

THE IMPACT OF ECONOMIC OPENNESS ON INTERNET DIFFUSION IN ESTONIA AND SLOVENIA

Master of Arts in Law and Diplomacy Thesis

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ABSTRACT

The importance of facilitating increased Internet diffusion has become widely recognized by policymakers in transition and developing countries. Wider use of the Internet will foster both economic and political development. Based on the case studies of Estonia and Slovenia, this thesis proposes that the best way to encourage Internet diffusion in transition and developing economies is through the privatization of an incumbent telecom company and opening the telecom market. Securing maximum openness and fair play in the telecom sector requires the establishment of a truly independent telecom regulatory agency. Telecom regulators need to become more independent and stay free of political interventions. This thesis recommends these policies be combined with liberal trade and foreign direct investment regimes.

1. INTRODUCTION

Estonia and Slovenia stand out among countries in Central and Eastern Europe (CEE) for having the highest Internet penetration¹ rates in the region. Not only have they been quicker than many other CEE countries to adopt the use of Internet, Estonia and Slovenia have also outperformed half of the European Union (EU) member countries. Considering the transformation undergone by Estonia and Slovenia in the 1990s and 2000s, from a command economy to a market economy, their success in terms of Internet diffusion poses a challenging public policy puzzle. Despite their specific success, the relevance of the issue is not limited to Estonia and Slovenia alone; putting together the pieces of this puzzle can lead to fascinating lessons for other transition and developing economies by providing a better understanding of policies that facilitate the diffusion of information technology. Why have these two countries with substantially different economic policies and paths of transition achieved the same outcome in *per capita* Internet penetration rates?

Slovenia inherited the best economic starting position in Central and Eastern Europe. The Yugoslav brand of socialism was much milder than in any other part of the Eastern bloc. Slovenia, in particular, benefited from the looser economic control, gaining Western technology transfer as well as engagement in international trade. By the 1970s, it had the most advanced telecom infrastructure in Eastern Europe and a strong IT-skill base started to emerge. Currently, Slovenia's per capita Gross Domestic Product (GDP) of USD 9,400 is significantly higher than that of any other applicant country and equals that of the EU's poorest countries. Its economic transition in the 1990s allows characterization of Slovenia as a "gradual transformer" that used

¹ The terms Internet penetration and Internet diffusion will be used interchangeably for the purposes of this article. In the context of the article, Internet diffusion refers to the number of Internet users in a country per 10,000 inhabitants. All the data concerning the number of Internet users per 10,000 inhabitants is collected from various sections of the International Telecommunications Union website.

incremental changes to better exploit its advantageous starting position. Hence, Slovenia's high *per capita* Internet penetration rate is an outcome of its wealth and advanced starting position.

In the case of Estonia prior to the collapse of the Soviet Union, the transfer of Western technologies was not possible due to export controls set by NATO members and Japan. Estonia's rapid utilization of Western technologies and emergence of new infrastructure were outcomes of radical economic opening and reform of its public sector. Free market reforms in the 1990s consisted of a very liberal foreign direct investment regime, unilateral free trade, and low taxes. Most importantly, with a *per capita* GDP two and a half times lower than that of Slovenia, Estonia makes the case that the Internet can be diffused and utilized in countries with different levels of wealth.

Interestingly, the vastly different economic policies of the two countries yielded the same result in *per capita* Internet penetration rates. This thesis aims to analyze the factors that contributed to this outcome. First, an outline of the core literature will be presented, followed by a hypothesis and description of methodology. Characteristics of Internet diffusion in the CEE will be presented. Second, assessment of the characteristics of public policies of Estonia and Slovenia will be made. Based on these comparisons, the thesis will then develop a conclusion and offer some policy implications for increasing Internet diffusion in transition and developing countries.

2. LITERATURE REVIEW

2.1 Literature on Economics, Policy and Technology Diffusion

An underlying theme in trade policy literature is that trade protectionism reduces the benefits of technology transfer for small countries (Dollar 1993, 434). It also decreases adoption incentives created by network, market power and learning externalities (Besley and Case 1993, 399). In

addition, most economists view unilateral free trade as an optimal trade policy for small countries. Depending on the particular sector, industry and countries, trade and foreign direct investments can be viewed as substitutes and complements. The mere possibility that foreign direct investment can be a substitute for trade leads one to explore the relations between trade and FDI regime in contributing to the diffusion of the Internet.

As trade openness and liberal FDI regime contribute to the increase in economic welfare, it logically follows that a strong correlation exists between the rate of per capita Internet penetration and level of economic development, as has been suggested in several studies (Arnum and Conti 1998, Kiiski and Pohjola 2001, Beilock and Dimitrova 2003). Many studies indicate that per capita Gross Domestic Product (GDP) is the key determinant of per capita Internet penetration rates. Kiiski and Pohjola (2001) use a sample of OECD countries to demonstrate that per capita GDP and the cost of Internet access best explain the observed growth in computer hosts in per capita terms. Beilock and Dimitrova (2003) investigated Internet diffusion in 105 countries, and their statistical analysis confirmed many previous studies that per capita income was the most important determinant of Internet usage rates. Two other determinants were openness of a society (defined as a non-economic factor) and level of infrastructure development (Beilock and Dimitrova 2003).

However, some studies question the significance of national income in explaining the Internet penetration rates. Dasgupta and others (2001) conclude on the basis of econometric analysis that income differentials do not explain the digital divide between countries. They explain that digital divide is not really new but reflects the persistent gap in main telephone lines. The authors demonstrate that competition policy matters a great deal given that low-income countries with high World Bank ratings for competition policy have a significantly higher

number of Internet subscriptions per main telephone line. Therefore, “feasible reforms could sharply narrow the digital divide during the next decade for many countries in Africa, Asia and Latin-America” (Dasgupta et al 2001, 15).

An essential element of effective competition policy in the telecom sector is the establishment of an independent regulatory agency. The more independent the regulator is from political intervention, the more effective the regulator will be in ensuring fairness to market entrants and the more effective the competition will be (Taylor 2002). This is particularly important if the state is an owner or a sole owner of the incumbent telecom company, a situation that creates conflicts of interests and temptations for politicians to intervene in competition policy for the benefit of vested interests. As stated by Heimler, “by placing ‘distance’ between regulators and regulated companies, there is a gain in transparency, but also in the efficiency of the controlling function” (Heimler 2000, 189). Such an independent regulatory agency is crucial for reducing collective action costs in implementing sound competition policy.

This brief overview of some recent studies, which aims to explain the outcomes in the Internet diffusion and assign a great significance to economic factors, does not include all the arguments that have been made in explaining the rate of Internet diffusion. However, these studies do explain the main findings by helping understand the contribution made by the determinants of Internet diffusion. On the balance, it is striking that many of the key determinants are correlated. For example, trade openness may lead to an increase in GDP, which in turn may lead to investments in infrastructure, thereby making the Internet more accessible for the general population. Other scenarios are possible on the basis of key factors outlined by the recent research.

One of the key questions is whether or not policy reforms can make a significant difference in terms of Internet diffusion despite differences in national income. The finding that per capita GDP is the key determinant of per capita Internet penetration rates has relatively little policy relevance. Logically, it would follow that the only way to increase Internet penetration rates would be by growth in GDP. However, narrowing the wealth gap between developed and developing countries may take decades. Hence, conclusions put forth by Dollar (1993) that trade protectionism reduces benefits of technology transfer and Dasgupta et al (2001) that policy reforms can make significant difference will lead to further exploration of the literature on policy reforms and institutions, particularly in the context of transition economies.

2.2 Literature on Political Economy, Institutions and Transition

The comparison of Slovenia and Estonia relates directly to the debates in international and comparative political economy addressing the ability of social democratic corporatist and free market countries to achieve similar or same outcomes in their relative performance (Garrett 1998). It also links to the issue of whether social democratic corporatist systems are exceptional in their ability to internalize the negative externalities of labor unions power from the perspective of neoclassical economic theory (Olson 1982).

In addition, this thesis will look beyond such formal categories as Gross Domestic Product (GDP), Foreign Direct Investments (FDI) and so on by considering the path-dependent factors from the previous systems, institutional design of polity and economy, and institutional changes that have been crucial in achieving these particular outcomes in Internet diffusion. The thesis centers on the central themes of neoinstitutionalist discourse in economics, political science and other social sciences by analyzing the role of institutions in the performance of economies (North 1990, Knight 1992). More specifically, North (1994) has argued that the

broader institutional framework of countries should be taken account in the process of privatization.

Furthermore, by discussing the effectiveness of regulation, privatization, liberalization and other government policies, direct or indirect, in the context of Internet diffusion, the theories of market and public sector failures in particular and role of government in economy in general should be taken into account (Buchanan & Tullock 1962, Vogel 1996). The collective action literature highlights the difficulties in promoting general interests and the potential for regulatory capture by interest groups (Olson 1971).

The last decade has seen a rapid increase in academic research on the transition from socialism to a market economy and democracy. As the countries studied are transition economies, the research will also borrow key themes from this inquiry. Specifically, discussions on costs and benefits of gradual transition and radical across-the-board economic opening will be taken into account (Balcerowicz 1995). The connection between Internet diffusion and economic opening of former socialist economies will be addressed in particular. The degree of opening is reflected in their respective trade and foreign direct investment policy regimes. This discussion is also introduced by literature that analyzes the impact of “creative destruction” in these economies and the balance between security of existing organizations and innovation that is encouraged by displacement and challenges to the existing organizational structures (Schumpeter 1975).

3. HYPOTHESIS

Following the discussion of the literature above, the paper develops the hypothesis that economic openness is a key variable in explaining the level of per capita Internet diffusion in the former socialist economies of Central and Eastern Europe. As was already pointed out in the

introduction and will be demonstrated in Chapter 5 of the thesis, wealth cannot explain the level of Internet diffusion in the two cases studied in particular and the CEE in general.

Economic openness is defined broadly and refers to both overall openness of economy and openness in the telecom sector. Concrete indicators of economic openness will be discussed in methodology chapter of the thesis. In addition, it is crucial to include some dynamic aspects of development. Initial starting position of former communist countries differed greatly when they started economic reforms in the early 1990s. Hence, the hypothesis of the study is the following:

The higher the level of overall economic openness is in a country, the higher the potential to increase the number of Internet users per 10,000 inhabitants despite the country's initial starting position, when holding everything else constant.

4. METHODOLOGY

The analysis will be based on a qualitative case-study approach in which detailed case studies of Estonia and Slovenia will provide the basis for testing the hypothesis; the aim is to go deeper than is generally possible in the quantitative setting. The dependent variable will be the number of Internet users per 10,000 inhabitants. Independent variables determining the level of openness of economy will be FDI regime (legal barriers, informal barriers, international commitments), trade policy (trade to GDP ratio, tariff rates, international commitments) and market access in the telecom sector (in fixed line telephony, data transmissions and leased lines, international commitments), privatization (whether or not the incumbent company has been sold), and degree of independence of telecom regulators (whether independent regulatory agency has been set up and whether it can regulate telecoms without short-term political interventions). Dynamic

analysis will be introduced by looking at initial starting positions of countries in the early 1990s and the economic transition between 1991 and 2003.

As a starting point, Estonia and Slovenia will be compared to Slovakia and Latvia in order to minimize biases in qualitative research where two “success” cases are compared with each other. Looking only at countries with high levels of Internet diffusion makes it difficult to identify the factors that have contributed to this outcome. Hence, it is crucial at least casually compare some of the potential explanatory variables with countries where the level of Internet diffusion is significantly lower but these countries are otherwise fairly similar to the cases studied. For this purpose, I developed Appendix I, which highlights key characteristics of Estonia and Slovenia in comparison to Latvia and Slovakia. The comparison is based on the assumption that Latvia and Slovakia are fairly similar to Estonia and Slovenia (e.g. both countries are relatively small, in close proximity to Western Europe, and poised to join the European Union in 2004). Appendix I also makes clear why the explanatory variables are mainly economic and legal. In terms of human development, political development and literacy rates, the countries are fairly equal and it is not possible to identify any other variables that are not used in this thesis as potential explanatory variables.

