paid on the modes of industrial organization than only to the macroeconomic policy itself.

When the Baltic countries received their re-independence in the early 1990s, one can mention that their economic situation differed from other CEE transition countries such as Poland, Czech Republic and Hungary. The reason for such a difference stems from the fact that the economic coordination and vertically integrated industrial links stayed immutable to the end of the centrally planned system. To be precise, 90 per cent of the Baltic industry was commanded by the ministries of the centrally planned system. Furthermore, their industrial competitiveness was estimated to be weaker than in these CEE countries, but better than for example in Bulgaria, Romania or the CIS countries. As a result, the collapse of the centrally planned system turned out more dramatic and induced a deeper demand, production and input crisis in the Baltic countries, but they managed to avoid a complete disaster.

As a result of this collapse, the shortage of the inputs weakened the Baltic industrial production already in the centrally planned period but the ultimate collapse triggered a sharp rise in the costs and prices in the industrial sector. The concrete act from the government was the first price reform in the years 1990-1991 and 1992, which raised the consumer and producer prices emersely. Finally, the collapse of trade with other CEE countries and CIS countries was the final straw forcing the Baltic countries to transform their vertical and narrow production structure and redirect their trade to the new export markets. Since 1994, the Baltic countries overcame the three-year transition period and stabilized their macroeconomic environment (BOFIT 2002). In sum, Estonia, Latvia and Lithuania followed a stringent macroeconomic policy which has led to low inflation, stopped their output from falling and redirected it to a growth path, as well as stabilized their new currencies.

4.2 Privatization and Incentives for Innovation

Next, we briefly present the general features of the Baltic privatization programs. Because the privatization programs have been already extensively discussed we only review the main foundations and compare them to the Baltic circumstances. The arguments for the rapid privatization in the transition period were supported by several studies, for example, Borenstein – Kumar (1990), Frydman – Rapaczynski (1990), Lipton – Sachs (1990), Blanchard (1991) and Grosfeld (1994). These economists built up several privatization models and classified them as small-scale and large-scale privatization. The small-scale privatization included shops, cafes etc. and these above-mentioned studies put pressure to accomplish this procedure with direct sales, probably guaranteed by the state. In contrast, the large-scale privatization was found to be in a key and therefore sensitive position as regards the future success of the industrial base. The large-scale firms were advised to move out from under the state control and then to create a market-based governance system inside the firm.

As highlighted also in other transition countries, the purpose of the privatization in the Baltic countries was to give the tools for the reorganization of the industrial structure. Especially in this concept, the large size of the industrial firms compared to their size of the economy constituted high risks for the stability of the economy. The starting point was to split up the state monopolies and strengthen the flexibility, competitiveness and innovativeness of the emerging SME industry. After this process was successfully finished, the shares should be dealt optimally to the specific interest groups. Since the process was unique, the distinctive exceptions can be based on the previous experiences of the market-economy privatization programs. Several deviate objectives for the privatization in the Baltic countries can be found where the first three were common also in other CEE countries but the last two seem more crucial for the Baltic countries:

The first main objective, as found from other CEE countries during the transition period, was that such a process should form high-powered incentives for the principals and thereby they should stimulate managers by pushing firms first to compete in the domestic markets but, because the domestic demand was modest, also to enter later the more competitive EU markets. In other words, the privatization gave alternatives to decide how such an industrial structure with low-powered incentives should be liquidated and then reorganized in a more innovative fashion in the hands of the new

interest groups. Concerning this issue and comparing the deepness and scale of the privatization between the market-based and Baltic countries, as Vickers and Yarrow (1991) put it, the distinctions seemed rather clear. First, a clear difference can be detected regarding the number of firms which competed in the international markets. The success in innovations seemed to be an enigma of the survival of these firms and at least partially it was unclear. Also the restructuring projects were troublesome to carry out without market-based oriented managerial skills because of the old-fashioned and heavy industrial structure. Second, another difference can be found by comparing the privatization of the state monopolies. Almost all Baltic firms belonged to this group, while in the market economies it consisted of some sectors such as energy, public transport or telecommunications. The concern for this issue was that the property just moved from "the left-side pocket to the right-side pocket" by increasing the crossholdings and power coalitions between former owners without any new innovative activity.

The second main objective was the continuation of the first. This objective of the privatization process itself was to create the market-based governance structure for the privatized Baltic firms. It included both the internal governance system of the firms and external governance of financial institutions.

The third main objective, also familiar to other CEE countries, was the separation of business and politics to remove or at least restrict the political decision-making inside the firm and was called the "depolitisation" of the economic environment. According to Frydman and Rapaczynski (1993), one of the main objectives in the CEE programs was to distinguish the political and economical decision-making by separating the economically significant business sector from the state. The ownership issue itself seemed to be a multifaceted political question and the depolitisation became sensitive project to carry out because of the conflicts with the several interest groups. Moreover, the investigations including the background and incentives of the several owners as well as the structure of the ownership collusions that might occur after these economic reforms were deemed fruitful.

The next two main objectives were more familiar to the Baltic countries than other CEE countries. The fourth objective was that, after returning to the market environment, for an operation to split up the large-scale vertical structure to a smaller one, the resulting more flexible firms had to achieve higher success in innovations. The goal of

such a procedure was to increase the innovativeness of the industrial sector. Several theoretical papers such as Holmström (1989) and Teece (1996) support such a procedure by claiming that an increase in firm size lowers at least product R&D. Holmström (1989) emphasizes that the small-scale firms act more innovatively than large firms because of the lower agency costs in the innovation process, and Teece (1996) maintains that principal-agent distortions in large-scale firms might impair innovation because agents trade-off the performance of the firm for their own welfare. Such a procedure found support already earlier by several empirical studies such as Mansfield (1981), Link (1982) and Scherer (1991). According to Mansfield (1981), within industries, the process and product R&D increases less than firm size. Scherer (1991) shows that process R&D increases relative to product R&D as the firm size increases, and Link (1982) stresses that the share of R&D dedicated to process innovation increases with the market concentration among most R&D industries.

The last objective was clearly a practical problem. The Baltic countries lacked the financial resources to follow successfully through on such privatization programs. Impaired by the several exchange rate and price reforms after the centrally planned period, domestic savings remained at an insufficiently low rate in order for the public to invest in company shares, and in addition, foreign direct investments were unable to fill the gap required (UN 1999).

Privatization Methods – Visegrad vs. Baltic Countries

The first step in the process was to choose an appropriate privatization method. According to Sadowski (1992), the privatization process can be separated into: *(i)* returning the ownership rights to their previous owners; *(ii)* Selling the enterprise or some of its parts to the private owners; *(iii)* Selling the whole stock of shares or some parts of them; *(iv)* Changing the ownership rights without compensation to the private owners. When comparing these methods, and because the ownership rights before the centrally planned economy emerged were laborious to clear up, the Baltic countries decided to use re-privatization rather than returning the ownership rights back to the previous owners. To quote Sadowski, the main methods in the privatization process would be to sell the shares to the new owner groups as *(ii)*-*(iii)* and distribute them for free by using for example vouchers *(iv)*. By choosing the selling method, the suitable interest groups were found to be the management, employees, banks, investment banks, funds, other domestic firms, citizens and foreign investors.

Table 1: Privatization Methods and Development before 1996, %

Country	Selling to foreign investors	Management and employees – buyouts	Voucher	Compensation	Other	State ownership
Czech R.						
Amount	32	0	22	9	28	10
Value	5	0	50	2	3	40
Hungary						
Amount	38	7	0	0	33	22
Value	40	2	0	4	12	42
Poland						
Amount	3	14	6	0	23	54
Estonia						
Amount	64	30	0	0	2	4
Value	60	12	3	10	0	15
Lithuania						
Amount	<1	5	70	0	0	25
Value	<1	5	60	0	0	35
Latvia						
Amount	20	30	0	0	20	30

Source: Gray (1996)

Largely, three diverging methods were used in the privatization programs in the transition period: *i)* direct sales; *ii)* vouchers; *iii)* buyouts by the management and employees. As shown in table 2, the voucher method was common in the Czech Republic, Lithuania, and partly in Poland. In contrast, the direct selling method turned out to be more popular and it was used in Hungary, Estonia, Latvia and Poland in order to attract foreign investors. The buyout method took place in Poland.

Direct Sales

Hungary, Estonia and partly Latvia used the direct sales as a primary method to channel an authority-directing share of the assets to the foreigners, and buyouts were used as a secondary method. Before direct sales, the Hungarian government started its privatization program in 1989 by using so-called the spontaneous privatization method. According to this method, employees and management had the privilege to make an offer to buy the firm. After the spontaneous privatization, the Hungarian government had a growing interest to promote the role of domestic capital and started the small-scale privatization program by emphasizing the significance of Hungarian entrepreneurship. As suggested from these steps, one can point out that

the Hungarian privatization program leaned on the selling methods and case-by-case solutions without vouchers. The Hungarian State Property Agency (SPA) organized the privatization programs and the main purpose was to find foreign capital for their large-scale plants. In this procedure SPA negotiated directly with the foreign investors, and they had two possibilities: directly offer to buy out the firm or buy the state-held part of the shares, which in general led to a majority position in the firm.

As in Hungary, the Estonian privatization program included only two noteworthy methods: selling to foreign investors and buyouts by the management and employees. Estonia's privatization program was firstly directed towards the large-scale electronics, engineering and metal companies. In Estonia, six industrial branch ministries, of which five were subordinate to the union-republican party (building materials, light industry, wood processing industry, meat and milk industry and food industry) while the sixth was subordinated to the republican ministry (local industry), lost their coordination rights and firms were sold mainly to foreigners. Before the privatization program, the state-owned sector of the Estonian industry was split into three organizational units: state enterprises, state joint-stock companies and companies leased in various forms to workers' collectives (Hyvärinen – Borsos 1994). After the privatization, such a governance structure was shut down and it was replaced by the market-based and firm-specific governance system. Therefore, the goal was twofold at the same time, to split down the large-scale firm structure and then reorganize the supervision with domestic management, employees and especially with the foreign ownership. Since 2000, the medium and large-scale privatization has ended in the industrial sector and the reorganization still continues in the state-owned infrastructure companies (EBRD 2000). Moreover, Kalmi (2002a, 2002b, 2003) has emphasized in the empirical analysis how the employee ownership has succeeded in Estonia. He found out that "old" employees are less active to sell their shares than expected in literature, but to include new employees as owners are more risky to the employee ownership. One clear excuse for the decline of the employee ownership is that the impact of transaction costs increase relatively faster than the impact of decision making when the employee ownership disperses. When comparing the efficiency of the firms, in general, the employee-owned firms are as successful as the other domestic-owned firms. Mostly employee-owned firms have lower capital, lower sales volatility and less-risky compared to other firms. Moreover, the traditional Coase-theorem

does not hold in these circumstances because high information asymmetries are present in the Estonian insider-owned firms.

The Latvian government leaned also on the selling method both in the small- and medium-scale as well as the large-scale privatization. The required domestic capital or entrepreneur groups were absent and thus "the selling to foreigners" method seemed to be the only choice. This method was similar to that in Hungary and Estonia, and was directed to the large-scale firms because the small- and medium-scale firms such as cafes and restaurants were privatized to the domestic entrepreneurs. In the large-scale privatization, the purpose was to find foreign investors in order to install a market-based governance framework. Even if the Latvian firms had sufficient technology and educated employees, "market-based" innovations and business culture were urgently needed. According to EBRD (2000), the remaining large-scale privatization is progressing slowly because the domestic industrial groups use their power in politics and because of the desire of the state to own a majority stake in the privatized firms.

Buyouts

The buyouts by management and employees acted clearly as the primary method only in Poland even if it was first called mass privatization. In that way, the Polish privatization programs differed when comparing to other CEE transition countries, and the clearest distinction was the variability of the methods used by the Polish authorities. The mass privatization program started in 1991 and first four hundred firms were accepted to the privatization program. The Workers' Councils were in a pivotal position because the employees in the privatized firms received 10 per cent of the shares for free (Stark 1992). The privatization process in Poland continued also with the selling method. According to this program, the state property was moved to the control of the ministry and then the shares were delivered to the national privatization fund. This fund was governed by domestic and foreign representatives. In practice, the domestic and foreign consulting firms and investment banks had a central role during the privatization. The privatized firms were intended to be reorganized before selling, but the procedure seemed complicated. The opinions of the buyers and sellers regarding the condition of the firms differed significantly, and the selling method turned out to be a disappointment in Poland. Instead, most of the firms were privatized in using the "buying method" through the mass privatization in which the

employees and ongoing management bought the firm. As mentioned earlier, the privatization of the Polish firms proved to be complicated, and therefore the state ownership after the privatization appeared highest in Poland compared to other CEE countries.

Vouchers

The goal of the voucher method was to keep the ownership in domestic hands. In that way the practice in the large-scale privatization in the Czech Republic (and in the former Czechoslovakia) and Lithuania differed from other countries. The reason for such difference was that the government distributed vouchers for the purchase of shares, and therefore most of the capital of the large-scale firms, to the citizens. By using this method the government emphasized that the ordinary citizens would have incentives to watch over the development of the domestic industry (Winiecki 1992). The process in practice turned out as follows. First, the state property was transferred to three privatization funds, which were responsible for the building up the joint-stock firms. Next, shares were sold against vouchers to the citizens, and finally the rest of the shares to domestic and foreign institutions and private investors.

The privatization method used in Lithuania was similar to that of the Czech Republic and it was called the investment voucher. The voucher method included various rights because the vouchers could be used for not only buying shares in a firm but also for buying an apartment or house. Since 1993, the citizens were able to exchange vouchers, which diminished and avoided the risks of the ownership itself. The advantage of such a method was that it hastened the Lithuanian privatization process because it made it possible to start the reorganization of the industrial structure rapidly. From the point of view of active governance, the privatization experts in Lithuania deemed it crucial that the management owned some stake in the firm and the foreign investors had an active role in order to facilitate access to western technology and marketing channels. The disadvantage of the investment voucher method was that the government lost its power to influence the internationally competitive firms. The weakness of the Lithuanian privatization method seemed obvious because the government was unable to collect any funds for the purpose of supporting the technology transfer or emerging firms. In the beginning of the transition period such behavior could have been appropriate by promoting the Lithuanian firms to become more sophisticated to the Western markets.

