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Market Entry and the Change in Rail Transport Market when Domestic Freight Transport Opens to Competition in Finland

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Keywords: rail transport, market entry, entry barriers, entry deterrence, opening competition

ABSTRACT

Domestic rail freight transport was opened to competition as of the beginning of 2007. This means that all operators who meet the regulations can enter the rail freight transport market and operate rail transport. The purpose of this research was to study the market entry of new entrants, and the barriers related to it. The research also set out to evaluate the change in the rail transport market and the equal realisation of competition prerequisites.

The Finnish railway legislation, which is based on EC legislation, states that the conditions for operating rail traffic include a safety certificate, an operating licence, the allocated rail capacity, and a rail network access contract. The government has an important role in creating a non-discriminatory playing field, as the conditions of perfect competition cannot be achieved. The market entry barriers and the actions of a dominant company also have a big effect on the functionality of competition.

The research material consisted of answers gathered from an expert panel, comprising over 50 persons, using the Delphi method and two question rounds. The analysis of the research material was conducted using qualitative content analysis and a narrative approach, and scenario-based working methods typical for futures studies. The material was analysed to form expert profiles and their character descriptions, and scenarios that describe the market entry of different types of railway undertakings. This type of triangulation is new in this sector and helps to highlight new aspects of the examined phenomenon. The research results were evaluated by mirroring them on the results of the special evaluation interviews.

Based on this research, railway stock acquisition and the difficulty of accessing the services create the greatest barriers to market entry. Other entry barriers include a long market entry phase, recruiting staff, inadequate rail capacity, and the possible actions of the market dominating company which complicate market entry and competition. The research results show that there will be more competition in rail freight transport than expected. The most significant scientific contribution of the study is the clustering of administrative factors into one entity that creates a substantial entry barrier in addition to financial and technical issues. The authorities are expected to be active, more customer-friendly and quick, instead of the passiveness they have shown so far.

Tampereen teknillinen yliopisto
Tuotantotalouden osasto, Liikenne- ja kuljetustekniikan laitos
Mäkitalo, Miika: Markkinoilletulo ja rautatiemarkkinoiden muutos kotimaisen tavaraliikenteen avautuessa kilpailulle Suomessa

Hakusanat: rautatieliikenne, markkinoilletulo, markkinoilletulon esteet, markkinoilletulon estäminen, kilpailun avaaminen

TIIVISTELMÄ

Rautateiden kotimainen tavaraliikenne avattiin Suomessa kilpailulle vuoden 2007 alusta. Tämä tarkoittaa sitä, että säädökset täyttävät toimijat voivat tulla rautatiekuljetusmarkkinoille ja harjoittaa liikennettä. Tämän tutkimuksen tarkoituksena oli selvittää uusien toimijoiden markkinoilletuloa ja siihen liittyviä esteitä Suomessa. Työssä tavoitteena oli myös arvioida rautatiemarkkinoiden muuttumista ja tasapuolisten kilpailunedellytysten toteutumista.

EY-lainsäädännön mukaisen Suomen rautatielainsäädännön mukaan rautatieliikenteen harjoittamisen edellytyksiä ovat turvallisuustodistus, toimilupa, myönnetty ratakapasiteetti ja rataverkon käyttösopimus. Julkisen vallan rooli toimivan kilpailun edellytysten luomisessa on tärkeä, sillä täydellisen kilpailun olosuhteita ei voida saavuttaa. Kilpailun toimivuuden kannalta markkinoilletulon esteillä ja markkinoita hallitsevan yrityksen toiminnalla on suuri vaikutus.

Tutkimuksen aineisto muodostui hieman yli 50 hengen asiantuntijapaneelilta delfoi-tekniikalla kerätystä kahden kyselykierroksen vastauksista. Aineiston analyysissä käytettiin laadullista sisällönanalyysiä ja narratiivista analyysiotetta sekä tulevaisuudentutkimukselle ominaista skenaariotyöskentelyä. Aineistosta muodostettiin asiantuntijaprofiilit ja niihin liittyvät tyyppikuvaukset sekä erilaisten rautatieyritysten markkinoilletuloa kuvaavat skenaariot. Tämän tyyppinen menetelmien rinnakkainen soveltaminen on tällä alueella uutta ja auttaa näkemään tutkittavasta ilmiöstä uusia puolia. Tutkimusten tuloksia arvioitiin peilaamalla niitä erityisten arviointihaastattelujen tuloksiin.

Tutkimuksen mukaan markkinoilletulon merkittävimmät esteet ovat kaluston hankinta ja palveluihin pääsyn vaikeus. Muita markkinoilletulon esteitä ovat pitkä markkinoilletuloaika, henkilöstön hankinta, rataverkon ratakapasiteetin riittämättömyys sekä mahdollinen markkinoita hallitsevan yrityksen markkinoilletuloa ja kilpailua vaikeuttava toiminta. Tulosten valossa rautateiden tavaraliikenteessä kilpailua tulee kuitenkin olemaan enemmän kuin aikaisemmin on odotettu. Tutkimuksen merkittävin tieteellinen kontribuutio on hallinnollisten tekijöiden yhdistäminen yhdeksi laajaksi kokonaisuudeksi, joka muodostaa huomattavan markkinoilletulon esteen taloudellisten ja teknisten seikkojen ohella. Viranomaisilta odotetaan nykyisen passiivisena nähdyn otteen sijaan aktiivisuutta, asiakasystävällisyyttä ja nopeutta.

FOREWORD

After a nearly 150-year journey, the railways in Finland have reached an interesting turning point: railways are abandoning the era of a single, monopoly operator and moving on to a situation where the market has several operators[1] and internal competition within the industry. The air is filled with anticipation and excitement, and the atmosphere could be described with a quote from Juhani Aho's classic novel: "Railway… one could not really figure out what it was all about, no matter how hard one pondered and guessed about" (Aho 1884, 32). The traditional railway sector which – especially internationally – is organised with vast human resources and operates in a very bureaucratic manner is now switching to a competitive situation familiar from other areas. Quoting one of the answers in the research material – although with a different meaning – we could say that we are currently experiencing the metamorphosis of a dinosaur.

This dissertation was born from my enthusiasm for research and opening rail transport to competition. Due to the work economic reasons of this research I have carried out on the side, I chose my research topic based on my own interests, official duties, and the research needs of the Finnish Rail Administration. Even though the selection of my research topic may seem trivial from the aforementioned perspective, the selection follows the four topic selection guidelines[2] set forth by Eco. At the same time, working on the dissertation has provided an interesting opportunity to view the entirety of everything connected to my duties from a researcher's perspective. In my job I deal with my research themes, so I hope that my dissertation will not convey only civil servant's vague ideas expressed using administrative jargon or hard-to-understand judicial-corporate thoughts[3], but that it would, on the contrary, reflect Schopenhauer's (1974, 522) guideline: "One should use common words to say uncommon things; but those authors do the very opposite."

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[1] The completion time of the research, just before the competition realizes, is ideal. As a researcher, I naturally wanted to steer clear of Desiderius Erasmus Roterodamus' (1974, 59) idea of bad timing: "There's nothing more foolish than an untimely wisdom, nor is there anything more irrational than ill-used rationality."

[2] According to Eco (1990, 23–24) one should consider the following issues in selecting a research topic: topic fits the interests of the researcher, material is available, the research understands the material, and the methodological framework fits the researcher's experience. My own topic and research meets this criteria.

[3] Wuori warns that the current power structures will not create anything new. The goal of my research is naturally different, even though I have worked as a civil servant in the Government in the Ministry of Transport and Communications and in the administrative sector of the aforementioned ministry. Wuori (2005, 22) writes: "Parliaments, castles of Government and temples of power and fools running around in them will soon be no more than empty cathedrals and monuments, for which we need to find more reasonable use."

I would like to express my gratitude to the instructor of my post-graduate studies and dissertation, Professor Jorma Mäntynen, who has motivated me to do my best ever since I was completing my M.Sc. studies. He allowed me a great deal of researcher's freedom but yet at the same time offered great instructions, and I hope that my dissertation will illustrate this in a good way. I am thankful and indebted to Tuomo Suvanto, the Ministerial Adviser of the Ministry of Transport and Communications, who was a great help for my research with all of his questions and comments. I would also like to thank Professor Harri Kallberg from the Tampere University of Technology and Doctor Petri Tapio from the University of Helsinki for our research related conversations. I thank Research Professor Risto Kulmala from VTT Technical Research Centre of Finland and Professor Markku Sotarauta from the University of Tampere for the preliminary examination of my dissertation, as their valuable observations allowed me to make several significant improvements to my work.

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I wish to extend my thanks to my friends, my family and Hissas for support and providing me with good counterbalance to my work and research duties. A special thanks goes to my parents, Marjaleena and Markku, who have always believed in me and supported me in everything I do. I want to thank my sister Maarit, who has read my draft versions and given some great development ideas. My dear wife, Sanna-Riia, has been my ever-present discussion and sparring partner. Without her support and encouragement I could have easily run out of steam or got lost in the theoretical methodological jungle. I thank her with the words she is already very familiar with – *Una sed lea*.

Helsinki, November 2007

Miika Mäkitalo

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1 INTRODUCTION

1.1 Research background

The objective of the European Community is to promote the freedom of movement of its citizens, services, goods, and capital. One of the basic principles of the community's internal market is the freedom to provide services, which means that it actively tries to remove barriers of open competition and to create a common market that operates on a commercial basis (see EY 2002a; EY 2002b). Transport policy has held a special position within the Community, and as such it does not include the principle of freedom to provide services. Transport policy has, however, been heading towards a free market. (e.g. EC 2006b, 22; Rissanen & Korah 1991; Mäkilä, Mäkitalo & Mäkelä 2004, 381, 384–386.)

The Commission of the European Communities published its first White Paper on transport policy in 1992, and it dealt mostly about opening up the transport markets. In 1996 the Commission published a White Paper called *A Strategy for Revitalising the Community's Railways* (EC 1996), which had the same key message. The White Paper *European transport policy for 2010: Time to decide* (EC 2001), which outlines the EU's transport policy, states that the EU must develop an economically, socially and environmentally sustainable transport system. The Commission is concerned about the increase in road transport. As a result, the EU's transport policy aims to even out the imbalance between modes of transport and shift freight from road to other, more environmentally friendly modes, such as short-haul transport by sea, transport by inland waterways, and rail transport. (EC 2001, 6–20; EC 2006b.)

In other words, promoting rail transport is an integral part of the European Union's transport policy. Rail transport has shown some favourable development, but on the other hand, this particular mode of transport has been – quoting the Commission – in a state of "decline". Factors such as the lack of infrastructure, incompatibility, poor productivity and unreliable services, have been considered as impeding the development of rail transport. (EC 2001, 27–36.) According to the Commission, opening the market is an absolute precondition for modernising the rail transport, as it will help to improve the competitiveness of this transport mode (EC 2001, 28–32). The condition and market share of rail transport in Finland is good, especially when compared with the EU's older Member States. Even though the opening of competition has, in fact, progressed according to the Community legislation in Finland, the Finnish rail transport policy does not share the Commission's view on opening competition. The Parliament of Finland has outlined, and the Finnish Ministry of Transport and Communications has empha-

sised that the opening of competition is not the primary method to improve the efficiency of the railway sector (see e.g. LVM 2004b). According to the Ministry of Transport and Communications the competitive strength of rail transport services can be improved in particular by developing the infrastructure (LVM 2005b, 7).

International traffic within the European Economic Area[1] was opened to competition in Finland in 2003, according to the first railway package[2]. This means that new players could have entered the western transit traffic. This, however, has not happened. One of the suggested reasons is that the western transit traffic is fairly small and it would be hard to create new traffic. It has also been thought that Finland's different gauge[3] – compared with the rest of Europe – would increase the investments in rolling stock significantly, which would make the western transit traffic less attractive. The other factor that impedes open competition in the western transit traffic is the Baltic Sea. Due to the different gauge and the Baltic Sea, Finland is almost like an island with no connection to European continent. On the other hand, the Finnish freight transport that opened according to the second railway package[4] at the beginning of 2007 has received some attention in various industries (see e.g. Iikkanen & Siren 2005, 50–51; Lönnblad 2006), and also in the press[5]. The interest is naturally affected by the fact a functional transport market supports the competitiveness of industry (VNK 2004, 79).

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[1] The European Economic Area (EEA) refers to the extended area of the European Union's common market, which includes, in addition to the Member States, Norway, Iceland and Liechtenstein, of which the first has some meaning to rail transport.

[2] The railway package refers to the collection of Community rail legislation. The railway package was used to continue the rail policy initiated by the directive on the development of the Community's railways passed in 1991. The railway package was the Community's answer to the poor status of railways that was detected in the 1990s.

[3] The Finnish gauge is 1524 millimetres. The European standard gauge is 1435 millimetres. The Russian gauge is 1520 millimetres, and therefore Russian rolling stock can be used in the Finnish rail network. (RHK 2006c, 16; Mäkelä et al. 2002, 50.)

[4] The European Union continued the opening of the competition with the second railway package. In addition to domestic freight transport, the second railway package includes compatibility and security issues.

[5] There have been several newspaper articles on the opening of the rail transport competition, e.g. Aamulehti 2007, Distributor 2007, Helsingin Sanomat 2007, Hufvudstadsbladet 2007, Forum 2007, Kaleva 2005, Kauppalehti 2006, Kauppalehti 2007, Keski-Uusimaa 2007, Kouvolan Sanomat 2006, Logistiikka 2006, Länsi-Savo 2007, Savon Sanomat 2005, Savon Sanomat 2007a, Savon Sanomat 2007b, Taloussanomat 2004, Turun Sanomat 2005, Turun Sanomat 2006a, Turun Sanomat 2006b.

The objective in Finland has been to create facilities for fair and transparent rail transport competition. According to prime minister Matti Vanhanen's first government's programme (see VNK 2003, 44), the Finnish Ministry of Transport and Communications, lead by minister Leena Luhtanen, drafted an Action Programme that aimed to strengthen Finland's logistic position and to improve the utilisation of the economic potential. The Action Programme focuses on ensuring the prerequisites for rail transport competition and the neutrality of the competition (LVM 2005a, 10–13). Also according to Vanhanen's second government's programme, the rail transport will be promoted by creating facilities for competition (VNK 2007, 34). According to the Ministry of Transport and Communications the authorities' duties must be arranged so that new railway undertakings can operate here once the competition opens up (LVM 2005b, 7).

The changing market situation will also require the government to take a different approach to carrying out its basic task and serving its interest groups. The fact that attention in this sector has shifted from maintaining passages to developing the entire transport system will help to meet the new requirements. Maintaining the passages is not an absolute value in itself, but the passages are there to serve the needs of people and business life (see e.g. Haapasalo & Korte 2002, 2–19, also Ryyppö & Herneoja 2002, 217–218; Mäntynen 2006, 34–36; Mäkitalo 2001, 69–73). The opening of competition will also change the role of the Finnish Rail Administration: the focus will shift from railway maintenance to the customers, the railway undertakings[1] (RHK 2006a, 28; RHK 2006b, 5; Mäkitalo 2006a).

1.2 Deregulation as a part of social development

Opening rail transport to competition is a part of the European transport policy (see e.g. EC 2001). Similarities can be found in the development of rail transport and air traffic: Both of them used to be operated by state-owned monopolies, and now the trend is towards open competition. The European Commission and the European Parliament have promoted this development, but the Member States of the Council of Europe have actually been against the development or its speed. Rail transport is following the footsteps of air traffic, but rail transport's market

[1] The role of the Finnish Rail Administration has changed from constructing railways to providing rail services (RHK 2006a; Mäkitalo 2007a). According to Finnish Rail Administration's definition, the basic task of the office and the end product of its processes is "a rail network that can be operated in the agreed manner" (RHK 2005g).

situation, prevailing in the EC regulations, will not be safeguarded[1]. (Mäkilä et al. 2004, 381–386.)

Opening rail transport and air traffic to competition is also a part of a more general and social development of deregulation: The European Community has been heading towards the freedom of providing services (Rissanen & Korah 1991; Aho, Cornu, Georghiou & Subirá 2006; Alkio 2004). Opening the electric and telecommunications market have been the most visible topics in social discussions. The purpose of opening competition has been to create a common market, boost companies' performance and improve the position of the companies' customers. The competition has not, however, worked favourably in certain sectors of electric and telecommunications markets. In Finland, the goal of opening competition was that the possibility of entering the market and the resulting competition would boost companies' operations in all market sectors. It also aimed at protecting customers from monopolies. The idea was that the customers of the companies would get to enjoy the benefits of more efficient operations. (Airaksinen 1993, 6–7, 76–88, 291–299; see also Purasjoki 2006; Hirvonen, Sulamaa & Tamminen 2003.)

Opening competition and deregulation became part of the social development in the 1990s (Ruokanen 2004, 15; VNK 2004, 93). Competition would be welcome, for example, in production of services, because the productivity of the service and public sector is lower than, for example, in the industry sector (Ruokanen 2004, 39–51, 83–87; VNK 2004, 84–93; Kess 2004). The lack of competition is seen as one of the most significant reasons for poor development of productivity, because effective and functional markets would create innovations and new business operations (VNK 2004, 93–100). The reasons behind opening competition and deregulation are the same as in the globalisation development: barriers for trade and competition are dismantled and new rules are created (Ruokanen 2004, 18–20). Globalisation has helped the movement of capital, products and factors of production, and also lowered their costs (VNK 2004, 11–15), i.e. as the markets

[1] In air traffic, the safeguarding of the market situation can be seen in, for example, grandfather rights. Allocation the air traffic scarcity consists of allocating airport's runway and terminal capacity, i.e. coordinating departure and arrival times (or so-called slots). An airline company will be provided with the same slots also in the next season, if it has used the slot enough during the previous season. In rail transport, the allocation of scarcity applies to the whole train journey. Railway undertakings apply for the required rail capacity from the Finnish Rail Administration, and the Finnish Rail Administration coordinates the applications. The rail capacity is allocated once a year for a one-year long timetable period, and the railway undertakings do not have a priority right on their last year's timetables. Not even a contract signed with the rail network owner on the rail capacity characteristics and use of rail network will guarantee the rail capacity described in the aforementioned contract. (Mäkilä et al. 2004, 384–385; IATA 2005; L 555/2006; RHK 2005f; see also Koolstra 2005.)

open up, the imperative of the European Community will support globalisation as well. Globalisation allows companies to seek their way in places that have an attractive market and where they can attain the best possible productivity. Therefore in the global economy it is not only companies who battle against each other, but also countries. (Ruokanen 2004, 18–20, 113–115; VNK 2004, 16–18; Haapasalo 2006.)