5. EXPLAINING INTERNET DIFFUSION IN CENTRAL AND EASTERN EUROPE

Policymakers in transition and developing countries who aim to increase the level of Internet diffusion in their respective countries are eager to draw policy lessons from Western Europe, the United States and Japan. Yet it is important to understand that Internet diffusion in these countries is a product of broader social, political, and economic progress. Developed countries had the benefit of decades to build up societies that, to a greater or lesser extent, facilitate the diffusion of new technologies. Looking at the EU average of Internet diffusion indicators and

those of former European Communist countries, it can be said that the EU is far ahead of the CEE. However, a digital divide exists within the EU and within the CEE, which complicates the issue further. In his study *The New Economy in Europe (1992-2001)*, Italian economist Francesco Daveri states that two-thirds of EU citizens live in countries where Information and Communication Technologies (ICT) are as diffused as in the United States, but one-third live in countries that are slow ICT adopters (Daveri 2002, 1).

In Spring 2003 the European Commission acknowledged this fact by inviting three applicant countries (Estonia, Malta, and Slovenia) to move from the eEurope+ program to the eEurope program (European Union 2003). The eEurope+ program aims to develop the information society in applicant countries of the EU. The eEurope program, in contrast, is meant to encourage member states to develop an information society.² The existence of these two programs is official recognition that a large digital divide exists among the applicants despite their many similarities in overall development—and that some applicant countries (such as Estonia and Slovenia) are actually at the same level of Internet diffusion as EU members.

The paths taken by Estonia and Slovenia have been radically different in their transition from the socialist model to the market economy. Therefore, the same outcome in Internet diffusion has been achieved through different means. Methodologically, these two cases are comparable given their relatively similar size, close proximity to Western Europe, and relatively

² The eEurope program is an outcome of the European Council meeting in Lisbon on 23-24 March 2000. The eEurope Action Plan was adopted by the European Commission in May 2000. The necessity of a separate eEurope+ program for applicant countries was recognized at the European Ministerial Conference in Warsaw on 11-12 May 2000. The Lisbon meeting set objectives for the EU to “become the most competitive and dynamic knowledge-based economy in the world (eEurope+ 2003, 5). The existence of two separate programs is based on the understanding that the level of development differs between the EU and applicant countries. Therefore, problems are different as well. “EU candidate countries are faced with enormous challenges in their attempt to catch up with the development of a knowledge-based economy...” (eEurope+ 2003, 5).

high economic openness. A comparison of these two countries offers practical insight into the public policies that facilitate Internet diffusion.

TABLE 1. NUMBER OF INTERNET USERS PER 10,000 INHABITANTS IN EU MEMBER STATES AND SELECTED COUNTRIES IN THE CEE FROM 2000 TO 2002³

COUNTRY	2000	2001	2002
Austria	3,325	3,194	4,094
Belgium	2,923	3,104	3,286
Bulgaria	528	746	897
Croatia	669	559	1,629
Czech Republic	973	1,360	2,465
Denmark	3,921	5,403	4,652
Estonia	2,721	3,004	4,133
Finland	3,723	4,303	5,089
France	1,437	2,638	3,138
Germany	3,015	3,736	4,241
Greece	947	1,321	1,547
Hungary	715	1,484	1,576
Ireland	1,793	2,331	2,709
Italy	2,304	2,827	3,011
Latvia	619	723	1,331
Lithuania	609	679	1,445
Luxembourg	2,281	2,461	3,675
Netherlands	4,379	4,905	5,304
Poland	725	984	984
Portugal	2,494	3,494	3,556
Romania	357	447	806
Slovakia	939	1,248	1,604
Slovenia	1,508	3,008	4,008
Spain	1,367	1,827	1,931
Sweden	4,558	5,163	5,731
UK	2,644	3,995	4,062

5.1 Geographic Proximity to Western Europe

While the achievements of Estonia and Slovenia are increasingly recognized among policy circles in Europe, their examples are often dismissed as irrelevant for other countries. Their geographic proximity to Western Europe is often given as one reason why they are not relevant

³ Data was collected from various documents published on the ITU website during the years 2002-2003 (<http://www.itu.int/ITU-D/ict/statistics/>). Namely, information technology statistics published by ITU on 9 October 2003 and 12 December 2002 were used. All numbers are rounded up to the closest whole number.

examples for other CEE countries. Geography matters. Estonia has benefited tremendously from its closeness to tech-savvy Nordic countries. However, Slovenia's proximity to Italy and Austria can hardly explain its success, as neither is particularly known for being technology-oriented. Furthermore, most EU candidate countries are relatively close to Western Europe, and some are also close to respective Nordic countries. However, Internet diffusion in other EU candidate countries is two- to three times lower than that in Estonia and Slovenia.

5.2 Small Size of Countries

Another counterargument to the relevance of Estonia and Slovenia is the small size of both countries. Although policy literature on the diffusion of the Internet does not address the size of economies as a key variable, a recent book does address the question indirectly. *The Size of Nations* by Alberto Alesina of Harvard University and Enrico Spolaore of Brown University, indicates that the ten richest countries in terms of *per capita* GDP in the world are all small (or even very small) with the exception of the United States (Alesina and Spolaore 2003). Since several other policy articles conclude that wealth is a key determinant of Internet diffusion rates (see discussion in the literature review), a correlation between size of countries and Internet diffusion can be established.

Alesina and Spolaore (2003) argue it may be harder in larger countries to formulate policy because preferences of the population in such states are more heterogeneous. Logically, it would follow that with populations of 1.4 million and 2 million, respectively, Estonia and Slovenia have been able to change more quickly as a result of their small size. However, if size were truly a crucial factor in achieving positive policy outcomes, then the world would be full of wonderful small countries, indeed. Correlation does not necessarily imply causation. Furthermore, there are several relatively small countries in the CEE, such as Latvia, Lithuania,

and Slovakia, which differ greatly in terms of Internet diffusion rates despite their relatively close location to Western Europe. Evidently, the resources of small countries are also in proportion with the size of their population.

5.3 Per Capita Wealth

Wealth is another often-cited determinant of Internet diffusion. But even if per capita GDP is a good general indicator of Internet diffusion in some countries, it does not help to explain the outcomes showcased in Estonia and Slovenia. First, Estonia's per capita GDP is USD 3800 while Slovenia's is USD 9400 (ITU 2003). Estonia is an outlier as its Internet penetration rate is much higher than its *per capita* GDP might predict. The per capita GDP is about 2.5 times higher in Slovenia than in Estonia, and GDP at purchasing power parity (PPP) of Slovenia is about 70 percent higher than that of Estonia (see Appendix I). At the same time, the number of Internet users per 10,000 inhabitants is equal in the two countries. Furthermore, there are countries, such as Greece, with a similar per capita GDP level to Slovenia, yet their Internet penetration rates are two times lower than that in Slovenia.

5.4. Infrastructure Development

The number of main telephone lines per 100 inhabitants demonstrates the state of infrastructure development, a factor that is helpful in facilitating Internet diffusion. However, the differences among the EU candidate countries in the diffusion of main telephone lines are not great. As the following table indicates, a higher number of main telephone lines per 100 inhabitants does not necessarily mean more Internet users per 10,000 inhabitants. Compared with other CEE countries, Estonia and Slovenia have significantly higher Internet penetration rates but similar rates of diffusion of main lines. For example, Hungary has 37 main lines per 100 inhabitants, which is more than Estonia's 35 but less than Slovenia's 40. However, the rate of Internet

diffusion in Hungary is two times lower than in Estonia and Slovenia. The levels of infrastructure development in Estonia and Slovenia cannot explain the outcome in the Internet penetration rates, as Table 2 demonstrates. By this indicator, Slovenia should have more users in per capita terms than Estonia.

TABLE 2. MAIN TELEPHONE LINES PER 100 INHABITANTS AND NUMBER OF INTERNET USERS PER 10,000 INHABITANTS IN EU MEMBER COUNTRIES AND SELECTED CEE COUNTRIES 2001⁴

COUNTRY	INTERNETUSERS	TEL. LINES
Austria	3,194	47
Belgium	2,799	49
Bulgaria	746	36
Czech Rep	1,363	37
Denmark	4,472	72
Estonia	3,005	35
Finland	4,303	55
France	2,638	57
Germany	3,645	64
Greece	1,321	53
Hungary	1,484	37
Ireland	2,331	49
Italy	2,758	47

COUNTRY	INTERNET USERS	TEL. LINES
Latvia	723	31
Lithuania	679	31
Luxembourg	2,266	78
Netherlands	3,292	63
Poland	983	30
Portugal	3,494	43
Romania	447	18
Slovakia	1,203	29
Slovenia	3,008	40
Spain	1,827	43
Sweden	5,163	74
UK	3,995	59

5.5 Internet Access Costs

Internet access costs do not explain the outcome either. Even though Estonia has lower Internet access costs than Slovenia, the comparison at Purchasing Power Standard (see Appendix I) indicates that Estonia's access costs are actually significantly higher. When compared with other countries in Central and Eastern Europe, Estonia and Slovenia have the lowest Internet access costs among the countries that will join the European Union in May 2004. In this context the difference between Estonia and Slovenia is not significant. If costs were to be the key factor in

⁴ Data was collected from various documents published on the ITU website during the years 2002-2003 (<http://www.itu.int/ITU-D/ict/statistics/>). Namely, information technology statistics published by ITU on 9 October 2003 and 12 December 2002 were used. All numbers are rounded up to the closest whole number.

explaining the same outcome in Estonia and Slovenia, access costs in Estonia should be significantly lower than those in Slovenia.

Both countries studied here are democracies, are due to join the European Union in 2004, and are rated as the least corrupt countries in Central and Eastern Europe. Hence, the variable political openness that was seen as crucial by Dimitrova and Beilock (2003) cannot explain the outcomes. Other factors, such as overall human development (includes literacy) and corruption, that can be crucial are also included in Appendix I. Through casual comparison it becomes clear the countries studied are fairly equal in these categories.

5.6. Economic Openness

As the GDP, political openness, Internet access costs and infrastructure development cannot explain the outcome in these four cases, the impact of economic policies on Internet penetration rates will be investigated. Appendix I clearly demonstrates that the key difference between Estonia and Slovenia is to be found in their openness toward international trade, foreign direct investments, and the general level of economic freedom. Economic freedom is directly linked to a competitive environment in the economy and in the telecom sector. Comparison of Internet access costs in Estonia and Slovenia does not reveal predatory pricing or abuse of monopoly power in the market when compared with other countries in the CEE. However, access prices can often be distorted by universal service obligations in the domestic telephony services. In short, domestic calls are often subsidized by international calls and/or other means. Even in the case of moving from cross-subsidization to cost-based pricing, pressure from the electorate may lead to regulatory intervention in setting access prices (particularly as the dial-up Internet access costs depend on the costs of local calls). Thus, the costs of Internet access do not necessarily reveal the competitive environment in the telecom sector.

By looking at some other potential indicators of competitive environment in the telecom sector, Appendix I reveals that Slovenia has approximately 2.5 times fewer Internet hosts per 10,000 inhabitants. This difference indicates structural impediments on the supply side. Certain factors keep the barriers for market entry high and discourage entrepreneurial activity on the Internet. Hence, the competitive environment in the market in general and in the telecom sector in particular should be analyzed. Naturally the question that follows involves not only whether economic openness in a broader sense is a crucial factor but also whether openness (competitive environment) in the telecom sector is an important factor in the determination of Internet penetration rates. The nature of competition policy in the telecom sector should be taken into consideration as this is the key for securing the competitive market environment in the telecom sector. In other words, the level of liberalization of the economy, specifically the telecom sector, is the key variable when comparing Estonia and Slovenia. This finding is based on the discussion of theories by Dollar (1993) and Dasgupta et al (2001) in the literature review.

It has become clear that wealth, geography, and infrastructure are not plausible explanations of Internet diffusion rates in Estonia and Slovenia. The exceptionalism of these two cases, then, encourages us to look at their public policies of the 1990s and investigate how these policies may have affected Internet diffusion outcomes. In addition to the importance of the regulatory framework of the telecom sector, broader economic policy frameworks also impact technology diffusion. Openness reduces transaction costs for facilitating the initial diffusion of the Internet and bolsters the competitive ways of using the network, which in turn increases innovative uses and further diffuses the Internet. Thus, an open economic environment, resulting from a liberal Foreign Direct Investment (FDI) regime and free trade, is directly linked to the open nature of the Internet.