As familiar from Hungary, Estonia and Latvia, another method with vouchers used in Lithuania was the selling procedure in order to attract foreign investors. Such a method turned to be satisfactory, however, because the direct deals with the foreign investors generated no particular interest. Finally, the voucher privatization came to an end in June 1995 and afterwards, as found for example from EBRD (1998, 2000), the rest of the firms have privatized by using direct offers, but the lack of transparency and political interference have raised the concerns about the success of direct sales.

Summary

As above discussed, the privatization methods carried out in these countries have been relatively different. The basis for such differences is that Hungarian firms were in a different position compared to the firms in Czech Republic and Poland. The firm culture followed in Hungary seemed more free-minded than in its counterparts because the management had a rather powerful position in the decision-making, and the control of the state was wanted to be as minimal as possible. Compared to Poland the difference seemed crucial, because both the state and employees dominated in the firm's decision making. From the early 1980s the employee committee had privileges by law to take an active part in the firm by transferring the power from the state officials to the employee committees. These arrangements discussed above had already transferred the monitoring to some interest groups inside the firm before the final privatizing process in Hungary and Poland. By contrast, the monitoring in the Czech Republic followed the traditional socialistic ideology where the control over the firms was focused on the state. The management of the firms was led through the ministry, and even if, for example, the employees committee was responsible of choosing the management, the government made the final decision for appointing the management (Frydman et al. 1993). Comparing the Baltic countries, the same ideology seems viable. Estonia was free-minded about selling sell its share of stocks to foreigners and strongly wanted to integrate with the market-based economies. In addition, its industrial base provided more advanced integration modes with the EU industry compared to Latvia and Lithuania.

When considering the relation between the various privatization methods and a firm's willingness to innovate, our outlook seems as follows. Privatization determined basic rules to build up such governance inside the firms that might lead to the

successful innovations, but it was unable to solve the governance approach itself. Comparing several privatization methods, the direct sale method seems the most viable to change such an infrastructure the most rapidly. The voucher method seems inappropriate because it lacked a mechanism to collect urgently needed financial funds and restructuring the capital markets is time-consuming. Finally, buyouts without entry of foreign investors might lead to an industrial structure where the previous rulers hindered the radical reforms. This seems to be the case in Poland and Lithuania.

4.3 Financial Governance, Innovation and Ownership Modes

In this section we introduce several contexts where various modes of ownership with the chosen financial governance might amplify or impair incentives in innovation. The contribution to discuss is then how several ownership combinations including the state, domestic public owners or foreign investors might affect the principal incentives when restructuring the privatized firm in the Baltic circumstances. The main question in this approach is the credibility problem, that is, how the managers of the Baltic firms are able to convince outside investors to channel their funds to the Baltic investment plans.

Concerning the issue of financial governance and ownership, several claims can be proposed before analyzing their impact on the principal incentives in the Baltic countries: first, the politicians in power paradigm maintained that there could be conflicts in decision-making between politicians and new owners, and funds might be channeled to other targets than innovative assets; second, the paradigm about optimal dispersion of shares showed that more attention should be paid to the ethics of ownership and financial governance, and privatization proved to be incapable of collecting the state funds for the purpose of investing in education and R&D programs; third, the absence of a capital market paradigm indicated that such capital markets had a minor role in corporate control; fourth, experiences with soft budget constraints, a bad debt problem and bankruptcy procedures delayed the restructuring process, raised the doubts of foreign investors and directed funds to the inappropriate and unknown targets; fifth, the conception of foreign investors' aims was mixed and created conflicts between domestic and foreign owners.

Paradigm between Society Welfare and Politicians in Power

The conception by several authors discussed next emerged as follows: the privatization process in principle was flawed and therefore an imperfect and artificial way to move the property "in the spirit of the fair play" to the new owners. At least it functioned that way in the Russian large-scale gas and oil companies.

Several aspects shed light on the disadvantages when the politicians have a governing responsibility. Among others, Vickers and Yarrow (1991) emphasized essential failures based on such a process. They claimed that the state was still one of the main owners and there will be a conflict between the political and common welfare in the firm. The costs for the continued state ownership could be described as some kind of sub-optimal investments for social purposes influenced by the state. In this case, increasing ownership by the public therefore diminishes the influence of the state and guarantee more appropriate principal incentives and better protection for choosing new technological investments. As a result of the Baltic privatization programs, we infer that the influence of politicians was largest in Lithuania, where the privatization turned out to be less efficient. In contrast, in Latvia and Estonia, a direct sale method produced quickly the independently working firms and it follows that direct influence of the state officials in firms' decision-making decreased radically.

Based on above framework, Vickers and Yarrow (1988) found the state ownership complex in a way that politicians also maximize their own success both inside the firm and in the political arena. Therefore, politicians are constrained to make decisions that are politically sensitive. Another goal for the state could be to promote full employment at the expense of competitiveness in the foreign markets (Williamson 1985). The political decisions in these circumstances such as the mass firing of employees and closing down the factories might lead to rapidly increasing unemployment among voters. If we rely on the national statistics of the Baltic countries, this claim has no evidence at least in Estonia, where the unemployment decreased below 10 per cent in 2002. Also in Lithuania, unemployment started to decrease in 2002 but in both Lithuania and Latvia it appears to stay at a relatively high level, over 13 per cent.

One main advantage for the state ownership, which is a sensitive approach in the transition period, is that the state's obligation as an owner is to take care of the social

welfare in the whole economy. The main concern, according to Shapiro - Willig 1990, was that these newly governed firms abandoned the social aspects in their investment policies. They were concerned, in both cases, that the society might jump radically from the centrally planned society to a hard-core capitalism even if the public or foreigners had ownership rights. In the transition circumstances when the state lost its control over, for example, tax policy, environment issues or labor markets, the privatized and largely foreign-integrated firms can act independently without any governance from the state. Additionally, Laffont and Tirole (1993) found several advantages of the state ownership by fostering social welfare. The optimally carried out state ownership would generate the welfare such as full employment for the society without restricting the profit maximization. However, as cited in their study, due to the state ownership, it gives the possibility for the state to reach the "society goals" which are a part of the profit maximization, but these goals restrict principals to redirect resources to more innovative targets. The good example of these "society goals" was the social services, such as day-care centers or employee housing, offered by the centrally planned firms. Therefore in this case, the state ownership can prevent new owners from putting the reorganization plans into effect for political reasons.

Reflecting such a concern as regards the Baltic countries, we are aware that the complex goals for social welfare might harm the setting of the principal incentives but we expect that such concern is there rather different. In the Baltic countries, the state has behaved as a bridge builder between the various interest groups. That is, contrary to experiences of other transition countries and especially of Russia, the Baltic governments - led by Estonia - have gradually reformed their economies in order to improve the circumstances of both the domestic and foreign firms to make more complete contracts and thereby foster industrial innovations. However, at least one concern can be raised which can lead to uneven development. Those employees who have the ability to work at the restructured and maybe foreign-integrated firm compared to the other employees will rapidly reach a higher standard of living.

Optimal Dispersion of Shares and Absence of Capital Markets

The debate about corporate governance falls within two distinctive frameworks: to Anglo-Saxon stock-based and alternatively to bank-based models as in Germany and Japan. An extensive body of literature can be found regarding this approach by the Western economists (see e.g. Fama – Jensen, 1983; Sheard, 1989; Franks - Mayer,

1990; Stiglitz 1991b; Prowse, 1995; Groenewegen 1997; Edwards - Nibler, 2000). Also a large body of literature is adapting this approach to the transition circumstances (see e.g. Schleifer – Vishny, 1986; Stiglitz, 1991a; Frydman – Rapaczynski, 1993; Goodhart, 1994; Hyvärinen 1996). We review only the main findings that might be appropriate in the Baltic financial structure by concerning ourselves with which model might be more appropriate. The consequential wisdom is that such literature concerns the optimal dispersion of the share holdings for the purpose of finding a solution to share the ownership by optimizing the strongest possible efficiency in governance. In discussions about transition governance structures, these Western governance models were used as a backbone to find solutions for the principal incentives in transition.

One of the most clear adverse effects on domestic and foreign ownership after the privatization programs was the separation effect. The question in this approach is what does the privatization actually solve? To change the centrally planned state governance to the public ownership might lead to a lack of separation of ownership and control as well. The conclusion is that the ownership structure itself sounds incapable of solving the problem of incomplete contracting because each modes of the separation of ownership and control even in Western circumstances can create contract incompleteness and misuse of firms' assets. We rate the significance of the principal incentives to be high during the reorganization of the financial institutions.

The right choice of the governance system has been recognized as essential in order to develop the principals' incentive structure. Some skeptical standpoints were found that both of these models are flawed (Frydman – Rapaczynski, 1993) because the transition countries started from the trash and most of the firms might end up in bankruptcy before such financial institutions are installed. In other words, in order to refinance the extant industrial firms, the hidden soft-budget constraints threateningly hindered the controlling of debt by the financial sector. This was the parting shot to deepening the soft budget constraints or bad debt case. However, the clear need for the well-functioning financial institutions were observed because these institutions directed their attention towards the necessary market information. Such information gave the necessary signals of the directions of the transition firms. Therefore, Goodhart (1994) recognized that, in the short run, a quick decision of choosing the Western governance system in the reorganization stage is essential to guarantee the suc-

cess of the process itself but, on the long run, there should be careful consideration of which governance model to use. Moreover, Stiglitz (1991b) brought forward that there might be also other possibilities to amend the governance. In addition of these models he suggested alternatives as external corporate governance or the networking system with the other interest groups of the firm. This led to the insight that the governance leaned on the law in finance, corporate law, country-specific financial and firm structures as well as the current level and progress of the various financial institutions, which could indirectly lead to the control through the bank-based or the stock market-based system. Moreover, Dosi (1990) connected these two financial systems and industrial change to the learning and selection. Dosi suggested that firm size, levels and distributions of technological capabilities differs from performance such as rates of innovation and productivity growth when these are mapped to learning and selection. Therefore finance is an essential bridge where the financial institutions exert pressure on the industrial firms to choose the rates by pushing them to learn and innovate new products, and in a different environment such a process leads to various paths.

Such a learning and selection process can be found from the Baltic financial markets. In the early stage, the critics focused more on the stock-based system than on the bank-based system because the CEE financial structure differed greatly from the Anglo-Saxon model and therefore it was unable to influence the industrial dynamics (see for example Frydman – Rapaczynski, 1993). Therefore, the governance mechanisms found from the centrally planned firms conformed to the bank-based instead of stock-based system for several reasons.

One clear excuse for the bank-based system was found from the poorly functioning capital markets. Hyvärinen (1996) found that – at least during the transition period – the banking sector was more appropriate for controlling the invested funds than capital markets because their debt financing bound them to make settlements that are more comprehensive and they were able to make contracts that are more explicit. Moreover, certain disadvantages can be found with respect to the CEE capital markets. The first was that, after the privatization programs in the mid 1990s, funds were absent to bolster the capital markets. The second was that after creating the Baltic stock market around 1996, the volatility was too high to create sufficient control through share prices. In other words, the inoperability of its main controlling mecha-

nisms such as the absence of takeovers, and its implications as the absence of market information clearly impaired the functionality of the capital markets.

The role of the Western bank-based governance seemed fruitful for several reasons. First, there was no market-based value for the firms because of the broader absence of a well-functioning financial infrastructure such as capital markets and reliable financial information; second, there was an absence of the historically aware shareholders and especially a concern of the trustworthy shareholders and power coalitions after the privatization process. Moreover, there was no procedure for the other controlling mechanisms such as direct sales or takeovers; finally, there was no procedure how to reorganize the insolvent parts of the firms or soft budget constraints. The closing down these firms would have been profitable by decreasing the transaction costs in the long run even if it was a sensitive procedure in the short run.

Several attempts to create a market-based financial system can be found. The main finding was that the aim of the Czech privatization program was to create shareholders' visible hand, which is familiar in the stock market-based system. The suitable proposals on the reorganization of ownership in the Czech transformation process were discussed in several studies, for example, Mejstrik (1992), Bouin (1993) and Parker (1993). However, the critics claimed that if the shareholdings are largely dispersed, none of the principals has incentives or power to govern the firm, and the political opposition can efficiently slow down the whole reorganization process. To avoid such behavior, the Czech privatization authorities developed the funds where the approach of dispersed shareholding could be avoided and shareholding could be concentrated to the hands of the motivated and enlightened investors. Mladek and Hashi (1993) indicated that the grouping of the shareholdings would improve the corporate governance but they were concerned about the ethics of such groups by asking that "who is responsible for their decision making and who will control them?" Based on these critiques, Boycko, Shleifer and Vishny (1993) also provided evidence on the planning of the voucher privatization. Their research shows that they dealt critically with the quality and tradability of the vouchers and its realization at the time of sale. They paid attention to the ethically responsible owners and to the absence of institutions, especially a capital market. They argued critically that a mismatch between the reasonable owners and allocated capital raises the question of the urgent need for the market-based economic institutions, which can offer the suitable governance.

We maintain that a sound structure of financial institutions is a cornerstone of the Baltic innovation activity. Because FDI inflows were mostly directed to the Visegrad countries and the domestic markets were small in size and domestic investors rare, this restricted the funds available. In addition, the direct sales privatization method solved the ownership dispersion problem in Estonia and Latvia but developments might have been more complex in Lithuania, where the investment voucher was the main privatization method. Even if it solved the dispersion problem it created a new one. Without the voucher method the availability of tradable shares stays more moderate in the Baltic stock markets than in the Visegrad stock markets. The market value of Vilna, Tallinn and Riga stock exchanges was less than 5 billion EUR while the market value reached, for example, 12 billion EUR in Prague, 13 billion EUR in Budapest and 29 billion EUR in Warsaw in the end of 2002. In spite of this, as based on the research of Hyvärinen (2001) the average weekly returns were on par with those of the Visegrad stock markets or even to the Western stock markets although the Baltic markets were marked by thinness and high standard deviation in returns.