The globalisation development and promotion of deregulation has also received some criticism. Globalisation has been criticised because it has been presented so that it benefits mostly the industrialised countries and weakens the position of third world countries, increases income differences within countries, weakens the opportunities of international politics, makes it harder to maintain welfare states, and increases environmental problems and their underestimation. (Haaparanta 1998, 68–80; Väyrynen 2001, 15–58.) The criticism targeted towards deregulation is often based on the evaluation that the gained benefits are smaller than the drawbacks or that only the selected few get to enjoy the benefits. The criticism for deregulation is often connected to criticism for a larger phenomenon, the market economy. There are several different arguments and arguers behind the criticism towards deregulation and the market economy[1]. The central fears in rail transport have included safety related compromises and the inability to carry out the social service obligation.

1.3 Research objectives and the research problem

This research aims to review the market entry of new operators and the resulting phases in the Finnish rail freight transport. In relation to the new operators' market entry, this research also aims to evaluate the barriers for entering the rail freight transport in Finland. The market entry barriers are connected to industry structures and regulation, but due to companies' strategic games also to how the market reacts to the newcomers. For the abovementioned reason, this study will review and evaluate the strategic behaviour of the biggest operator on the market in promoting or preventing market entry. The research will also evaluate what type of a market change will occur after there are several operators on the market, if that is to take place.

This research aims at answering the following questions:

- What are the prerequisites for entering the rail freight transport market?

[1] See e.g. Siltala 2004; Wuori 2005, 9–92; Väyrynen 2001, 82–126; von Wright 1981, 409–427; von Wright 1992, 237–263; Raittila 2005, 79–85.

- Are there any market entry barriers in the Finnish railway sector? And if there are, what kind of barriers?
- What type of changes will occur in the rail transport market once the competition opens up?
- If there are any market entry barriers, what should be done to the railway sector in order to guarantee a level playing field? And so on: What new challenges will the opening of competition bring about for the railway authorities?

In other words, the research will review the opening of competition, the change in the markets, and the market entry of new operators in Finland. The point of review will be the administrative market entry stages and their effects on the new operator's market entry. At the moment there is only one railway undertaking[1], VR Limited, in the Finnish railway market, but the opening of domestic rail freight transport can change the situation. So far there is no practical knowledge of the research topic, and therefore this research will be a future-oriented study and its research material will consist of expert evaluations.

The research will examine the *future* of the railway industry and it will present evaluations on what the future could be like and what kinds of futures seem plausible. The purpose of the research is not only to evaluate future, but it will also be linked to the present day. The research aims to influence the future of examined matters, i.e. it aims to highlight issues that, based on the results, could and should be influenced. These include, for example, issues related to the operations of the authorities. Due to the intention of influencing the operation and future competition facilities, one of the objectives of this research is to create the future, which Kuusi (1993, 134) considers the starting point of studying the development opportunities of the future (see also Bell 1997b, 1–5, 67–111; Mannermaa 1993a, 21–22).

1.4 Research limitations

This work is limited to reviewing the market entry and related barriers in rail freight transport. This can be justified for two reasons: The competition in freight transport and passenger traffic differ in nature: the competition in freight transport is open, whereas in passenger traffic it will most likely include more regulation, so that the social service obligation can also be fulfilled in the competitive

[1] There is also a second railway undertaking, Karhulan-Sunilan Rautatie Oy, in Finland. It operates on its the 10 kilometre-long track. The railway undertaking transports approximately million tonne-kilometres per year, i.e. its share of the market is only marginal. (Finnish railway statistics 2006; NEA et al. 2005, 35.)

situation. Due to the characteristics of freight transport and passenger traffic, the dynamics of the birth of the competition will also be different (e.g. Suvanto 2003; see also Starkie 1993, 60–62; Kerosuo 1987). The competition in freight transport is open, but competition in passenger traffic refers mostly to the fact that the state or municipalities will use a tender procedure for transport purchases. Furthermore in the current situation, the opening of domestic passenger traffic is not on the horizon, even though the trend is heading towards it. Based on the EC regulations currently under development or still in the proposal stage, passenger traffic will be subjected to competition brought on the basis of the public service contract regulation[1] and the third railway package. The preparation of the public service contract regulation has, however, been slow during recent years, and its content has changed along the way. For passenger traffic, the third railway package will deal with the international passenger traffic within the European Economic Area, which was opened to competition by virtue of a Railway Act upon the implementation of the first railway package in 2003. Opening domestic long-distance traffic seems unlikely, because several Member States, such as France and Belgium, are very much against opening passenger traffic to competition. For the abovementioned reasons, the research will focus only on freight transport.

The other research limitation is a geographical one: the research will be limited to reviewing the market entry only in Finland. This is to say that the research will study the Finnish domestic traffic and that type of international traffic within the European Economic Area that at some point travels in Finland. Therefore the operators studied in this research can be Finnish operators, operators within the EEC, or consortiums. This is a justified limitation, because the EU Member States have different industrial structures and regulations, and the technology and functionality of their railways are due to various reasons very different from each other, which means that the market entry and problems related to it are also different in different countries. Nevertheless, section 2.7.3 of this research will present some international studies related to the topic of this research, i.e. on the opening of competition as well as their results.

1.5 Key research concepts

In this section I will present concepts that are central to this research and must be defined due to the viewpoint of understanding this research. The most central concepts of this work comprise the opening of competition, markets, market entry, monopoly, rail transport, and railway undertaking.

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[1] European Commission's proposal for a regulation of the European Parliament and of the Council on public passenger transport services by rail and by road

The opening of competition

The opening of competition refers in this research to the deregulation of rail transport, which means giving up the monopoly, which consequently allows new railway undertakings to enter the market (see HE 16/2006). This research is centred on domestic freight transport. Other terms used as a synonym for the opening of competition include rail transport deregulation, opening the rail network and opening the market.

Markets

Markets refer to an institution or group consisting of buyers and sellers of a certain product or service (Mankiw 2004, 64). As a result, the rail freight transport market refers to the buyers and sellers of rail freight services.

Market entry

Market entry refers to the operations and stages a new operator must complete before it can practice rail transport.

Monopoly

A monopoly is a company that controls the market completely or has a very strong hold on the market, and may use strategic market entry barriers to protect its market position. A monopoly tries to influence the competitors' conception of the market situation and benefits of entering the market. (Kurokallio 1990, 6.) A monopolistic competition refers to forms of incomplete competition, such as monopoly, oligopoly, cartels, and monopolistic and olygopolistic competition. (Kerosuo 1987, 27) In Finland, the monopolistic railway undertaking is VR Limited.

Rail transport

Rail traffic (in Finnish raideliikenne) is a common name for tramway, metro and rail transport (L 113/1999). Rail transport (in Finnish rautatieliikenne) is a special form of rail traffic, which is heavier than other modes of rail traffic. Due to the great strength and little normal resistance of the tracks, the need for tractive effort in relation to the transported mass is very small on tracks, which allows great masses and high speeds in rail transport. Functional characteristics of rail transport include being bound to the gauge, moving as a train, forming a train, timetable and traffic control. (Mäkelä, Säily & Mäntynen 2002, 7; Meskanen, Mäkelä & Mäntynen 1996, 26–48.)

Railway undertaking

A railway undertaking refers to a private-law company or other corporation who, based on the relevant operating licence granted within the European Economic Area, operates rail transport as its main business and possesses the rolling stock required for the rail transport operations. (L 555/2006.) Synonyms for railway undertaking include, for example, railway company, train operating company and operator.

1.6 Research structure

This research report has been written according to the standard structure of a research report[1] with some adaptations. The theoretical framework, following the Introduction, comprises Chapter 2 (Rail transport legislation, market entry stages, and market description) and Chapter 3 (Market entry and barriers to entry). Chapter 2 describes the rail transport and competition court legislation in Finland and in Europe. The chapter also describes the market entry of a railway undertaking from an administrative point of view. Chapter 3 describes different forms of markets, and national and business economics theories concerning the market entry and barriers related to it. This chapter also includes a summary of the theoretical part.

Chapter 4 (Research methods) describes the methodological approach of the research. The chapter presents the methods used to collect and analyse the research material, and justifies the use of those methods in this research.

Chapter 5 (Presenting the research material) describes the research material which is organised and categorised into different themes. Chapter 6 (Analysis and results) presents the research analysis that presents the experts' profiling based on the analysis of the results, and the market entry scenarios. This chapter also presents some other key results that emerge from the research material.

The last chapter, Chapter 7 (Discussion and Conclusions), reviews and discusses the research material and results, and evaluates the reliability of this research. The chapter also includes some topics for follow-up research.

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[1] Studies often use the IMRD-structure (Introduction, Methods, Results, Discussion), which is often developed into a more detailed structure as follows: introduction, theoretical framework, research methods, material, results, evaluating and interpreting the results, conclusion and reviewing the research. (Olkkonen 1993, 112–114; Airila & Pekkanen 2002, 24–27; Hirsjärvi, Remes & Sajavaara 1997, 232–233.)

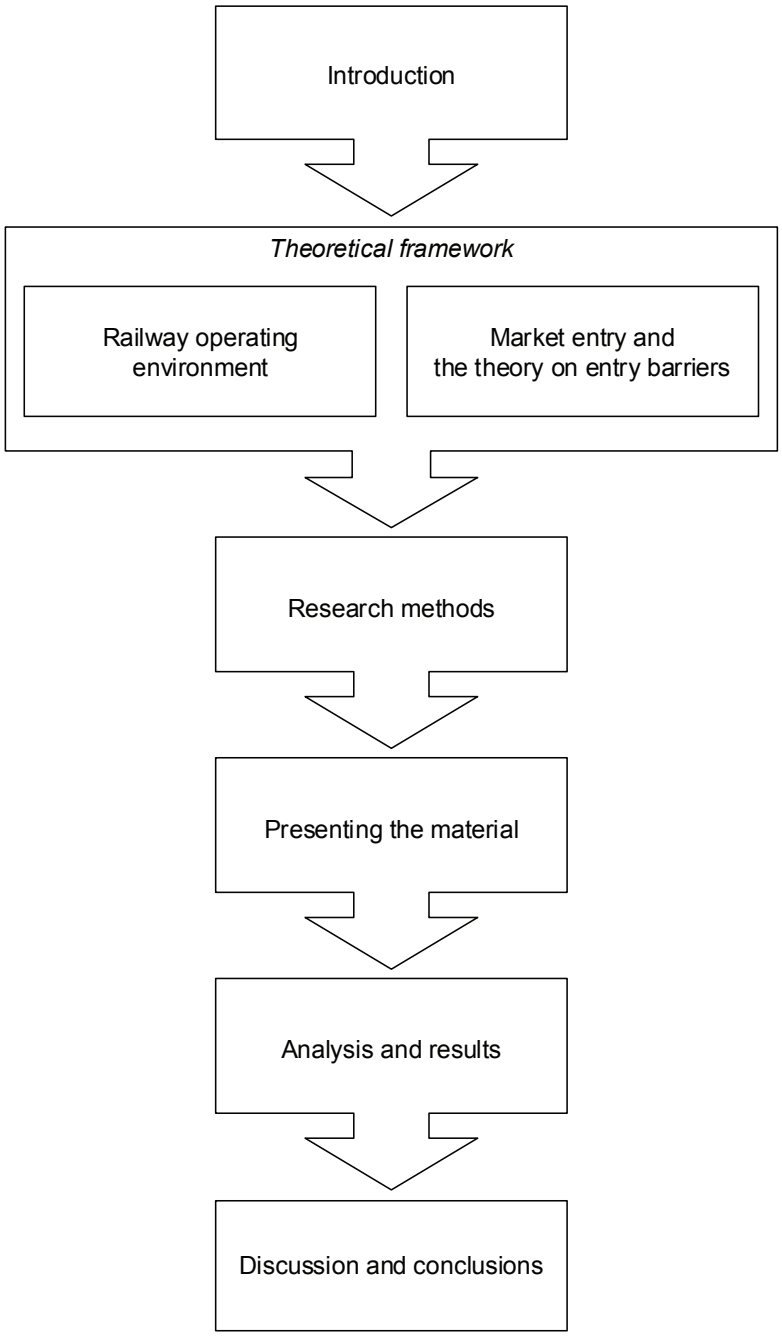

Figure 1. Research structure.

2 RAIL TRANSPORT LEGISLATION, MARKET ENTRY STAGES, AND MARKET DESCRIPTION

Because the market entry stages are defined by the rail transport legislation, it is very important for this research to review the legislation, its background, and lawful operations. The Finnish railway legislation is very closely connected to the legislation of the European Communities, which is affected by the EU's transport policy objectives. In this chapter I will review the EU's transport and rail transport policy definitions and EC legislation, which comprises the railway development directive and three railway packages. With regard to legislation, I will also briefly review the competition legislation, as it is closely connected to sectors where competition occurs.

In this chapter, I will also present the central players of the rail transport industry. Knowing the players is essential for understanding the stages and processes of entering the market. The legislation sets certain market entry requirements, which I will examine in both logical and chronological order from the point of view of the entrant. In this context, I will also bring forward issues, which are connected to the different stages, but may be ignored in the legislation. After describing the issues related to entering the railway market, I will move on to describe the Finnish rail freight market, its characteristics and the matters affecting it. In this chapter, I will also introduce some Finnish railway policy definitions and Finnish and international studies related to opening rail transport to competition.

2.1 EU rail transport policy and EC legislation

Rail transport and its promotion have a central role in the transport policy of the European Union[1]. The EU's transport policy is described, for example, in the White Papers, which state that the European Union aims to promote the opera-

[1] The goal of the European Community is to promote throughout the Community a harmonious, balanced and sustainable development of economic activities, and it tries to achieve this with a common market and policies. The concept of policy refers in this context to sets of norms more concrete than the goals set by the Community Law and that promote the creation of the common market and harmonisation of economic policy. A list of the Community's policies is presented in the third article of the Treaty establishing the European Community (see EY 2002a). The transport policy is mentioned in section F of the article. The community did not implement a common transport policy, even though the Treaty of Rome, which entered into force in 1958, would have allowed it to do so. For nearly three decades, the Council of Europe did not bring the Commission's suggestion forward, which is why the European Parliament took legal action against the Council in the Court of Justice. The court ruled that the Council had decided not to act according to the 75th (currently 71st) article of the treaty. After the court's decision, the Community has started to make laws on transport policy. (Piironen 2005, 82–84.)

tional conditions of environmentally friendly modes of transport. The EU's transport policy is implemented centrally using community legislation, which creates operational environments that help to achieve the objectives that are set forth in the transport policy. The first act of rail transport community legislation, the railway development directive, was passed at the beginning of 1990s. The directive did not have the intended effects, so the regulation of rail transport has continued with three regulatory railway packages.

2.1.1 The White Papers

In 1996, the European Commission published a White Paper (EC 1996) on the strategic reform of the railway sector. In this document, the Commission suggested that rail transport has lost its market share, because it has not been able to respond to the changing market situation and customers' expectations. According to the commission, railways should have a bigger role in solving Europe's transport problems. The commission considered the market forces as the central dynamo of the reform. (EC 1996, 6–10.) Competition in rail transport would lower costs, improve the quality of the services, and create new products (EC 1996, 15–21).

The European Commission published in September 2001 a White Paper called *European transport policy for 2010: time to decide*, which described the common principles and objectives of the Community's transport policy. The objectives of this White Book included a new balance between modes of transport, removing transportation bottlenecks, taking the users into account in the transport policy, and fixing the pricing issues in the transport sector. The new balance between modes of transport referred to shifting tonne-kilometres from road and air traffic to more environmentally friendly modes of transport, such as shortsea shipping, transport by inland waterways, and rail transport. All in all, it can be said that the ideas presented in the White Paper favour rail transport. The key objective of the transport policy was to increase the market share of rail freight transport and at the same time slow down the growth of road transport, because the aim was to cut down and prevent negative externalities caused by certain modes of transport. (EC 2001.)

The White Paper said that opening rail transport to regulated competition is "a central precondition for revitalising the railways" (EC 2001, 28). The Commission felt that increasing internal competition within the industry would improve railways' competitiveness vis-à-vis other modes of transport. The White Paper also emphasised the meaning of interoperability, the usability of the infrastructure, and safety in rail transport. (EC 2001, 27–36.)

The European Commission continued to push its competition imperative in the mid-term review of the White Paper published in June 2006, and suggested that national regulatory bodies must ensure that the legislation is implemented in its complete form, which allows the markets to open up in their entirety on the Union's internal market. The Commission stated that it would monitor the true opening of the railway market and strive to improve competition conditions by removing the structural barriers that hinder the railways' competitiveness. (EC 2006b, 10–11.)

2.1.2 Railway development directive

The rail network and the railway undertakings operating in it were separated in the European railway regulation in 1991, when the so-called railway development directive[1] was issued. This also marked the start of the EU's railway policy reform. The EC regulation was based on the Swedish model of separating the railway sector. In Sweden the separation of rail maintenance and transport was carried out in 1988, when Statens Järnvägar was split up into Banverket, a company responsible for maintenance, and SJ[2] who is responsible for operating rail transport (e.g. Alexandersson, Hultén, Nordenlöw & Ehrling 2000, 20–46; Nilsson 2002a; CER 2005, 39–55; LM 1998, 40–44)

In Finland, the rail network and rail traffic were separated in 1995. The state-owned company, VR[3], was dismantled and two new bodies were established at the same time: VR Group including its subsidiaries and the Finnish Rail Administration, an independent civil service department responsible for the rail network maintenance (RHK 1996, 4–7; see also Salminen & Viinamäki 2001, 47–56; Vaikkinen 1997, 253–260). The structural solutions for separating the rail maintenance and transport from each other have differed around Europe. The Commission has criticised those Member States where the separation has been done only on the administrative level, which has allowed them to keep all operations in the same group by separating the maintenance and transport with

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[1] Council directive 91/440/ETY on the development of the Community's railways.

[2] Staffan Hultén says that it is generally believed that deregulation is based on a carefully deliberated political decision. According to him, things took a different path in Sweden: Statens Järnvägar's continuous need of money, threats on discontinuing tracks, and the lack of transparency in its operations finally resulted in changing the regulatory environment. (Hultén 1999.) According to Nordenlöw and Alexandersson the goal of deregulation is to lower market entry barriers, increase competition and enable market growth. According to them this has been the goal of regulatory changes in Sweden only in rare cases, which is why the development of Swedish legislation reminds them of nothing more than fussing about regulations. (Nordenlöw & Alexandersson 1999, 1; cf. SOU 2005, 329–396.)

[3] The name *Valtionrautatiet* (in English State railways) disappeared when the company became a public corporation in 1990.

holding agreements[1]. (DERC/RB 2005; Mäkitalo, Paasikivi & Mäkilä 2004, 11–12; Mäkilä et al. 2004, 383; EC 2007b, 45.)

2.1.3 First railway package

The European Commission has aimed to create a functional internal railway market, which the railway development directive failed to do. In 1998, the Commission presented its suggestion for the first railway package comprising three directives. The European Parliament and Council ratified the directives in February 2001, and the directive entered into force 15 March 2001. The railway package consists of the following directives:

- amending directive on the development of the Community's railways[2]
- directive on the licensing of railway undertakings[3]
- directive on rail capacity and infrastructure charges[4].