6. ESTONIA: A RADICAL REFORMER

6.1 Initial Starting Position

Until the break-up of the Soviet Union in 1991, Estonia was subject to extremely limited diffusion of Western information and communication technologies (ICTs). The Coordination Committee on Multilateral Export Controls (COCOM) imposed tight controls on the exports of ICTs to Estonia as country was a *de facto* part of the Soviet Union (Elkmann 1994, 64). Prior to the collapse of the Soviet Union the number of main telephone lines per 100 inhabitants in Estonia exceeded 20, compared with the average 10 lines customary in the Soviet Union at the end of the 1980s. In addition, Estonia had fairly advanced human capital in IT. Estonia began investing its money and human capital in its Institute of Cybernetics as early as the 1960s. While similar institutes in other Soviet Republics focused on math and engineering, the Estonian institute concentrated on computer programming (Roth 2004).

In the early 1990s, the local IT community became crucial in setting government policies on IT spending, procurement, and use. In 1993, a strategy paper by government officials, IT specialists, and scientists was prepared with the sole aim of establishing principles for the management of modern, well-functioning state information systems. A special IT department of the central government was formed, and the central government budget included a single category entitled “Number 37” for all IT expenditures of the various government agencies. Government IT procurement was subsequently unified, and new government purchases had a positive impact on the Estonian IT market. Since 1996, Internet-related issues have been a source of increasing public interest in Estonia (Ott and Siil 2003).

Once Estonia restored its independence in 1991, the government’s policies were not sector specific. In the 1990s, Estonia did not engage in industrial policies that would target the

ICT sector or companies directly. Government interest, procurement, and promotion of ICT certainly benefited domestic ICT companies, such as Microlink, as well as foreign firms that had entered the Estonian market. The overall incentives for such widespread ICT adoption and use by the government should be seen in the context of radical reforms implemented by Estonia in the 1990s rather than as an outcome of special interests. ICT offered one of the means for the youthful government of free marketers, under the premiership of Mart Laar, to increase public sector effectiveness and demonstrate the government's progressiveness in the early 1990s. It was a period of "extraordinary politics," in the words of former Polish finance minister and current governor of the Central Bank of Poland, Leszek Balcerowics, as he described the utilization of the window of opportunity by radical reformers who enjoyed strong public support (Balcerowics 1995, 4, 145-165). The collapse of the Soviet Union led to what Joseph Schumpeter called "[a] creative destruction" (Schumpeter 1975, 81-86). This allowed Estonia's new elite to execute several radical reforms, such as flat income tax and unilateral free trade, without courting interest groups (Feldmann and Sally 2001, 13-14).

6.2 Trade Policy

In 1991, the Western markets accounted for five percent of Estonia's exports. By 1999, the EU alone accounted for 63 percent of Estonia's exports and 58 percent of its imports (Feldmann and Sally 2001, 10). The former Soviet Union, once the main market for Estonia's imports and exports, counted for less than one-fourth of Estonia's exports and imports. Estonia was able to rapidly integrate its economy with the West and re-orientate its trade from East to West due to the free trade, liberal foreign direct investment regime, so-called double tariffs imposed by Russia (for political reasons), and the collapse of Russian markets. Russia's policies and situation created incentives for Estonian companies to seek markets in the West. In 1995 Estonia

established a unilateral free trade regime (including agricultural products). This radical liberalization of international trade is considered one of the cornerstones of Estonia's economic liberalization of the 1990s. Most importantly, the rapid path of trade liberalization in Estonia, which culminated in 1995 when a unilateral free trade regime came fully into existence, enabled technology transfer to occur.

6.2.1 WTO Membership

Estonia joined the World Trade Organization (WTO) in 1999 as a developed country.

Negotiations for accession lasted for four years, and were especially challenging due to Estonia's unilateral free trade regime. WTO accession normally requires binding tariffs on the levels not above pre-accession rates – which in the case of Estonia was zero. However, as Estonia pursued membership in the European Union, she reached compromise (reflecting the EU trade regime) allows Estonia to implement average tariff bindings on industrial goods at slightly higher than six percent. To date, Estonia has only enforced tariffs on agricultural goods (3.3 percent, on average); industrial goods are still subject to the unilateral free trade policy (Feldmann and Sally 2001). Once a member of the EU, Estonia will give up her WTO commitments to assume those of the EU. If so requested, the EU must compensate Estonian trading partners in areas where Estonia's tariff bindings are lower than those of the EU. Apart from these changes, Estonia agreed to fully open the domestic and international telecom services market by 2003, which occurred already by 2001, and has committed to guarantee full market access in financial, freight, education, environment and tourism services.

Estonia's accession to the WTO also meant the government had to implement WTO-compatible domestic legislation, including protection of intellectual property rights as required by the trade-related aspects of intellectual property rights (TRIPS) agreement of WTO. As in the

case of general trade policy, Estonia's legislation concerning intellectual property rights is influenced by the country's EU aspirations.

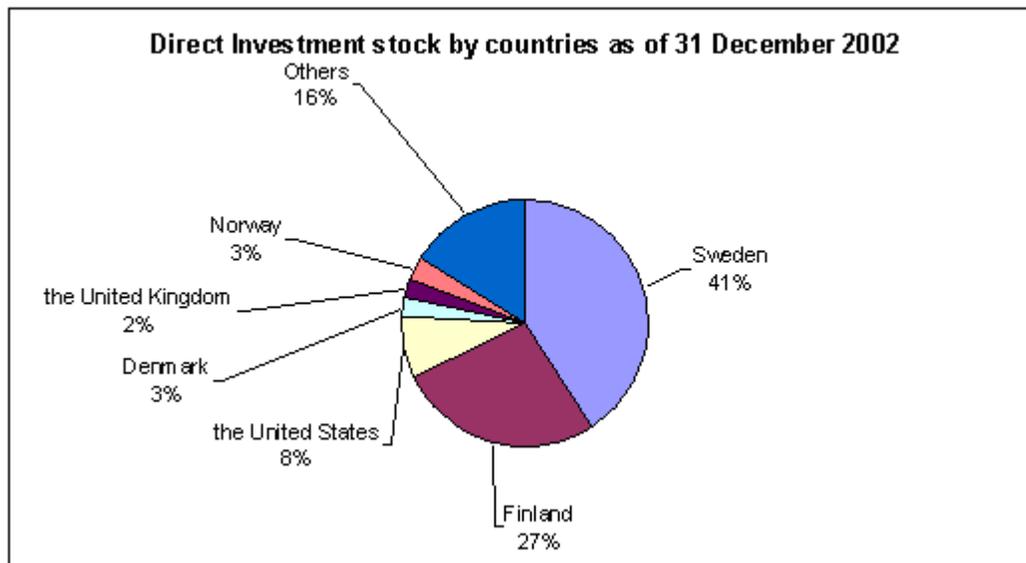
6.3 FDI Regime

Most large companies were privatized by the mid-1990s (Organization for Economic Cooperation and Development 2001, 6). The role of foreign investments was crucial in this process, and was combined with the inflow of expertise and technology (Organization for Economic Cooperation and Development 2001, 1-4). Estonia spent the 1990s creating one of the most favorable foreign investment climates in Central and Eastern Europe. "As a result Estonia has attracted one of the highest rates of foreign direct investment per in the region" (OECD 2001, 1, 4). In terms of FDI per capita, Estonia ranked third in the CEE, behind Hungary and Czech Republic; FDI in relation to gross domestic investment was third as well, ranked higher than most other CEE countries (Hirvensalo 2001, 2). Most importantly, Estonia's liberal foreign direct investment regime created incentives for neighboring Nordic investors. While geographic proximity and similarities in culture and language were undoubtedly important in the inflow of FDI, it is hard to argue that inflow on such levels would have taken place without the existence of a favorable investment climate.

6.3.1 Distribution of FDI Inflow by Country

By the end of 2002, the Nordic countries accounted for more than 70 percent of total FDI stock in Estonia; FDI from Sweden amounted to 41 percent, and from Finland to 27 percent of total FDI stock in Estonia. For example, Finland's Sonera and Sweden's Telia both own 24.5 percent of Estonian Telecom, and invested a combined total of USD 115 million into this market-leading company.

TABLE 3. INWARD FDI IN ESTONIA (BY COUNTRY)



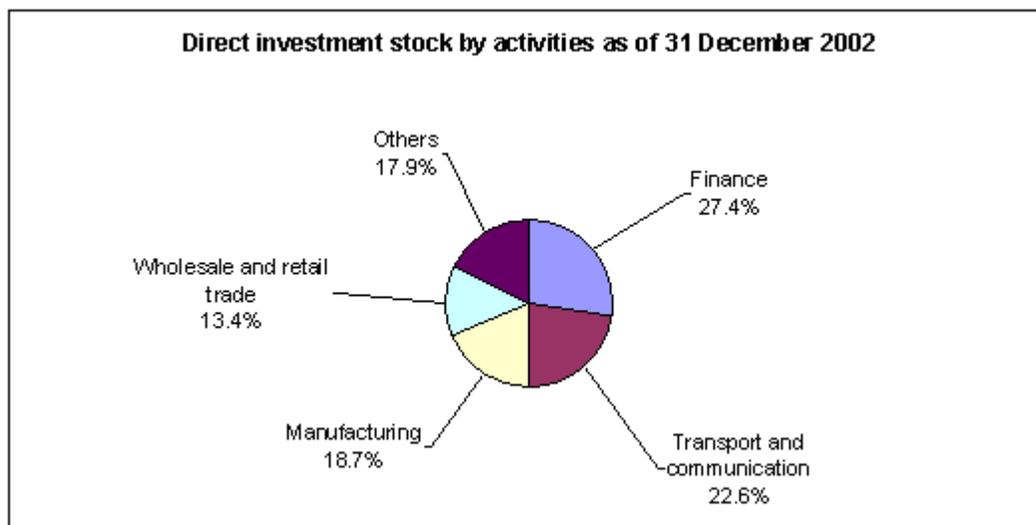
Sources: Estonian Investment Agency, Bruno Lill, Center for Markets in Transition, Helsinki School of Economics, October 2001. Updated by Ville Rämänen in October 2002 and Antti Leivonen in May 2003

6.3.2 Distribution by Economic Activity

Financial intermediation is the leading recipient of inward foreign direct investment due to Swedish acquisition of leading Estonian banks in the second half of the 1990s and a heavy presence of other Nordic financial services companies. Finance is followed by transport, storage, and communications, including telecommunications (OECD 2001, 4). Inflow of FDI in telecommunications is a direct result of the privatization of the incumbent telecom company and liberalization of the telecom market (OECD 2001, 2-3).

According to the OECD, the high percent of “others” (18 percent) in the total distribution of inward FDI can be explained by the high share of electronics manufacturing in this category (OECD 2001, 3). Electronics manufacturing is not classified separately. During the last decade, Nokia’s subcontractor Elcoteq invested USD 16 million into its plant in Estonia’s capital, Tallinn.

TABLE 4. INWARD FDI IN ESTONIA BY ECONOMIC ACTIVITY



Sources: Estonian Investment Agency, Bruno Lill, Center for Markets in Transition, Helsinki School of Economics, October 2001. Updated by Ville Rämänen in October 2002 and Antti Leivonen in May 2003.

6.3.3 Legal Framework of FDI

Estonia's legal framework addressing FDI has been liberal and non-discriminatory since the early 1990s. In general terms, foreign investors have been treated equally with domestic investors. Restrictive measures in Estonian law were only set forth in a few exceptional cases that would differentiate and discriminate investors according to their nationality, their place of residence and their location. Even more rarely have these legal provisions been applied in practice (Eesti Vabariik 2003). The key restrictions on foreign capital allocation existed in the legislative acts on land privatization and regulations concerning real estate.

Most importantly, legislation that initially limited the share of foreign capital in some domestic industries was changed in the late 1990s and early 2000s in conjunction with efforts to harmonize the domestic legislation with that of EU's *acquis* concerning the free movement of capital. In 2000 Estonia abolished a restrictive foreign investment law. Legislation regulating the

transfer of land ownership to foreign legal persons and foreigners in general was changed in 2003. The Insurance Law was harmonized with EU legislation in 1999. The Broadcasting Law was changed in 2000. A law on protection of beaches and seashores was changed in 2000. In all of these cases some discriminatory measures concerning the foreign participation, investments or ownership by foreigners were removed (Eesti Vabariik 2003).