Financing Imperfections

The approach of the soft budget constraint appeared as one of the most significant issues against state ownership. The pioneering article by Kornai (1979) was a starting point about discussing this approach. According to his view, the state firms in the socialist countries were unwilling to adjust their costs to the profits because they financed their losses from the state budget. Because of the state subventions, the firms had no threat of bankruptcy and this diluted the managerial incentives to keep the firms profitable. The incapability of the state authorities to make competitive-based decisions to steer the firms toward the market-based environment without subventions was the reason for the current approach. It was not only the problem of some of the firms as it spread through the whole industry as well to the banking sector. According to Stiglitz (1991a), the cross loans between firms and banks spread the soft incentives to the whole society. The centrally planned multiple production matrix aimed at safeguarding production at each level made impossible to undertake the bankruptcy procedure by raising the soft-budget constraint. Laffont and Tirole (1993) found that the absence of such controls caused the misallocation of resources and it reduced the willingness for investments in technology and human capital. The absence of the information through the signaling procedure of the share values blurred the long-term investment plans.

The argument of the soft budget constraint seemed significant during the CEE privatization process. The subventions by the state during the crisis protected the firms from bankruptcy procedures. The costs of that procedure decreased the principal incentives in order to push the management to improve the innovativeness and competitiveness of the firm in both the domestic and foreign markets. Therefore the privatization was justified because it diminished the transaction costs of the state interventions because of the harder budget constraints (Sappington – Stiglitz, 1987).

In the Baltic countries, the soft budget constraint worked through the centrally planned product chain where, in the end of command economy, the Baltic firms started to lack the required inputs to finalize their products. The soft budget constraint created a financial crisis because they were unable to obtain payments from other parts mainly from the Russian federation. Therefore, the Baltic firms suffered from the soft budgets but they were not creating the dilemma themselves.

There was one specific risk when using the bankruptcy procedure for the Baltic firms. In the beginning of the transition, most inefficient firms were closed down. This process showed that the property of the firm was sold out to the Western countries at scrap value and employees disappeared to the other sectors. Such process was a good example that the transition might lead to the rapid liquidation of the poorly-functioning firms by slashing also the value of the better-functioning firms. For this reason, the bankruptcy procedure was recognized to be a last resort measure because, with the bad debt problem, it would cause a large-scale crisis in the whole economy because the value mechanism of assets was under development. Even in the market economies, bankruptcy was found to be an inefficient measure to reorganize the assets. In the beginning of the transition period, it would be inefficient measure to transform capital in the Baltic countries where the ownership right regimes were weak.

As indicated above, bankruptcy procedures should be used as a control mechanism in order to show which parts should be closed down. Based on this procedure, when the Baltic markets were slowly opened up to international competition and the transition period came to an end, such a mechanism, when adapt studiously, might encourage firms to develop the covering mechanisms for their debt-financed investments. Such behavior would prevent the waste of the innovative assets by channeling the property to the specific coalitions. Moreover, such a covering might in turn encourage inves-

tors to use bankruptcy as an instrument against the poorly functioning firm. Therefore, this instrument would give the right to the investors to close down the poor parts and then reorganize the more innovative parts of the firm.

In conclusion, it seems that the bankruptcy procedure sounds useful among some other procedures, that is, market forces, competition and the threat of the bankruptcy together would be an efficient method for the governance in the Baltic countries. Because the power coalitions formed after the privatization programs with the large-scale sized firms would be an inefficient combination to make needed modifications, then the threat of the bankruptcy through the market-based competition would be a necessary procedure to force these power coalitions to re-orientate their assets. In these circumstances, the miniscule increase in competition would have the needed influence to wag the whole structure and it might be restorative when the state was incapable to restore the whole industry. In other words, the increase in competition would strengthen the role of the state early on through the soft budget constraints and protectionism but later on the fear of liquidation would increase the incentives of the management in order to increase the productivity.

Foreign Investors and Western Governance

As mentioned above, the approach of the Western-like governance was found useful in the transition process at least in the short run. Several researchers such as Frydman – Rapaczynski (1991) presented weaknesses at the development of the CEE industrial organization structure and agency problems that might be corrected by foreign governance. According to their view, the main shortcoming of the state firms was their inability to form effective corporate governance to the market-based circumstances. Since the privatization process was the basis for further deregulation and decentralization then the efficient governance system formed a link between the principals and the agent. During this principal-agent process, the argument for the foreign owner seemed essential where the knowledge of the Western governance created the incentive framework to the CEE management.

Next question is why not take the well-functioning foreign governance system abroad with the FDI? At least, there are some advantages for the foreign investors and governance. For example, the reorganization effect was strongest because they had no strains from the centrally planned period. Comparing the involvement and

role of the foreign investors in Estonia, Latvia and Lithuania it was investigated whether the ownership rights used the various methods to shape the assorted incentives to the management. At the same moment, according to these methods, the behavior of the management and the profitability between the firms seemed to form differently. The clearest distinction has been found from the firms when the Baltic firm found the Western partner, which brought technological know-how, and upgraded its own incentive and governance system to suit the transition circumstances.

In general, the reform programs carried out for example in Estonia led to the conclusion that the role of foreign investors seemed to be a remarkable cornerstone in the Estonian industrial restructuring process and their role was accentuated especially in the large-scale privatization. Therefore, the Estonian reform turned out to be a successful procedure for finding the core investors abroad who could be helpful in installing the new methods of corporate governance and managerial incentives as well as enclosing Estonian firms in market-based information, know-how and innovation networks.

It seems that Lithuania found support for its investment voucher program from the Visegrad countries. Not surprisingly, because of the difficulties of firm valuation, a number of reasons can be discovered why especially the Hungarian economists such as Hunya (1991) and Mihalyi (1993) took a critical attitude of this process. They claimed that such a process is harmful to Hungarian domestic investors because with this large-scale privatization method "the family silverware was sold to the foreign investors". Another reason was that a low valuation might imply low revenues to the government. Mihalyi (1993) emphasized that in the large-scale privatization, the main income was collected from the foreign investors but the less competitive parts of the firms stayed in the state hands. Such behavior can be insisted in a way that the foreign investors focused their interest only on the well-equipped parts of the firm or industrial branch and left the uncompetitive parts to the state. The critics of such a procedure said that the profits of the well-equipped parts spilled abroad but the domestic managers and authorities had to find an answer for the reconstruction of the uncompetitive parts. In sum, however, as the result of the Lithuania privatization programs, the state ownership in the industrial sector remains still significant and complex because some parts of the production plants are found to be uncompetitive.

4.4 Specific Features about Financial Governance and Contracting Environment after Stage I

In this section, we observed heterogeneity among several Baltic privatization methods and financial governance, and examined specific features which might have an effect when forming the high-powered incentives for principals. In summary of this approach, we raise several statements.

Privatization was a focal procedure to create a basis for the reorganization process and ongoing integration into the EU markets.

It was commonly known that the privatization programs were a starting point for the transition process in the Central European countries. It emancipated the ownership rights and gave more "elbowroom" to the industrial reorganization and institutional development itself by separating the decisions of the economic agents from the state control. However, the privatization process was not enough: it was incomplete and therefore insufficient for solving the governance process in production and fostering success in innovation. Therefore our analysis needs further analysis to explain these governance modes.

Several privatization methods, political opposition and an unclear mixture of shareholdings confused investors and slowed down the principal incentives.

As mentioned, each CEE country used its own specific privatization methods. Such a variability of the methods created confusion about who would be responsible for the decisions made inside the firm. The voucher method moved the ownership rights to the citizens, but there was a concern of highly dispersed ownership in the same way as found in the Anglo-Saxon stock markets. After the vouchers were distributed no one could be sure who would eventually own the shares and use power inside the firms. Because the standard of living remained low, the citizens were tempted to sell the shares even at a low price. Moreover, ownership by the public had no inherent advantage over the state ownership. That is, both ownership modes faced the same problems concerning the principal-agent issues, dispersed ownership structure, failures or inefficiencies in the board working due to the asymmetric or loss of relevant information and the power coalitions inside the firm and the board.

Furthermore, the direct sale method to the foreign investors concerned the CEE economists. They claimed that there is no evidence of their motives and they can just

liquidate the firm's assets, put the money in their own pocket and disappear. The main concern raised, however, was that the society could jump radically from a centrally planned society to a hard-core capitalistic society no matter whether its assets were owned by the public or the state. In sum, the ownership mode was inadequate to offer a final solution in the reorganization process; it gave the authorization to start the process but more enriched explanations were needed to find out the excuses, which might lead to the efficient governance in production as well as the industrial integration or enlargement process in the EU.

The shortcomings in firms' financial relations and absence of a functional financial sector channeled funds to inefficient targets.

To analyze the relationship between the shortcomings in finance (absence of capital markets, soft budget problem, bad debt, bankruptcy procedures and validity of foreign investors) and innovative activity, it was found clear that these institutional weaknesses channeled funds for other purposes than education or R&D programs and hindered the high-powered incentives of principals. Moreover, the heterogeneity of foreign investors created uncertainty and conflicts between domestic and foreign principals. The unclear question was still the industrial competitiveness and the cost structure in closer integration with the competitive EU markets.

5 Stage II: Institutional Framework and Governance in Production

As studied above, stage I examined the relationship between the financial governance and principal incentives to enhance innovation. Next, stages II and III explain the factors of sound institutional development and contractual environment for the purpose of improving managerial incentives. Thus we identify the meaning of the governance framework of production and innovation for the speed of the outsourcing process itself. Moreover, in stages II and III, we use the framework of the theoretical study of Grossman – Helpman (2002b) to investigate the relationship between managerial incentives and institutional structure of the governance in production and then governance for innovation.

In this section, we suppose that the aim of the EU and Baltic contracting partners is to minimize the searching and customization costs, and the gap in technological expertise. We establish that the searching costs are mostly born from the institutional infrastructure and instead the firms themselves handle the customization costs by improving their incomplete contracts. However, the government can at least partly decrease the customization costs by improving the country's ability to maintain the required level of human capital and R&D. The ability to match technology between parties and the gap in technological expertise are both linked to the sufficient country-level infrastructure in human capital and R&D.

Concerning the context of the incomplete contracting, industrial restructuring and managerial incentives, we define the institutional framework in this section. Such a framework includes the factors about the institutional development that might help clarifying and diminishing the costs originated from the quality of the legal system and distance in expertise. Concerning such an institutional framework, we first discuss on the several policies, which belong to the duties of the state authorities. These are a legal framework of the firm and trade regulations as well as industrial and technology policy, where the aim is to minimize the technology gap between the Baltic and EU firms. Second, we analyze the role of state officials in order to minimize the searching costs, customization costs and distance in expertise between contracting firms. To put it briefly, the purpose is to review the main shortcomings and advantages found from the Baltic institutional environment.

5.1 Spontaneous Step-by-step Institutional Reconstruction and Transaction Costs Approach

The transaction cost approach became one of the most interpretative theories in the CEE transition period because it indicated pertinently the shortcomings of the centrally planned institutions. Needless to say, these institutions comprised the costs as routines, bureaucracy, hierarchies and the lack of efficient coordination as investigated in the context of the transaction cost theory. The urgent need to create a new and less-hierarchical, market-based institutional structure was emphasized in several studies such as Frydman – Rapaczynski (1993) and North (1997) due to the need to govern the production sector during the transition process. However, according to Frydman – Rapaczynski (1993), the rapid reorganization of the institutions to corre-

spond to the Western institutions included high risks. It was clear that new and unknown market-based institutional arrangements increased the risk of failure. Therefore, they suggested that new institutions should be formed spontaneously while taking into account the needs of the markets, therefore making the reorganization process "spontaneously evolutionary". However, such an evolutionary process was found out to be problematic because the long history of the central-planning administration took its toll and the local authorities became estranged from the Western logic. According to Frydman and Rapaczynski, instead of the rapid jump to the Western institutions, the CEE institutions should have been developed by the step-by-step procedure with the self-correcting mechanism because there appeared to be at least two main shortcomings. The first was that there is insufficient interest in the new type of institutional models or their functionality is uncertain. The reorganization was not enough because it created new sticky and established bureaucracies just replacing the hierarchies from the centrally planned period without changing routines. Another shortcoming was that new managers can choose the passive role in their investment policy without seeking to reorganize the firm, and shirking and opportunistic behavior might continue also after the transition period. The needed reallocation of resources could therefore fail.

As found from these studies, it was increasing recognized that the dynamics of an innovative industrial structure falls not only on the firms itself but also on the functionality of the economic institutions and the regulations by law. In this approach, as quoted by North (1991), the key issue of economic development is the evolution of the economic institutions of creating an economic environment that induces increasing productivity. Concerning the transition issue, North (1997) mentioned that the collapse of the centrally planned system destroyed the formal institutional framework, but the most of the informal constraints still existed. As a result, the attention should be focused on trying to develop a better understanding between the formal and informal constraints in which these activities took place. Based on these opinions, it seems clear that the goal for the Baltic countries was to attenuate the institutional gap between them and market-based economies by breaking down especially informal constraints and then restructuring the institutional environment in parallel with the emerging industrial structure.

Consequently, the message of this analysis is that the purpose of the EU integration to the East is especially to change these informal constraints. We assume that the target for the reorganization and institutional building is based on the conception that the target for the Baltic industrial firms is to survive on the enlarged EU markets and not only for example to retain their positions in the domestic, Russia, other CEE or CIS markets. We neglect to define these competition circumstances but we describe the factors that might help us reach such a level of institutional development and industrial restructuring. In other words, concerning our topic of outsourcing, that is the level that leads to the increasing outsourcing contracts between the Baltic intermediate and EU final producers.

5.2 Institutional Framework and Quality of Legal System as Signaling Procedure

First we examine the broad framework to help clarify the legal system that would be the basis for the successful EU industrial integration to the East. We claim that its purpose is more than just to guarantee legally each other's obligations, but it has also the signaling effect to the EU-Baltic integrating partners. The opinions above clearly suggest that a functioning legal system acts as a critical element supporting the development of efficient, competitive and durable entrepreneurship. The functioning environment flows as the interaction of many sources such as business, finance, labor, R&D and trade regulations.