The most important objective of the first railway package was to open international freight transport within the European Economic Area to competition. As regards to this, it was also important to create equal and non-discriminatory procedures for granting operating licences, granting and approving safety certificates, allocating rail capacity, and levying charges. The railway package also included a decision on publishing the Network Statement. According to the railway package the contents of the Network Statement comprises three parts: infrastructure, pricing principles and prices, and principles for allocating rail capacity. (L 555/2006; HE 16/2006; dir. 2001/14; see also Mäkitalo et al. 2004, 12–13; Mäkitalo 2004, 7; Mäkitalo 2003a, 26; RHK 2004a, 5.)

The Member States were given two years to nationally implement the first railway package, i.e. the deadline expired 15 March 2003. In addition to Finland, the Netherlands, Belgium, Spain, Italy, Portugal, France, and Denmark were the only countries to present the European Commission with a notification of implementing the railway package directives by 15 December 2003. (EC 2004a; also DERC

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[1] The holding agreement separates the operations *de jure*, but the Commission's criticism was based on the fact that the operations have a *de facto* connection and support each other.

[2] Directive 2001/12/EY of the European Parliament and of the Council on amending the Council directive 91/440/ETY on the development of the Community's railways.

[3] Directive 2001/13/EY of the European Parliament and of the Council on amending the Council directive 95/18/ETY on the licensing of railway undertakings.

[4] Directive 2001/14/EC of the European Parliament and of the Council on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification. 2001/14/EC annuls the directive 95/19/EC.

2003; DERC 2004.) All Member States have presented the implementation notification by the beginning of 2007. The Commission has started to evaluate the implementations. (EC 2007b.)

2.1.4 Second railway package

The key contents of the EU's second railway package deal with rail transport safety and interoperability. The European Parliament and Council approved the second railway package after a conciliation procedure in April 2004, and issued the following acts that are included in the package:

- regulation on the establishment of a European Railway Agency[1]
- directive on establishing a railway safety control, the so-called railway safety directive[2]
- directive on extending the scope of interoperability requirements[3]
- directive on the opening of the national rail freight market[4]

The railway package also includes the Commission's report (EC 2002) to the Council and the European Parliament, *Towards an integrated European railway area*. Furthermore, the railway package includes a recommendation for the European Community to accede to the Intergovernmental Organisation for International Carriage by Rail, OTIF.

In addition to interoperability, the key contents of the second railway package from Finland's point of view include the establishment of a national and independent safety authority and the opening of domestic freight transport. According to the solution the Council and the Parliament reached through a conciliation procedure, it was agreed that national freight transport will be opened by 1 January 2007, a year earlier than the Council had planned. (see e.g. Piironen 2004, 9–10; Pennanen 2007; Mäkitalo et al. 2004, 13–14.)

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[1] Regulation No 881/2004 of the European Parliament and of the Council establishing a European Railway Agency.

[2] Directive of the European Parliament and of the Council 2004/49/EC on safety on the Community's railways and amending Council Directive 95/18/EC on the licensing of railway undertakings and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification.

[3] Directive of the European Parliament and of the Council 2004/50/EC amending Council Directive 96/48/EC on the interoperability of the trans-European high-speed rail system and Directive 2001/16/EC of the European Parliament and of the Council on the interoperability of the trans-European conventional rail system.

[4] Directive 2004/51/EY of the European Parliament and of the Council on amending the Council directive 91/440/ETY on the development of the Community's railways.

2.1.5 Third railway package

The European Commission presented in March 2004 a proposal on the third railway package, which includes a report (EC 2004a) to the Council and the European Parliament: *Further integration of the European rail system: third railway package*, and four proposed measures:

- directive on the certification of locomotive and train drivers[1]
- regulation on international rail passengers' rights and obligations[2]
- regulation on the quality requirements and liability of rail freight services[3]
- directive on opening up the market for rail passenger transport services[4].

The key contents of the railway package are connected to improving the quality of rail transport services. The harmonisation of requirements and certificates related to locomotive drivers' qualifications tries to facilitate driver movement and mobility between different countries and railway undertakings. The purpose of the regulation on international rail passengers' rights is to improve the passengers' situation. Correspondingly, the objective of the regulation on the quality requirements and liability of rail freight services is to improve freight transport customers' situation and to increase the quality of rail freight transport. (Mäkitalo et al. 2004, 14–15.)

2.2 Finnish railway legislation

As for rail transport, the core of the Finnish railway legislation comprises the Railway Act (555/2006) and decrees issued based on it. The Railway Act, which came into operation in September 2006, combined the previous Railway Act (198/2003; see also HE 162/2002) and the directive on the interoperability of the trans-European conventional rail system (561/2002). (Pennanen 2007.) The Railway Act, which became operative in 2003, was used to nationally implement the first railway package of the European Union. The new Railway Act, which

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[1] Commission's proposal: Directive of the European Parliament and of the Council on the certification of train crews operating locomotives and trains on the Community's rail network, COM(2004) 139 final.

[2] Commission's proposal: Regulation of the European Parliament and of the Council on international rail passengers' rights and obligations, COM(2004) 143 final.

[3] Commission's proposal: Regulation of the European Parliament and of the Council on compensation in cases of non-compliance with contractual quality requirements for rail freight services, COM(2004) 144 final.

[4] Commission's proposal: Directive of the European Parliament and of the Council amending Council Directive 91/440/EEC on the development of the Community's railways, COM(2004) 139 final.

came into force in the autumn of 2006, was used to nationally implement the second railway package of the European Union (see HE 16/2006; LiVM 11/2006 vp).

The Railway Act also opened the national freight transport as of the beginning of 2007. The Railway Act continues to create equal and non-discriminatory preconditions for rail transport competition. (HE 16/2006.) The Railway Act also lays down the requirements for operating rail transport, which are described in section 2.5.

2.3 Competition law and market entry

The idea behind the competition law is that competition is the driving force behind the market economy. The market economy is self-controlling, and competition between companies forces companies to improve their efficiency and transfer the competition benefits they have gained to their prices. The purpose of the competition legislation is to prevent companies from operating in a manner that restricts competition or prohibits the free functioning of market mechanisms. The operations of companies holding a dominating market position are supervised, and sometimes companies are prevented from gaining a dominant market position if it would be due to something else than organic growth. The sectors under review include those submarkets of national economy where companies are in a competitive relation with each other. The competition legislation is based on the views of national economy, especially competition theories. Perfect neoclassical competition does not exist anywhere, and such a market environment is not even pursued. The competition legislation aims to maintain functional and efficient competition. This is to say that there is sufficient competition or competition opportunities on the market in order for the market mechanisms to function. (Rissanen & Korah 1991, 1–4; Leivo & Leivo 1997, 1–5.)

In the United States, the prevailing principle is that large capital requirement is not a significant market entry barrier. The justification for this is the belief that if the business in itself is profitable enough, then entrepreneurs capable of acquiring the capital will emerge. In Europe, more attention is paid to the operations of small and medium-sized businesses. The competition policy has always paid special attention to unrestricted market entry opportunities and the meaning of potential competition. If the economic efficiency of operations was considered the only objective of the competition policy, then only few market entry barriers would have any meaning. The relative capital expenditure is often greater in small than large companies, which can lead to a situation where acquiring the capital may form a market entry barrier. The goal of the competition rules can be either to

attend to the efficiency of the economy or to protect small and medium-sized companies. In the latter scenario, the attitude towards market forces is more critical and more market entry barriers are found. The Court of Justice of the European Communities has declared issues such as a good distribution network between companies operating on the market, technical advantage and need for large capital in production as market entry barriers. (Rissanen & Korah 1991, 5–7; Leivo & Leivo 1997, 325–329.)

2.3.1 Competition law of the European Communities

The European integration process began with the establishment of the European Coal and Steel Community in 1951. The European Economic Community was established with the Treaty of Rome in 1957. The Common Market was established in order to gain economic benefits between Member States. The idea was to provide companies with an opportunity to produce goods and services wherever the best preconditions existed and to sell them where there was demand. (Rissanen & Korah 1991, 8–9.) According to the second article of the Treaty establishing the European Community (EY 2002a):

> "The Community shall have as its task, by establishing a common market and an economic and monetary union and by implementing common policies or activities referred to in Articles 3 and 4, to promote throughout the Community a harmonious, balanced and sustainable development of economic activities, a high level of employment and of social protection, equality between men and women, sustainable and non-inflationary growth, a high degree of competitiveness and convergence of economic performance, a high level of protection and improvement of the quality of the environment, the raising of the standard of living and quality of life, and economic and social cohesion and solidarity among Member States."

The Member States must allow free movement of goods, services, work force and capital within the European Community, so that the national borders would not restrict the movement of the economic resources. A member state citizen or a company established in a member state is also free to establish a company in another member state. The effects of removing the sales barriers can, however, be disregarded by special arrangements between companies. In order to prevent these types of arrangements the Treaty establishing the European Community includes regulations on restrictive practices with regional effects and also on their supervision. In other words, the competition rules promote integration, free movement, and companies' competitiveness. In addition to the rules on restrictive practices the Treaty establishing the Community includes regulations on state subsidies to companies and business operations. A state subsidy that distorts competition by

favouring a certain company or product cannot be used on the Community market. The EC tries to use its competition rules to create a level playing field for the companies. (Rissanen & Korah 1991, 9–10, 15–21; Leivo & Leivo 1997, 3–5.)

The starting point of the EC's competition law is the general prohibition on unfair use of restrictive practices and dominant market position. All agreements that do not comply with this ban are null and void, and violating the prohibition is a punishable act. A deviation of this prohibition is possible only in individual cases based on a given permission, or if the competition principles have been supplemented by granting general exceptions specific to the agreement type. The EC's competition law is considered to be built on the principle of prohibition. One of the objectives of the EC's competition rules is also to make sure that the preconditions of functional competition prevail in the regional markets of the European Community. The goal of the competition rules is to ensure that companies who are efficient in the internal markets will flourish at the expense of inefficient companies. (Rissanen & Korah 1991, 4–10, 15–19; Leivo & Leivo 1997, 3–10; Federation of Finnish Technology Industries 2004, 8–15.)

The unfair use of restrictive practices and dominant market position, and regulations on the implementation and application will be interpreted from the viewpoint of the general goals of the agreement. The competition rules apply to all products and services, but certain areas do not fall into this scope of application. The transport sector was debarred from the competition rules' scope of application, when the EC Council passed the regulation on the implementation of competition rules in 1962 (so-called Anti-trust regulation 17/62). The Commission of the European Community oversees that the competition rules are followed. (Rissanen & Korah 1991, 15–28.)

According to the Court of Justice of the European Communities the dominant market position means that a company has such a strong market position that it can act independently of its competitors and customers, which allows it to prevent effective competition. The dominant position is not based on one, but on a combination of many factors. The key issue, however, is the market share of the company. Factors considered to contribute to the dominant market position include vertical integration, technological head start, strong brand, lack of potential competitors, and technical and financial resources. The significance of these factors can be seen especially in the market entry barriers. (Airaksinen 1993, 208–209; also Leivo & Leivo 1997, 293–360.)

2.3.2 Finnish competition law

The legislation on restrictive business practices (480/1992), which was previously amended (318/2004) in 2004, forms the core of Finnish competition legislation. Its objective is to protect sound and effective economic competition from harmful competition restrictions. When the law is applied, special attention is paid to consumer rights and protecting the freedom of trade from unfounded barriers and restrictions. (L 318/2004.)

The law on restrictive business practices is applied in all trade sectors, excluding the exceptions listed in section 2. The law is based on the principle of prohibition, which means that certain restrictive trade practices are prohibited, and evaluating the legality of these practices does not include any evaluation of their harmful effects. These directly forbidden limitations include all restrictive trade agreements and unfair use of a dominant market position in a way defined in Articles 81 and 82 of the EEC Treaty. The Competition Authority can forbid entrepreneurs from practices in breach of the law on restrictive business practices, and based on the Competition Authority's proposal, the Market Court can impose a sanction if the entrepreneur violates the restriction defined in the law on restrictive business practices. (Alkio & Wik 2004, 134–135; Määttä 2004, 23–52; see also LVM 2001b.)

2.4 Operators in the Finnish railway sector

The railway sector operators having a central role for the rail transport competition include – in addition to railway undertakings – the Finnish Ministry of Transport and Communications, the Finnish Rail Administration, and the Finnish Rail Agency. In addition to the aforementioned and due to competition, there is also a link between the railway industry operators and the Finnish Competition Authority. Furthermore, the railway industry includes operators with no immediate significance to this research. These include, for example, railway maintenance companies, notified bodies, and the Accident Investigation Board. Besides the aforementioned operators, railway undertakings' interest groups include various service providers, such as terminal companies, harbours, and suppliers of rolling stock. The railway industry operators and their relations are presented in Figure 2 (cf. LVM 2004a, 28).

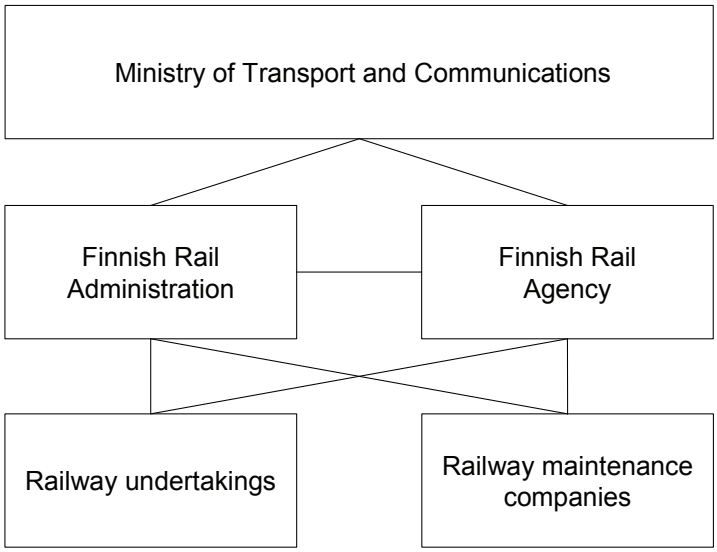

Figure 2. Railway sector operators.

In the Government of Finland, railway issues come under the remit of the Ministry of Transport and Communications. The mission of the Finnish Ministry of Transport and Communications is "to promote the functionality of the society and the welfare of the population by ensuring that both citizens and business life have access to high-quality, secure and cost-efficient transport and communications connections and that companies within the same sector have a level playing field" (LVM 2005c). The government's proposal for and justifications of the Railway Act state that the ministry should be responsible for the general control and supervision of the railway industry and rail transport, and also for promoting the operational preconditions of rail transport[1]. (HE 16/2006; see also LVM 2005d) The ministry is responsible for the result-oriented supervision of the Finnish Rail Administration, railway maintenance funds, and the supervision of the Finnish Rail Agency[2]. The ministry is also responsible for granting operating licences to railway undertakings.

The Finnish Rail Administration is a department subject to the Ministry of Transport and Communications and the infrastructure manager of the state-owned rail network. The duties of the Finnish Rail Administration include the maintenance and development of the rail network, securing rail network safety, allocating rail capacity, traffic control, and passenger information. (HE 16/2006; L 1095; L 555/2006; RHK 2005a.) The mission of the Finnish Rail Administration is to

[1] The new Railway Act will clarify the role of the Ministry of Transport and Communications. Previously, the ministry was responsible for transport policy, granting operating licences, purchasing unprofitable traffic, controlling the ownership of VR Group, and for the result-oriented supervision of the Finnish Rail Administration. Furthermore, the ministry was in charge of the tasks of rail transport regulatory bodies.

[2] Previously, the ministry was also responsible for controlling the ownership of the VR Group.

"promote the operational preconditions of rail transport as an effective, safe and environmentally friendly part of the domestic and international transport system" (RHK 2005e, RHK 2005f).

The Finnish Rail Agency is a department subject to the Ministry of Transport and Communications and it was established in connection with the implementation of the second railway package in 2006. According to the railway safety directive, every member state must have a safety authority that is independent of the infrastructure manager and railway undertakings. The Finnish Rail Agency is responsible for general rail safety, official tasks assigned or dedicated to the agency, international cooperation, and supervising compliance with safety measures in rail transport. In concrete terms, the Finnish Rail Agency's duties include, for example, processing safety certificates, granting permits for implementing rail transport subsystems, monitoring that interoperability demands are observed, competence issues of persons involved in traffic safety tasks, and matters related to rail transport education and issuing standards. The Finnish Rail Agency also acts as a regulatory body, which settles issues related to railway undertakings' claims for correction. (L 1094/2005; L 555/2006; Alppivuori 2006; LVM 2004a.)

According to the definition in the Railway Act, a railway undertaking refers to a private-law company or other corporation which, based on the relevant operating licence granted within the European Economic Area, operates rail transport as its main business and possesses the rolling stock required to operate rail transport. The railway undertakings offer logistics services to parties who buy them. The legal definition of operating rail transport also applies to museum traffic operators, even though they are not railway undertakings. (L 555/2006.) At present, the only rail freight operator in Finland is VR Limited[1].

The Finnish Competition Authority is an agency subject to the Ministry of Trade and Industry and it acts as the public competition authority. Its objective is to protect sound and effective economic competition and to increase economic efficiency by promoting competition and abolishing competition restraints. The Act on the Competition Authority defines that its responsibilities include examining competition conditions, discovering restrictive practices, taking actions to abolish harmful effects of restrictive practices, and taking initiatives to promote competition and dismantle restrictive regulations and provisions. Furthermore, the

[1] VR Cargo is the business unit of VR Limited, which is the subsidiary of the company operating rail transport defined in the Act on transforming Valtionrautatiet to a limited liability company (20/1995).

Finnish Competition Authority is responsible for attending to tasks assigned or dedicated to it. (L 711/1988; VnA 66/1993; Competition Authority 2004.)

2.5 Market entry in rail transport

The purpose of a company is to do business and make profit[1] (L 624/2006; Porter 1998b; Järvinen 1923, 5–9). To operate a railway undertaking is to provide logistics services, especially rail transport services. Customers' need and demand for services create supply, which results in internal competition within the industry. The demand and market attract new companies to provide their services. A market entrant can be a totally new company, a geographic extension to an existing business of a company, or a result of new business operations of a company previously engaged in a different line of business. (Virtanen 2001, 100–103; see also Pekkarinen & Sutela 1981a; Pekkarinen & Sutela 1981b; Kotler & Keller 2006; Hauta-aho 1993, 5–34; Root 1994, 22–43, 181–191.)

The concrete stages required to enter the rail freight transport market are presented in Figure 3 (adapted from RHK2006c, 12). Establishing a company and entering the market is based on the assumption of potential demand or on a preliminary agreement on providing transport services. From an administrative point of view, applying for a safety certificate and an operating licence comprise the first steps. The acquisition of production factors, rolling stock and personnel can be carried out side by side with safety certificate and operating licence applications, if the operator can provide a sufficient account of how matters are to be organised. An operator can be called a railway undertaking after it has been granted an operating licence and a safety certificate. Thereafter, the railway undertaking can request for rail capacity for its intended traffic. Before a company can start to operate rail transport, it needs to sign an access contract with the Finnish Rail Administration on the use of rail network. The access contract lays down the rules for the use of rail network and key services.