Even though Estonia established a liberal and non-discriminatory legal framework for FDI in the early 1990s, ratification of the Europe Agreement in 1995 contributed to the maintenance of the framework and “locked in” the domestic legislation. Namely, Article 61 of the agreement committed both the European Union and Estonia to not establish any new legal measures that would restrict the free movement of capital (Eesti Vabariik 2003). By the signing of the EU accession agreement on 16 April 2003, Estonia had completed harmonization of its domestic legislation concerning free movement of capital and, thus FDI, with the laws of the European Union (Commission of the European Communities 2002b, 54-56, Eesti Vabariik 2003). A few exceptions to this generalization relate to the acquisitions of real estate by nonresidents, FDI in security services, air transport and ownership of sea-going vessels (Commission of the European Communities 2002b, 55-56). As Estonia has not requested a transitional period in these areas, the legislation will be completely harmonized by May 1, 2004, the date Estonia is scheduled to join the EU.

6.4 Telecom Sector Liberalization and Regulation

In light of the enforced interconnection between the open economy and open nature of Internet architecture, the privatization process of the incumbent telecom requires examination. In 1992, the Estonian government signed a concession agreement with *Telia* and *Sonera* of Sweden and

Finland, respectively. A monopoly on fixed-line telephone calls was bestowed to the incumbent, *Eesti Telekom*, until the end of 2000 (World Trade Organization 1999, 11-12).

6.4.1 Privatization of Incumbent Telecom Company

The incumbent telecom is a good representative of the large companies privatized in Estonia by the mid-1990s. In this sense, the telecommunications sector is representative of the general trend shown in inward FDI during the 1990s, as the amount of FDI “has been influenced by several large investment project in privatised infrastructure enterprises” (OECD 2001, 6).

In 1992 the Estonian government signed a concession agreement with Telia and Sonera (now TeliaSonera), by which both companies acquired half of 49 percent of shares in the incumbent telephone company. In other words, Finland’s Sonera and Sweden’s Telia both own 24.5 percent of Estonian Telecom. This investment enabled an increase in the number of main telephone lines per 100 inhabitants from 28 in 1995 to 35 in 2001 and the digitalization of 70 percent of the telephone lines (ITU 2003). In return for the investment and transfer of skills and technology, the monopoly on fixed-line telephone calls was granted to the incumbent until the end of 2000.

In 1997 the company, by then restructured into *Eesti Telekom*, offered 24 percent of the government’s 51-percent stake through initial public offering (IPO) to domestic and international investors. The government holds a 27-percent stake in the telecom company and has a golden share.⁵ The legality of the share has been questioned on the basis of domestic business law and EU law (ESIS 99a). In the process of Estonia’s EU accession negotiations, the European Commission criticized the Estonian government’s approach in dividing the ownership and

⁵ On February 2004 Estonian Government decided to consider privatization of *Eesti Telekom*. In a competitive bidding McKinsey was hired to evaluate benefits and costs of privatization and also potential ways for privatizing the remaining stake of government. On April 2004 *TeliaSonera* made offer to buy 51 percent of shares and to take the whole company private. The offer was rejected by the government because the price was considered too low. Currently, it is not clear how and when exactly the government will privatize its stake.

control by holding the golden share (Eesti Vabariik 2003). The EU Commission considers the golden share to be against the principles of free movement of capital and has started several court cases against member states for using the scheme.⁶ However, Estonia agreed to use the golden share as a temporary measure that would end before the country's accession to the EU, and justified the necessity of the golden share, referring to weak and ineffective domestic regulations. The issue was resolved and did not create permanent problems between Estonia and the EU in regard to the free movement of capital (Eesti Vabariik 2003).

6.4.2 Rationale and Extent of the Monopoly Power

The monopoly on fixed-line telephone calls was granted to the incumbent until the end of 2000. The monopoly power raises questions about the ability to benefit as there was a lack of competition and the public monopoly was simply replaced by a private one. However, consideration of the broader context within which this monopoly carrier operated challenges such simplistic conventional wisdom. While most would agree that a monopoly position does not create incentives to innovate or offer improved telephone services to customers, a consideration of the broader context is in order. First, in 1992 Estonia was a poor ex-Soviet state, and foreign investors were not exactly knocking on the door begging to enter: Estonia only had 1.4 million inhabitants and was at very high risk of political turmoil (e.g., possible ethnic conflict, war with Russia, etc.) (Mannik 2002). In exchange for the monopoly, the country was able to acquire needed investments for building the telecom infrastructure in this investor-unfriendly environment. In the early 1990s, most telephone lines in Estonia were analogue lines; by 2001 over 70 percent of the lines had been digitalized (International Telecommunications Union 2002). Even though the number of main lines per 100 inhabitants in Estonia was significantly higher

⁶ It is also a key point of several research papers in business economics that the use of golden share decreases the value of company.

than the Soviet Union average of 9.7 lines in 1989⁷, the investment in main lines was crucial. In 1995, the number of main lines in Estonia was 27.7 lines per 100 inhabitants. By 2001, the number had increased to 35.2. Also, the potential conflict of interests between the state as a regulator and the state as a shareholder is not so great because decreased ownership of shares to 27 percent in the incumbent telecom company and ineffectiveness of using golden share minimized state interests as a shareholder.

Second, the incumbent telecom company was held accountable throughout its period of monopoly. An independent regulator of the telecom sector was set up in 1998 and, according to an assessment by the European Commission, the agency was a fully independent regulatory authority (Commission of European Communities 2002, 90). Increasing public, government, and business interest in ICT issues constituted a considerable pressure. In addition, many Nordic investors who entered the Estonian market already had experience in the Nordic markets against the same incumbents who now owned Eesti Telekom. The outcome of that pressure is reflected in the prices of Internet connection; prices in Estonia were among the lowest in the CEE in 2001 (eEurope 2003+ 2002, 18).

Third, the provision of leased lines and alternative infrastructure use was partially liberalized before the end of 2000. Estonia had a free market for data transmissions, Internet service providers (ISPs), and backbone service providers before the end of the monopoly (ESIS 1999a). Hence, companies and other large entities were able to overcome barriers imposed by the monopoly even before the end of its dominance. On balance, the monopoly situation in the Estonian telecom market demonstrated that the benefits were greater than the costs. The existence of a monopoly from 1992 until the end of 2000 enhanced the nature of the open

⁷ I do not have data for Estonia in 1989, as it was part of the Soviet Union at that time. The data for the Soviet Union is sourced from Business Week (1989).

network; and thus also favored the positive externalities of the Internet. Despite the existence of a powerful interest group who could have benefited tremendously from a delay or complete blocking of liberalization, the commitment to opening the market to competition prevailed, leading to the most competitive telecom market in the CEE.

6.4.3 WTO Basic Telecom Agreement

Estonia undertook the WTO Basic Telecommunications Agreement in 1999. Estonia's schedule of commitments provided unconditional market access with an exception in the cross border supply and commercial presence mode. The exception stated that "domestic intercity and international services have to be switched over the public telephone network of the Estonian Telephone Company Ltd. according to the Concession Agreement between the Government of the Republic of Estonia and the Estonian Telephone Company" (World Trade Organization 1999, 11-12).

Estonia could not provide immediate market access in fixed line voice telephony as its concession agreement with strategic shareholders of Estonian Telecom company secured the incumbent a monopoly in these services until 31 December 2000. It also meant limitations on market access in mobile telephony services as the domestic intercity and international interconnection with another mobile or fixed network had to be switched over the network of the incumbent telecom company (World Trade Organization 1999, 11-12). In the WTO Telecom Agreement, Estonia agreed to end the above-mentioned exception in the market access by 1 January 2003.

Otherwise, Estonia provided unconditional market access and national treatment in the telecom sector (with the exception of limitations on market access and national treatment in the mode of supply concerning the presence of natural persons as provided in the horizontal section

of the schedule of specific commitments). Estonia agreed to undertake additional commitments after six months of WTO accession. According to these commitments, laid out in the reference paper which was annex to the schedule of commitments, Estonia agreed to prevent anti-competitive practices in telecommunications (cross-subsidization, preventing suppliers from not making available technical and commercial information), non-discriminatory nature of interconnection services (principles of transparency, cost-oriented rates and availability of technical information) and to secure existence of independent regulators (World Trade Organization 1999, 23-25).

6.4.4 Opening of the Domestic Telecom Market for Competition

WTO commitments were an outcome of EU accession negotiations as Estonia had to implement the requirements laid out in the EU Telecommunications *Acquis* in its domestic legislation and the final result of negotiations on Chapter 19 of the accession treaty of the EU indicates the country did not receive any transitional arrangements in adopting and applying EU legislation in the telecommunication services (Commission of the European Communities 2002a). The key commitment was to lift all limits on market access and national treatment by January 1, 2003, thereby by ending the monopoly in the fixed-line telephony services. However, Estonia adopted new Telecommunications Act in February 2000, which lifted the limits on market access and national treatment in the telecommunications market by January 1, 2001 (Commission of the European Communities 2002b, 89-90).

6.4.5 Regulation of Telecom Sector

The country's first Competition Act was adopted in 1993; in general terms, it established the principles of competition policy in line with the EU's Treaty of Rome articles 81 and 82 (formerly articles 85 and 86, as these were changes with the Treaty of Amsterdam)

(Konkurentsiamet 2003). The country's aspirations to join the EU led to the adoption of a second competition act in 1998 and a third act in 2001. These new laws implemented the principles of competition policy set forth in the Treaty of Rome articles 31, 86 and 87, in addition to the articles mentioned above.

Estonia adopted a new Telecommunications Act in February 2000.⁸ Most importantly, the law set 31 December 2000 as the date of expiry for the exclusive rights held by the Estonian Telephone Company in the provision for fixed-line voice telephony (Commission of the European Communities 2000, 65). The Telecommunications Act regulated the competencies of the independent regulator, established new regime for authorization, interconnectivity, and provision of universal service, and required the tariffs to be cost-oriented.

Regulation of the telecom sector is split between two state agencies: the Competition Board and Communication Board. The role of the Competition Board is to secure the competitive environment of the economy and enforce general anti-trust policies on the basis of the Competition Act. The Communication Board is a sector-specific agency that focuses on setting technical standards and economic regulation of the telecom sector. Both state agencies operate under the Ministry of Economy and Communications. The Competition Board used to operate under the authority of the Ministry of Finance; the Communications Board operated under the Ministry of Transport and Communication. The Ministry of Economics and Ministry of Transport and Communication merged in 2002, creating a new super ministry with authority over both agencies.

6.4.5.1 Competition Board

The Competition Board derives its authority from the new Competition Act of 2001, which contains the main principles of the anti-trust rules of the European Union, including full merger

⁸ The English version of the legislation is available at http://sa.riik.ee/atp/failid/Telecommunications_Act.htm

control. The Competition Act of 1998 was already in line with EU legislation, except in the area of merger control. This act and paragraphs 399-402 of the new Penal Code, adopted in June 2001 and in force as of September 2002, gives the Competition Board the authorization to conduct pre-trial investigation in competition offences (Commission of the European Communities 2002, 58). This Competition Act also provides for criminal liability of legal persons in regard to competition offences. The competition board employs 48 civil servants of whom 13 are lawyers. According to the EU assessment, the board is a fully independent regulatory agency and has sufficient resources and expertise (Commission of the European Communities 2001a, 44-45).

The area of telecommunications is a relatively new field for the Competition Board as the telecom market in the fixed-line voice telephony was opened to competition on 1 January 2001. In April 2001, the Board started an investigation into the rapid increase of local call prices by the incumbent telephone company and asked the company to reduce prices. The incumbent disagreed with the demand and initiated a civil law suit against the Competition Board. The law suit was heard at all three levels of the Estonian court system and, in 2002, the Supreme Court finally ruled in favor of the Competition Board, and dismissed the rulings of lower courts in favor of the incumbent telephone company (Konkurentsiamet 2002, 3).

6.4.5.2 Communications Board

The Estonian National Communications Board (ENCB) in its current form became operational in 1998. The state agency upon which the ENCB was built had been founded in 1991, but regulated only radio frequencies. In 1994 its competences were expanded to include broadcasting in general. In 1999 cable service provisions were also put under the control of the agency. Restructuring of the agency took place from 1998-2000. In addition to its role in setting technical

standards, the agency became the regulator of telecommunications as an economic sector (Sideamet 2001). The board regulates all telecommunications services (including fixed line and mobile telephony) and has right to declare the operators as “companies with significant market power” that subject the companies to more extensive regulations and scrutiny. Since the new Telecom Act took effect, the ENCB has declared daughter companies of incumbent *Eesti Telekom – Eesti Telefon* (recently renamed *Elion*), a fixed line operator, and *Eesti Mobiiltelefon*, a leading mobile telephony provider, as companies with significant market power.