Legal Framework

The similar weaknesses, as found from the other CEE countries, troubled the Baltic legal institutions because they were unable to sort firms into the survivors and non-survivors. The economic links formed in the centrally planned period still supported the firms where the possibilities to compete in the new circumstances remained low. At the same time the firms with the competitive innovations had difficulties to acquire any support. Furthermore, there were no regulations how to solve financial insolvencies such as the bad debt problem, which caused bankruptcies in the firms that, at least in the long run, had competitive prospects, and firms with the low estimates on the long run, received financing based on their centrally planned political background (CCET 1994). Therefore, it was not surprising that the legal framework had

to be reformed to signal that such insufficient procedures can be handled and it was not an impediment for the outsourcing activities before the industrial integration between the Baltic and EU firms could be lucrative.

As found out by Rumpunen (1997), since the centrally planned period, the Baltic countries have been active to re-adopt their laws in the commercial and economic fields. In order to create an efficient business law framework, the clear rules of ownership rights might be the first essential cornerstone to secure the obligations and responsibilities on the decision-making inside the firm and between parties. Also the business law should define the rules of public information of the privatized firms. Such information included the necessary releases of the compulsory publications (annual reports) or other announcements in order to improve the transparency of the stock markets and other financial institutions. Furthermore, the clearness of the labor and social security regulations such as minimum wages and other compensations and also the law concerning R&D, for example the intellectual property rights (patents etc.), improved the quality of the legal system and increased the incentives for the EU final producers to make intermediate contracts with Baltic producers.

Concerning this issue, new laws have been adopted, for example in Estonia: law on foreign investment (1991); bankruptcy law (1992); securities, competition and privatization law (1993); law on property rights (1996), in Latvia: competition law (1991); privatization law (1992), company law (1992); in Lithuania: privatization law (1991), bankruptcy and competition law (1992); company law (1994), (see EBRD 1998, 2000). Before new laws were ratified, the Baltic authorities used foreign expertise, for example, German authorities and some international consultant services. These consultant firms have been used to formulate the current and future legislation in accordance with EU standards. Especially the funds through the PHARE program granted by the European Commission have helped the Baltic countries to harmonize their laws with the EU legislation as well as to educate the law personnel working in the several governmental law institutions. Furthermore, the last step to harmonize the legislation between the Baltic and the EU countries was to follow the recommendations of the White Paper on integration into the Internal Market of the Union.

Trade Liberalization and Deregulation

In general, the involvement with free trade agreements improved the quality of the legal system. When considering the competitive viewpoints, the lowering of the trade barriers and allowing competition that is more liberal enhanced the progress of the privatization. The tightening competition improved the outside control of the firm and increased both the resource allocation and productivity (Hart 1983, Holmström 1982). If the competition was restricted through entry or trade barriers by the state, then carrying out market deregulation and liberalization at the same time with the privatization process would lead to the appropriate results. The tightening competition might be more effective than only restructuring the ownership rights. Also deregulation only has brought improvements to productivity.

When considering the trade regulations after the centrally planned and transition period, the Baltic institutions needed more education and training to learn how to negotiate new regulations with the European officials and with other trade organizations to give them equal access to the Western markets like other countries. With the former member countries of the Soviet Union there were no foreign trade systems in place at all. According to Hyvärinen – Borsos (1994), the development of the Baltic foreign trade policy agreements after the centrally planned period was approximately as follows. The progress of the Baltic countries, compared with the other CIS counties, has been successful in building institutional links to the rest of the world through a set of agreements concerning free trade and MFN (Most-Favored-Nation) status. First, The Baltic countries concluded the bilateral agreements of that time with EFTA countries (Finland, Norway, Sweden and Switzerland). All these agreements were basically of the same content and provided for duty free trade in industrial goods subject to rules with origin. When Finland and Sweden joined the European Union in 1995, it was agreed with the EU that the Nordic countries could negotiate free trade agreements with the Baltic countries.

The first step for the Baltic countries was to be granted MFN status by the EU. The mutual granting of MFN status was agreed upon in the Agreement on Trade and Commercial and Economic Co-operation, and GSP (Generalized System of Preferences) status was granted during the year 1992. In general, these agreements included that industrial goods can be exported to the EU as duty-free and agricultural products with reduced tariffs without any quantitative limits if they do not belong to the group of “sensitive products”.

The next step was to negotiate the same trade agreements with the EU as concluded between the EU and other six Central European countries called “Europe agreements”. These agreements included a framework for strengthening co-operation such as political relations, technical assistance, and harmonization of legislation. When the provisions of the Europe Agreements were fully implemented, the Baltic countries with other CEE countries re-evaluated the position that EFTA countries enjoyed regarding the trade in manufactured goods with the EU countries. Moreover, Berg (1997) discussed the recent developments of the Baltic trade agreements based on the Baltic Sea Region Programme and the Union pre-accession strategy on this region. The improvements in trade relations between the EU, Baltic Sea region and Russia will speed up trade and industrial integration in the Baltic countries. Concerning the international trade agreements, Estonia and Latvia joined the WTO in 1999. One of the significant issues was the WTO negotiation round between the Baltic countries and Russia in order to support the reduction of the trade barriers. Import tariffs and export subsidies in trade between Russia and Lithuania have complicated the WTO accession negotiations with Lithuania.

In sum, the Baltic countries had chosen rather free regulations in international trade, which is a signal for further fluent trade and industrial relations between the EU and Baltic firms. After joining the EU, more education and training will be needed so that the Baltic countries can utilize the advantages of the enlarged Europe.

5.3 Institutional Framework, Searching Costs, Customization Costs and Distance in Expertise

The next step is to consider how the improvements in the institutional framework might decrease the costs of outsourcing. The improvements in the contract technology lead to lower searching costs through two channels. The first reform ideology of the institutional framework depends on overall communication infrastructure (telecommunications, transport and other services such as accommodation). Another reform ideology in such a framework concerns the improvements in human capital and R&D institutions, which creates innovation capabilities, that is, education and R&D policy and in that way decreases the customization costs and narrows the gap in expertise.

Institutional Structure and Searching Costs

The institutional framework includes factors such as transport services, telecommunication and education infrastructure. Before starting the production process itself, both parties will search for the suitable partners. Therefore there should be an infrastructure to meet and negotiate for the final production process. This approach is examined in several studies such as Hyvärinen – Borsos (1994), Hyvärinen – Hernesniemi (1995), Hernesniemi – Hyvärinen (1995) and Kilvits et al. (1997). First, the fluent activity of the transport services such as air transport will therefore be required. In the Baltic countries, the highest business activity is concentrated around their capitals: Riga, Tallinn and Vilnius. The main challenge is to rebuild the capital airports to correspond to international standards. The Riga airport was modernized with an EBRD loan in order to improve the runways and the lighting system. In addition, the Tallinn airport has been repaired in 1995 to respond to the needs of the international air traffic. Second, a functioning telecommunication network is one of the crucial links to lower the searching costs. Versatile, high-quality and cost-efficient telecommunication services improve the efficiency of the intermediate and final producers on both sides. The telecommunication investments in the Baltic countries are a promising area for co-operation in which the Nordic telecommunication companies such as Nokia and Ericsson have provided significant inputs. The recent investments in the mobile telephone NMT and GSM networks will fulfill the Western standards in business calls. Third, the education investments in the management would indirectly lower the searching costs. These include language and negotiating skills by the management. The international co-operation in education might lead to sufficient results so that the Baltic managers can be trained with the Western partners or University programs either at home or abroad. The Institute of Stockholm School of Economics in Riga (Latvia), where also Estonian and Lithuanian students are allowed to study, is an encouraging example of that kind of co-operation.

Institutional Structure, Customization Costs and Distance in Expertise

Now we turn to examine the need for the institutional framework as described above, but we analyze its significance due to the decrease in the customization costs and distance in expertise.

The geographical location of the Baltic countries with respect to goods distributors or markets affects the transport costs by easing the business activities and industrial integration. The functioning of the transportation system was therefore one basic factor behind the industrial competitiveness by lowering the customization costs and the incompleteness in contracting. Delays and interruptions in transport increase these costs and disturb final production, and therefore the state may play a major role in improving the functioning of industrial transport via its investment through its transport investment.

According to Baldwin – Martin (1998), the increase of information and communication technology has radically diminished the transportation and communication costs. Such a development has several advantages concerning the behavior of MNEs when advanced information and communication technologies make it possible to control and decentralize the MNE operations more efficiently (Pajarinen et al. 1998). These claims also fit the Baltic countries. The state transport firms are being privatized and activities are decentralized in order to increase competition and stabilize transport prices. Owing to their geographical location, the Baltic countries have functioning transport connections via the Baltic Sea. The location is favorable for transit traffic both in the east-west direction to Russia as well as in the north-south direction between Northern and Central Europe. Latvia's most important commercial harbors are Ventpils and Riga. Ventpils is more significant for industrial logistics. It is designed primarily for oil and oil products, but most of the grain transports were transferred through Ventpils to the East, and deliveries of coal, timber and metal products to the West. Estonia's most significant harbors are Muuga, City and Kopli owned by the state enterprise Tallinn Port. Muuga is the main harbor for industrial goods, also handling grain, oil products and wheeled vehicles. City port transfers metal products, lump cargo, including containers, packets and wheeled cargo. Kopli port handles oil products, timber and sawn timber and mineral building materials. Lithuania is located between the CIS countries, Latvia and the Baltic Sea and it has a relatively well-functioning logistics chain through the east-west railway network and Klaipedan harbor. Therefore its main task has been to handle bulk goods to the CIS countries (see for example Kilvits et al. 1997, Hyvärinen – Hernesniemi 1995, Hernesniemi – Hyvärinen 1995).

The next step in this approach is the significance of education policy. As is well known, the advantage of the Baltic countries rests on their high level of education,

and their basic education policies have guaranteed the necessary qualifications of the employees by lowering the customization costs and distance in expertise. The first step to compare the Baltic educational level with the Western educational systems was to assess it using the ISCED classification system (Kilvits et al. 1997). University-level teaching is considered as being theoretically advanced and enrollment levels have stayed rather high in the Baltic countries. University teaching has strong traditions in natural sciences and some fields of engineering. Since the Baltic labor force needs retraining, adult education must also be emphasized. The upgrading of the competence of the Baltic labor force depends also upon co-operation between restructured firms and government. Possible mechanisms of retraining are apprenticeship programs, joint research projects of firms and universities as well as firms' own training programs in areas such as industrial processes and material handling, accounting and techniques of quality management. Co-operation in education systems can be developed internationally so that the Baltic workers could be trained in Western companies abroad (Hyvärinen – Borsos 1994). The Baltic countries have growing opportunities to increase co-operation in programs organized with Western organizations. Such programs cover management training, assistance to business particularly SMEs, investment promotion, and industry-related environment protection.

The debate about the urgent need for R&D policies in the Baltic countries and their eagerness to become integrated in the EU market has been found to be remarkable for two reasons. First, their domestic markets are small and the large-scale industrial conglomerates were unable to respond to the domestic demand because the industrial structure was geared toward heavy industry and capital goods at the expense of the light industry, services and consumer goods. Second, as found also from the other transition countries, an urgent need for the institutions by supporting R&D activities and education was and still is essential to enforce consolidation of labor-market institutions, skill-adjustment, technology transfer and industrial R&D because the highly educated R&D personnel is disappearing to the other sectors.

As indicated above, in order to lower the customization costs and lower the distance in expertise between the Baltic intermediate and EU final producers, the R&D policy including technology transfer and diffusion of R&D offers one of the needed institutional frameworks. The technology gap proved to be the biggest concern in the Baltic countries because, as compared to the OECD countries, the share of high-technology

products has been remarkably low. According to this concern, the future technological progress depended on how well the newly restructured firms were supported by the technological infrastructure and how they were prepared to internalize the technological change.

As can be found from the Baltic industrial integration process, the small Baltic firms benefit from the technological progress when they subcontract with the large-scale multinationals, which had already gone through the international competitive pressure. The western firms, which organize new innovations and technology transfer, would likewise benefit from diffusing these new innovations into final products in the intermediate Baltic producers. The government had a central role because the technology transfer can be reinforced by public support or new R&D investments in the new industrial fields and steering of the training programs into new R&D directions. As discussed in Kilvits et al. (1997), these training programs consist of the EU as well as international scientific-technical co-operation through several of the European Union and the world-wide research, technological and innovation programs: FRAMEWORK V, EUREKA, COST, PHARE, ESA, CERN, ESF and EMBL. The aim of these programs is to combine the R&D interests of scientific institutions and the needs of industrial firms. As a result, we propose that Baltic firms should take the next step in the near future. The Baltic governments have the responsibility via R&D policy to support these firms starting to produce own final high-R&D products and in that way decrease the risks of the hold-up problem. As found from Sharp (1996), EU R&D funding is mostly channeled to a small number of large firms instead of SMEs. Therefore, the Baltic firms cannot stay passive in the EU R&D programs during the integration process and leave its formation to the governments in order to channel EU R&D funds to the SMEs and in this way they should take an active role in forming their own R&D identity.

After joining to the EU, the successful co-operation and participation with these programs and foreign firms will be the cornerstone of successful Baltic R&D policy. As is well known, external technological infrastructure emphasizes the role of research institutions as well as the foreign technology in the innovation process and the diffusion of technology. In general, the Baltic universities, which carry out the basic research and support the conversion of innovation into the industrial production, had long research traditions in the natural and technology sciences (Hyvärinen – Hernesniemi 1995, Hernesniemi – Hyvärinen 1995, World Bank 1993). However, one can

see that in such circumstances it still takes an inconveniently long time for basic and applied research to have a competitive impact upon industrial production processes. It was generally comprehended that the Baltic countries have no time for such a procedure to reach the R&D level of the EU countries. That is why the restructured firms have to prepare their personnel to benefit from the foreign technical assistance. Even if some branches, such as the Baltic electronics sector, have been proclaimed the flagships of the centrally planned industrial base, most of the Baltic production machinery still needs new technological investments because the current levels of quality and productivity lag behind those of the West.

5.4 Specific Features about Institutional Framework, Governance in Production and Contracting Environment after Stage II

In this section, we identify the institutional arrangements that help to form the high-powered managerial incentives and therefore enhance the contractual eagerness toward EU-Baltic industrial integration. Several implications about the usefulness and shortages of sound institutional framework can be proposed:

Transaction costs approach seemed to be the first challenge for the Baltic countries to refrain the complexity, fuzziness and hierarchical character of state institutions.