[1] Chapter 1, Article 5 of the Act on Limited Liability Company states that the purpose of a company is to create profit for its shareowners, if not otherwise stipulated in the articles of association.

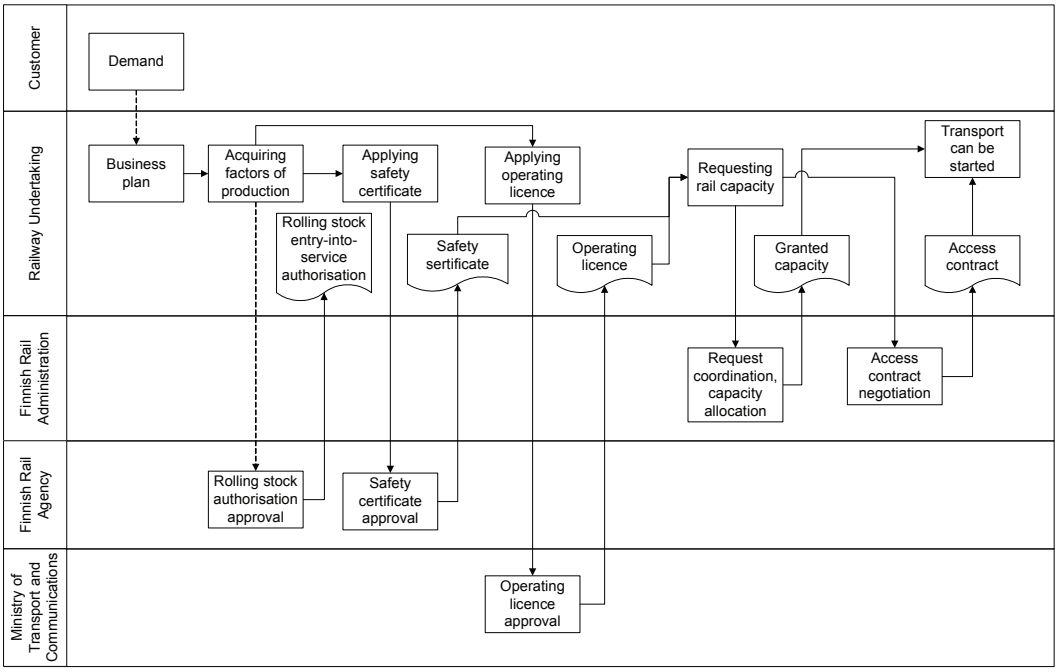

Figure 3. Market entry in rail transport.

2.5.1 Acquiring factors of production

The central factors of production for operating rail transport include rolling stock and personnel. A railway undertaking can acquire the necessary rolling stock either new from rolling stock suppliers, second-hand from other railway undertakings operating in the market, or through a leasing contract. An operator must apply for an entry-into-service authorisation for the new type of rolling stock before applying for a safety certificate. (RHK 2006c, 16.)

A railway undertaking may acquire the required personnel by recruiting personnel from other companies operating on the market or by training personnel. The demands for the training are defined differently based on whether the persons are to be responsible for traffic safety or some other task that has only little and indirect effect on rail safety. The first group includes, for example, trainings on driving rolling stock and working on railway yards, which can be organised by educational institutes approved by the Finnish Rail Agency. The Finnish Rail Agency also approves the training programmes concerning traffic safety tasks. The latter group, tasks with indirect effect on rail safety, includes for example installation, maintenance and check-up tasks on rolling stock when the work focuses on wheels, brakes or bogie assemblies or equipment that belong to the traffic control or safety systems. The only party that provides railway training in the aforementioned rail safety tasks at the moment is VR Training Centre (in Finnish VR Koulutuskeskus), which belongs to VR Group. (LVM 2004a, 36–38; L 1167/2004; L 555/2006.)

2.5.2 Safety certificate

The safety certificate is used to ensure that the applicant meets the safety criteria set for a railway undertaking's operation and that it has the qualifications for safe operation in the rail network. The safety certificate required of a railway undertaking is granted or approved by a national safety authority, which in Finland is the Finnish Rail Agency. The Finnish Rail Agency also approves safety certificates previously granted elsewhere in the European Economic Area. The Finnish Rail Agency can also demand further clarification on the intended traffic, which is based on a safety certificate granted elsewhere. The Finnish Rail Agency has up to four months to resolve an issue concerning the granting or approval of the safety certificate[1]. (L 555/2006; RVI 2006a, 1–2; RHK 2006c, 13–14.)

According to Article 31 of the Railway Act, the applicant must deliver the following information to the Finnish Rail Agency in order for the agency to grant the safety certificate, and furthermore the Finnish Rail Agency will demand an account of the applicant's safety organisation, regulations and instructions, internal audit, managing fault situations, and subcontracts. (RVI 2006a, 1–8; L 555/2006.) Based on the Act, the Finnish Rail Agency will grant the applicant with the safety certificate, if:

1. The applicant has a safety management system and a similar system for its internal arrangement, which ensure that rules and regulations concerning rail traffic safety are observed.
2. The applicant's management and personnel in charge of traffic safety is competent and professionally trained.
3. The applicant's rolling stock meets the set requirements and the service and maintenance tasks are properly arranged.
4. The applicant has sufficient insurance or some other arrangement.

The Finnish Rail Agency has drawn up instructions on how to apply for a safety certificate (see RVI 2006a; cf. RHK 2003h) and created a template of the safety certificate application (see RVI 2006b). The safety certificate consists of two parts within the European Community. Part A of the safety certificate presents the railway undertaking's safety management system, which has been approved in the whole of the European Economic Area. Part B of the safety certificate ensures that the railway undertaking meets the special requirements needed for the safe use of the rail network of the member state in question. The Finnish Rail Agency grants

[1] According to the Finnish Rail Agency, the decision on granting the safety certificate will always be made within 12 months of receiving the application, even if the applicant has not delivered all information required for granting the safety certificate.

the applied safety certificate or approves Part A of a safety certificate granted elsewhere in the European Economic Area for a maximum of five years at a time. (RVI 2006a, 1–2, 6–7; also RVI 2006b.)

2.5.3 Operating licence

The Finnish Ministry of Transport and Communications grants the railway operating licence for applicants located in Finland[1]. The operating licence and its terms are checked every five years. An operating licence granted in one of the Member States is valid in the whole of the European Economic Area. The Finnish Ministry of Transport and Communications makes its decision on the operating licence within three months of the date when the applicant has delivered all required information. (L 555/2006; also RHK 2006c, 13.)

The Finnish Ministry of Transport and Communications grants the operating licence for an applicant located in Finland if (L 555/2006):

1. The applicant intends to operate rail transport as its main business using the rolling stock it possesses or to provide pulling services.
2. The applicant has a safety certificate granted or approved by the Finnish Rail Agency[2].
3. The applicant is considered reliable and the persons assigned to its management tasks have the necessary competence and a good reputation.
4. The applicant has a sufficiently solid financial standing, so that it is, based on known issues, capable of fulfilling the actual and expected responsibilities and commitments for at least a year.
5. The applicant has a sufficient liability insurance or some other corresponding arrangement.

2.5.4 Requesting and granting rail capacity

The Finnish dictionary of foreign words (Nurmi, Rekiaho & Rekiaho 1992, 104) defines the Finnish word for capacity, “kapasiteetti”, as 1) volume, holding capacity, size, quantity or 2) ability, preconditions, competence. Correspondingly,

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[1] According to the working group that discussed official rail transport tasks, this task should have been transferred to the new safety authority to be established (LVM 2004a, 32–33). Nevertheless, the granting of operating licences was left to the Ministry of Transport and Communications (L 555/2006).

[2] Based on the Railway Act, the applicant can also provide a corresponding explanation of its operation. On the basis of this Act, the applicant can apply for the operating licence and safety certificate at the same time, and does not need to wait for the safety certificate before handing in the operating licence application.

Mäkitalo (2003b, 38) has defined rail capacity as "the highest possible theoretical traffic carrying capacity of a track section, measured by number of trains per a time unit". The size of the rail capacity[1] is affected by the properties of the track section and rolling stock features. In order to evaluate efficiency, the rail capacity or traffic could also be measured in persons per time unit (e.g. persons per hour) or gross or net mass per time unit. (Mäkitalo 2000, 14.) The scheduling begins with defining passengers' and customers' needs, after which the transport needs are coordinated with the rail network[2] (Mäkitalo 2001, 26–27; Mäkitalo et al. 2004, 23–26).

Requesting rail capacity

The railway undertakings request rail capacity for the state-owned rail network from the Finnish Rail Administration for regular traffic in the next one-year timetable period. There are also certain times when railway undertakings can request new rail capacity or request a change in the rail capacity already allocated to them for the remaining part of the timetable period. Rail capacity for other than regular traffic can be requested as an ad hoc request. (L 555/2006; VnA 751/2006; RHK 2004b, 26–28.)

The rail transport timetable period begins every year at midnight between Saturday and Sunday of the second weekend of December, and ends at the same time next year[3]. A railway undertaking must request the rail capacity for each timetable period no earlier than 12 months and no later than 8 months before the next timetable period begins. (VnA 751/2006.) The time for requesting rail capacity used to be calculated differently in the Member States of the European Union, and therefore RailNetEurope's timetable working group (RNE TT 2005a, RNE TT 2005b) harmonised the request date as follows: the last possible date for

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[1] The concepts rail capacity and the use of rail capacity refer to different things: Rail capacity is always connected to a track section, and the use of rail capacity always to a train. The use of rail capacity refers to traffic that either occurs on or has been planned for a track section. The use of rail capacity refers to the right of use assigned to a train for a given section at a given time and place. This means that a train travelling in the rail network will always use a certain amount of rail capacity, i.e. part of the traffic carrying capacity of a track section. Granting right of use to the rail capacity is referred to as allocating rail capacity. In evaluating the efficient use of the rail network, one must consider that functional and efficient rail transport is very different from the maximum theoretical traffic carrying capacity. (Mäkitalo 2003b, 38; Mäkitalo 2000, 13–51; Pitkänen 2006a, 12–38; Pitkänen 2006b, 516–519; Ronni 2000, 165–169.)

[2] There are several different approaches, techniques and methods to timetabling (see e.g. Mäkitalo 2001, Pellandini 2000, Pellandini 2001a, Schulz 1994, Tawast 1974). One interesting technique is the ant society based timetabling (see Ghoseiri & Morshedsolouk 2006).

[3] The original directive proposal was amended so that the timetable period will change in December instead of June (DERC 2002). There has been discussion about moving the beginning of the timetable period in ForumTrainEurope and RailNetEurope (RNE TT 2003).

handing in the rail capacity application is on the same day of April as the timetable period begins in December (see RHK 2006c, 23).

A railway undertaking can request a change in capacity allocated for regular services at specific dates during the timetable period. Based on the applications, the Finnish Rail Administration will make changes to the capacity allocated for regular services for the remaining timetable period during the timetable period concerned. The approval of changes requires that the change will have no effect on the capacity allocated to other railway undertakings or international traffic within the European Economic Area. The specific dates for applying changes to rail capacity for regular services are defined in the Governmental Decree on the Timetable Period in Rail Traffic and Applying for Rail Capacity. (VnA 751/2006.)

The applications for changing capacity allocated for regular services must be submitted not later than four weeks before the rail capacity for regular services enters into force. In addition to the dates mentioned in the decree, the Finnish Rail Administration may for special reasons decide on other dates on which changes can take place. The Finnish Rail Administration shall inform the railway undertakings of possible new dates on which the rail capacity for regular services may be changed. The Finnish Rail Administration must process the rail capacity requests concerning the dates on which the rail capacity for regular services may be changed "without unreasonable delay". (VnA 751/2006; see RHK 2004b, 28.)

In addition to the specific dates for requesting changes to rail capacity for regular services or changes concerning the timetable period, a railway undertaking may request rail capacity from RHK regardless of the prescribed period if they "urgently need temporary capacity for one or more train routes" (L 555/2006). Ad hoc capacity requests for the time period between the change dates defined in the Governmental Decree and set by the Finnish Rail Administration can be made after the rail capacity application period has ended[1]. (VnA 751/2006; RHK 2006c, 24.)

Rail capacity is requested in writing, but the application can also be submitted in electronic format[2]. The Finnish Rail Administration has drawn up instructions (RHK 2003g) for requesting rail capacity. These instructions are published annually also in the Network Statement (see RHK 2006c, 23).

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[1] Rail capacity for museum traffic can, however, be applied for no earlier than four months before the scheduled departure (VnA 751/2006).

[2] In accordance with the Act on Electronic Communications with the authorities (13/2003).

Capacity allocation

Based on the railway undertakings' rail capacity applications, the Finnish Rail Administration prepares a rail capacity allocation proposal[1] for the next timetable period within four months of the application due date by coordinating the rail capacity applications (L 555/2006). The European infrastructure managers have, however, agreed (RNE TT 2003) that rail capacity requests are coordinated within 2 1/2 months (see RHK 2006c, 25). The proposal for the allocation of rail capacity is based on rail capacity applications, provided that the timetables based on rail capacity applications will not prevent the operation of rail transport (L 555/2006).

The Finnish Rail Administration will coordinate the railway undertakings' rail capacity applications so that the traffic, which is based on the coordinated rail capacity, can be implemented if several railway undertakings have applied for the same rail capacity or the requested rail capacity affects the rail capacity requested by another railway undertaking. In order to improve the efficiency of the use of rail network, the Finnish Rail Administration can offer the railway undertaking a rail capacity that is not significantly different from the requested rail capacity. (L 555/2006; see also RHK 2004b, 28–29.)

In drafting the proposal for the rail capacity allocation, the Finnish Rail Administration can solve coordination problems based on grounds stated in the Railway Act[2]. If railway undertakings' rail capacity applications cannot be coordinated due to overlapping applications, the Finnish Rail Administration will define the route or part of the route as so-called congested rail capacity with its decision[3]. The Finnish Rail Administration can also designate a track section as congested if it is evident that the section will be congested during the timetable period. Rail capacity applications for congested sections can be prioritised based on the traffic-type priority order (RHK 2003b) defined in Section 19 of the Finnish Rail Administration's Railway Act (Table 1). The priority order defined by the Finnish Rail Administration will be published in the Network Statement (see RHK 2006c,

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[1] The Railway Act refers to the rail capacity allocation proposal as schedule proposal (see L 555/2006 21 §).

[2] It has also been discussed as regard to rail capacity allocation methods whether the rail capacity could be allocated based on pricing. This idea is affected by the neoclassical idea of microeconomics. The available rail capacity, i.e. scarcity, could be allocated effectively based on railway undertakings' willingness to pay (LVM 2002, 8–9). Several models have been suggested for this method (see e.g. Nilsson 2002b, Isacsson & Nilsson 2003; also Nash & Matthews 2003, 1–12; Johnson & Nash 2005, 21–23; de Villemer 2004, 18–19). The Finnish railway legislation does not allow this kind of method to be used in Finland.

[3] The term congested rail capacity (congested infrastructure in directive 2001/14, in Finnish ylikuormitettu ratakapasiteetti, which means overloaded rail capacity) is a poor term in the light of the concept of rail capacity: it would be better to talk about a section, for which the traffic needs cannot be coordinated.

25–26). The Finnish Rail Administration can, however, deviate in its decision from the priority order defined in the Railway Act and Network Statement (L 555/2006). The 12th action in the development programme report on strengthening Finland's logistic position is to evaluate if Finland's logistic position could be improved by developing the priority principles of track use in passenger and freight transport services (LVM 2005a, 13).

Table 1. Priority order for congested rail capacity[1].

Priority	**Transport**
1.	Synergetic passenger transport entity
2.a	High-speed passenger transport
2.b	Transport linked to industry processes
3.a	Local rail transport and other passenger transport
3.b	Other regular rail freight transport
4.	Rail freight transport without specific timetable demands
5.	Other transport

The Finnish Rail Administration will deliver the proposal for the rail capacity allocation to rail capacity applicants by the coordination deadline, and presents an opportunity for the applicants to be heard. The hearing period is 30 days from the delivery of the proposed rail capacity allocation. In addition to railway undertakings, all customers of rail freight services and organisations purchasing rail freight services are entitled to provide a statement on the rail capacity allocation proposal during the 30-day hearing period. For the latter parties, the hearing period will begin when the Finnish Rail Administration publishes in its collection of regulations a notification, which states that the rail capacity allocation proposal has been completed. (L 555/2006; see e.g. RHK 2005b and RHK 2005c.)

[1] Definitions of the priority table for overloaded rail capacity (RHK 2004b, 30): "The synergetic passenger transport entity refers in passenger transport to a group of trains forming a transport system that clearly provides added value to the customers. An example of a such system is the traffic operated according to the regular interval timetable. High-speed passenger transport refers to transport whose some parts do not belong to the synergetic transport system. International passenger transport can also belong to this category. Process industry transport refers mainly to transport services whose immediate point of departure or destination is a harbour or private siding. The transport services are substantially connected to managing overall logistics. This group comprises especially combined transports, chemical forest industry transports, and transports to the harbours. Other transport can include, for example, transports related to rail maintenance or museum traffic." The idea behind interpreting the defined priorities is that a train is assigned with a traffic term from the priority table for its entire journey. It is also essential that the traffic term assigned to a train from the priority table can change in the middle of the journey. (RHK 2004b, 29.)

Based on the capacity allocation proposal and comments presented by the parties involved, RHK shall decide on the allocation of rail capacity on a fair and non-discriminatory basis. RHK shall pay particular attention to the needs of passenger and freight transport and infrastructure maintenance, as well as to the efficient use of the rail network. The decision will also take into account the priority order determined for specialised and congested infrastructure. (L 555/2006.)

Ad hoc rail capacity

The Finnish Rail Administration allocates the requested ad hoc capacity, if the requested rail capacity can be allocated. If there are several simultaneous ad hoc requests, the ad hoc capacity is allocated on a first-come first-served basis. The Finnish Rail Administration will approve or deny ad hoc requests within five working days of receiving the application. (L 555/2006.)

Information systems for managing rail capacity

The information systems connected to rail capacity management and scheduling are in VR Limited's possession. Current information systems connected to scheduling and rail capacity management include, for example, AIKS and KULTU. At the moment, all information regarding the traffic timetables is transferred to the Finnish Rail Administration's traffic control systems from VR Limited's systems. In addition to the aforementioned systems, both VR Limited and the Finnish Rail Administration use a timetabling software called Viriato, which is used separately from all other software. (Natunen, Mäkitalo & Paasikivi 2005; Mäkitalo et al. 2004, 28.)