After the market opened to competition in January 2001, the ENCB created a new office enlisted with the responsibility of controlling the accounting systems as well as compliance with accounting regulations. This was important in order to secure compatibility with the EU telecom *acquis* and related requirements of network interconnection charges and universal service. Basically, the EU legislation does not allow market participants to charge discriminatory prices, and as the aim is to have cost-based pricing, then the common standards of accounting methods have to be adopted as well.

According to the EU assessment, the ENCB is a fully independent regulatory authority and its current staff (135 employees) is sufficient to carry out regulatory functions related to interconnection (Commission of the European Communities 2002, 89-90). However, the EU also raises concerns over potential conflicts of interests; although the ENCB is under administrative authority of Ministry of Economics and Communications (Commission of the European Communities 2002, 90). Paragraph 102 of the Telecommunications Act grants the ministry “supervisory control” over the ENCB.⁹ According to paragraph 19 of the ENCB statutes, the general director of ENCB is nominated by the minister on the basis proposed by the chancellor

⁹ Estonian Telecommunications Act. 2000. Available at http://sa.riik.ee/atp/failid/Telecommunications_Act.htm

of the ministry (Communication Board 2003). Among other things, paragraph 15 states that the Minister of Economics and Communications approves the structure of the board on the basis of the proposal by the General Director of the board. The board is financed from the state budget, but the minister is responsible for authorization, revision and control of the implementation of the budget allocation, as stipulated in paragraph 7. These provisions indicate clearly that the operations of the board are dependent on the Minister of Economics and Communications. Considering the fact that this position is taken by politicians, the board is obviously not independent of potential political intervention and such a framework may lead to ‘regulatory capture’ by vested interests.

However, the ministry does not represent state interests as a shareholder in *Eesti Telekom* – the incumbent company regulated by the ENCB – and the ownership rights were transferred to the Ministry of Finance in 2000. Even this remedy was not enough for avoiding the potential conflict of interests; after all, in the end both ministries represent the same government.

6.5 Conclusion

Certainly Estonia’s close proximity to the Nordic countries and the liberalization of export controls in ICT helped Estonia to perform well. At the same time, it could not have been possible without domestic policies favorable for attracting trade and FDI. Domestic policy decisions were certainly influenced by international factors, such as conditionality imposed by the International Monetary Fund, and WTO and EU aspirations. However, the domestic decision-makers carried out more radical reforms than ever imposed by any international regime. Policies, such as unilateral free trade, flat income tax, no corporate income tax and currency board, are not on the agendas of these organizations. Therefore, the domestic policies that opened up the economy were the result of bottom-up rather than top-down initiatives (Feldmann & Sally 2001).

Most importantly, Estonia's rapid economic opening and lead role in radical economic reforms helped the country become an Internet adapter. Government policies toward Internet diffusion should be seen as a part of the broader picture of reforms that helped modernize the public sector by increasing efficiency and transparency rather than sector-specific approach toward the Internet. As successful diffusion depends on an increasing number of users and requires growingly sophisticated users in order to boost innovation, diffusion of the Internet in Estonia is a result of the broader framework created by the government, not of direct social engineering. Particularly the ability to attract foreign direct investments into the telecom sector, and concurrently, to keep the incumbent telecom company to the account and credibly commit to market opening have been crucial in determining the lower relative prices of Internet access than in the most countries. Low prices, in turn, have encouraged Internet use.

7. SLOVENIA: A GRADUAL TRANSFORMER

7.1 Initial Conditions

In the case of Slovenia, limited technology transfer was possible before the break-up of Yugoslavia because the impact of export-control regimes imposed by the members of NATO and Japan was not as strong as that on the other Eastern Bloc countries (Gray 1999, 104, 106). Technology transfer was facilitated by extensive trade relations with Western Europe, mainly Germany. Already in 1989, 52 per cent of Slovenia's goods and services were exported to the European Community (now the European Union) (Brinar 1999, 246).

The key difference between Yugoslavia and other socialist countries in Central and Eastern Europe is found in industrial and economic policy (Gray 1999, 104). The Yugoslav system emphasized the importance of "self-management" of the industries; the state did not own

manufacturing industries, nor did it dictate what factories produced. Workers played a considerable role in the decision-making process of each company. Even if Yugoslavia remained a one-party state, its economic system was not fully centrally planned. The system created better incentives than existed in other parts of the socialist world. It was especially beneficial for northern Yugoslavia, where factories exported products to Western Europe and were often in direct contact with their customers in the West, a communication that enabled them to learn about the functioning of a market economy (Gray 1999, 104). Since the 1950s, Slovenia was the most developed republic of Yugoslavia. Its greatest success was in economic performance, and living standards were similar to the poorest countries within the EU (e.g. Portugal and Greece), even before the collapse of socialist Yugoslavia.

Slovenia used the opportunities afforded by their relatively mild form of socialism to a maximum extent and “the main channel through which this occurred was the signing of licensing agreements for technology transfer which enabled enterprises to receive state-of-the-art know-how as well as equipment” (Gray 1999, 106). Slovenia’s manufacturing base was diversified and became internationally competitive. This implies that, differently from other CEE countries, Slovenia’s position allowed the country to take a step-by-step approach to economic restructuring and to start with economic stabilization instead of facing stabilization, liberalization, complete re-orientation of international trade, and other reforms all at the same time. In the 1990s Slovenia experienced the smoothest political, social and economic transitions seen in Central and Eastern Europe. For most of the 1990s, economic growth was above four percent (World Trade Organization 2002). According to other measures of macroeconomic performance, Slovenia has, during the last decade, certainly been one of the best performing economies in the CEE.

Furthermore, Slovenia started to focus on IT-related research and education, which started in the mid-1970s. In the early 1980s, secondary schools began installing mainframe computers. In the 1990s, the government also launched specific projects to increase Internet diffusion at schools, public libraries, and research institutions. In addition to educational capacity, development of local IT communities was possible as a result of the existence of the local technology industry (IskraDelta). Decentralized control of the economy and “social ownership” of companies created more incentives for entrepreneurship and innovation than the Soviet command economy. Inflow of FDI in the technology sector further encouraged the transfer of Western technologies.

For example, Siemens established a joint venture with Iskratel in 1989. Slovenia’s early ICT orientation allowed fairly sophisticated technology companies to grow and integrate with Western clusters (Biegelbauer *et al* 2001). Currently, many multinationals (Siemens, Cisco, and Microsoft) have invested in Slovenia or have partnered with Slovenian companies. In addition, the country has a wide range of medium-sized hardware and software companies. Most importantly, Slovenian companies hold relatively high positions in the value chains of Western multinationals.

7.2. Trade Policy

In the 1990s Slovenia gradually increased its share of trade with the EU (Institute of Macroeconomic Analysis and Development 1998, 56). Trade barriers have been liberalized incrementally, but further reduction is required for entering the EU. Even if the change has been slow compared with the rest of the CEE, liberalization has had a positive effect on the transfer of technologies throughout the 1990s.

Slovenia opted for an export-oriented trade policy (instead of the import substitution that was carried out until the late 1980s) even before gaining independence in 1991, and has significantly liberalized international commerce (IMAD 1998, 56). The ratio of merchandise trade (exports and imports) to GDP is around 120 percent, one of the highest rates in Central and Eastern Europe (World Trade Organization 2002). Developed countries account for more than 75 percent of Slovenia's international trade, and most of it is with the EU markets (IMAD 1998, 56)

7.2.1 Tariff Rate Simplifications and Reductions

Slovenia's simple average applied MFN tariff rate was almost 11 percent in 2001. The average for non-agricultural goods was 9.5 percent and agricultural goods 16 percent (World Trade Organization 2002). Slovenia's tariffs are escalatory, in particular in the timber, food, textile and clothing industries. A large difference exists between applied rates and bound rates, which in most cases are a uniform rate of 27 percent. During the last years such gaps have been a source of unpredictability of tariff regime. However, Slovenia is scheduled to join the European Union in 2004, and will adopt the EU's bound rates, thereby eliminating the gap between bound and applied rates.

Throughout the 1990s, Slovenia has gone through liberalization and rationalization of trade policy. It has simplified customs procedures, eliminated surcharges, and focused on tariff lines with lower tariff levels. The result of this extensive and gradual reform is that 96 percent of tariff lines are *ad valorem*. However, a relatively large number of tariff exemptions and the use of mixed duties in agriculture remain in place. Slovenia reduced preferential rates more rapidly than MFN rates during the reforms throughout the 1990s and 2000. Export taxes were moved by the late 1990s.

7.2.2 The Impact of the EU on Trade Policy Reform

Preparations for joining the European Union have forced Slovenia to liberalize its trade policy yet further, particularly in regard to reducing tariff rates and harmonizing trade barriers with EU standards. Slovenia has a large number of preferential trade agreements, the most important one being with the EU. As most imports come from EU countries, exclusively MFN rates are applied to only 15 percent of total imports. The average tariff on industrial imports from the EU is only 0.5 percent. In agriculture, tariffs are negotiated with each partner individually, depending on the “sensitivity” of the products; this has led to a variety of product and country-specific tariff rates. Such access is adjusted on an on-going basis, resulting in hundreds of tariff quotas for agricultural products. Hence, the transparency and efficiency of tariff administration suffers (World Trade Organization 2002).

The structure of trade protection in Slovenia indicates that the country is fairly similar to the Western European countries. Agriculture, clothing and textiles are protected from import competition through higher tariff rates. Most other goods do not receive significant protection. However, trade protection has been significantly reduced during the last decade as a crucial part of a broader package of economic reforms. In addition to the strict trade policy measures, the government has used financial means such as subsidies and capital controls in order to offset the negative impact of import competition in the sectors that suffered most in the process of reforming trade policy.

7.2.3 GATT/WTO Membership

Soon after gaining independence, Slovenia applied for GATT membership and the country was the last contracting party to join the GATT in 1994 (World Trade Organization 2002). In 1995 Slovenia became an original member of the World Trade Organization as a developing country,

and its preferential status as a developing country expired in 1997 (Brinar 1999, 249). Slovenia's commitments to the WTO have certainly forced it to liberalize its level of trade protection across industries.

Considering that Slovenia entered into the GATT/WTO framework as a developing country despite its relatively high level of development, it is obvious that the gradual approach to reforms also underlies its strategy towards the WTO. Furthermore, the existing tariff levels on agriculture and textiles can be well explained in light of WTO commitments. It is easy to keep higher tariffs on agriculture and textiles, as the key players in WTO, the EU and USA are doing so as well.

7.3 FDI Regime

In general terms, Slovenia pursued relatively protectionist and targeted policies toward FDI (Organization for Economic Cooperation and Development 2002, 25). Instead of opening entry for all investors on an equal basis, the government discriminated against foreign investors in the privatization process and attempted to meddle with direct financial incentives instead of following rules of fair play (World Trade Organization 2002, ix, x, 13, and 26). Hence, the ratio of FDI to GDP remains well below average in the region. The World Trade Organization (WTO), Organization for the Economic Cooperation and Development (OECD), and other international organizations see the main barriers for FDI in an open privatization policy and a stable regulatory environment.

Such discriminatory policy can be explained by the gradual transition process in which governments run by former *apparatchiks* of socialist Yugoslavia do their best to preserve the social democratic corporatist nature of the country. Protection against foreign investments has been used to minimize the negative distributional effects of economic change and influenced the

restructuring of the telecom sector (Organization for Economic Cooperation and Development 2002, 11).

By the end of 2000, Slovenia's total stock of inward FDI amounted to USD 2.8 billion, which is approximately 14 percent of Slovenia's GDP. However, this ratio of FDI to GDP remains well below average in the region. Per capita, Slovenia lags behind Czech Republic and Hungary, but in terms of FDI stock as a share of GDP Slovenia has attracted less FDI than even Slovakia, the political "black sheep" of the region for the greater part of the 1990s (Henderson, 221-224). Slovenia's neighbor Austria alone accounts for over 45 percent of the total FDI into Slovenia; other major investors are Germany, France, Italy, and the United States. The share of the European Union in inward FDI stock increased from about 60 percent to 84 percent between 1994 and 2000 (WTO 2002, 26).