To solve this argument, the first suggestion was that rapid change included remarkable risks. Therefore new institutions should be created in a spontaneous way and by taking into account the needs of the ever-changing and evolutionary transition process. In such circumstances, the step-by-step procedure with the self-correcting mechanism might be appropriate. It also seems appropriate that the goal of the Baltic countries was to attenuate the institutional inefficiency by increasing the transparency of informal constraints inside institutions.

By supposing that the government is responsible for the functioning institutional framework which enhances the governance in production, it is the government's responsibility to form legal framework to guarantee the obligations of each interest groups and use it as the signalling procedure.

One difficulty between the Baltic and EU firms was the discrepancy in corporate law. With the help of foreign expertise, the Baltic countries have been active to revamp their centrally planned laws in the fields of commerce, finance and economics but they also adopted completely new market-based laws. Significant efforts to im-

prove the contracting environment were made in the such fields as ownership rights, public information on privatized firms, labor and social security regulations and the law concerning R&D. Further, the Baltic countries took an active part in negotiating their new trade agreements but they still need more education and training to solve the negotiation procedures with the EU and with other international organizations. The Baltic countries have successfully built trade links with the rest of the world through a set of trade agreements such as GSP, MFN, "Europe agreements" and finally their procedure to joining the EU.

Functional institutions act in the key role of regulating the guidelines which definitely affect the outsourcing costs.

This argument works via two indirect channels. The first is that the government can be active in building the serviceable communication infrastructure that reduces the searching costs in contracting between parties. Since the industrial activity in the Baltic countries is concentrated around their capitals (Riga, Tallinn and Vilnius), this makes it worthwhile to build the communication infrastructure such as airports, accommodations and telecommunication around these regions. Another channel for reducing customization costs and distance in expertise rests on the workable education and R&D policy. As regards the merits of the Baltic education level, according to ISCED standards, university-level teaching is considered as being theoretically advanced and capabilities in natural sciences and some fields of engineering are strong. Concerning employee training, possible mechanisms of retraining are apprenticeship programs, joint research projects of firms and universities as well as firms' own training programs in such areas as industrial processes and material handling, accounting and techniques of quality management.

As indicated above, the R&D policy including technology transfer offers one of the needed institutional frameworks for the diffusion of technology in the Baltic firms. The Baltic governments have an increasing challenge after joining the EU to support new R&D investments in the emerging industrial fields and steer the training programs toward the new R&D directions. The co-operation and participation with the EU as well as international scientific-technical co-operation and training programs might be the cornerstone of Baltic R&D success in the near future. The final goal is to create their own industrial identity so they can produce their own final products for the enlarged EU markets.

To conclude the stage II, we have found that the correspondence between the institutional arrangements and governance in production can be established, but more investigations are needed to discuss about the governance with respect to innovation. This approach is investigated in the next section.

6 Stage III: Governance in Innovation and EU Industrial Integration to the East

After introducing the financial governance and institutional framework of governance in production we are ready to examine governance in innovation. Sections I and II lacked the analysis how innovations take place inside industrial organizations. In this section we explain the essential features of the governance for innovation approach to investigate the process of industrial reconstruction during the preparation of the EU industrial integration between the Baltic intermediate and EU final producers. While the literature in this field is extensive, we have chosen two ways to examine this approach. First is *the resource capability framework* in which we consider the meaning of high-skilled human capital and success in R&D innovations. Second is *the organizational framework* inside the reorganized Baltic firms, which discusses the conditions to form the high-powered managerial incentives. This framework includes the improvements to the governance structure for innovations inside the firm, investments to the inside firm training for purpose of the market–based leadership and communication skills. That is, the management capabilities lead to the innovations by picking up the right production processes and by joining to the international technological progress such as technology transfer and diffusion.

6.1 Resource Capability Framework and Human Capital

Meaning of Capability, Human Capital and Growth

So-called endogenous growth theory was a hit in the early 1990s. Several theoretical models of R&D-based or more specifically innovation-based growth such as Grossman – Helpman (1991a) and Aghion – Howitt (1992) hypothesize that the conventional human capital might be incorporated. It seems natural to suppose that the

utilization of human capital is beneficial when the stock of human capital is increasing. It is stressed, for example, in Stokey (1991) that the quality of schooling rather than quantity is one of the main sources of long-term growth. She also shows that if a small open economy with slightly higher human capital than in the rest of the world starts to trade in the intermediate goods, its investment in human capital can give an ever-increasing boost to growth. Based on this insight, one can argue that the Baltic countries might reach such a path and the catch-up effect will be high: their advantages from EU industrial integration might be higher than the effects of integration in the EU countries, because small economies are more flexible to adapt R&D-intensive production compared to larger CEE economies.

High-skilled Human Capital

Based on the recent foundations of Machin – Reenen (1998) and Berman – Bound – Machin (1998), the skill-biased R&D intensity and technological change and also relative demand for high-skilled employees are increasingly needed resources in the developed countries. Such a tendency is also a signal to the Baltic firms that skilled personnel acts as a key factor in the EU outsourcing process and in that way has an upgrading effect on managerial incentives. High-skilled human capital in principle generates the final producers' incentives to search for their conceivable partners from such region, and Baltic firms might be better off by finding more profitable contracts with the EU final producers. As discussed in the previous section, the starting point for skill-biased employees in R&D is estimated to be at a high level in the Baltic countries. The next purpose is to find a partner among the EU final producers to fulfill their practical skills in their firm-specific training programs. Under such conditions, however, the concern might emerge that the employees are divided among the different groups according to which contract the Baltic firms are able to sign. As earlier briefly discussed, this implies that a more efficient contract leads to the uneven development between Baltic firms if they have managed to sign a contract with more profitable EU firms. Intuitively, a race for profitable contracts divides the Baltic firms into winners and losers, and that way leads to the high dispersion of employee wages and sharply biased skill-structure for successful contracting firms compared to losers. Thus also the national education and training infrastructure is needed as investigated in stage II to compensate for such an uneven development.

Skill Spillovers, Innovations and Integration

An important result in the spillover and innovation literature is that a critical mass around it is needed to be successful (Baldwin 1989). The successful spillovers can be found from the regions in which similar types of firms work as clusters and spread their knowledge by co-operating with the same kind of problems. Therefore, the skill spillovers are supported by the fact that skilled employees have low barriers to use each other's information. Such clusters can be formed to the Baltic capitals: Tallinn, Riga and Vilnius. Such a view also implies that a key factor for increasing skill accumulation in the Baltic firms requires close links with the high-technology EU firms and advanced EU technology programs.

Several studies such as Lundwall – Johnson (1994) and Gregersen – Johnson (1997) stress that the learning process and especially institutional learning are needed for successful innovations. They describe that even if the innovation systems are still nationally restricted, the learning needs international R&D integration and in that way cross-border skill spillovers. Therefore one of the key factors in building the Baltic innovation system is the functional institutional structure, which is nationally supported but leans on the EU-wide skill spillovers. Baltic institutional change should move towards a learning economy, as defined in models such as Dalum et al. (1992), Lundwall – Johnson (1994) and Smith (1996), in which the rate of knowledge turnover is high and the change of the total knowledge stock is fast. According to them, the learning economy needs, firstly, the advanced computer and communication technology that already exists in the Baltic region. Next, when the R&D in the ongoing technical progress is costly, there is a need to adapt new organizational forms which might lead to the higher utilization of innovation resources in the EU-Baltic industrial integration. Then, to encourage skill spillovers in the learning economy via communication technology, there is a need for strong education institutional support in order to impact on innovation capabilities. Finally, the role of government policy is crucial for supporting such a learning process by keeping up the education institutions, incentives for education and creative destruction in education (labor mobility and retraining programs) and to keep the learning institution open for international integration.

6.2 Resource Capability Framework and R&D

Innovation-based Growth

For the functionality of the Baltic innovation system, the approach of innovation-based growth plays a critical role both at the industrial and the country level, and such growth would be appropriate also in the Baltic countries. This approach is extensively discussed for example in Baldwin (1989) and Grossman – Helpman (1994) that profit-seeking investments in technology improvements are at the noteworthy place during the sustainable long-run growth. They emphasize that the profit-motivated innovations are explained by the Schumpeterian pattern where technological know-how with the managerial skills clinches how the inputs are combined when creating new innovations. In other words, as Freeman (1994) puts it: "in Schumpeter's theory, the ability and initiative of entrepreneurs, drawing upon the discoveries of scientists and inventors, create entirely new opportunities for investment, growth and employment." Moreover, as found from Baldwin, the key point is that the emerging economies such as the Baltic countries earmark sufficient funds for R&D investments and restrict consumption until they reach the same R&D level as in the developed EU countries. Therefore one can see that, in the early era of the EU, it will be beneficial for the Baltic countries to concentrate on the R&D investments and postpone consumption.

Success in R&D, Technological Regimes and Innovation Systems

Grossman – Helpman (1994) maintain that the economic growth necessitates the process where the intermediate products are improved incessantly, and for such reason raises the productivity of final products. Such a tendency abides by the Schumpeterian pattern where successful new-innovated products, introduced by the new or existing firms, replace the previously innovated products, and they race to introduce a new generation of products depending on the characteristics of each industry. The only question is when and how will the Baltic industrial base undertake such a process?

An essential explanation for the resource capabilities of the Baltic countries might be found from the technological regimes. Such regimes are discussed by Nelson – Winter (1982), Winter (1984, 1987), Malerba – Orsenigo (1990, 1993) and Breschi et al.

(2000), and they are classified as: firstly, *cumulativeness of technical advances*, which denotes an innovation activity that forms a mass of innovation stock and creates possibilities to spread to new technological fields, where the high level of cumulativeness is typical for economies with high continuity of innovations and increasing returns; secondly, high *appropriability of innovations*, which means broad resources for protecting innovations from imitation and for reaping profits from innovative activities and instead low appropriability gives the possibility for the widespread existence of externalities; next, high *technological opportunities*, which exist in those environments where incentives for new innovations are favorable and success in innovations is therefore plentiful; lastly, the *properties of the knowledge base*, which can be broadly examined by the role of basic vs. applied sciences. The basic sciences generate broad general knowledge for practical problems while, in contrast, applied sciences solve the problems naturally connected with the applied technologies.

Next we should explore the following question: what might be the guidelines for the Baltic countries? The relationship between the Schumpeterian pattern and technological regimes is defined and empirically tested with European patent data from Breschi et al. (2000). They divide the technological progress into two separate patterns, where first the Schumpeterian pattern is characterized as *creative destruction* with technological ease of entry and the measurable role of new entrepreneurs and firms in the innovation process. Second the Schumpeterian pattern is called *creative accumulation* with the prevalence of large established firms and the presence of relevant barriers to entry of new innovators. The results show that the sectoral patterns of technical change are related to the nature of the underlying technological regime. Instead, the pattern of creative destruction is related to low degrees of cumulativeness and appropriability, and high importance of applied sciences and to an increasing role for external sources of knowledge from the EU. The pattern of creative accumulation is related to high degrees of cumulativeness and appropriability, high importance of basic sciences and relative low importance of applied sciences as sources of innovation.

According to the experience of the 1990s, the Baltic industrial reorganization might follow the Schumpeterian pattern of creative destruction. We know that directly after the Baltic re-independency, the number of firms grew exponentially but only a minority of the firms survived, and such behavior has continued during the 1990s. The

Baltic firm behavior is typical for the Schumpeterian pattern where the birth and death of firms is extensive. One might claim that the suitable pattern for the innovation system in the Baltic countries is the model that supports creative destruction with the technological regimes where cumulativeness and appropriability are low but the role of applied sciences and externalities from the EU is high.

Technological Change, Externalities and Government Regimes

The literature of this approach is indeed broad and we present some main guidelines, which could be useful for the EU-Baltic integration. Hence this framework is adapted to the Baltic case by the research of several authors, for example, the surveys of Grossman (1990) and Cohen (1995), and also the research papers of Johnson – Gregersen (1995), Teece (1996) and Gregersen – Johnson (1997), who have discussed about the sufficient environments for interactive innovations. Several foundations can be applied for the EU-Baltic industrial integration as follows:

First, one might argue that the active improvements of the Baltic governmental regimes are crucial for fluent externalities, which are generated by the rapid entry of new technologies. Especially in the Baltic countries, the innovations need interactive R&D co-operation with the EU firms and technological programs, and without such adaptation of the Baltic institutions the growth of innovative activity might be moderate. The technological change is based on the new innovation-promoting regulations of the state. That is why the state's role in the Baltic industrial integration into the EU is crucial for guaranteeing the functionality of intellectual property rights, patents, capital and labor market regulations and laws for efficient contracting between parties.

Second, the economy that has concentrated on the increasing force of learning and technological change should also revise the governmental regimes (Gregersen – Johnson 1997). As found directly after the re-independency of the Baltic countries, the traditional infrastructure investments such as energy and transport have already been finished or are in the home stretch. As the targets of industrial policy, these will become less important after their decreasing costs in the near future but for that reason the regimes should be focused more clearly on targets, by matching with the production sector, such as education, information technology, EU technical standards, applied research and other parts of the knowledge infrastructure.

Third, in relation to EU-Baltic technological co-operation, the benefits of the spill-over effect are one of the clear externalities, and highly advisable for the Baltic firms because they might be the fastest way to mitigate the technology gap. Several studies such as Grossman (1990), Griliches (1991) and Nadiri (1993) support this relation of spillovers and firm performance. According to their view, international dissemination of new ideas and technologies takes place by international industrial integration and through the operations of multinational corporations, and the spillover effect is positively related to efficiency gains both in intra-industry and inter-industry spillovers. Mowery – Rosenberg (1989) and Cohen – Levinthal (1989) among others demonstrate that firms need also their own R&D investments because these firms are, firstly, more capable of generating their own innovations and, secondly, of exploiting more intensively external knowledge. Instead, the free ride effect is, however, noticed to reduce their own R&D funding, as noted by Grossman (1990): "Intra-industry and inter-industry spillovers are found together with the substantial evidence that firms reduce their own R&D expenditures when the opportunity to free ride on others increases".