The goal of the Finnish Rail Administration is to create an overall system, in which the flow of traffic information begins with the rail capacity application and ends in traffic control (Natunen 2005; Mäkitalo et al. 2004, 29–30; see also Eronen 2005; cf. Rosenberg, Pajunen, Lähesmaa, Levo, Sahala & Leviäkangas 2004; Levo, Lähesmaa & Sahala 2004b). This overall system is presented in Figure 4. The rail capacity will be allocated using an own system that is designed for scheduling and coordinating rail capacity applications. (Mäkitalo et al. 2004; see also Nyby 2005a, Nyby 2005b.) There will also be a so-called traffic database including all information required for traffic control, and this database will be established between the traffic control systems and the system used for coordinating rail capacity applications. The Finnish Rail Administration is also building a railway infrastructure data warehouse on the rail network's properties. The railway infrastructure data warehouse will allow railway undertakings to get up-

to-date information on the rail network. (Mäkitalo, Tuominen & Väänänen 2005, 8, 15–18.)

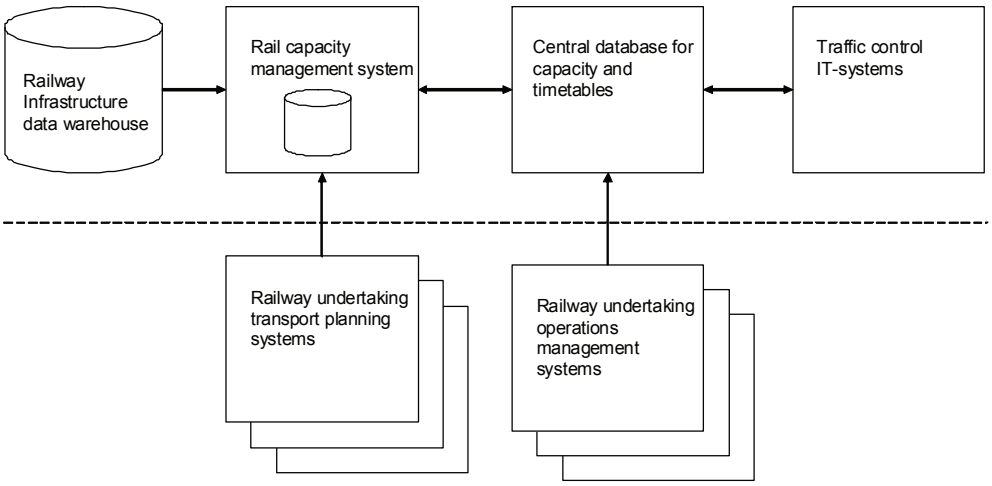

Figure 4. Overall system for managing rail capacity.

In addition to printed documents, the railway undertakings can apply for rail capacity using an IT system interface. The Finnish Rail Administration defines these IT system interfaces in the so-called LIIKE project[1] (see Natunen 2005, also Natunen 2006). In addition to the search tools for international rail capacity, the Finnish Rail Administration is also constructing a national architecture and interface solution that meets the Finnish needs. According to several views expressed in Europe, these various IT solutions could prove problematic for the new railway undertakings and therefore create a market entry barrier (e.g. Weidmann 2005).

The European telematic applications for freight technical specifications for interoperability, TAF TSI, have been drawn up in connection with the work on rail transport interoperability in the European Union. The telematic TSI defines the standard messages used in communications between railway undertakings and infrastructure managers. It defines, for instance, the message used for ad hoc requests. Finland has studied the current systems and changes to the systems required by the TSI, and has also been actively involved in the European implementation planning. (EC 2006a; Holmberg & Niemimuukko 2005; Holmberg 2006; SEDP 2005.) There is also a web-browser based tool, PathFinder, used currently in Europe to create and approve international rail capacity applications (Kolk 2003; RNT TT 2005a).

[1] Preliminary study and requirement specification of the IT solution for managing rail capacity.

Railway yard capacity and applying for it

The Finnish Rail Administration has proposed that the need for railway yard capacity[1] is stated in the rail capacity application for the timetable period. This way the needs for line capacity and railway yard capacity can be coordinated at the same time. The description of the needs for railway yard capacity can be, in the shortest form, a brief memo including a general description of the need for railway yard capacity in each track section. In coordinating the rail capacity applications the Finnish Rail Administration will also process railway undertakings' needs for railway yard capacity. If it seems that more than one operator is in need of a certain railway yard, the Finnish Rail Administration will consult the railway undertakings in order to find a solution. In coordinating the needs for using railway yards, the Finnish Rail Administration must also evaluate its effects on the use of line capacity. The use of railway yards is agreed in the rail network access contract. (Mäkitalo 2006b; see also L 555/2006.)

2.5.5 Agreements related to the use of rail capacity

Rail network access contract

Before a railway undertaking can start operating rail transport, it must sign an access contract on the use of key services important to the rail network and operating rail transport services. The key services include, for instance the use of train formation yards, storage sidings, other sidings and also traffic control services. A railway undertaking and the Finnish Rail Administration can also agree on other practical arrangements necessary for the operation of rail transport. (L 555/2006; RHK 2006c, 14.)

The Finnish Rail Administration will consider the rail capacity allocated to the railway undertaking and its scope of traffic in the access contract. The access contract is valid for the duration of the timetable period and it can be amended if matters concerning, for example, the scope of traffic so require in the middle of the timetable period. The rail network access contract can be made when all requirements for operating rail transport are met. Rail transport can be started once the access contract is signed. (L 555/2006; RHK 2006c, 14.)

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[1] Railway yard capacity refers to transport service on the railway yard, "the number of cars or groups of cars serviced in or passed by the railway yard" (Mäkelä & Tanhuamäki 2004, 25). The passenger transport railway yard capacity, for freight transport as well, is a part of the rail capacity application for line traffic.

Framework agreement

If a railway undertaking so wants, it can sign a framework agreement with the Finnish Rail Administration. This agreement defines the properties of the rail capacity the railway undertaking needs. The framework agreement does not, however, entitle the railway undertaking to the rail capacity defined in the agreement. A railway undertaking must apply for the rail capacity described in the framework agreement separately for each timetable period, and it must do so in accordance with the application procedure defined in Railway Act. Rail capacity applications for rail capacity described in framework agreements are processed as normal rail capacity applications. The framework agreement does not affect the need for signing an access contract. (L 555/2006; RHK 2004b, 14–15.)

The framework agreement is signed for a maximum of five years. Longer agreements are, however, possible due to special reasons. Reasons for agreements longer than five years include, for instance, transportation business agreements, special investments, extraordinary business risks, or other weighty reasons. (L 555/2006.)

2.5.6 Questions concerning operational actions

The Finnish Rail Administration provides the railway undertakings with an access right to the state-owned rail network in accordance with the allocated rail capacity and for an infrastructure charge. The access right applies to railway routes, train formation yards, storage and loading sidings and other tracks. The infrastructure charge also includes the rail traffic control service and communications by means of passenger information systems. On electrified track sections a railway undertaking can connect to the Finnish Rail Administration's transmission network to get tractive force for its rolling stock or to use electricity for other purposes. The Finnish Rail Administration can – in addition to the services included in the infrastructure charge – offer the railway undertakings, for example, access rights to its buildings and land areas as commercially priced services. (L 555/2006; RHK 2006c, 28; see also VnA 206/2003.)

By virtue of railway legislation, a railway undertaking is obliged to offer certain services to another railway undertaking to use. The services must be offered with their track connections, if the service in question is provided only by one provider, and there is no other reasonable way to offer the service. The availability and use of services must be agreed with the service providers. The service provider is entitled to charge a service fee reasonable and equal to all railway undertakings. (L 555/2006; RHK 2006c, 28.)

2.5.7 Network Statement

The Network Statement is a report that the infrastructure manager publishes for the rail capacity applicants once every timetable period. The Network Statement is an information package on the rail network access requirements and applying rail capacity. (L 555/2006; Mäkitalo 2003a, 26.) Based on Article 4 of the Railway Act, the Network Statement must publish information about regulations that deal with 1) rail network access rights, 2) principles for infrastructure charges, 3) rail capacity applications and related deadlines, 4) rolling stock requirements and the approval of rolling stock, and 5) other matters concerning the operation and requirements of starting rail transport. Furthermore, the Network Statement must include information about the quality and scope of the rail network and the use of services. The Network Statement should also include those regulations that the Finnish Rail Administration has issued for 1) specialised rail capacity, 2) priority order of congested rail capacity, and 3) threshold amounts for the minimum use of track specific rail capacity. The law provides that the Finnish Rail Administration must hear the rail capacity applicants located in Finland and also other rail capacity applicants seeking to access the Finnish rail network. (L 555/2006.)

The Network Statement is published once every timetable period, no later than four months before the deadline for handing in the rail capacity applications, which means that it is published a year before the timetable period begins (L 555/2006). The Finnish Rail Administration has published five Network Statements in Finland. The first Network Statement on the timetable period of 2004 (see RHK 2003c) was published in March 2003 (RHK 2003a, 5) after the Railway Act entered into force, and it was one of the first European Network Statements. A press release (RHK 2003d) was drafted to accompany the statement. Thereafter the Network Statements (for timetable periods 2005–2008) have been published in December according to the publication schedule described in the directive (see RHK 2003e; RHK 2004b). The Network Statement is published in Finnish, Swedish, and English (see e.g. RHK 2004b; RHK 2004c; RHK 2004d).

The Network Statement follows a harmonised European content structure. The common structure and minimum information content of the Network Statement has been defined by the Network Statement working group of the International Union of Railways (UIC) and infrastructure managers' RailNetEurope (RNE). According to the common structure (RNE NS 2003c, 1–10; RNE NS 2005b) the Network Statement includes six chapters:

1. General information
2. Access conditions
3. Infrastructure

4. Capacity allocation
5. Services
6. Charges.

The common content structure comprises the list of headings and writing instructions (see. RNE NS 2003c; RNE NS 2005b). Even though the Network Statements have been drawn up in accordance to the same common structure defined by RNE's Network Statement working group, the European Network Statements differ from each other in structure and content (Väänänen 2004, 9; cf. e.g. JBV 2003 and NR 2004). RailNetEurope's Network Statement working group has noticed these differences and has had a report done on the congruence of Network Statements. Based on the report the Network Statement working group had done (Prosjekttjenester 2004, 11–14; see also EC 2003), a more detailed structure with explanations would help the infrastructure managers to create more similar Network Statements. The report states that different issues are described in different countries under the same heading. RailNetEurope's working group is still having fundamental discussions on the Network Statement's function and the description of its content (RNE NS 2003d; RNE NS 2004a; RNE NS 2004b; RNE NS 2004c; RNE NS 2005c; RNE 2005, 16; RNE 2006, 22–23; RNE 2007, 24). The working group has also discussed about drafting a Network Statement to certain international corridors (RNE NS 2005a; RNE 2005, 16).

In Finland, the Network Statement has been developed by organising Network Statement development seminars and drafting reports on how the Network Statement could be developed. An annual Network Statement development seminar has been organised in conjunction with the drafting of the Network Statement. This seminar has tried to come up with development guidelines and it has also evaluated new ideas brought forward. The first Network Statement development seminar was held in October 2003. The seminar concluded that rail capacity allocation must be defined more accurately and rail maintenance should be defined using maximum funding levels. The seminar also discussed about the publication format of the Network Statement and the possible discontinuation of Jtt[1]. (RHK 2003f; Mäkitalo et al. 2005, 28.) The second Network Statement development seminar was held in September 2004. The conclusion of the seminar dealt with rail maintenance descriptions, the decreasing the number of infrastructure and operating point register columns, better description of the changing operating environment, i.e. describing the competition rules and including the safety authority in the text (RHK 2004e). The third Network Statement develop-

[1] Technical regulations and instructions related to the train safety regulations.

ment seminar, held in the early autumn of 2005, discussed the current and future function of the Network Statement and in that context also pondered what type of information the readers are searching in the Network Statement. The seminar also deliberated on the Internet Network Statement. (RHK 2005d; Mäkitalo et al. 2005, 28.)

The Finnish Rail Administration drafted a comparison of Network Statements in the autumn of 2003, which reviewed Network Statements published in Europe and assessed how the Finnish Rail Administration's Network Statement could be developed. The report (Cousins 2003c, 7–9) proposed that matters should be concretised and additional sources of information should be pointed out. In the summer of 2004, the Finnish Rail Administration drafted a development report on the Network Statement (Väänänen 2004), where it interviewed the users of the Network Statement and compared it to other European Network Statements. The results of the comparison comprised improving the accuracy of the information in the Network Statement, reducing the amount of information on the infrastructure and traffic operating point registers, and describing the operational models used in competitive situations. (Väänänen 2004, 26–29; Mäkitalo et al. 2005, 27.) The third report on the development of the Network Statement (Väänänen 2005) was drafted in the summer of 2005, and it focused mainly on the new Network Statement requirements caused by the opening of competition. The results of this report included, for instance, better description of phases required to access the rail network, and improving the accuracy of the infrastructure and rail maintenance information. (Väänänen 2005, 19–22.)

The next step in developing the Network Statement is an Internet based, which means that the Network Statement would be published as a normal web page, instead of the current PDF report. The Internet version would allow quick and easy publication of updates. It would also make it possible to include more information to the topics than the paper publication allows. Examples of additional information to be published have included railway yard diagrams and instructions to which the text refers. (Mäkitalo et al. 2005, 32.)

2.6 Description of the Finnish rail freight market

Due to their basic properties (see e.g. Mäkelä et al. 2002, 7), rail freight transport services are best suited for heavy and long transports. The cost factor often represents the most important selection criteria in rail freight transport (Kurri, Peltola & Sirkiä 1998, 32; Iikkanen & Siren 2005, 42–44). Typical rail freight transports include transports for the forest, metal and chemical industries. The biggest transport flows consist of the aforementioned industries' raw material

transports to production plants and transports of products from production plants to harbours. Approximately 40 per cent of transports comes from transports to and from Russia, and the majority – approximately 3/4 – of them consists of Finnish industries' raw material transports. Compared to road transport, rail transport represents a more environmentally friendly and safer alternative. (Iikkanen & Siren 2005, 13; RHK 2006a, 16–17; see also Mäkelä et al. 2002, 86–87.)

The total rail transport volume exceeded the road transport volume up to the 1950s (Valtionrautatiet 1972, 8–9; Iikkanen 1997, 11–13; Tiehallinto 2006). Rail transports' market share on domestic transports remained high up to the early 1970s, but since then it has decreased due to the rapid growth of road transports. The total rail transport volume started to increase in the 1990s, and the upward trend has remained steady ever since (Figure 5).

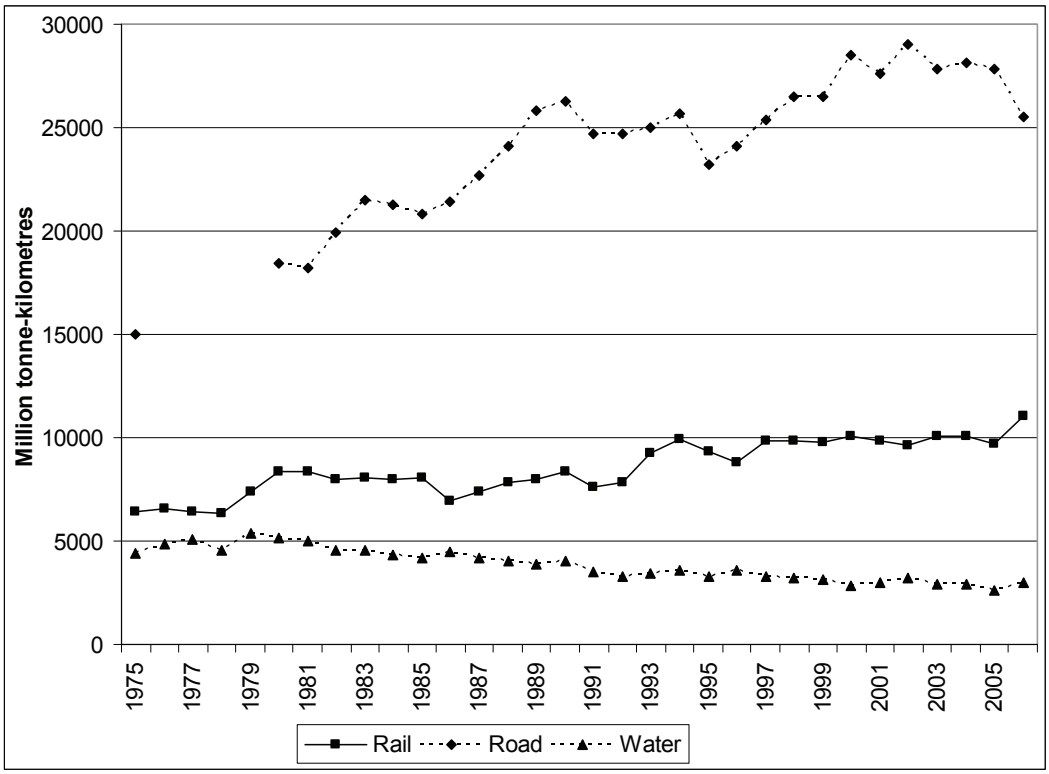

Figure 5. Development of total transport volumes in domestic traffic by different modes of transport in 1975 through 2006.

The future of total rail transport volumes in domestic traffic is affected especially by the financial position and industrial production levels. The basic industry also has a key role. (Iikkanen 1997, 38, 49–51.) According to the latest freight transport estimate, freight transports will increase to 49.6 million tonnes in 2010, and to 52.0 million tonnes in 2025. Transports of raw timber are estimated to increase by four percent by 2010, when they will comprise over 40 per cent of domestic transports. (Iikkanen & Varjola 2002, 49–50, 58–66; Välke 2004, 256–257.) As for the rail network, the increase in transports will focus on Russian

connections, Helsinki–Oulu main line, and Jämsänjokilaakso–Rauma section. (Välke 2006, 24). In 2006[1], the total transport volume amounted to 43.6 tonnes of goods, and 11.1 billion tonne-kilometres (Finnish Rail Administration's railway statistics 2007, 7). The opening of competition in rail transport is not expected to have a significant effect on the transport volumes (Kirjavainen, Frank & Varila 2002, 25–26, 31, 37; Iikkanen & Siren 2005, 50–51).

Factors contributing to the selection of the transport mode include, for example, transportation costs, transport time, reliability and suitability. In domestic transport, the selection is based on the transported product. Different products have their own natural transportation needs, which is why sometimes there is no competition between the various modes of transport. Most competition between different modes of transport can be found in the medium-range transports of the forest, metal and chemical industries' raw materials and products. (Iikkanen & Siren 2005, 15; Soisalo 2005, 60–74; Mäkelä et al. 2002, 87.)

Pekka Iikkanen has developed a new method for evaluating the core areas and development of transport modes used in freight transport. The transport needs of different branches of business can be estimated in relation to the value added of these branches; this ratio is called the transport intensity of a branch (see Iikkanen 2004; Iikkanen & Gröhn 2004). Based on the transport intensity levels of different industries, the competitiveness of rail transports has developed favourably. Rail transports have a significant market share in the forest, metal and chemical industries' transports (Figure 6, source: Iikkanen & Siren 2005, 35). (Iikkanen & Siren 2005, 27–35.)