7.3.1 Distribution of Inward FDI by Sectors

Most inward FDI is directed into the manufacturing sector (43 percent of total FDI stock), including industrial output, such as paper, paper products, machinery and equipment, rubber and plastic products, chemicals and chemical products, and motor vehicles (OECD 2002, 10). Most of these products play an important role in Slovenia's export structure. According to the Organization for Economic Cooperation and Development (OECD), foreign investors are attracted to Slovenia because of individual companies rather than specific industries (OECD 2002, 10). In addition, FDI is concentrated on a small number of large multinational companies (MNEs) of European origin. This characteristic indicates that Slovenia has been well integrated with the economic clusters in Europe (Biegelbauer et al 2001).

Between 1994 and 2000 there have also been changes in the relative importance of inward FDI in Slovenia. The majority of manufacturing industries either maintained their share

of total FDI inflow or increased the share. The share of the service sector in the total inward FDI increased considerably. The largest change occurred in the financial services sector. Yet the telecom service has not seen a considerable change. The share of inward FDI in the category of postal and telecom services increased from 0 percent in 1994 to 0.4 in 2000. (OECD 2002, 11).

7.3.2 Legal Framework for FDI

Slovenia gained state independence in 1991, and filed an application to join GATT in 1992. Slovenia was the last contracting party to join the GATT in 1994 and was a founding member of the WTO in 1995. As Slovenia had to commit to the Agreement on Trade Related Investment Measures (TRIMs), most legal restrictions to foreign direct investments were dismantled in the first half of the 1990s, thus leading to the first wave of FDI inflow (WTO 2002, 13, OECD 2002). Slovenia's investment measures have been WTO compatible, especially when considering that Slovenia became an original member of the World Trade Organization as a developing country; preferential status as a developing country expired in 1997 (Brinar 1999, 249). TRIMs article 4 grants developing countries exceptions in complying with obligation of national treatment (Folsom et al 2002, 331).

As far as specific measures are concerned, foreign companies are allowed to own 100 percent of equity without a prior approval requirement. Also, tax administration and the protection of intellectual property rights are generally well organized and administered (WTO 2002, 26). Recently, the government has designed targeted policies to make Slovenia an even more attractive investment location for the foreigners. The government offers direct financial assistance for companies that aim to generate an additional 100 jobs in the first three years of operation. This grant is meant for financing a portion of fixed assets as long as the investor invests at least 2 million euros (USD 2.2 million) (World Trade Organization 2002, 29).

Companies may also be able to reduce their income tax from 25 percent to 10 percent by investing in two special economic zones. In these zones, companies may apply for preferential treatment in terms of value-added tax and an accelerated depreciation of assets. The government has also designed a special three-year plan called “Government Incentive Scheme 2001-2004” to attract FDI by smoothing the administrative hassles.

However, the current urge to attract investments is a recognition that previous policies kept foreign investors at bay. “The existence of capital controls, the prevalence of privatization operations through management-employee buyouts, the complex formula requiring ownership of companies to be spread among various investors (investment funds, Slovene Development Corporation), and the two-year freeze on the sale of shares acquired through the national voucher program left limited room for acquisition by international investors, in particular through the stock market” (WTO 2002, 26). In addition, other impediments to investment, such as compulsory requirements regarding the presence of Slovenian nationals on the management or executive boards of companies,¹⁰ the procedures related to the acquisition of land for industry, procedures for the approval of industrial sites, and some aspects of labor legislation created additional barriers. FDI inflows into Slovenia had slowed significantly by 1998 and continued to decrease in 1999 and 2000 (OECD 2002, WTO 2002, 11, 26). The core reasons for the slow down can be defined as a discriminatory privatization process that preferred domestic investors to foreigners, pervasive capital account restrictions, and a hesitant process of liberalization in the service sector (WTO 2002, ix, x, 13, and 26). Hence, “Greenfield” investment¹¹ has been the dominant form of FDI (WTO 2002, 26). The WTO, OECD and other

¹⁰ It was eliminated three years ago (WTO 2002, 26)

¹¹ The term “greenfield” investment implies FDI that involves establishment of a new firm and/or construction of a new plant rather than buying an operating business and/or plant.

international organizations see the main barriers for FDI in an open privatization policy and a stable regulatory environment. Protection against foreign investments has been used to minimize the negative distributional effects of economic change.

7.4 Telecom Sector and Regulation

The reluctance to privatize and liberalize the Slovenian market has had an extreme impact on the telecom sector. Throughout the 1990s, the Slovenian government engaged in building a “national champion” of the incumbent telecom company.

7.4.1 Ownership of Incumbent Company

While other CEE countries sold a large stake of their incumbent companies to the strategic investors from the West, the Slovenian government still owns the majority of shares. The state agency responsible for telecom and postal services was split into Telecom and Post in 1995. *Telekom Slovenije* took over all PTT obligations; in 1997, the Telecommunications Act was adopted and *Telekom Slovenije* was transformed into a public stock company. Seventy-four percent of shares of the incumbent telecom company, *Telekom Slovenije*, are owned by the state; 13 percent of shares are owned by workers, the rest are state-owned, domestic investment funds. In addition, two employee representatives are also members of the board of *Telekom Slovenije*, as is typical of Slovenian companies.

Other CEE countries, especially top reformers, have typically privatized their telecom companies earlier and attracted FDI from multinational telecom companies. Hungary privatized a part of the incumbent in 1993, the Czech Republic in 1995, Poland in 1998, and Slovakia in

2000.¹² The almost non-existent inflow of FDI into Slovenia's telecom sector over the last decade is a combined result of the state's unwillingness to privatize the incumbent telecom company and its reluctance to truly open the telecom market. This outcome in the telecom sector is a clear reflection of the broader selective protection toward inward FDI in Slovenia, which aimed to minimize the increased influence of international economic factors on the Slovenian economy and rapid distributional effects thereof.

Particularly the domestic nature of complete ownership rather than just state ownership has socialized the telecom company business and allowed domestic interest groups to gain leverage against privatization. Possible privatization has been a constant topic of discussion with the EU, and the decision has not been made as of the writing of this thesis.

7.4.2 Telecom Market Opening

Similarly, continuous delay has also been a factor in opening the telecom market to competition. Slovenia had originally planned to open the market for competition by the end of 2000 (Institute of Macroeconomic Analysis and Development 1998, 116-117). Most importantly, the telecom market opening in the fixed line telephony services has been constantly postponed both formally and informally. Initially, the government had planned to open market by the end of 2000 (IMAD 1998, 116-117, *Telekom Slovenije*). Slovenia formally ended the monopoly in fixed lines over voice telephony by the Telecommunications Act, which set forth the legislation for opening the market, was not adopted until 2001. The situation is well characterized by the statement from the government press office: "After the Slovenian telecommunications market was formally liberalized on 1 January 2001, the new Telecommunications Act was passed by Parliament on 10 April, defining in detail the rules of operating in the liberalized market and providing for their

¹² Slovakia delayed privatization because the authoritarian Prime Minister Vladimir Meciar, who run the country in the second half of 1990s, declared the incumbent telecom company "a strategic company." Once Meciar was forced to step down, the majority stake was sold to Deutsche Telekom in 2000.

implementation” (Republic of Slovenia 2001). However, the act legislated a transition period in the market opening in areas of leased lines, the local loop, number portability, and cost-based accounting mechanism for operators with significant market power until July 2002 (Commission of the European Communities 2001, 67). Hence, the market was not opened until mid-2002, and informally the new competitive environment has not ensued because the Telekom Slovenije monopoly continues to exist in reality.

The regulator of the telecom sector was set up in 2001. However, according to the European Commission assessment of 2003, Slovenia still has to strengthen the regulator in order to make the agency truly independent (Commission of the European Communities 2003, 35-36). The market opening has been subject to constant pressure by the EU, which demanded the candidate countries to open their telecom markets by the end of 2002. The ineffective implementation of anti-trust aspects of competition law that meets the EU standards was highlighted in November 2003 by the report of European Commission on the progress of EU applicant countries (Financial Times 2003).

In comparison with other countries’ reluctance to open their markets for competition and privatize incumbent telecom companies, Slovenia’s performance in the telecom sector has been good. First, the number of main lines increased from 31 lines in 1995 to 40 in 2001 (International Telecommunications Union 2003). Second, the nature of socialization of ownership—where the stakeholders are not a narrow interest group but rather a disperse group of workers, financiers, and business people—has increased the accountability of *Telekom Slovenije*. This is reflected in the prices of Internet connections, which among the least expensive in the CEE region (eEurope 2003+ 2002, 18). However, the costs of such low prices may have been widely socialized as well.

Third, Slovenia had formally liberalized the market in data transmissions, but in reality, the market was still held by a monopoly. ISP services were partially liberalized but licenses were required which increased the cost of entry. Leased lines and alternative infrastructure use was partially liberalized (ESIS 1999b).

Hence, there were some ways to overcome the power of the incumbent but, on balance, the gap between formal and informal rules indicates that the monopoly had *de facto* control not just in the voice telephony but also in the provision of Internet connectivity. The need to solve the issue was a part of the rationale that led to the creation of the Ministry of Information Society in 2001. The decision to create a special ministry grew out of the recognition that a more concentrated effort was needed to coordinate the government's ICT priorities. Some existing relationships between the Ministry of Communication and the incumbent telecom company did not encourage reform of the telecom sector.

7.4.3 WTO Basic Telecom Agreement

Slovenia's domestic approach is reflected in its lack of participation in the extended GATS negotiations on basic telecommunications of 1997. Different from other EU candidates in the CEE, Slovenia did not take specific commitments and did not improve its GATS Schedule in 1995, which reflected the state of domestic legislation then. Hence, Slovenia's schedule of commitments to the Agreement on Basic Telecommunications Services of WTO, which is an annex to the Fourth Protocol of General Agreement on Trade and Services (GATS), does not include most telecommunications services and states that "setting up and operation of telecommunication networks infrastructure as well as the provision of voice telephone, packet

and circuit switched data services, telegraph, telex, mobile radio telephone, satellite and paging services are excluded (public monopoly)”(World Trade Organization 1995, 16).

In the case of value-added telecom services, Slovenia limited market access and national treatment in the cross-border supply mode until January 1, 1998. Market access in the supply-mode of commercial presence stated that share of foreign participants in the provision of value-added telecom service providers may not exceed 99 percent of equity and issuance of licenses depends on whether basic telecommunications network is used for value-added services (World Trade Organization 1995, 16). Otherwise, market access and national treatment were not limited in the area of value-added telecom services (with the exception of limitations on market access and national treatment in the mode of supply concerning the presence of natural persons as provided in the horizontal section of the schedule of specific commitments). On the positive side, Slovenia has implemented WTO TRIPS and EU compatible legislation on the protection of intellectual property rights. In 2001, Slovenia joined the Information Technology Agreement (ITA) (World Trade Organization 2002).

7.4.4 Telecom Market Regulation

Slovenia has been reluctant to bring its anti-trust legislation to the EU standards throughout the 1990s. The 1993 Law on Competition Protection had major shortcomings in market definitions, market domination, and giving investigative powers to the Competition Protection Office (CPO). The National Programme for the Adoption of the Acquis set forth major goals in amending the legislation in 1998, but laws remained unchanged. The CPO had very low staff levels, and enforcement of rules has been a constant problem (Commission of the European Communities 1998, 22-23). In June the Law on the Prevention of Restriction of Competition was adopted that

brought the legislation broadly in line with the EU *acquis* (Commission of the European Communities 1999, 34). The act laid down the functions and independence of CPO. Concerning the telecom sector, CPO initiated two investigations into Telekom Slovenije's alleged abuses of dominant market position which concerned non-transparent pricing practices of leased lines in 1999 (Commission of the European Communities, 36). Currently, in the field of anti-trust legislation, Slovenia needs to strengthen administrative capacity and enforcement of existing laws by the Competition Protection Office in order to comply fully with the EU legislation (Commission of the European Communities 2003, 21-22).

By end of 2000 Slovenia had not established a separate regulatory authority in the telecom sector, tariff rebalancing, liberalization of voice telephony and alternative networks for the provision of telecom services were all not reflecting the EU telecom *acquis* requirements. The Act of Telecommunications was adopted in May 1997, and it provided legal framework for establishing key principles of EU legislation. However, Slovenia was extremely slow in implementing the legislation (Commission of the European Communities 1998, 25). More specifically, insufficient resources in providing regulatory functions were apparent. The state preferred to spend money on infrastructure development rather than providing fair rules in the market.