Finally, the Baltic countries are dependent on the EU funding in R&D both at the public and the firm level. Grossman (1990) is helpful for discussing about the government's role in funding of R&D. Most industrialized countries already subsidize R&D in the forms of direct government grants to universities and think-tanks for basic research, grants to firms for certain types of applied research. As indicated earlier in stage I, after the re-independency and privatization programs the Baltic countries still lacked the required finance in order to acquire their own R&D funding. Even if the privatization programs were carried out by the selling method, the urgent need to finance other targets from the budget such as the social and health sector meant that funds for the national R&D programs were absent. However, it might be more efficient to utilize the firm-specific R&D activity because, according to Grossman (1990), government-funded research has been substantially less productive than projects financed by the firms themselves.

As examined in stage II, the link between finance and R&D investments can be emerged both at the institutional and firm levels. First, at the institutional level, the key target for the governmental regime is to guarantee a stable and viable environment for the financial institutions. Teece (1996) points out that well-functioning

capital markets should offer the multiple sources of funding, and in general, the R&D funding is basically based on the internal cash flow and new equity. This indicates that the Baltic stock markets are in a critical position by offering enough equity to be invested in the R&D of new product development because new firms had no internal cash flow. However, as earlier indicated, a snapshot from the Baltic stock markets appears to seem moderate. Since the beginning, the structure of the stock markets has been biased to shares of banking and service companies, and the investments to the industrial shares still seem to be low. Secondly, at the firm level, the capital market imperfections are replaced by the internal cash flow when possible, and therefore such a characteristic is typical for the large-scale firms. On the other hand, SME firms are more active in using the R&D spending and it is growing with the cash flow, and an increase in their leverage reduces the R&D intensities (Hall 1990, Hao – Jaffe 1990). The difference between SME and large-scale firms is that SME firms finance their R&D by debt and larger firms use equity (Acs –Isberg (1991). This argument indicates that if the volatility of the Baltic stock markets is led by the shares of the banking or service sector and the equity capital in the industrial sector is low, then in these circumstances the banking sector should find resources to finance the R&D investments of the SME firms.

6.3 Organizational Structure for Human Capital and R&D

Firm Size, Integration of R&D Assets and Success in Innovations

When considering the success in innovations, the organizational form is crucial for creating the high-powered incentives for the management. First, clear implications for the role of the organizational form and size with respect to the success in innovations is discussed in studies such as Holmström (1989), Aghion and Tirole (1994) and Teece (1996). Holmström (1989) shows that the small-scale firms are more active in innovative research compared to large-scale firms. The reason for such an outcome is that the research is highly expensive and mixing innovative tasks with routines might lead more easily to the misallocation of research resources in the large-scale firms.

About the relation of the integration and intellectual inputs, the research supports flexible networks but not vertical integration. Aghion and Tirole (1994) have formed a model which emphasized the organization of R&D activity when contracts are in-

complete. The model was based on the Grossman - Hart (1986) and they found several implications. First, if intellectual inputs dominate the incentives to innovate are higher when the research is allocated to the independent firms, and vice versa, the R&D activity is vertically integrated if the capital inputs dominate over the intellectual inputs. Second, if the multiple innovations emerge, then the property rights should be split based on their comparative advantage in creating value.

Moreover, Teece (1996) emphasizes that the formal and informal organizational structure is a more crucial determinant of innovation rather than only the product market structure. Complex forms of inter-firm agreements such as high-flex "Silicon Valley" and virtual –type firms might link their human resources & organizational capabilities, and lead to the higher rate and direction of innovations than traditional conglomerates and vertically integrated firms. The high-flex "Silicon Valley" and virtual-type forms might be recommended with the Milgrom-Roberts (1995) type of lean and flexible manufacturing in production. Such manufacturing is well suited to circumstances where the production runs are short and changes in production are frequent. The resource capabilities needed are the skilled workers with cross-training of both parties and product development includes cross-functional teams, and the decision making is based on the local information and self-regulation. It is well known that the legacy of the centrally planned - mass production without competition - period was extremely different from these modern types: the cultural gap is enormous. Because of the insolvency of the centrally planned industrial structure and high investment costs of reconstructing it to suit the EU competitive environment, these new modes of production with the small-scale industrial structure are highly recommended. When the Baltic countries seek to adapt to commercial operations and production modes, the case could be completely the opposite, which avoids the contracts of generating the costs of the hold-up problem.

Managerial Incentives, Outsourcing and Resource Capabilities

During this section, we have shown guidelines, which might improve managerial incentives because they play the key role when analyzing the outsourcing costs. Lastly the managerial incentives and skills resolve the success or failure of matching partners. As known from Grossman – Helpman (2002b), the success of outsourcing is dependent on how to minimize searching costs, customization costs and distance in expertise by improving the incomplete contracts between parties. When resource ca-

pability framework is evaluated in conjunction with the outsourcing approach, this provides several arguments for the EU-Baltic industrial integration as follows:

Firstly, searching costs might be reduced subject to their capability to join the international co-operation. The first required step is the advanced computer and communication technology with the skilled employees in order to find a partner among the EU final producers to fulfill their practical skills in firm-specific training programs.

Secondly, the customization costs and the distance in expertise are closely connected to each other. The reduction of customization costs needs the managerial capabilities to innovate to pick up the right production processes as well as the high-skilled employees of R&D and trained assembly workers. The distance in expertise might be minimized by, firstly, rapid technological progress where the externalities through the EU-Baltic R&D programs, and with the EU-Baltic industrial integration are crucial by generating technology transfer and imitation; secondly, creative destruction with the technological regimes where cumulativeness and appropriability are low but the role of applied sciences and externalities from the EU is at pivotal importance. In other words, in the EU-Baltic technological co-operation, the benefits of the spillover effect are highly advisable especially for the Baltic firms because it is the fastest way to mitigate the technology gap.

6.4 Specific Features about Governance for Innovation, Managerial Incentives and Contracting Environment after Stage III

This section examines the insights that might be useful to form a national innovation system for the Baltic counties in order to consider their joining the European Union. Several aspects are highlighted as follows:

High-skilled human capital and skill spillovers are the premises for the successful innovations and high-powered managerial incentives

High-skilled human capital is the strength of the Baltic innovation system. By furthering the progress of skilled human capital, the Baltic firms need close links with the high-technology EU firms and advanced EU technology programs. As is well known, the Baltic infrastructure already includes advanced computer and communication technology, which is needed for keeping up the learning economy paradigm, but it still requires, firstly, new organizational forms for the higher utilization of in-

novation resources in the EU-Baltic industrial integration, and secondly, strong support of education institutions in order to impact on innovation capabilities. That is the government policy that supports the advanced learning process by keeping up the education institutions, incentives for education and creative destruction in education.

Main guidelines for the resource capabilities of R&D are based on the technological regimes of creative destruction with EU externalities.

Based on our analysis, the suitable pattern for the innovation system in the Baltic countries is the model that supports creative destruction with the technological regimes where the role of applied sciences and externalities from the EU are in a key position. Baltic governmental regimes should be targeted for the rapid entry of new technologies, interactive R&D co-operation with the EU firms and technological programs. Moreover, the regimes should be focused more clearly on targets like education, information technology, EU technical standards, applied research and other parts of the knowledge infrastructure. The Baltic firms urgently need the R&D spillovers because it seems to be the fastest way to mitigate the technology gap. Finally, the Baltic countries are dependent on the EU funding in R&D both at the public and firm level. While large-scale firms can channel their cash flow and new equity to the R&D projects, the small-scale firms are more likely to finance their R&D spending with debt. Therefore, in these circumstances the banking sector should find resources to finance the R&D investments of the small-scale firms. That is because small-scale firms are more active to create new innovations and without public funding the finance should be channeled through the EU technology programs or as a by-product of industrial integration via the EU final producers.

New Baltic industrial structure should be encouraged to create modern forms of organization and modes of production

As previously discussed, the SME firms are more active in innovative research compared to the large-scale firms. Therefore the small-scale industrial structure is again more appropriate than the large-scale structure. The reason for such outcome is that the research is very expensive and mixing innovative tasks with routines might lead more easily to the misallocation of research resources in the large-scale firms. Another reason for this comes from the intellectual inputs, which are crucial for outsourcing: if intellectual inputs dominate, the incentives to innovate are higher when the research is allocated to the independent firms. The innovation system should

therefore be modern to encourage firms to form new modes of organization and production. The high-flex “Silicon Valley” and virtual-type of organization modes might be recommended with the lean and flexible manufacturing in production.

Moreover, managerial incentives play a central role when analyzing the outsourcing costs. Searching costs might be reduced subject to whose capability to participate in the international co-operation. When advanced computer and communication technologies are in efficient use, the management should fulfill the practical skills of the employees in the firm-specific training programs. Then, the customization costs rest on the managerial capabilities to innovate and pick the right production processes, and on the skill-biased employees of R&D and trained assembly workers. The distance in expertise might be minimized by the externalities through the EU-Baltic R&D programs, while the EU-Baltic industrial integration is crucial for generating technology transfer and imitation through the externalities.

6.5 Summation of the EU-Baltic Innovation System

Baltic Industrial Reorientation, Outsourcing and FDI: Main Foundations.

The Baltic industrial comparison shows that the Baltic success in competition and reorientation to the EU markets seems narrow. It rests mainly on the human capital-intensive electronics and telecommunication industry. Conceivably, the human capital-intensive electronics industry contains the clearest opportunities for industrial integration with the EU companies. However, the broader success might be reached by the low labor costs and hand-made skills in industries such as the food processing, textiles, machinery and wood industries. The leading country is Estonia followed by Latvia, while Lithuania’s industrial capacity seems to be the lowest.

When considering outsourcing, the Baltic countries have achieved only a half percent share of the EU total imports in intermediate products of machinery and transport equipment in 2000. The neighboring effect seems significant because the most significant outsourcing partners with the Baltic companies can be found from Finland and Sweden. More than two-thirds of the Estonian intermediate exports to Finland consist telecommunications equipment parts, and the role of Swedish industrial relations has increased since 1995. In addition, Latvian industry has lost its position with Germany

but increased the industrial integration with Sweden and Finland especially in telecommunication parts and components. Finland is the second largest intermediate product importer from Latvia after Germany. Swedish industry has a central role in Lithuania and Swedish outsourcing to Lithuania includes intermediate products to transporting and electronic machinery.

STAGE I

Macroeconomic Stabilization & Privatization: A First but not Complete Step.

The Baltic countries have followed the basic neoclassical path by stabilizing their macroeconomic environment. As a result, Estonia, Latvia and Lithuania have followed the proportionally contracted macroeconomic policy which has led to low inflation, stopped their output from falling and redirected it to the growth path, as well as stabilized their new currencies. Such stabilization was needed but it was only a basis for the industrial reorganization.

Over-sized Industrial Structure and no Domestic Wealth.

When considering an efficient industrial structure for innovation in the Baltic countries, the over-sized industrial firms compared to the size of the economy formed the high barriers to strengthen the flexibility, competitiveness and innovativeness of the SME industry.

We suggest that the direct sales used Estonia and partly Latvia as a primary privatization method were the most efficient way to split up these monopolies and find quick solutions with help of the foreign investors to restructure the viable part of the industry. The weakness of the Lithuanian privatization method seemed obvious because the government was unable to collect any funds for the purpose of supporting the technology transfer or emerging firms.

However, the privatization process is incomplete for solving the governance process in production and success for innovation. When considering the relation between the various privatization methods and a firm’s willingness to innovate, our outlook seems as follows. Privatization determined the basic rules to build up such governance inside the firms that might lead to the successful innovations, but it was unable to solve the governance approach itself. Comparing several privatization methods,

the direct sale method seems the most appropriate to change such an infrastructure the most rapidly. The voucher method seems inappropriate because it neglected to collect urgently needed financial funds and restructuring the financial institutions such as capital markets is time-consuming.

To analyze the relationship between the shortcomings in finance (absence of capital markets, soft budget problem, bad debt, bankruptcy procedures and validity of foreign investors) and innovative activity, then the direct sale method gives also the quickest way to find solutions to this approach.

Financial Governance and Politicians in Power.

As a result of the Baltic privatization programs, we infer that the influence of politicians was largest in Lithuania, where the privatization turned out to be less efficient. Instead, in Latvia and Estonia, a direct sale method produced quickly the independently working firms and it follows that a direct influence of the state officials on the firms' decision-making decreased radically. Moreover, let us consider the claim that politicians are constrained in making decisions that are politically sensitive, for example, by increasing unemployment. It seems that this claim has no evidence at least in Estonia, where the unemployment has decreased gradually, even if both in Lithuania and Latvia, it appears to stay at a relatively high level.

Financial Governance, Share Dispersion and Absence of Financial Institutions: Bank-based or Stock-based Financial Structure?

We maintain that a sound structure of financial institutions is a cornerstone for the Baltic innovation activity. We claim that the banking sector and foreign investors are the main sources for the Baltic firms. However, FDI mostly directed to the Visegrad countries and the small size of the domestic markets and rare domestic investors restricted the funds available. In addition, the direct sales privatization method solved the ownership dispersion problem in Estonia and Latvia but the situation might be more complex in Lithuania, where the investment voucher was the main privatization method. Even if it solved the dispersion problem, it has created a new one. Without the voucher method the availability of tradable shares stays more moderate in the Baltic stock markets than in the Visegrad stock markets. In spite of this, the average weekly returns are at the average level when comparing them to the Visegrad stock markets or even to the Western stock

markets, even if the Baltic market thinness with the high standard deviation in returns seems evident.

Financial Governance and Financing Imperfections.

In the Baltic countries, the soft budget constraint worked through the centrally planned product chain where, at the end of the command economy, the Baltic firms started to lack the required inputs to finalize their products. The soft budget constraint created the financial crisis because they were unable to obtain payments from other parts mainly from the Russian federation. Therefore, the Baltic firms suffered from the soft budgets but they were not creating the dilemma themselves.

There was one specific risk when using the bankruptcy procedure for the Baltic firms. In the beginning of the transition, most of the incapable firms were closed down. This process showed that the property of the firm was sold out to the Western countries at scrap value and employees disappeared to the other sectors. Such a process was a good example that the transition might lead to a rapid meltdown by cutting also the value of the better-functioning firms. For this reason, the bankruptcy procedure was recognized as the last measure because, with the bad debt problem, it would cause a large-scale crisis for the whole economy since the value mechanism of assets was under development. Therefore we propose that this instrument would give the right for the investors to close down the poor parts and then reorganize the more innovative parts of the firm. Market forces, competition and the threat of the bankruptcy together would be an efficient method for the governance in the Baltic countries.