[1] The corresponding transport volumes of 2005 stood at 40.7 tonnes of goods, and 9.7 billion tonne-kilometres (Finnish Rail Administration's railway statistics 2006, 7). The figures of 2005 are below normal, which is due to the forest industry's work stoppage.

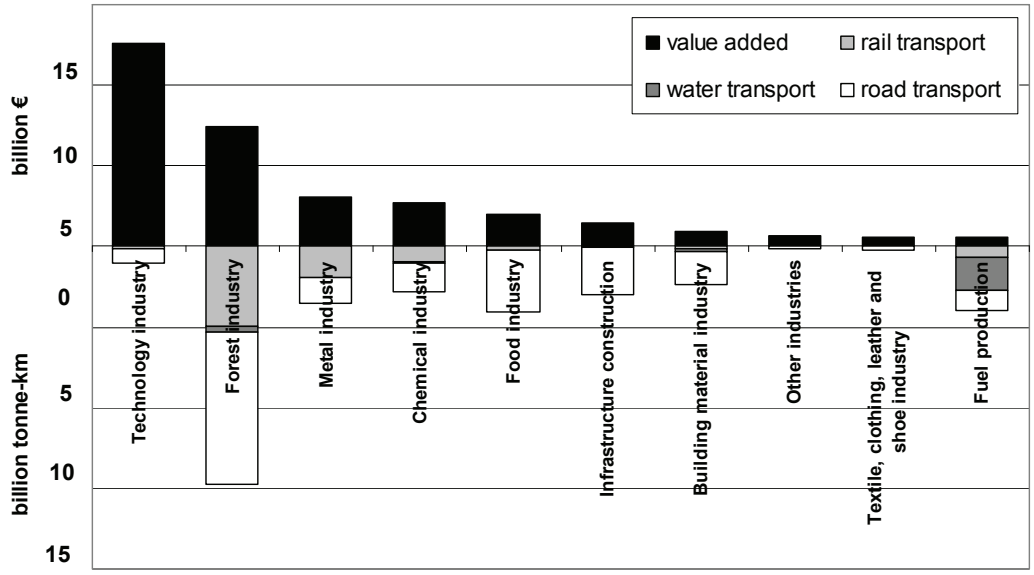

Figure 6. Values added and modes of transport for different industries in 2002.

2.7 Finnish railway policy definitions and earlier studies

In this chapter I will introduce some Finnish policy definitions related to railway competition. Knowing the Finnish railway policy definitions is important in order to estimate the direction in which the rail legislation or issues related to the rail transport competition may be heading. Furthermore, the results of this research can be projected on the current situation and used to assess the necessity of new operators. In this chapter I will also introduce some Finnish and international studies on the opening of rail transport to competition, and the results or these studies.

2.7.1 Railway policy definitions

The Ministry of Transport and Communications of Finland has created several working groups to discuss various questions on the opening of competition. In 1998, i.e. before the European Union's first railway package, the Ministry of Transport's working group discussing the opening of competition suggested that Finland would allow open rail network access in freight transport. The working group also suggested that Helsinki Metropolitan Area Council and the Ministry of Transport would be allowed to organise a competitive public tender for the local transport services in the metropolitan area. (LM 1998, 87.) The working group also estimated how various types of competition would work in freight transport. The types of competition brought forward included franchise competition, competition for monopoly rights on certain routes or areas, and open access to the rail network. The working group considered the last-mentioned as the most

suitable type. (LM 1998, 67–69.) The working group estimated that the opening of competition will not create competition in rail transport, but it will not result in "a significant amount of transports to be transferred from VR Limited to other railway undertakings". The biggest advantage in opening competition, according to the working group, is the fact that competition and the threat of competition will boost rail transport. (LM 1998, 75–79, 84.)

The Finnish Ministry of Transport and Communications' working group discussing the competition in local transport presented a few issues concerning the topics of this research. There is a need for a specialised institute for railway personnel training, and this institute should provide training services for all railway undertakings. This educational institute could belong to VR Group, or it could be independent of other railway undertakings. The current organisation of traffic control would be sufficient in the early stages of the competition, but the working group estimated that the need for transferring the central traffic control functions to the Finnish Rail Administration should be studied in the future. (LVM 2001a, 24–25.)

The final report of the Government's study *Strengthening competence and openness Finland in the Global Economy* (the so-called Brunila's globalisation report) states that a functional transport market supports the competitiveness of the industry. The idea behind this was that companies will improve their business operations and introduce new innovations faster in a competitive market. Therefore all operators who meet all requirements should have open access to transport and terminal operations. (VNK 2004, 78–82.)

The working group assigned by the Ministry of Transport and Communications of Finland to assess official rail transport duties expressed their views on some questions related to the opening of competition. The working group highlighted the rail capacity allocation as one of RHK's most central official duties. The working group stated that sufficient resources and required competence should be allocated to this task. (LVM 2004a, 33–34, 55.) The working group also proposed that traffic control should be separated from VR Limited who operates rail transport (LVM 2004a, 34–35).

In the summer of 2005, the Ministry of Transport and Communications of Finland specified the railway policy definitions on the opening of competition regarding, for example, the organisation of traffic control, railway training, and authorities' operations. According to the Ministry of Transport and Communications, the existing organisation model of traffic control cannot be used in its current form, because there may be several operators in the rail network from the beginning of 2007 onwards. As a result, the Ministry of Transport and Communications

suggested that national traffic control monitoring centre, at least, should be transferred to the Finnish Rail Administration by the year 2007. (LVM 2005b, 3.) The railway training is to be organised and carried out in an equal and non-discriminatory way (LVM 2005b, 4). The Ministry of Transport and Communications believes that the effects of the opening of competition will "probably remain fairly small at least in the early stages". Nevertheless, the objective is to ensure that competition can occur, and this requires that the authorities prepare for the opening of competition. (LVM 2005b, 7.)

The rail traffic control working group assigned by the Finnish Ministry of Transport and Communications proposed that the organisation of traffic control, i.e. transferring traffic control to VR Limited operating rail transport, is no longer expedient when the freight transport opens up. The working group suggested moderate progress on the organisation of traffic control, but nevertheless solving requirements concerning the transparency and equality of traffic control. According to the working group's proposal, the traffic control should be organised within the VR Group so that traffic control would be turned into a new limited liability company that would belong to the VR-Group Ltd. The working group used the company bylaws of the new traffic control company and the fact that the board of directors would comprise parties independent of the VR Group to justify the solution's transparency, equal treatment of railway undertakings, and independence of handling traffic control matters. (LVM 2006a, 12–13, 23–28; Mäkitalo 2006, 26; see also Hirvonen, Niskakangas & Steiner 2003, 316–327; L 624/2006.) In VR-Group Ltd's extraordinary general meeting held in May 2007, it was decided that the Board of Directors and the managing director start a project, which will be lead by the Finnish Rail Administration and in which the central traffic control operations to be transferred to the Finnish Rail Administration's traffic management centre by the beginning of 2008. The most central function to be transferred to the Finnish Rail Administration is the national rail traffic control monitoring centre. The Finnish Rail Administration's traffic control centre is to monitor traffic control on a national level, coordinate regional traffic control, and solve traffic problems. (VR Group 2007; RHK 2007.)

The working group assigned by the Finnish Ministry of Transport and Communications to assess the status of the VR Training Centre decided to propose that the Training Centre be transferred to the administrative sector of the Ministry of Education. The working group felt that the Finnish Ministry of Education and The Finnish National Board of Education should be responsible for supervising the training, and the Finnish Rail Agency should be in charge of the safety contents of the offered training services. The working group considered that the training fulfils the neutrality requirements of the Railway Act. According to the Railway

Act, the VR Training Centre must provide training services to everyone for a fee. (LVM 2006b, 28–30.)

2.7.2 Finnish studies on opening rail transport to competition

There have been several reports and studies on the opening of rail transport to competition in Finland. Reports and studies on the opening of rail transport to competition have been carried out in Finland since the 1990s. A few exceptions excluded, I will not deal with reports made before the 21st century in this chapter, even though some of them present interesting ideas[1]. This is because the expectations of Community legislation were somewhat different at that time, and little time had passed from the separation of rail maintenance and transport. This chapter will present some of the reports and studies on the opening of competition made by the Finnish Rail Administration and the Finnish Ministry of Transport and Communications. This chapter will also introduce some studies carried out elsewhere in Europe in so far as they apply to Finland. Studies on market entry barriers are nearly non-existent, although many studies have touched upon the topic.

In 1997 the Finnish Rail Administration carried out a study (Järvelä 1997) on the preconditions for competition and creating them for the Finnish rail network. The study estimated that the preconditions for competition are worsened by the need for coordinating rail maintenance and transport, expensive rolling stock as a market entry barrier, difficulties in timetabling and allocating rail capacity in a situation with several railway undertakings, and the economies of scale and joint production in rail transport. (Järvelä 1997, 34–39, 65.) Järvelä (1997, 46–66) also estimated in his study that preconditions for competitions are not favourable in passenger transport. The preconditions for competition are much better in freight transport, because there is no such interdependency as in the passenger transport. The study also suggested that in order to provide a level playing field, the new railway undertakings should be allowed to access, for instance, the train station and depot facilities. (Järvelä 1997, 56–58.)

In 2000, the Finnish Rail Administration carried out in internal study (Hirvonen & Mäkitalo 2000) on the scenarios of opening freight transport to competition. The goal of the study was to use these scenarios to evaluate the opening of competition and its consequences. (Hirvonen & Mäkitalo 2000, 4–5, 35.) The study presented four different scenarios, which were formed based on the futures table drafted

[1] There are quite a lot of this writings, reports and studies. (See e.g. Grout 1997, Lehto 1994, Lehto 1997, Kuitunen 1998, Pellandini 2001b, Vaikkinen 1997, VTV 2002.)

earlier. The different forms of competition – open competition, regional monopoly, franchising contracts and free purchasing – from the key column of the futures table formed the basis for the scenarios. (Hirvonen & Mäkitalo 2000, 26–34.) The study stated that the effects of and factors related to the opening of competition must be critically evaluated before opening competition. Matters suggested for evaluation included, for instance, questions related to the priority order, and the organisation of traffic control and railway yard operations. (Hirvonen & Mäkitalo 2000, 35.)

The Finnish Rail Administration has also done several studies that deal with questions that are indirectly related to the opening of competition. The Finnish Rail Administration studied the problems in scheduling rail investments, and at the same time touched upon some questions related to the opening of competition (Natunen 2004). The study stated that the organisation of traffic control, among other things, should change due to the opening of competition (Natunen 2004, 98–99). As stated before, the working group assigned by the Ministry of Transport and Communications to assess official rail transport duties also proposed that traffic control should be separated from VR Limited operating rail transport (LVM 2004a, 34–35). A similar conclusion was also made when the FITS telematics programme worked on its Model for rail transport disturbance management: an independent traffic control, subject to the Finnish Rail Administration, should be established. (Levo, Lähesmaa, Hautala & Pajunen 2004a, 30–31, 33–35.) A study conducted in 2005 evaluated software that can be used for scheduling and allocating rail capacity, and more precisely how they meet the needs of the Finnish Rail Administration. This study described thirteen different software suitable for timetabling, seven of which were examined more closely. The study showed that three software were good enough to be considered as viable alternatives, and recommended these software to be tested in use. The final purchase decision could be made based on the test use. (Nyby 2005b, 56–133.)

The Traffic System Department of the Finnish Rail Administration has also studied the infrastructure manager's service role when the competition finally opens up. A study on the marketing and sales of rail capacity stated that the Finnish Rail Administration should create a system that would be used to send queries to railway undertakings and to allow interest group work with them. The Finnish Rail Administration should also establish its own role in relation to the railway undertakings when the competition opens up. The study also estimated that new railway undertakings will experience difficulties in accessing rail transport services, because the service facilities are either owned or provided by VR Limited, a competitor of these new railway undertakings. This was considered to have a negative effect on competition. The study stated that Finland, too,

should consider reorganising the ownership of services related to the operation of rail transport in order to ensure an equal and non-discriminatory playing field. (Holmberg 2005, 102–110.) A study on the production of rail network services stated that the Finnish Rail Administration should help to create the required preconditions for the new railway undertakings to enter the market. The Finnish Rail Administration should create facilities for providing counselling services and publish a guide on starting rail transport in Finland. (Väänänen 2006, 64–86.)

The Finnish Ministry of Transport and Communications ordered in 2002 a report on the effects of opening competition. This report estimated that supply, which may increase due to the opening of competition, may not increase total rail transport volume, but credible competition could lower prices. According to the report, VR Limited could preserve its monopoly after the opening of competition, or the new railway undertakings might acquire a few per cent market share similar to Sweden. (Kirjavainen et al. 2002, 25–26, 37.) One of the conclusions of the report was that there are very big market entry barriers. The presented market entry barriers included economies of scale, major investments in rolling stock, demands and requirements of the railway industry, acquiring competent personnel, resistance from a strong market leader, lack of harmonised railway system, Finnish rail gauge and Finland's geographical location, a small market, small number of large clients, clients' established cooperation with VR Limited, and the fact that the opening of competition does not apply to the Russian-bound traffic. The report stated that allowing competition does not translate into actual competition because of the significant market entry barriers. (Kirjavainen et al. 2002, 22–24, 38–39.)

The report on competitiveness, carried out by the Finnish Ministry of Transport and Communications, the Finnish Rail Administration, and the Finnish Road Administration, estimated that the opening of competition will have a concrete effect on the freight transport market and the competitiveness of rail transport[1]. The industry estimated that the opening of competition would first influence the unit train transport services. The report also estimated that the competition will lower prices. The prices may be reduced especially in those transports where there is no competition between different transport modes or companies from the buyer's point of view. (Iikkanen & Siren 2005, 42–44, 50–51, 58–59; Iikkanen

[1] A similar observation was also seen in RHK's report, which deliberated the development of rail network in southeastern Finland from the point of view of freight transport (Iikkanen, Kosonen & Rautio 2005). The report stated that rail freight transport customers consider the opening of the competition as a significant factor to the competitiveness of rail transport services. It was also suggested that competition would emerge, which was seen as a favourable trend. (Iikkanen et al. 2005, 32.)

2005, 6–8.) The report also stated that the industry considers it problematic that the Russian-bound traffic will not open up like the domestic traffic. (Iikkanen & Siren 2005, 12; Iikkanen 2006, 28.)

A dissertation on the operations model of future transport the basic manufacturing industry (Rantala 2006) suggested that competition would emerge especially in the basic industry's strong streams of goods. An industrial company can begin the transport itself, although the usual trend in logistics is to outsource transport services. The interviews of the study showed weak signals on the fact that logistics service providers could be interested in operating rail transport. The study also stated that the industry expects new and competitive railway solutions, either from the current railway undertaking or from new the railway undertakings. (Rantala 2006, 126–128, 136, 139.)

2.7.3 International studies on opening rail transport to competition

The structure of the rail transport industry is different in Europe than for example in the United States, where a railway undertaking also owns the rail network it uses. Therefore only studies and reports made in Europe have something to contribute to this particular research[1]. Rail transport competition and its opening has been studied a lot in Europe, but nevertheless there are not too many studies that have something to contribute to this research. The rail freight markets of different EU Member States have country-specific characteristics due to the industry and railway technology of each country. Therefore only those European studies that deal with the market entry or changes in the market are interesting for this particular research.

The European Commission has carried out several studies on the degree of the opening of rail transport markets in the European countries. A study in 2004 evaluated the openness of the market by calculating a descriptive index, which consisted of national legislation and practical opportunities and barriers for accessing the rail network (IBM 2004, 5, 8–10). According to this study, Finland belonged to the group which lagged behind in the opening of the market, even though Finland had developed its processes to better serve the opening market

[1] The opening of the competition has, however, been organised very differently, even though it is based on the same and common EC legislation (see EC 2006c, EC 2006d). Great Britain is often used as an example when talking about the opening of rail transport, even though the deregulation was organised in a whole different way than the current EC legislation describes it. The central difference was that the infrastructure manager, Railtrack, was privatised and made into a listed company. The problem was that Railtrack was seeking growth through large development projects and real estate sales and at the same time neglected its rail maintenance tasks. (Cousins 2003a; Cousins 2003b; Murray 2005; Malin 2003.)

(IBM 2004, 45–46; see also IBM 2002, 11–29, 41–42; Knorr & Eichinger 2005). The results of another similar study, ordered earlier by the Commission, were very similar: In theory, competition was possible, but the competition did not emerge, for instance, because the Finnish railway market was not attractive to others and there was also too little market information available. (Steer Davies Gleave 2003, 9.)

The European Commission has created a report on the implementation of the first railway package (EC 2006c). The report includes appendices (EC 2006d). According to the report, the new European railway undertakings felt that the application process for the operating licence and safety certificate can, in places, be non-transparent, arbitrary, complex, long-lasting and expensive, which forms a serious market entry barrier (EC 2006d, 24–27; see also NIM 2003, 6–7; Hylén 2001, 10). The new railway undertakings were also worried about discrimination in accessing key services. These services included railway yards, refuelling facilities, and terminals. The problems in accessing the services were mostly due to the fact that the biggest company on the market and the owner of the particular service had used its market position to its own advantage and decided the conditions for accessing the service. The difficulty of accessing the services created a central market entry barrier. According to the report, it had been estimated that the dominating companies try to complicate the market entry of new operators, as well as their practising of rail traffic once they manage to enter the market. The new railway undertakings had experienced that the authorities of certain Member States were not able or willing to operate in an appropriate manner. They felt that this was because the state owned the biggest company on the market. (EC 2006d, 24–27, 55–59; see also Uhl 2004.)