The 2001 Telecommunications Act foresaw transitional periods in market opening in the areas of leased lines, unbundling the local loop, number portability and cost-based accounting mechanism for operators with significant market power. These transitional measures expired in July 2002 (Commission of the European Communities 2001b, 69). Hence, *de facto* and *de jure* market opening took place in July 2002 as many of those measures are crucial for securing effective regulatory framework for the market participants. Most importantly, the act laid down

the legal foundation for creating the Agency for Telecommunications and Broadcasting that was established in July 2001. EU assessment in 2003 states that Slovenia is partially meeting the requirements of the telecom *acquis*. Particularly, the national regulator should be strengthened, legislation concerning operators with significant market power should be improved and fair competition in the fixed lines to be ensured (Commission of the European Communities 2003, 35-36).

7.4.4.1 Telecommunications and Broadcasting Agency

The Telecommunications and Broadcasting Agency (TBA) was an outcome of the merger between the Telecommunications Administration and the Broadcasting Council. However, as these two previous agencies were not really independent regulators, in many ways the TBA represents a completely new structure. The TBA is an independent body financed by the fees collected from the operators in the broadcasting and telecom sectors. According to article 109 (1) and Article 116 (1) of the 2001 Telecommunications Act, the agency is funded by Telecommunications Fund, which is part of national budget.¹³ Hence, the fees will go to the fund, will be reflected in the national budget as a separate category. It functions as technical standard setters and economic regulator of these sectors. However, the independence of the agency can be questioned as article 107 of the telecommunications act states that the director and deputy directors are nominated by government on the basis of public tender. Furthermore, article 108 (1) states that the agency is governed by statutes that are issued by the director but approved by the government. The term of office for director and deputies is five years. Article 107 (3) and (4) set severe limitations on the involvement of directors and their relatives (partners, spouses, children) in the economic activities of the sector under their jurisdiction.

¹³ Telecommunications Act. 2001. Republic of Slovenia. Available at [http://mid.gov.si/mid/mid.nsf/V/K851F2F26C175EC34C1256C0C006F521D/\\$file/Telecommunications_Act.pdf](http://mid.gov.si/mid/mid.nsf/V/K851F2F26C175EC34C1256C0C006F521D/$file/Telecommunications_Act.pdf)

In addition to its directors, the agency has two councils: the Telecommunications Council and Broadcasting Council that advise the director. Article 107 (6) states that either of these bodies may propose to government that the director and/or deputies be dismissed. Article 117 (2) says the Telecommunications Council consists of 11 members appointed by the National Assembly (parliament) for a term of five years. The council members cannot have political affiliation, but up to one-third of them may represent operators in this sector.

In sum, several provisions of the Telecommunications Act concerning the work of TBA do not allow this agency to function with full independence. The role of government in nominating the director and approving statutes and the involvement of operators in the Telecommunication Council are reasons for concern.

7.5 Conclusion

Even before the abolishment of COCOM export controls, Slovenia was more advanced than any other CEE country in terms of ICT diffusion. Since its break from Yugoslavia, Slovenia has selectively pursued protectionist and targeted policies in regard to foreign direct investments. Instead of opening entry to all investors on an equal basis, the government has discriminated against foreign investors in the privatization process and has meddled in the process of direct financial incentives instead of following rules of fair play (World Trade Organization 2002). Such selective protectionism has not been supportive of the telecom sector, and has had much broader implications than simply drawing FDI for the incumbent. Constant delays in the market opening have also kept away potential “Greenfield” FDI in the telecom sector, as the incumbent controls the network in reality and the local loop (the so-called “last mile” that connects individual users into the main network) has not been unbundled. Not only has this allowed the incumbent to completely control the fixed line voice telephony market but also all other services

that are made possible through fixed line telephony (e.g. ISPs) or that have to connect at some point to the fixed line telephone network (e.g. mobile telephony). Hence, the WTO recommendation on service industries applies to the telecom services. “In general, the process of modernization in service industries could benefit from increased foreign presence, in terms of increased transfers of capital, technology and know-how, and hence from enhanced market access commitments in the WTO” (World Trade Organization 2002). Minority shares in the telecom company could have been privatized in 1999-2001. The ownership is not necessarily linked to control, and the government could have had a golden share to retain control. Furthermore, several years ago telecoms remained an attractive investment opportunity, and concurrently, the inward FDI into Slovenia slowed down. Privatization could have provided an attractive alternative, as it would have benefited both the telecom sector and other areas of economy.

8. COMPARISON OF ESTONIA AND SLOVENIA

By comparing the two aforementioned cases, it is obvious that Slovenia had a better initial starting position than Estonia. Slovenia had more advanced infrastructure, mainframe computer penetration, and higher personal computer penetration. Furthermore, Slovenia’s ability to trade facilitated technology transfers from the West. Estonia, on the other hand, was part of the closed economic system of the Soviet Union, and certain technologies (such as mainframe computers) never even reached the country. Since Internet diffusion is dependent on the availability of existing infrastructure and information technologies, Slovenia inherited the best starting position of the former Eastern Bloc.

However, a decade later, Estonia's Internet diffusion level equaled that of Slovenia. At the same time, Slovenia made tremendous progress, comparatively speaking. Estonia's independence from older information technologies, that age relatively quickly, combined with proper public policies, actually created strength in the adoption of new technologies. Thus, dependence on older technologies may lead to higher transaction costs affiliated with the adoption of certain new technologies. Sometimes building a new house and the renovation of old house may be equally costly; at other times building a new one might even be cheaper than renovation of the old.

Estonia started as a *tabula rasa*, making it possible to bring in the newest technologies. With combined new investments in infrastructure, diffusion was able to accelerate on the basis of a rapid growth rate. Slovenia's dependence on older technologies created disadvantages as the interconnectivity between older and newer technologies is not always possible. Such a phenomenon is evident in Slovenia's large number of personal computers that are not connected to the Internet. Technically, it may be difficult to implement the connectivity between newer and older technologies.

Most importantly, the policies taken by Slovenia and Estonia to encourage ICT diffusion also reflect the general path of reform and chosen political economy models in both countries. Estonia had a radical, shock-therapy type approach to transition aimed at creating a free-market economy. Slovenia chose a gradual reform path and a political economy system similar to social democratic corporatism, where public policies are the outcome of national consensus among left-leaning governments, industry, and centralized labor unions (Garrett 1998). What makes the Slovenian and Estonian cases educational for all countries in general and transition countries in particular is that both nations achieved the highest Internet penetration rates under conditions of

monopoly in fixed-line voice telephony. The 2001 Estonian and Slovenian Internet access costs were significantly lower than in the Czech Republic, Hungary, Latvia, Lithuania, Poland, and Slovakia (eEurope+ 2003 2002, 18).

TABLE 5. KEY CHARACTERISTICS OF POLITICAL ECONOMY FRAMEWORK OF ESTONIA AND SLOVENIA, 1991- 2002

CHARACTERISTICS	ESTONIA	SLOVENIA
Initial Starting Position in the 1990s	Almost no Western ICT technologies; poor infrastructure; fairly developed technical skills.	Limited availability of Western technologies; basic infrastructure; strong IT skill base.
Nature of Transition	Radical across-the-board economic reforms; full liberalization of the economy.	Gradual reforms; incremental opening of the economy; many protectionist measures.
Political Economy System	Predominantly free market.	Typical characteristics of social democratic corporatism.
Trade Policy	Open trader; unilateral free trade from 1995-2000.	Fairly open trader; gradual elimination of protectionist measures throughout the 1990s.
Foreign Direct Investment Regime	Open non-discriminatory regime; rapid privatization; foreign participation encouraged.	Greenfield investments preferred; discriminatory towards foreigners; domestic investors preferred to foreigners in the privatization process.
Power of Labor Unions	Weak; fragmented.	Strong; centralized bargaining.
Dominant Ideology	Center-right; free market liberal.	Center-left; social-democratic.
Privatization of State-Owned Enterprises	Rapid; largest enterprises sold in the first half of the 1990s.	Slow; privatization of large enterprises started in the late 1990s and is ongoing today.
Industrial policy	Non-existent.	Direct encouragement of specific sectors/firms.

Under monopoly conditions, local calls are usually subsidized by the incumbent telecom company at the expense of long-distance calls in order to provide universal service. Therefore, the initial diffusion of the Internet (which occurs by dial-up access) can occur relatively cheaply; i.e., at the expense of international calls. As long as monopolist local call prices are acceptable and quality of service is tolerable, the market opening in fixed calls is not a precondition for Internet diffusion. However, such an approach is not sustainable in the long run. The increased sophistication of users will raise the demand for more competitive services, which in turn, will work against the incumbent and therefore limit the diffusion of the Internet.

Hence, opening the Estonian market in January 2001 – not delaying it like Slovenia – seems to have been good timing. The market opening increased the prices of using Internet through dial-up access because the move to cost-based prices meant that local telephone services were no-longer cross subsidized by international telephone calls. Consequently, many users switched to broadband access as it became cheaper in relative terms. This in turn, increased the time that users spent online and gave incentives for market participants to offer cheaper and more innovative services than before.

**TABLE 6. KEY CHARACTERISTICS OF THE TELECOM SECTOR
IN ESTONIA AND SLOVENIA, 1991-2002**

CHARACTERISTICS	ESTONIA	SLOVENIA
Privatization of Telecom Company	49 percent privatized in 1992; government's stake reduced to 27 percent in 1997.	Owned by state and state-controlled investment funds; 13 percent of shares belong to employees.
Nature of Ownership	International and domestic; Nordic state-owned telecoms; Estonian state; private investors; investment funds.	Dominantly domestic; Slovenian state owns 74 percent; employees own 13 percent; remainder belongs to state and domestic investment funds.
Monopoly of Fixed-line Services	Monopoly ended at the end of 2000.	Monopoly was supposed to end by the end of 2000 but was constantly delayed and transitional arrangements were granted until mid-2002.
Leased Lines	Partially liberalized before 2001; completely liberalized after 2001.	Partially liberalized before 2001.
ISP Services	Free market.	License required throughout the 1990s (not anymore).
Data Transmissions	Free market.	Formally liberalized; monopoly in reality
Governance	Ministry of Telecom represents the state in the company; independent regulator oversees.	Ministry of telecom represents the state in the company; independent regulator oversees; Special Ministry of Information Society set up in 2001.
Prices of Internet Access	Among the lowest in the CEE	Among the lowest in the CEE.

This ability to maintain relatively low prices for telecom services in Estonia and Slovenia indicate that the Slovenian and Estonian governments were able to keep the incumbent telecom company accountable, at least to a greater extent than other CEE countries. On balance, uncertainty in market opening and privatization of telecom in Slovenia reflects a higher degree of

regulatory capture of government policies by vested interests than in Estonia. A desire to minimize the negative effects of changing economic environment did not allow delivering the positive impact of “creative destruction” by wiping out the informal networks of the socialist era. That Slovenia had 179 Internet hosts per 10,000 inhabitants in 2002, demonstrates the existence of higher barriers for entry. At the same time, Estonia had 468 hosts; almost three times more than Slovenia (International Telecommunications Union 2003). This difference points to structural impediments on the supply side in Slovenia.

Estonia’s experience suggests that the market opening of the telecom sector is more achievable under the existence of diverse interest groups rather than a centralized national bargaining system. Economic openness of Estonia increased competitive pressures, rendered the dominance of narrow interests unlikely. Slovenia’s engagement in selective protectionism – where trade openness was preferred to FDI and foreign ownership –and the social democratic corporatist nature of the country blocked the opening of telecom sector constantly. As Slovenia’s initial starting position was much better than Estonia’s, then obviously Estonia’s more radical approach in changing the formal rules of the game reduced the transaction costs in Internet diffusion. Certainly, Slovenia has progressed rapidly as well.

However, the country has benefited from the heritage of the previous system, and the advancement of Internet diffusion could have been even greater with higher levels of competition in the telecom market. Involvement of diverse investors could have reduced inefficiencies in allocation of capital. For instance, Slovenia has more main telephone lines than Estonia because the country has invested more money into infrastructure development. But as similar Internet diffusion rates demonstrate, such a high number of main lines is not necessary.