Financial Governance and Foreign Investors.

In general, the reform programs carried out for example in Estonia led to the conclusion that the role of foreign investors seemed to be a remarkable cornerstone in the Estonian industrial restructuring process and they played a pronounced role especially in installing in the large-scale privatization. Therefore, the Estonian reform turned out to be a successful procedure for finding the core investors abroad, which could have been helpful in installing the new methods of corporate governance and managerial incentives as well as exposing Estonian firms to marked-based information, know-how and innovation networks. Such a policy is recommendable also to Latvia and especially to Lithuania even if there is a concern that, in the large-scale

privatization, the foreign investors might own the most viable part of the industry while the less competitive parts of the firms stay in state hands.

STAGE II

Institutional Framework and Tools for the Governance in Production.

Managerial incentives set the governance in production. We propose that the goal of the EU and Baltic outsourcing firms is to minimize the searching and customization costs, and the gap in technological expertise. To reach this goal we establish that the searching costs are mostly born from the institutional infrastructure and instead the firms themselves handle the customization costs by improving their incomplete contracts.

Step-by-step Institutional Reconstruction face Informal Constraints.

We have found out that Baltic institutions should be created in a spontaneous way and by taking into account the needs of the ever-changing and evolutionary transition process, and especially by breaking down informal constraints.

Quality of Legal System is a Key Signaling Procedure.

We claim that this approach is more than just to guarantee legally each other's obligations, and therefore it has also the signaling effect to the EU-Baltic integrating partners. The opinions above clearly suggest that a functioning legal system acts as a critical element for supporting the efficient, competitive and durable entrepreneurship. One difficulty between the Baltic and EU firms was the discrepancy in corporate law. With help of foreign expertise, the Baltic countries have been active to readopt their centrally planned laws at the commercial, financial and economic fields but they also adopted completely new market-based laws. Furthermore, they have actively harmonized their legislation with respect to the Internal Market of the European Union.

In general, the involvement of the free trade agreement improved the quality of the legal system. When considering the competitive viewpoints, the lowering of the trade barriers and allowing more liberal competition enhanced the progress of the privatization. The Baltic countries have taken an active part in negotiating their new trade agreements but in the future they will need more education and training to facilitate

the negotiation procedures with the EU and with other international organizations. The Baltic countries have successfully built the trade links with the rest of the world through a set of trade agreements such as GSP, MFN, “Europe agreements”, WTO and finally their EU accession procedures.

In sum, the Baltic countries had chosen rather free regulations in the international trade, which is a positive signal for further trade and industrial relations between the EU and Baltic firms. After joining the EU, it will be the training process and more education and training are needed so that the Baltic countries can utilize the advantages of the enlarged Europe.

Functional Institutional Framework has a Positive Impact on Outsourcing Costs and Distance in Expertise.

This argument works with two indirect channels. The first is that the government can be active in building the serviceable communication infrastructure that reduces the searching costs in contracting between parties. When the industrial activity in the Baltic countries is concentrated around their capitals (Riga, Tallinn and Vilnius), this means there are advantages in building infrastructure such as airports, accommodation and telecommunication around these regions. Owing to their geographical location, the Baltic countries have functioning transport connections via the Baltic Sea. The location is favorable for transit traffic both in the east-west direction to Russia as well as in the north-south direction between Northern and Central Europe.

Another channel for reducing customization costs and distance in expertise rests on the workable education and R&D policy. As regards the advantages of the Baltic education level, according to ISCED standards, university-level teaching is considered as being theoretically advanced and capabilities in natural sciences and some fields of engineering are strong. Possible mechanisms of retraining are apprenticeship programs, joint research projects of firms and universities as well as firms’ own training programs in areas such as industrial processes and material handling, accounting and techniques of quality management. Co-operation in education systems can be developed internationally so that the Baltic workers could be trained in Western companies abroad.

As indicated above, the R&D policy including technology transfer offers one of the needed institutional frameworks for the diffusion of technology in the Baltic firms.

There is still an urgent need for the institutions to support R&D activities, and education was and still is essential to enforce consolidation of labor-market institutions, skill-adjustment, technology transfer and industrial R&D because the highly educated R&D personnel is disappearing to the other sectors. Then Baltic governments have an increasing challenge after joining the EU to support new R&D investments in the emerging industrial fields and form the training programs to the new R&D directions. The co-operation and participation with the EU as well as international scientific-technical co-operation and training programs might be the cornerstone of Baltic R&D success in the near future. The final goal is to create their own industrial identity so as to produce their own final products for the enlarged EU markets.

As can be found from the Baltic industrial integration process, the SME Baltic firms benefit from the technological progress when they subcontract with the large-scale multinationals which have already gone through the international competitive pressure. That is, the Baltic firms cannot stay in a passive role during the integration process because they should take an active role to form their own industrial identity. Even if some parts, such as the Baltic electronics, have been proclaimed as one of the flagships of the centrally planned industrial base, most of the Baltic production machinery still needs new technological investments because the ongoing technology fails to fulfill the western quality and productivity levels.

STAGE III

The quality of schooling rather than quantity is one of the main sources of the long-rate growth.

We suggest that in Baltic circumstances the endogenous growth effect might work: a small open economy with slightly higher human capital than in the rest of the world starts to trade with the intermediate goods, its investment in human capital can give an ever-increasing impact on growth. We argue that, in the Baltic countries, the advantages of EU industrial integration might be higher than the effects of integration in the EU countries, because small economies are more flexible to adapt R&D-intensive production compared to larger applying CEE economies.

High-skilled Human Capital is a Key Resource in the EU-Baltic Integration.

Such a tendency is a signal to Baltic firms that skilled personnel act as a key factor in the EU outsourcing process and this generates the final producers' incentives to

search for their conceivable partners from such a region, and Baltic firms might be better off by finding more profitable contracts with the EU final producers.

Skill Spillovers Need a Critical Mass.

When the successful spillovers take place in regions in which similar types of firms work as clusters, the Baltic capitals, Tallinn, Riga and Vilnius, fulfill such a purpose. However, to become such a regional cluster the learning economies or regions need international R&D integration and in that way cross-border skill spillovers. Baltic institutional change should move towards such a learning economy and clustering industries with high rate of knowledge turnover and fast change in total knowledge stock.

Success in R&D might be found from Technological Regimes and EU-Baltic Innovation Systems.

We maintain that the suitable pattern for the innovation system in the Baltic countries is the model that supports creative destruction with the technological regimes where cumulativeness and appropriability are low but the role of applied sciences and externalities from the EU is found to be remarkable.

Externalities might be helpful with rapid technological change and EU-Baltic Co-operation both at the Institutional and Firm Level.

Especially in the Baltic countries, the innovations need interactive R&D co-operation with the EU firms and technological programs, and without adaptation of the Baltic institutions the growth of innovative activity might be moderate. The co-operation should be focused more clearly on targets that match with the production sector, such as education, information technology, EU technical standards, applied research and other parts of knowledge infrastructure.

In relation to EU-Baltic technological co-operation, the benefit of the spillover effect is one of the clear externalities, and highly advisable for the Baltic firms because it might be the fastest way to mitigate the EU technology gap. As found above, international dissemination of new ideas and technologies takes place by international industrial integration and through the operations of multinational corporations, and the spillover effect is positively related to efficiency gains both in intra-industry and inter-industry spillovers.

Finance of R&D Projects is in a Pivotal Position.

After the re-independency and privatization programs the Baltic countries still lacked the required finance in order to acquire their own R&D funding. Even if the privatization programs were carried out by the selling method, the urgent need to finance other targets from the budget such as the social and health sector meant that funds for the national R&D programs were absent. We know from the Western markets that well-functioning capital markets should offer multiple sources of funding, and in general, the R&D funding is mainly based on the internal cash flow and new equity. This indicates that the Baltic stock markets are in a critical position by offering enough equity to be invested in the R&D of new product development because new firms had no internal cash flow. However, as earlier indicated, because of the imperfections in the Baltic stock markets where the equity flows to offer the needed funding to the industrial sector, then in these circumstances the banking sector should find resources to finance the R&D investments of the SME firms.

The Organizational Framework should be based on the High-Flex and Virtual Type of Forms with Lean and Flexible Manufacturing in Production.

Our analysis indicates that the SME firms are more active in innovative research compared to large-scale firms. About the relation of the integration and intellectual inputs, the research finds indications against vertical integration and for flexible networks. The high-flex “Silicon Valley” and virtual type of forms might be recommended with the lean and flexible manufacturing in production. Such manufacturing is well suited to circumstances where the production runs are short and changes in production are frequent. When the Baltic countries seek to adapt to commercial operations and production modes it could be completely the opposite, which avoids the contracts of generating the costs of the hold-up problem.

References:

Acs, Z. – S. Isberg (1991): Innovation, Firm Size and Corporate Finance, Economic Letters, 35.

Aghion, P. – O. Blanchard – R. Burgess (1994): The Behavior of State Firms in Eastern Europe, Pre-privatization, European Economic Review, 38.

Aghion, P. – P. Howitt (1992): A Model of Growth Through Creative Destruction, Econometrica, 60.

Aghion, P. – J. Tirole (1994): The Management of Innovation, Quarterly Journal of Economics, 109.

Baldwin, R. (1989): The Growth Effects of 1992, Economic Policy, 9.

Baldwin, R. – P. Martin (1998): Two Waves of Globalization: Superficial Similarities, Fundamental Differences. Paper presented at the Kiel Conference on Globalization and Labor, Kiel, June 1998.

Berg, B. (1997): Estonian Industry as a Part of European Industrial Structure, in Berg (ed.) Estonian Economy and European Integration, ETLA C 75; Helsinki, Finland.

Berman, E. – J. Bound – S. Machin (1998): Implications of Skill-Biased Technological Change: International Evidence, Quarterly Journal of Economics, 113 (4).

Blanchard et al. (1990): Reform in Eastern Europe, Cambridge, Mass.

BOFIT (2002), Bank of Finland, Institute for Economies in Transition, Reviews.

Borenstein, E. – M. Kumar (1990): Proposals for Privatization in Eastern Europe, IMF Staff Papers, vol. 38, 2.

Bouin, O. (1993): Privatization in Czechoslovakia, in Ramanadham (ed.), Privatization, A Global Perspective.

Boycko, M. – A. Schleifer – R. Vishny (1993): Privatising Russia, Brooking Papers on Economic Activity, 2.

Breschi, S. – F. Malerba – L. Orsenigo (2000): Technological Regimes and Schumpeterian Patterns of Innovation, The Economic Journal, 110.

CCET (1994): Trends and Policies in Privatization, OECD, Paris.

Cohen, W. – D. Levinthal (1989): Innovation and Learning: The Two Faces of R&D – Implications for the Analysis of R&D Investment, Economic Journal, 99.

Cohen, W. (1995): Empirical Studied of Innovative Activity, in Stoneman (ed.), Handbook of the Economics of Innovation and Technological Change, Blackwell, Oxford.

Cowling, K. (1990): A New Industrial Strategy, International Journal of Industrial Organization, 8, North-Holland.

Dalum, B. – B. Johnson – B. Lundvall (1992): Public Policy in the Learning Economy, in Lundval, (ed.), National Systems of Innovation, London.

EBRD, (2000): Transition Report 2000; Employment, Skills and Transition, European Bank for Reconstruction and Development.

Edwards, J. – M. Nibler (2000): Corportae Governance in Germany: the Role of Banks and Ownership Concentration, Economic Policy.

European Economy (1994): Private Capital Flows to CEE's and NIS, No. 3.

Fama, E. – M. Jensen, (1983): Separation of Ownership and Control, Journal of Law and Economics, 26.

Franks, J. - C. Mayer, (1990): Corporate Ownership and Corporate Control: A Study of France, Germany, and the UK, Economic Policy, 10.

Freeman, C. (1994): Innovation and Growth, in Dodgson – Rothwell (eds.), The Handbook of Industrial Innovation, Cornwall.

Frydman, R – A. Rapaczynski (1990): On Privatizing Privatization: A New Proposal of Ownership Transformation in Poland, mimeo.

Frydman, R – A. Rapaczynski (1991): Privatization and Corporate Governance in Eastern Europe: Can a Market Economy be Designed? in Winckler (ed.), Central and Eastern Europe Roads to Growth.

Frydman, R. – A. Rapaczynski (1993): Insiders and the State: Overview of Responses to Agency Problems in East European Privatizations, Economic of Transition, vol. 1(1).

Frydman, R. – E. Phelps – A. Rapaczynski – A. Schleifer (1993): Needed Mechanisms of Corporate Governance and Finance in Eastern Europe, Economic of Transition, vol. 1(1).

Geroski, P. – A. Jacquemin (1985): Industrial Change, Barriers to Mobility, and European Industrial Policy, Economic Policy, 1.

Goodhart, C. (1994): Banks and the Control of Corporation, Economic Notes by Monte dei Paschi di Siena, 23.

Gray, C. (1996): In Search of Owners: Privatization and Corporate Governance in Transition Economies, The World Bank Research Observer, vol. 11.

Gregersen, B. – B. Johnson (1997): Learning Economies, Innovation Systems and European Integration, Regional Studies, 31.

Griliches, Z. (1991): The Search for R&D Spillovers, NBER Working paper No. 3768.

Groenewegen, J. (1997): Institutions of Capitalism: American, European, and Japanese Systems Compared, Journal of Economic Issues, June.

Grosfeld, I. (1994): Financial Systems in Transition: Is There a Case for Bank Based System? CEPR Discussion Paper No. 1062.

Grossman, G. (1990): Promoting New Industrial Activities: A Survey of Recent Arguments and Evidence, OECD Publications.

Grossman, S. - O. Hart (1986): The Costs and benefits of Ownership: a Theory of Vertical and Lateral Integration, Journal of Political Economy, 94.

Grossman, G. – E. Helpman (1991a): Innovation and Growth in the Global Economy, The MIT Press, Cambridge.

Grossman, G. – E. Helpman (1994): Endogenous Innovation in the Theory of Growth, Journal of Economic Perspectives, 8.