The market share of the biggest railway undertakings is very big in the European markets. The combined market share of new operators exceeded 20 per cent only in three countries (Figure 7, modified from Steer Davies Gleave Steer Davies Gleave, PSPC Consult & Universal Transport Consulting 2005, 4). (Steer Davies Gleave et al. 2005, 38–41; also EC 2007a; cf. EC 2007c, 90–91.) The opening of competition has also meant that national regulatory bodies have received some complaints for them to process (EC 2007c, 41–42). In Sweden, freight transport opened up in 1996, but there are still no operators of equal strength on the market. According to the Swedish Rail Agency this is because of the suppliers' strong position, which is due to high market entry barriers and little competition. (Järnvägsstyrelsen 2007, 16–17)

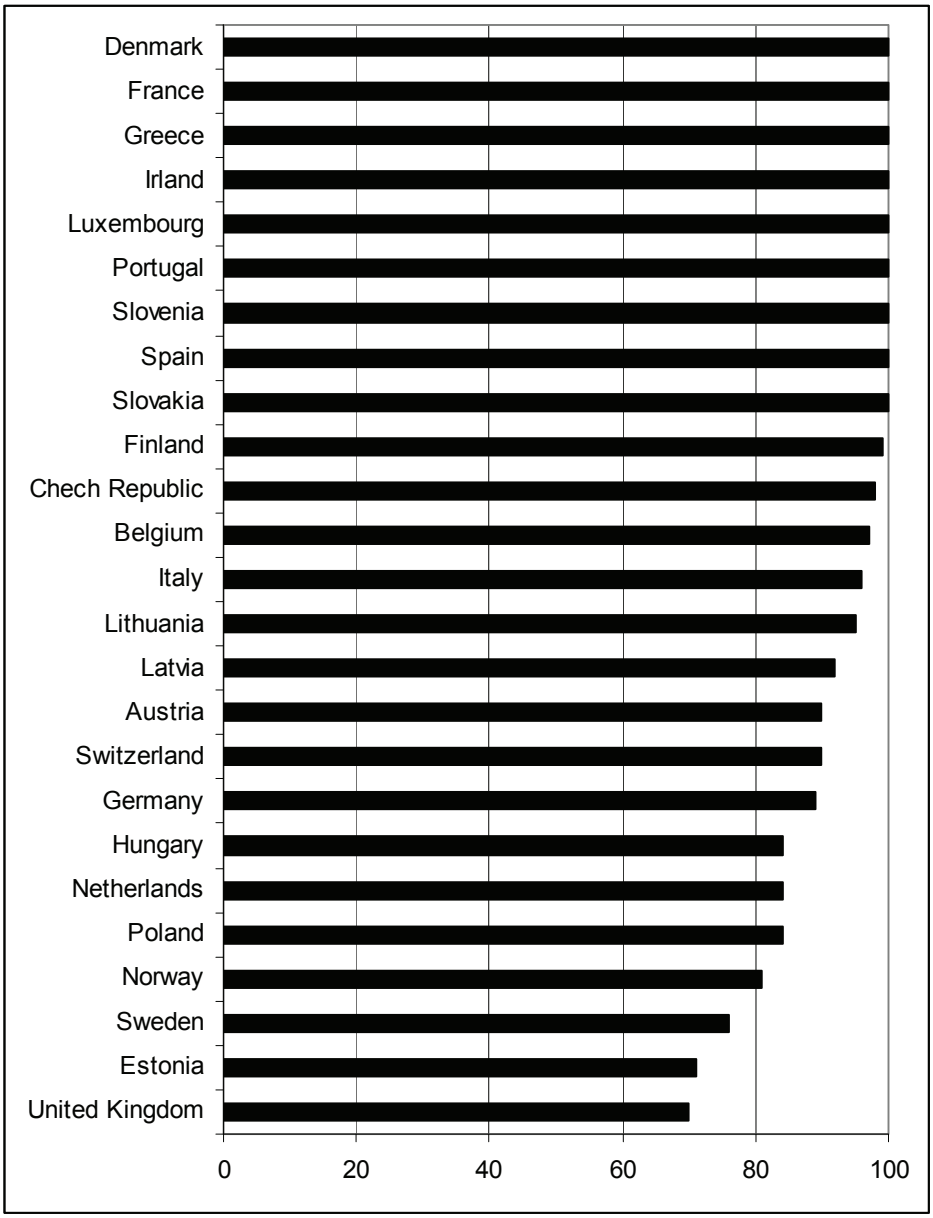

Figure 7. Biggest operator's market share in European countries.

Carlo Pfund reviewed the separation of transport and maintenance in his critical research on the opening of competition (Pfund 2002). The research estimated that the Finnish model of separating transport and maintenance seemed to work reasonably well (Pfund 2002, 50–51). The research considered the rail gauge, mains voltage, and the small market as possible market entry barriers, which is why VR Limited is expected to maintain its strong market position (Pfund 2002, 47–48).

Olli-Pekka Hilmola and Bulcsu Szekely reviewed in their study the opening of competition in the United States, Great Britain and Sweden. Based on a statistical analysis the study proposed that the demand for rail freight transport will pick up once the competition opens up, and the industry will be reborn. The authorities'

actions will have a significant effect on the performance of the industry. (Hilmola & Szekely 2006, 28–31; cf. CER 2005, 23.) Even though there seem to be major market entry barriers in Europe, Hilmola and Szekely (2006, 31) noted that entering the vertically integrated markets of the United States is much more difficult (see also Nash & Preston 1992, 13; Wynns 2004).

Hilmola and Szekely also examined the opening of competition from Geert Hofstede's cultural research dimension (see Hofstede 1997). The countries can be placed on a coordinate system whose axes are Individualism and Uncertainty Avoidance[1] (Figure 8, background material: Hofstede 2007). As for railways, individualism is connected to the use of public transport; countries with high individualism prefer cars over public transport. In countries with high uncertainty avoidance index, deregulation can cause difficulties due to the need of new legislation. Figure 8 shows that, for instance Great Britain, the United States, and Australia are very individualistic countries and have a low uncertainty avoidance index, i.e. they are countries who take big risks. Hilmola and Szekely concluded that these countries prefer private cars over public transport, and therefore the regulatory system will have only little impact on the functionality of the railway system. The researchers also suggested that this explains why deregulation has been so successful in the United States, but some other countries, such as France, are turning into very strictly regulated operating environments. It is interesting to see that EU Member States are positioned in different sections of the coordinate system. (Hilmola & Szekely 2006, 26–30.)

[1] The less the country and its people tolerate uncertainty, the greater the uncertainty avoidance index. This type of country requires more and more detailed legislation to avoid the negative effects.

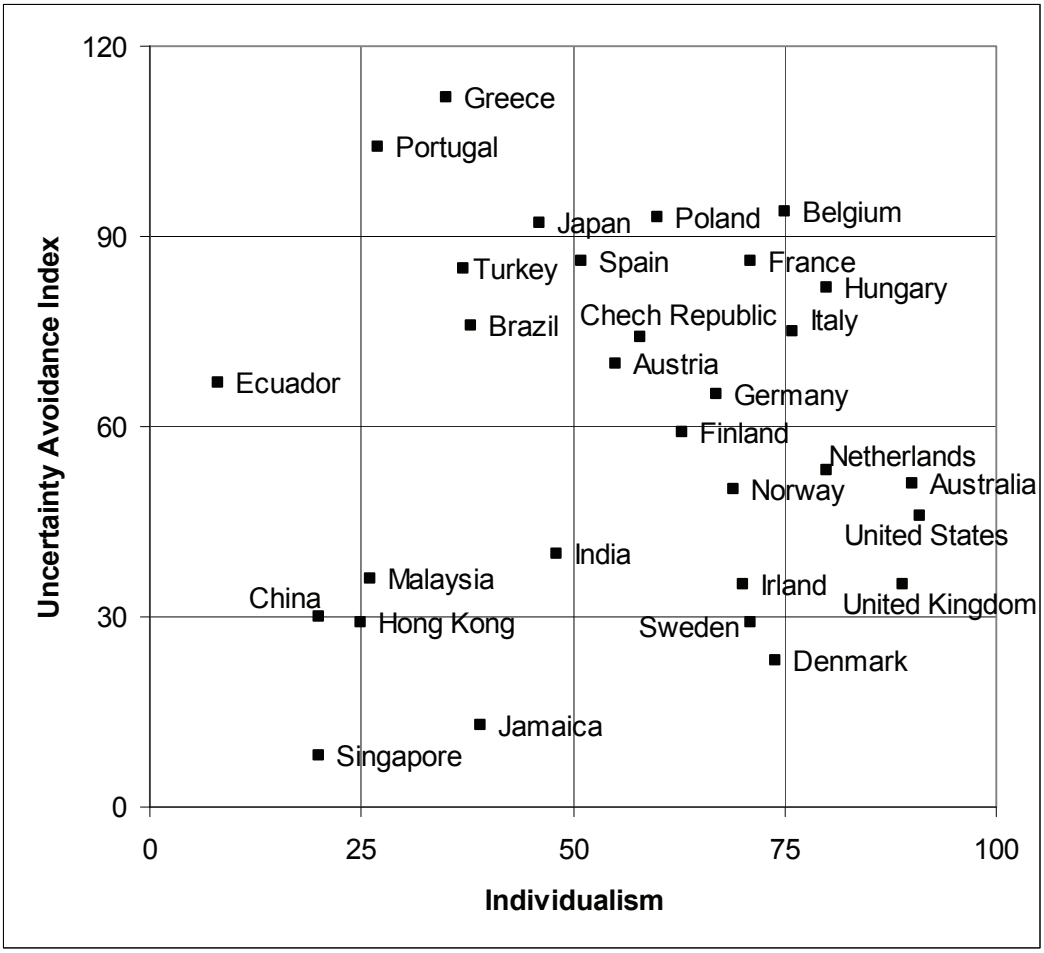

Figure 8. The location of some countries in Hofstede's cultural dimensions.

Pia Bergdahl presented in her report on the opening of rail transport competition in Sweden (2005) that in addition to the track itself, rail freight transports need to access several key functions, of which she mentions factory sidings, railway yards, and terminals. According to Bergdahl, it has not been clear where the infrastructure responsibility line should be drawn: what belongs to the administration's responsibilities and what should be left to the state-owned company? She feels that the insufficient separation of functions has caused a permanent imbalance between railway undertakings. (Bergdahl 2005, 49, 58–59, see also Guriev, Pittman & Shevyakhova 2003, 9–11.)

Bergdahl (2005) also discussed the political risk connected to the opening of competition. She feels that the purpose of opening competition was not completely clear and that deregulation has been slow in Sweden, which has caused some problems in the market. The state-owned passenger transport company, SJ, has been proven to abuse its dominant market position by offering its services in a competitive tender process for a price lower than its production costs. (Bergdahl 2005, 52–62; Nordenlöw & Alexandersson 1999, 14–15; Alexandersson & Hultén

2005, 13–14.) The court also found that SJ had not been able to calculate its own costs. SJ had not committed to the changes in the regulatory environment, which could be seen, for instance, in that SJ's management of the company asked the state to change the decision it had made after they lost a tendering process. (Hultén 1999, 10.) SJ has formed strategic business units in the new operating environment, and these units operate in different areas and buy certain services from SJ. The distribution of operations into small business units reduces the available economies of scale. (Stelling & Jensen 2005, 1–12.)

Deregulation and the opening of competition has increased railway undertakings' need to reduce costs, which has increased their cost-efficiency (Urdánoz & Vibes 2006, 1–12). If successful, competitive tendering process increases competition, improves efficiency and reorganises the industry on a sound basis. Nevertheless, predatory pricing through, for instance, limit pricing or predatory bidding undermines the positive consequences of the tendering process. The competitive tendering in the Swedish passenger transport has resulted in offers with significantly different prices. There are also some experiences of predatory bidding in competitive tendering process. (Alexandersson & Hultén 2006a, 89–91; Alexandersson & Hultén 2003, 19–21; Alexandersson & Hultén 2004, 19–20.) To some extent, the pricing differences are caused by different calculation methods: production-based pricing, strategic pricing, and pricing caused by imperfect information (Alexandersson & Hultén 2006b, 17–19).

According to Alexandersson and Hultén (2006a), the Swedish Competition Act, which is based on EC legislation, is not sufficient when the large international companies are suspected of predatory bidding. The concept of an essential market leads to a situation where the operation of a company is reviewed on regional markets where it can be a small player, even if the company is internationally a notably large group (Alexandersson & Hultén 2006a, 89–92; see also Rey, Seabright & Tirole 2002, 2–46).

Nordenlöw and Alexandersson (1999) examined the market entry conditions of small operators in the Swedish bus transport and rail passenger transport. They said that even though it has been possible to enter the market, the small operators have faced a problem: in a competitive situation they are facing a big and powerful railway undertaking on whose production they are partly dependent. According to them, the new and small operators had managed to avoid extra costs and attract competent personnel from the biggest railway undertaking quite easily. (Nordenlöw & Alexandersson 1999, 1–2, 21.) As a result of the emerged competition, the prices had dropped by approximately 20–25 per cent in local and long-distance passenger transport. The fact that the new operators are entering the market using lower prices often indicates that they have found an innovative

production method that helps to reduce costs. The new railway undertakings were granted the same access conditions to terminals and stations as the biggest railway undertaking, SJ. (Nordenlöw & Alexandersson 1999, 8–9.)

The presented barriers to entry and competition included expensive rolling stock, access to services controlled by SJ, actions taken by certain SJ staff members in their operative business operations that interfere the operation of rail traffic, and incoherent rules and regulations of rail transport (Nordenlöw & Alexandersson 1999, 19–21). Customers purchasing rail freight transport services found the price as a significant factor, but changing a railway undertaking required a remarkable difference in price, at least approximately 10 per cent. (Alexandersson et al. 2000, 59.) According to Alexandersson and Hultén (2005, 14), the parties who purchase transport services had not been very active in exploiting the competitive market situation. In fact, the competitive market situation has been used more for calculating prices for Green Cargo, the company operating the freight transport services of the former Swedish State Railways, and not so much for purchasing services from the new operators. (Alexandersson & Hultén 2005, 13–14.) According to the Swedish Rail Agency, the railway undertakings formed from former State Railways are currently controlling the passenger and freight transport, and the remaining railway undertakings are forced to serve only those customers who the dominant operators do not find that interesting. (Järnvägsstyrelsen 2007, 9–17.) In passenger transport, however, even a small number of competitors creates real and significant competition (Ivaldi & Vibes 2004, 14–15).

According to Nash and Preston (1992, 13), barriers to operating rail transport include personnel training expenses, lack of rolling stock resale market[1], access to service and maintenance facilities, market position and status of existing operators due to marketing, and access to common information systems. They also feel that new railway undertakings should be able to enter the market quickly, so that the dominant railway undertaking does not have time to react to the entry by lowering prices or increasing its production capacity. In rail freight transport market the new railway undertakings can sign secret contracts with parties who purchase transport services, and therefore the speed in which new railway undertakings can enter the market is not that critical. Due to the dominant operator's economies of scale it would be great if the new entrant was also a big railway undertaking, so that it too would enjoy economies of scale. (Nash & Preston 1992, 13.)

[1] This has changed in many European countries after the aforementioned study: the market of used rolling stock has developed due to the emerged competition. It is however worthwhile noticing that the acquisition of rolling stock presents a bigger entry barrier in countries with no or underdeveloped resale market of used rolling stock.

3 MARKET ENTRY AND BARRIERS TO ENTRY

The national and business economics theories deal with the market entry, barriers to entry, strategic prevention of entry, and competition. Knowing this theoretical background is essential in order to understand and evaluate operations connected to a single industry and companies within that industry. In this chapter, I will deal with competition and the different market forms, the extremes being perfect competition and monopoly. I will use the socioeconomic efficiency objective and the structure–conduct–performance-paradigm to introduce the government's possibilities to influence the operation of the market. I will describe the entry barriers with the help of competition research assumptions and market entry/exit discussions of two different schools – Harvard and Chicago. At the last part of this chapter, I will introduce how marginal pricing, production capacity and contracts are used as strategic methods for preventing market entry.

3.1 Competition and the different forms of markets

Economics and especially classical political economics is considered to be based upon Adam Smith's[1] (1723–1790) book *The Wealth of Nations*; Smith 1904a, 1904b), which is merited for proving economics as separate field of science. Smith argued that buyers and sellers try to maximise their own benefits, and that the free competition between them and the functionality of the pricing system results in an outcome that is best for the entity as a whole. The "invisible hand", which is present on the market, guides the economy and promotes general welfare. (Smith 1904a, 421; Pekkarinen & Sutela 1981a, 24–25; Mankiw 2004, 150.)

At the end of the 19th century, economics became more and more interested in the behaviour of individual operators, price formation, and maximising benefits. This gave birth to neoclassical economics, which started to displace political economics. In a neoclassical economic theory, a price based on demand and supply is considered to transfer information and distribute income. (Pekkarinen & Sutela 1981a, 32–37.) A neoclassical economics theory emphasises free competition and relies on social liberalism (Virtanen 2001, 121–125).

[1] Smith is considered as the founding father of economics, even though this title may be an overstatement. Nevertheless, the significance of Smith and his book to economics is undeniable. (Pekkarinen & Sutela 1981a, 24.) Smith himself, however, considers his moral theory as his most significant work.

3.1.1 Perfect competition

A market mechanism that operates based on a neoclassical microeconomics theory distributes economic resources in the most effective way possible (Lindberg 1992, 42). A functional market mechanism requires the conditions of so-called perfect competition, which refers to a situation where (Naylor & Vernon 1969, 43–44; Pekkarinen & Sutela 1981b, 96–108):

- there are so many buyers and sellers on the market that a single operator cannot influence the prices of products
- commodities are similar
- companies and factors of production can enter and exit the market freely
- perfect information prevails on the market.

A company cannot influence the market price on the perfect competition market, the given price is accepted as it is. Therefore a company can only use its profit maximisation calculation to estimate the amount of commodities it should produce. On perfect competition markets companies face a flat demand curve[1]. Since the price is given to the companies, the marginal revenue[2] of the company is equal to the price. A company maximises its profits by producing an amount with which the marginal costs[3] equal the price. The supply curve is the marginal cost curve that exceeds the company's changing costs per unit. (Mankiw 2004, 64–65, 289–308; Pekkarinen & Sutela 1981b, 97–102; Mäkelä 2000, 57–64.)

Even though the perfect competition market is one of the most important models of economics, it does not exist (Pekkarinen & Sutela 1981b, 108; Leivo & Leivo 1997, 1–3). Pekkarinen and Sutela (1981b, 108) have, in fact, stated that perfect competition is a "scientific abstraction that cannot materialise in the real world". It is also evident that several assumptions of perfect competition cannot be realised as such in realistic markets. Nevertheless, markets strive for a functional and competitive market situation that resembles a perfect market. The different market forms and competitive settings can be reflected on the conditions of perfect competition. Correspondingly, perfect competition cannot be achieved in Finnish rail freight transport, because the prerequisites of perfect competition cannot be fulfilled. Currently there is only one railway undertaking, i.e. a monopoly on the market, even though transport has been opened to competition.

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[1] The demand curve refers to the interdepence between price and demand (Mankiw 2004, 66).

[2] Marginal revenue refers to the change in total income caused by the sales of one additional unit (Mankiw 2004, 291–292).

[3] Marginal cost refers to the increase in total costs caused by increasing production by one commodity (Pekkarinen and Sutela 1981a, 219).

3.1.2 Some imperfect market forms

Monopoly

Monopoly is the opposite extreme of perfect competition in the continuum of market forms. In a monopoly situation, the company operating on the market is the only company in its branch, which means that it has no direct competitors. A monopoly situation can emerge due to various reasons, e.g. patents, factors of production, or legislation. (Pekkarinen & Sutela 1981b, 109; Mankiw 2004, 313–318.)

The demand curve of a monopoly (D) is also the demand curve of the market. The marginal revenue (MR) is always smaller than the price when the company's demand curve descends to the right. A monopoly maximises its profits by producing an amount with which the company's marginal costs equal the marginal revenue. The company's marginal costs (MC) and marginal revenue (MR) are the same with a production volume X, which results in price P (Figure 9). This equilibrium allows the company to maximise its profits. (Mankiw 2004, 318–329; Pekkarinen & Sutela 1981a, 105–106; Pekkarinen & Sutela 1981b, 109–113.)