The overall impact of pursuing selective protectionism in Slovenia or across the board liberal economic policies in Estonia is indicated by the following table. On the balance, the table shows clearly that Estonia ranks higher in both in the provision of ICT services and progressiveness of government policies.

TABLE 7. KEY CHARACTERISTICS OF ICT BUSINESS ENIRONMENT AND GOVERNMENT POLICIES OF ESTONIA AND SLOVENIA IN 2002
Rankings on a scale of 1 to 7 (7 is best, 1 is the worst)

Indicator	Estonia	Slovenia
Broadband Internet access availability	5.0	4.0
Local specialized IT services availability	5.4	4.5
Competition in ISPs	5.5	3.7
Government online services availability	5.8	3.7
Laws relating to ICT use	4.9	4.6
Government prioritization of ICT	5.3	4.4

Source: Compiled by author based on data from the World Bank (2003a and 2003c).

Broadband access ranking indicates that this service connecting to the Internet through DSL or cable modem is more available in Estonia than Slovenia. Local, specialized IT services measure the availability of specialized information services in the country. Competition in ISPs measures the ISP's competitive ability to ensure high quality and infrequent interruptions in service at low prices. As Estonia ranks significantly higher in these two categories, it confirms that Slovenia has structural impediments on the supply side of the Internet service provision. Table 2 (in Chapter 3) indicated that the number of Internet hosts per 10,000 inhabitants is 2.5 times higher in Estonia than in Slovenia. Such an outcome is heavily dependent on competition policy and whether entry barriers exist in the sector.

Government online service availability measures the ability to conduct business with government online. Laws relating to ICT use measure the efficacy of laws relating to electronic commerce, digital signatures, and consumer protection from the perspective of development and enforcement. Government prioritization of ICT measures the overall priority of governments' ICT policies. The higher ranking given to Estonia demonstrates that the government put more effort into this sector than was afforded by the Slovenian government. However, this policies of Estonia were not sector-specific but rather provided general framework where Internet and other ICTs can get utilized and diffused by companies, individuals, government agencies and other actors.

9. POLICY IMPLICATIONS

In general terms, these case studies demonstrate that transition and developing economies should open their telecom market for competition immediately, while concurrently privatizing incumbent telecom companies. In order to ensure maximum benefits of such a change, these policies should be combined with a liberal foreign direct investment regime in both the telecom sector and other areas of the economy. Such openness would help attract firms with diverse interests to the economy, thereby making it difficult for one interest group to dominate policymaking through regulatory capture.

9.1 Advanced Transition Economies Joining the EU

The key lesson from the cases of Estonia and Slovenia is that more advanced transition economies should strengthen regulatory regimes by establishing a regulatory agency with a high degree of independence and the ability to secure fair play in the market. It is obvious that for transition countries in the CEE joining the European Union in 2004 or 2007, the telecommunication legislation of the EU means market liberalization in conjunction with setting

up a stronger regulatory regime (Heimler 2000, 185-186). Formally, all of these countries liberalized their markets by 2003. However, many barriers for competitive market are still informally in place. The key is to increase the accountability of the incumbent telecom company and to try to keep prices of telecom services down by ensuring a competitive market environment through sound regulation. Estonia achieved this outcome by allowing diverse ICT companies to enter the market while incrementally strengthening its regulatory capacity. Most importantly, the case studies demonstrate that privatization of state-owned telecoms increases competitive pressures and reduces the possibilities for political interference.

Slovenia was able to overcome the negative externalities of state ownership and monopoly power of its incumbent telecom company due to the social democratic corporatist nature of the country, where diverse domestic interests and stakeholders were involved. However, Slovenia is exceptional for purposes of drawing recommendations. More advanced transition economies can learn more from Estonia. Though such countries have missed the opportunity for curbing the power of incumbent company monopoly in the manner done by Estonia, they can nonetheless achieve the same outcome by implementing a regulatory framework that secures a higher degree of competition in the market, which will in turn decrease prices of telecom services.

More concretely, policymakers should create an independent regulatory agency and appoint key, long-tenured decision-makers. Effective and independent regulation is especially important when a country is transforming from a monopoly in fixed-line telecom services to a full competitive environment. Market dominance may help the incumbent telecom company abuse the system via rent-seeking and keeping entry barriers high, whereas diversity of potential market participants – achieved through economic openness – minimizes the risk of predatory

behavior on the part of the incumbent. A strong regulatory agency implies more than just a simple telecom regulator. In many ways it should operate as an independent central bank that has control over monetary policy without the political interference.

9.2 Less Advanced Transition and Developing Economies

Of the two case studies, the Estonian experience is more relevant for less-advanced developing and transition countries. By partially opening their markets, limiting a monopoly, privatizing the incumbent company, and creating a liberal FDI regime, these countries can improve their rates of Internet diffusion. Unintended consequences of monopoly in voice telephony should be recognized. In addition, some countries could benefit by immediately opening their market to competition.

The governments of less-advanced transition economies should open their telecom market partially and set a firm deadline for a complete market opening. If a country is poor in capital and needs a significant investment in infrastructure, as was the case with Estonia in the early 1990s, sustaining a monopoly of fixed lines or partial monopoly (in rural areas, for example) can advance the telecom infrastructure. Such commitment to an open market will be completely “locked in” through the engagement of international organizations, such as the WTO and/or via domestic, constitutional means. Furthermore, in combination with a gradual market opening, a country could raise extra cash that could be directed toward infrastructure development via incremental privatization of an incumbent telecom company. In such a case, the establishment of a liberal FDI regime in conjunction with privatization and gradual liberalization could attract additional investors to the telecom service industry, which would then create pressure to keep the monopoly accountable.

The key in such a case, is the avoidance of regulatory capture by the incumbent company, which could delay the market opening. Hence, the diversity of different interests in this scenario is more crucial than the actual creation of a regulatory agency. Here, the main aim of a regulating agency is to set price controls for services that are offered under monopoly conditions. Furthermore, the government should encourage Internet diffusion by offering government services online, which would create additional incentives for using the Internet.

10. CONCLUSION

On the basis of purely static comparison of the two cases, the notion that higher degree of economic openness leads to higher number of Internet users in per capita terms can be rejected. Estonia is significantly more open economy than Slovenia but the per capita Internet diffusion is the same in both countries. However, when taking into account the initial starting position of both countries it becomes obvious that economic openness helped Estonia achieve the same level of Internet diffusion as experienced in Slovenia. Hence, two case studies prove the hypothesis to be correct. Higher degree of economic openness increases the potential to diffuse the Internet whatever is the initial starting position of the country.

The comparison of these two cases contributes to policy literature on Internet diffusion and political economy of reform by offering insights into the public policies of two advanced transition economies. On the economic side, the Internet can deliver tremendous productivity gains. Hence, transition and developing countries are trying to create suitable environments for the diffusion of this technology. Estonia and Slovenia offer broad lessons, demonstrating that it would be naive to assume a specific Internet policy without the necessary changes in the larger framework of policies will help increase Internet diffusion. Both cases suggest the increase in Internet diffusion is linked to a broader economic and political framework. Slovenia's high rate

of Internet penetration, for instance, is explained by its path-dependence derived from the former system and the ability of its gradual reform process to sustain such diffusion.

Estonia's example is particularly relevant for policy reform in transition and developing countries. In these countries the commitment to promote Internet diffusion often falls apart when serious reforms – such as liberalizing the telecom sector and ensuring fair competition in the market – need to be carried out. It should be recognized, however, that Estonia's success in encouraging Internet diffusion owes much to the radical reforms that swept the country throughout the 1990s, and created an extremely open economy that enabled the embrace of the Internet. Most importantly, a regulatory framework was set in place, and allowed the securing of more fair play in the market than typically seen in other transition economies. Evidence of this is found in that Estonia had some of the lowest Internet access costs in the region in 2001. This is demonstrated by its high number of Internet hosts, a number significantly higher than in any other state in Central and Eastern Europe.

The importance of Internet diffusion is usually cited in the punch line of policy programs stressing the need “to move toward a knowledge-based economy,” to depict the ideal nature of an “Information Society,” and to articulate concerns about the “digital divide.” Certainly, the role of the Internet and the number of people in an economy connected to the Internet are not just symbolic, but differ in substance. The Internet can be an important force behind political and economic development as it reduces transaction costs associated with the flow of information. Thus, it can have a profound impact on democratization. All nations interested in this end goal should prioritize the exploration and implementation of mechanisms that facilitate Internet diffusion in transition and developing economies.

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APPENDIX I

Economic and Other Key Characteristics of Estonia and Slovenia Compared with Latvia and Slovakia.

Indicators	Estonia	Latvia	Slovakia	Slovenia
Per capita GDP in 2001 (US\$)	3794	3249	3804	9790
Per capita GDP in 2000 at PPP (US\$)	10 066	7 045	11 243	17 367
Trade to GDP ratio in 1999 (%)	186.0	120.6	134.5	112.6
Average weighted tariff in 1999 (%) ¹⁴	0	5.3	12.0	10.6
Inward FDI performance ranking/ Potential ranking/classification ¹⁵	21/38/ front- runner	51/55 front- runner	26/48 front- runner	105/29/ below potential
Inward FDI as a % of GDP in 2002 (outward FDI as a % of GDP)	65.9 (10.5)	32.4 (0.8)	43 (1.7)	23.1 (4.8)
The share of telecom sector in Inward FDI (%).	22.6 ¹⁶	19 ¹⁷	16.9 ¹⁸	0.4 ¹⁹
Main telephone lines in 1995/2002 per 100 inhabitants.	28/35	28/30	21/26	31/41
Number of personal computers per 100 inhabitants	21	17	18	30
Number of cellular users per 100 inhabitants	65	39	54	84
Internet hosts per 10.000 inhabitants	468	152	160	179
Internet access costs per hour in 2001 (dial-up	1.3/2.9/2.2	4.2/8.8/3.5	1.8/5.0/1.9	1.5/2.1/1.9

¹⁴ Estonia had unilateral free trade from 1995-2000 without any tariffs (including agriculture). First tariffs were introduced on agricultural products in 2000 (a bit more than 2 percent) as a part of package of reforms in order to join the European Union.

¹⁵ The rankings are based on UNCTAD 2003 and classification on UNCTAD 2002. UNCTAD (2002) has divided countries into four groups by FDI performance and FDI potential, 1998-2000: 1) front-runners, 2) above potential 3) below potential, 4) under-performers.

¹⁶ This figure includes communications and transport as of 2002.

¹⁷ This figure represents transport and communication as of 2000.

¹⁸ This figure represents transport, warehousing and communications as of 2000.

¹⁹ This figure represent category postal and telecom services in 2000 (OECD 2002, 11).

access, peak time) Approximately in euros ²⁰ / at PPS per peak hour/PPS per off peak hour approximately in euros ²¹				
Transparency International Corruption Perceptions Index Ranking in 2002	29-30	52-56	52-56	27
Size of shadow economy in 2000-2001 (% of GDP).	39	40	27	29
Position in the index of economic freedom ranking in 2002	6	33	66	62
Position in the global competitiveness index of the World Economic Forum. Growth/Business Competitiveness Index Ranking in 2003.	22/28	37/29	43/43	31/30
Human development index ranking in 2002	42	53	36	29
Population (millions)	1.4	2.33	5.38	2.0

Source: Composed by author with data from Feldmann and Sally (2001), International Telecommunications Union (2003), World Economic Forum (2003), United Nations Development Programme (2002), eEurope+2003 (2002), Schneider (2003), Transparency International (2002), Heritage Foundation/Wall Street Journal (2002).

²⁰ According to eEurope+2003 Report (2002) Estonia and Slovenia have access costs that are lower than in Hungary, Latvia, Lithuania, Poland and Slovakia. Slovenia's and Czech Republic's Internet access costs are equal (Estonia's are lower than that of Czech Republic and Slovenia). Romania and Bulgaria have significantly lower access costs than Estonia and Slovenia. But in these two countries other barriers to Internet diffusion may offset the benefits of low access costs (quality of service, limited availability of PCs, low income et al).

²¹ PPS refers to Purchasing Power Standard. According to eEurope+2003 Report (2002), "Purchasing Power Parities are obtained as a weighted average of relative price ratios regarding a homogeneous basket of goods and services expressed as a unit that is independent of national currencies".