Grossman, G. – E. Helpman (2002a): Integration versus Outsourcing in Industry Equilibrium; Quarterly Journal of Economics, 117.

Grossman, G. – E. Helpman (2002b): Outsourcing in a Global Economy, Centre for Economic Policy Research Discussion Papers No. 3165.

Grossman – Helpman (2002d): Managerial Incentives and the International Organization of Production, NBER Working Paper No. 9403.

Grossman, S. – O. Hart (1986): The Costs and benefits of Ownership: a Theory of Vertical and Lateral Integration, Journal of Political Economy, 94.

Hall, B. (1990): The Impact of Corporate Restructuring on Industrial Research and Development, Brookings Papers on Economic Activity.

Hao, K. – A. Jaffe (1990): The effect of Liquidity on Firms' R&D Spending, Discussion Paper 1492, Harvard Institute of Economic Research.

Hart, O. (1983): The Market Mechanism as an Incentive Scheme, Bell Journal of Economics, 14.

Hernesniemi, H. – J. Hyvärinen (1995): Industrial Strategies for Lithuania, (Nordic Council of Ministers, seminar report), ETLA.

Holmström, B. (1982): Managerial Incentives Problems: A Dynamic Perspective. In Essays in Honor of Lars Wahlbeck. Helsinki: Swedish School of Economics.

Holmström, B. (1989): Agency Costs and Innovation, Journal of Economic Behavior and Organization, 12.

Holmström, B. – J. Tirole, (1989): Theory of the firm, in Schmalensee – Willig (eds), Handbook of Industrial Organization. Amsterdam: North-Holland.

Hunya, G. (1991): Speed and Level of Privatization of Big Enterprises in Central and Eastern Europe - General Concepts and Hungarian Practice WIIW, Discussion papers No: 176.

Hunya, G. (1993): Foreign Direct Investment and Privatization in Central and Eastern Europe, WIIW; no. 145, Vienna.

Hyvärinen, J. (1996): A Survey of Corporate Governance - Which Model for Transition Countries? ETLA – Discussion Papers, No. 557.

Hyvärinen, J. (2001): Siirtymätalousmaiden teollisuuden ja rahoitusjärjestelmän jälleenrakentaminen, Lisensiaatintyö: Rahoitusinstituutiot ja yritysten hallinnointi – kansainvälinen vertailu, LTKK.

Hyvärinen, J. – J. Borsos (1994): Emerging Estonian Industrial Transformation - Towards a Dual Industrial Strategy for Estonia, C 68-series, ETLA.

Hyvärinen, J. – H. Hernesniemi (1995): Industrial Strategies for Latvia (Nordic Council of Ministers, seminar report), ETLA.

Jensen, M. – W. Meckling (1976): Theory of the Firm: Managerial Behavior, Agency Costs, and Capital Structure. Journal of Financial Economics, 3.

Johnson, B. – B. Gregersen (1995): Systems of Innovation and Economic Integration, Journal of Industrial Studies, 1.

Kilvits, K. – T. Kuus – J. Laving – T. Puss, U. Venesaar – M. Viies – E. Vitsur (1997): Estonian Economy and Role in the International Division of Labor, in Berg (ed.) Estonian Economy and European Integration, ETLA C 75; Helsinki, Finland.

Kornai, J. (1979): Resource-constrained versus Demand Constrained Systems, Econometrica, 47.

Laffont, J. – J. Tirole (1993): A Theory of Incentives in Procurement and Regulation, The MIT Press, Massachusetts.

Lainela, S. (1995): Baltian maat vuonna 1994, Review of Economies in Transition, 1/1995, Bank of Finland.

Latvian Ministry of the Economy (1994): Publications.

Link, A. (1982): A Disaggregated Analysis of Industrial R&D: Product versus Process Innovation, in Sahal (ed.), The Transfer and Utilization of Technical Knowledge, Lexington.

Lipton, D. – J. Sachs (1990): Creating a Market Economy in Eastern Europe: The Case of Poland, Brooking Papers of Economic Activity.

Lithuanian Investment Agency (1995): Publications.

Lundwall, B. – B. Johnson (1994): The Learning Economy, Journal of Industrial Studies, 1.

Machin, S. – J. Reenen (1998): Technology and Changes in Skill Structure: Evidence from Seven OECD Countries, Quarterly Journal of Economics, 113 (4).

Malerba, F. – L. Orsenigo (1990): Technological Regimes and Patterns of Innovation: A Theoretical and Empirical Investigation of the Italian Case, in Heertje – Perlman (eds.), Evolving Technologoies and Market Structure, Michigan.

Malerba, F. – L. Orsenigo (1993): Technological Regimes and Firm Behaviour, Industrial and Corporate Change, 2.

Mansfield, E. (1981): Composition of R&D Expenditures: Relationship to Size, Concentration, and Innovation Output, Review of Economics and Statistics, 62.

Markusen, J. (1995): The Boundaries of Multinational Enterprises and the Theory of International Trade, Journal of Economic Perspectives, 9.

Markusen, J. – A. Venables (2000): The Theory of Endowment, Intra-Industry and Multinational Trade, Journal of International Economics, 52.

Mejstrik, M. (1992): Privatization in Czechoslovakia, in Ramanadham (ed.), Privatization: A Global Perspective.

Mihalyi, P. (1993): Privatization in Hungary: An overview, in Privatization in the Transition Process, Recent Experiences in Eastern Europe. United Nations.

Milgrom, P. – J. Roberts (1995): Continuous Adjustment and Fundamental Change in Business Strategy and Organization, in Siebert (ed.) Trends in Business Organization: Do Participation and Cooperation Increase Competitiveness?, Tübingen.

Mladek, J. – I. Hashi (1993): Voucher Privatization, Investment Funds and Corporate Governance in Czechoslovakia, British Review of Economic Issues, vol. 15, 37.

Mowery, D. – N. Rosenberg (1989): Technology and the Pursuit of Economic Growth, Cambridge.

Nadiri, W. (1993): Innovations and Technological Spillovers, NBER Working Paper 4423.

Nelson, R. – S. Winter (1982): An Evolutionary Theory of Economic Change, Cambridge Mass.

North, D. (1991): Institutions, Institutional Change and Economic Performance, Cambridge University Press.

North, D. (1997): The Contribution of the New Institutional Economics to and Understanding of the Transition Problem, UNU/WIDER, Helsinki, Finland.

OECD (1992): Reforming the Economies of Central and Eastern Europe, OECD, Paris.

Pajarinen, M. – P. Rouvinen – P- Ylä-Anttila (1998): Small Country Strategies in Global Competition – Benchmarking the Finnish Case, ETLA B144, Helsinki.

Parker, D. (1993): Unvelling the Planned Economy: Privatization in Czecho-Slovakia: Communist Economies of Economic Transformation, Vol. 5. No. 3.

Porter, M. (1998): The Competitive Advantage of Nations, London.

Prowse, S. (1995): Corporate Governance in an International Perspective: A Survey of Corporate Control Mechanisms Among Large Firms in the U.S., U.K., Japan and Germany, Financial Markets, Institutions and Instruments, vol. 4, 1.

Rowthorn, B. – H. Chang (1993): Public Ownership and the Theory of the State, in Clarke – Pitelis (eds.), The Political Economy of Privatization, London.

Rumpunen, J. (1997): Eastern Enlargement of the European Union, in Berg (ed.) Estonian Economy and European Integration, ETLA C 75; Helsinki, Finland.

Sadowski, P. (1992): Privatization in Eastern Europe: Goals, Problems, and Implications. Oxford Review of Economic Policy, 7.

Sappington, D – J. Stiglitz (1987): Privatization, Information and Incentives, Journal of Policy, Analysis and Management, 6.

Scherer, F. (1991): Changing Perspectives on the Firm Size Problem, in Acs – Audretsch (eds.), Innovation and Technological Change: An International Comparison, New York.

Schleifer, A. - R. Vishny (1986): Large Shareholders and Corporate Control. Journal of Political Economy, 94.

Shapiro, C. – R. Willig, (1990): Economic Rationales for the Scope of Privatization, Olin Program Discusson Paper 41, Woodrow Wilson School, Princeton University.

Sharp, M. (2001): The Need for New Perspectives in European Commission Innovation Policy, in Archibugi – Lundvall (eds.), The Globalizing Learning Economy, Oxford.

Sheard, P. (1989): The Main Bank System and Corporate Monitoring and Control in Japan, Journal of Economic Behavior and Organization, 11.

Smith, K. (1996): Economic Infrastructures and Innovation Systems, in Edquist (ed.) (1997) Systems of Innovation: Technologies, Institutions and Organizations, London.

Stark, D. (1992): Path Dependence and Privatization Strategies in East Central Europe, East European Politics and Societies, Vol. 6, No. 1.

Statistical Office of Estonia (1999), Publications.

Stiglitz, J. (1991): Some Theoretical Aspects of the Privatization: Applications to Eastern Europe, in Baldassari – Paganetto – Phelps (eds.), Privatization Processes in Eastern Europe - Theoretical Foundations and Empirical Results, St. Martin's Press, Rome.

Stokey, N. (1991): Human Capital, Product Quality, and Growth, Quarterly Journal of Economics.

Svejnar, J. – M. Singer (1994): Using Vouchers to Privatize an Economy: the Czech and Slovak Case. Economics of Transition, 2.

Teece, D. (1996): Firm Organization, Industrial Structure, and Technological Innovation, Journal of Economic Behavior & Organization, 31.

United Nations (1999): World Investment Report 1999: Foreign Direct Investment and the Challenge of Development, New York and Geneva.

United Nations (2003): World Investment Directory online, UNCTAD.

Van Arkadie, B. – M. Karlsson (1992): Economic Survey of the Baltic States; Ministry of Foreign Affairs, Sweden. Published and printed by Printer publishers Ltd., London.

Vickers, J. – G. Yarrow (1988): Privatization: An Economic Analysis. Cambridge, MA: MIT Press.

Vickers, J. - G. Yarrow (1991) Economic Perspectives on Privatization, Journal of Economic Perspectives, 5.

Williamson, O. (1985): The Economic Institutions of Capitalism, New York.

Williamson, O. (1992): Private Ownership and the Capital Market.

Winiecki, J. (1992): Privatization in Poland: A Comparative Perspective, Kiel Studies, No. 248, Institute of World Economics, Germany.

Winter, S. (1984): Schumpeterian Competition in Alternative Technological Regimes, Journal of Economic Behavior and Organization, 5.

Winter, S. (1987): Knowledge and Competence as Strategic Assets, in Teece (ed.) The Competitive Challenge: Strategies for Industrial Innovation and Renewal, Cambridge Mass.

World Bank (1993): Country Study, Estonia, the Transition to a Market Economy, Washington.

Zhang, K. – J. Markusen (1999): Vertical Multinational and Host Country Characteristics, Journal of Development Economics, 59.

Appendix

Appendix 1. CEE Shares of EU Exports and Imports in 2000

	Share of EU exports to CEE in parts and components	Share of EU imports from CEE in parts and components	Share of EU exports to CEE in manufacturing (SITC7)	Share of EU imports from CEE in manufacturing (SITC7)
Bulgaria	0.1	0.1	0.3	0.1
Cyprus	0.1	..	0.1	0.0
Czech Republic	2.7	3.4	2.3	2.6
Estonia	0.4	0.3	0.3	0.3
Hungary	4.3	4.0	2.5	3.7
Lithuania	0.1	0.0	0.2	0.1
Latvia	0.1	0.0	0.2	0.0
Malta	0.1	0.0	0.2	0.1
Poland	2.5	1.7	3.0	2.2
Romania	0.5	0.4	0.6	0.4
Slovak Republic	1.1	0.7	0.8	1.0
Slovenia	0.6	0.7	0.7	0.6
Total	12.6	11.4	11.3	11.0

Source: COMTRADE

Appendix 2. CEE Exports and Imports with EU in Parts and Components, Million EUR

Imports from EU	1993	%	1995	%	1997	%	2000	%
Bulgaria	..	..	..	..	98.1	1.1	163.8	1.1
Cyprus	57.0	2.6	62.5	1.4	77.4	0.9	122.7	0.8
Czech Republic	529.1	24.4	1374.4	30.4	1986.1	21.9	3221.1	21.0
Estonia	..	..	166.9	3.7	247.9	2.7	461.6	3.0
Hungary	485.4	22.4	630.7	14.0	2330.2	25.7	5169.0	33.7
Lithuania	..	..	67.0	1.5	131.7	1.5	135.5	0.9
Latvia	..	..	48.3	1.1	81.7	0.9	177.4	1.2
Malta	83.6	3.9	84.6	1.9	99.4	1.1	105.4	0.7
Poland	562.3	26.0	1186.1	26.3	2334.7	25.7	3019.9	19.7
Romania	169.1	7.8	269.7	6.0	317.4	3.5	643.4	4.2
Slovak Republic	..	..	195.0	4.3	811.6	8.9	1377.6	9.0
Slovenia	278.2	12.9	430.2	9.5	560.3	6.2	728.3	4.8
Total	2164.7	100.0	4515.4	100.0	9076.6	100.0	15325.8	100.0

Exports to EU	1993	%	1995	%	1997	%	2000	%
Bulgaria	..	..	..	..	36.1	0.7	62.9	0.5
Cyprus	1.2	0.1	2	0.0	2.5	0.0	..	..
Czech Republic	280.0	24.1	1214	38.6	1643.0	31.0	3764.8	30.0
Estonia	..	..	107	3.4	175.6	3.3	353.0	2.8
Hungary	384.7	33.1	739	23.5	1553.0	29.3	4431.9	35.4
Lithuania	..	..	5	0.2	10.1	0.2	24.6	0.2
Latvia	..	..	9	0.3	22.2	0.4	13.2	0.1
Malta	24.3	2.1	55	1.7	44.1	0.8	53.9	0.4
Poland	209.3	18.0	451	14.4	837.7	15.8	1874.7	15.0
Romania	20.0	1.7	79	2.5	128.1	2.4	468.9	3.7
Slovak Republic	..	..	148	4.7	454.0	8.6	768.2	6.1
Slovenia	244.1	21.0	336	10.7	397.1	7.5	716.5	5.7
Total	1163.5	100.0	3144	100.0	5303.5	100.0	12532.8	100.0

Source: COMTRADE

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