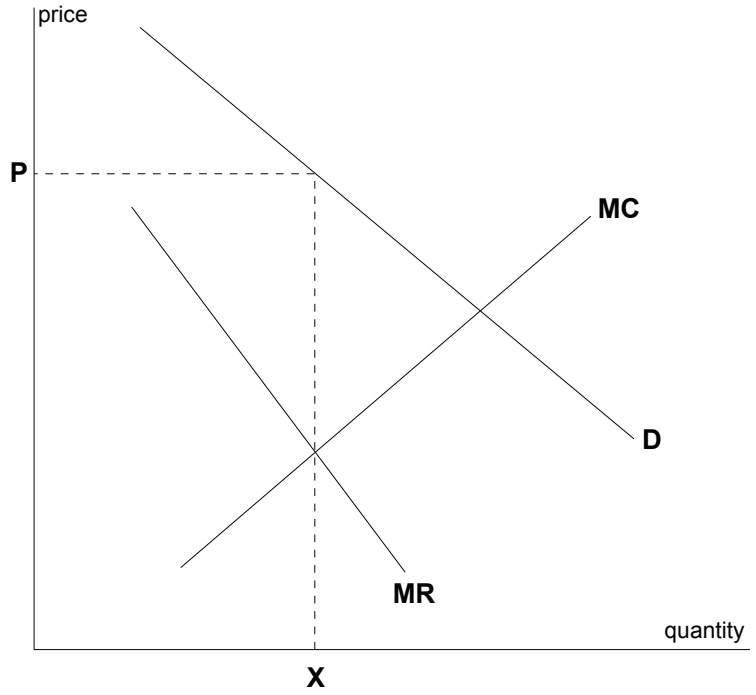

Figure 9. Monopoly equilibrium.

The market structure affects the market's equilibrium price and production volume. Figure 10 presents perfect competition and monopoly situation markets with similar demand and supply curves. Comparing the equilibria of the markets reveals that when compared to perfect competition, monopoly produces more and

for a higher price. This is due to the fact that in perfect competition the price forms when the marginal costs (MC) meet the demand (D), whereas in a monopoly situation the price is formed when the marginal costs (MC) meet the marginal revenue (MR). The consumer surplus[1] is also smaller in a monopoly situation (grey areas of the graph). The total surplus[2] is also smaller in a monopoly situation than in perfect competition, in which case a part of the surplus (area A–B–E) is not received. (Mankiw 2004, 374–380; Tirole 1988, 66–67; Pekkarinen & Sutela 1981b, 113–115; Pekkarinen & Sutela 1981a, 107.)

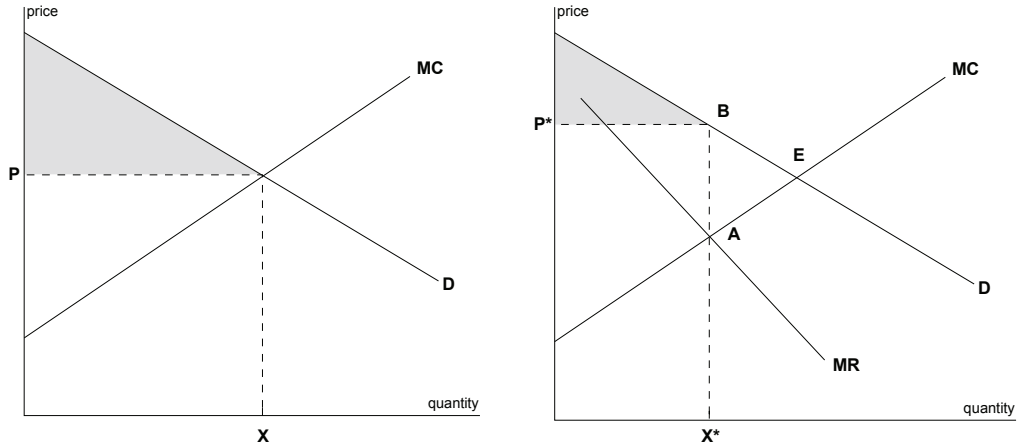

Figure 10. Equilibrium in perfect competition (on the left) and in a monopoly situation.

Natural monopoly

A monopoly caused by economies of scale and significant fixed costs is called a natural monopoly. If the costs decrease when the production increases, the lowest cost per unit is achieved with a production output that corresponds with the demand of the whole market. In a natural monopoly, the competition results in a situation where there is only one company on the market, even though there may have been several players in the beginning. (Pekkarinen & Sutela 1981b, 109; Mankiw 2004, 316–318.)

Producing a new commodity in optimum natural monopoly conditions and at the intersection of marginal costs (MC) and demand (D) (Figure 11) results in a loss of P_r–P. The most essential point in a natural monopoly situation is that the average production costs (AC) exceed the marginal costs (MC). Due to the monopoly situation, the company can still achieve the maximum profit. In this

[1] Consumer surplus refers to the difference between the price and the buyer's willingness to pay (Mankiw 2004, 139).

[2] Total surplus refers to consumer and producer surplus combined.

case, the production output of the company is X_m, and the resulting price is P_m. The optimal balance for the society (intersection point MC–D) causes a loss to the company, and cannot be achieved without subsidies. The production output X_r and the so-called Ramsey price P_r, which are formed based on the average production prices, are not optimal for the production, but thanks to the equilibrium the society does not need to support the company. (George, Joll & Lynk 1992, 336–337 ref. Järvelä 1997, 23–27; Sharkey, 1982, 54–57; Train 1991, 117–125.)

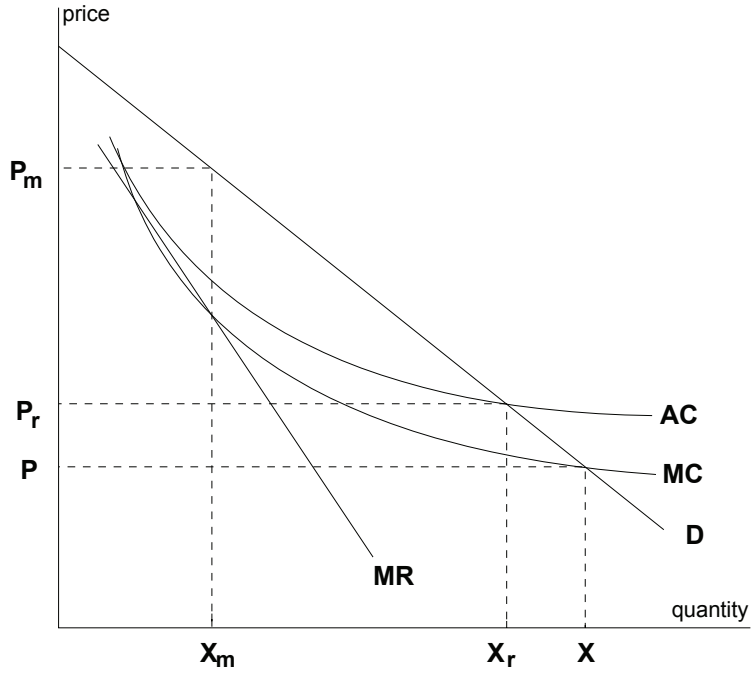

Figure 11. Natural monopoly.

The average costs of a natural monopoly decrease with all production volumes. The average production costs may also increase after a certain production volume (in Figure 12 after production volume X). In this case, the company enjoys economies of scale for a production volume X, after which increasing the production volume will increase the average price. In this type of situation the natural monopoly is dependent on the demand. The natural monopoly is at its most efficient with a certain demand level (straight D in the figure), and with a different demand level, there is room for several companies on the market. (Sharkey 1982, 29–34; Pekkarinen & Sutela 1981b, 109)

In Finland, the railways were a legalized monopoly until the year 2003, when the Railway Act opened the international transport within the European Economic Area to competition (L 198/2003, see also HE 162/2002). As for economics, rail transport has been considered as a good example of a natural monopoly, because rail maintenance and transport are connected to large fixed costs and need for capital, which leads to economies of scale in the actual operation (see Nash &

Preston 1992, 2–3; Foreman-Peck 1987, 108–111; Järvelä 23–33; Kerosuo 1980, 18). Therefore it was earlier considered that rail maintenance and transport tasks are produced, in socioeconomic terms, most efficiently if organised into one company. The vertical separation of railways, i.e. the separation of rail maintenance and transport, will abolish the railways' natural monopoly, even though economies of scale are connected to the operation of rail transport (see e.g. Hilmola & Szekely 2006, 31–32). Separating rail maintenance from the operation of rail transport means that the only prerequisite for entering the market is the acquisition of necessary factors of production. In this case, a company contemplating small-scale rail transport services would only need to acquire a small rolling stock sufficient to the intended level of transport. The vertical separation allows small operators to enter the market and operate rail transport services.

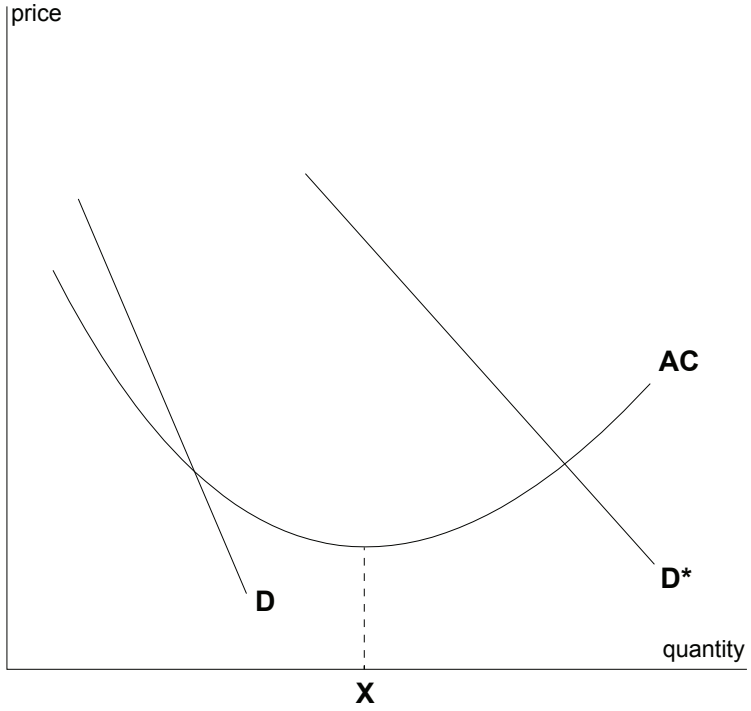

Figure 12. Natural monopoly and economies of scale that will be lost.

Oligopoly

Olygopolistic market consists of some large companies who compete against each other. The large companies can be accompanied by several small companies. Since there are only a few large companies on the market, they need to take notice of other large companies' decisions. Oligopoly is placed between monopoly and perfect competition. (Mankiw 2004, 345–353; Mäkelä 2000, 67–68.) Even though oligopoly can be seen as a transition phase from perfect competition to monopoly or vice versa, it is a rather stable market form. The interdependency of companies in olygopolistic market results in a situation where operators are seeking the

correct price level and playing a game in which they react to other players' moves. (Mankiw 2004, 345–369; Friedman 1983, 1–18; Pekkarinen & Sutela 1981a, 108–109.) Oligopoly can be a transition phase from a monopoly towards a perfect market. In branches with a natural monopoly, the journey may, however, end in an olygopolistic market.

3.2 Socioeconomic efficiency and competition

3.2.1 Socioeconomic efficiency objective and a public commodity

Socioeconomic efficiency objective and the concept of a public commodity can be used to estimate the government's involvement in the functionality of market mechanisms. According to the welfare economics theory, the imperfect operation of market forces provides the government with a reason to intervene in the operation of market forces and to increase socioeconomic efficiency[1]. Central factors contributing to the market forces' defectiveness include external effects[2], monopolistic competition, and public commodities. (Boadway & Wildasin 1984, 1–10, 55–73; Boadway & Bruce 1984, 103–129; Mishan 1969a, 59–68.) In a situation with external effects, the social and companies' individual marginal utilities are different in size, which causes inefficiency on the market. This is because companies try to maximise their own benefits and do not consider any social benefits or disadvantages in their operation. The government can influence the efficiency by regulating the economy and companies' operations[3], using taxation and pricing. It must also be noted that if there are external effects on the market, the pricing based on the marginal costs of a company does not result in an optimal situation with regards to the socioeconomic aspects. (Boadway & Bruce 1984, 103–129; Boadway & Wildasin 1984, 105–134; Mishan 1969a, 59–68;

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[1] Increasing efficiency, ceteris paribus, is a beneficial goal, as it increases social welfare at the same time. On the perfect competition market, a powerful market mechanism will allocate resources in the most efficient way possible; social science theories refer to this as first best economy. As stated earlier, the conditions of perfect competition cannot be fulfilled on any market, and therefore the optimal Pareto conditions of first best economy are not valid. When controlling an efficient economy, the government pays attention to the effects of monopolistic competition and external effects, which leads to second best economy. (Rees 1984, 29–44; Boadway & Bruce 1984, 131–135; Kerosuo 1987, 21, 23–24; Pekkarinen & Sutela 1981b, 106–108, 149–150; see also Mishan 1969b, 29–37.)

[2] External effects refer to the consequences that emerge unintentionally along with production. The external effects rarely affect the product and have therefore no effect on pricing either. Environmental effects are a good example of external effects. External effects can have a positive or negative effect on the society. (Mishan 1981, 377–474; Boadway & Wildasin 1984, 60–62.)

[3] It can be estimated that the inefficiency of economy caused by external effects and the fact that the rail network is in parts a public commodity, have served as socioeconomic reasons for separating rail maintenance and transport. (see Kerosuo 1987, 25–26, 28–36.)

Mishan 1981, 377–463; Kerosuo 1987, 24–26; Kerosuo 1980, 13–15; Pekkarinen & Sutela 1981b, 150–153.)

In monopolistic competition the price can be set higher than the marginal costs due to the dominant market position. The government can try to improve the social effectiveness by preventing monopolization of the market, regulating the operation of monopolistic markets, and reducing the difference between prices and marginal costs by means of taxation. (Boadway & Wildasin 1984, 62–63, 168–169; Boadway & Bruce 1984, 107–110; Kerosuo 1987, 27–28.) Public commodities represent a special case of external effects of consumption, because they very often have significant positive external effects. A public commodity is a product used by everyone, regardless of who pays for it[1]. Even though there are very few perfect public commodities in the light of this definition, commodities with characteristics and effects of public commodities are very interesting from the economics point of view. According to economists, a market mechanism cannot take care of the production of public commodities due to decreasing unit costs, which are often connected to their characteristics and production, and therefore the government must take part in producing these commodities. (Boadway & Wildasin 1984, 85–103; Kerosuo 1987, 28–32; Pekkarinen & Sutela 1981b, 157–159.)

It can be stated that the government can improve the socioeconomic efficiency by interfering in the imperfect operation of market forces – also in rail transport. The socioeconomic efficiency of rail freight transport can be improved in many ways that are implemented by means of transport policy. The government can correct the external effects within an industry, but they can also affect the external effects of the industry. The government uses railways to correct efficiency distortions caused by the external effects of road transport. In other words, the government should finance the deficit of the railway sector, caused in practice by rail maintenance, up to a certain point in order to improve socioeconomic efficiency and public welfare. (see e.g. Kerosuo 1987, 42, 123–135; Suvanto 2004; Schreyer, Maibach, Schmid, Rothengatter, Doll & Ott 2004; Mäkitalo 2007b.)

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[1] A more detailed description of a public commodity is that the commodity has the following two characteristics: 1) The unsuitability of exclusion principle, which is to say that the members of the community use the commodity as much as the others, or more loosely, no member can be excluded from using the commodity. 2) Community of consumption, which means that an increase in the consumption of one community member does not decrease the amount of commodity available for the other members, or more loosely, the amount of commodity available for other community member does not decrease in proportion to an increase in new consumption. National defence has been considered a good example of a public commodity. (Kerosuo 1987, 28–29; Boadway & Wildasin 1984, 85–103; Boadway & Bruce 1984, 118–122.)

Rail transport has some characteristics of a public commodity. The rail network has some aspects of the community of consumption: the amount of commodity available for other operators to use does not decrease proportionally as new consumption – products transported for a company purchasing transport services – increases. However, it has to be noted that rail capacity is a limited scarcity divided between railway undertakings. The insufficient rail capacity is already a problem for many track sections. It is also worth remembering that rail maintenance is connected to decreasing unit costs, external effects of rail transport, and rail network's natural monopoly, which is to say that it is not worthwhile for a new operator to build a second rail network. The price of rail transport services is used as an exclusion method, in which case those who use the services also pay for them. Before the separation of rail maintenance and transport, railways had big fixed costs and decreasing unit costs. The separation of these functions meant that the decreasing unit costs are now connected to rail maintenance, and the operation of rail transport has become almost a normal business operation.

3.2.2 Structure–conduct–performance paradigm

The structure–conduct–performance research paradigm (SCP) is used as a traditional evaluation tool in neoclassical studies on market competition. The SCP paradigm is used to evaluate how the basic conditions and structure of the market and the competition behaviour of the companies affect the performance and efficient resource allocation of the industry. (Alashban, Hayes, Zinkhan & Balazs 2002, 23–25; Lindberg 1992, 44.)

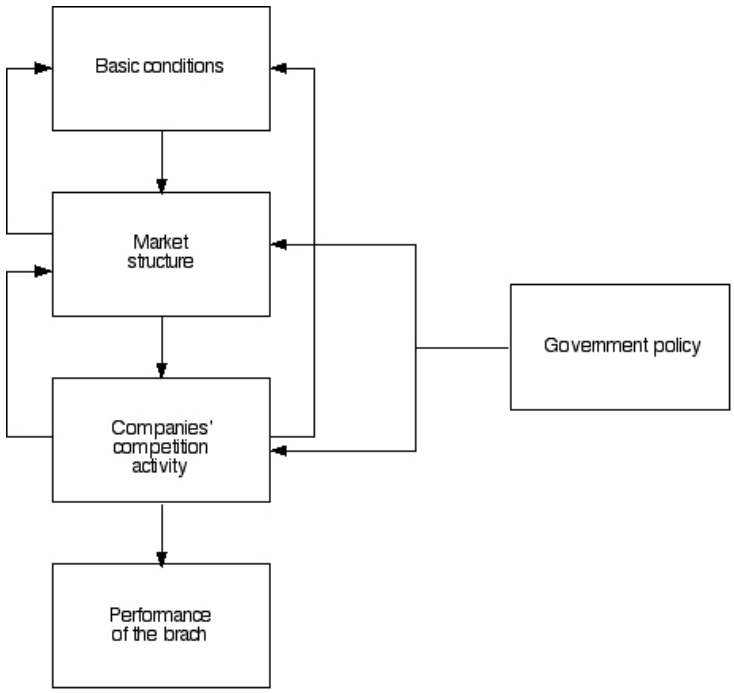

Figure 13. Structure–conduct–performance paradigm.

The basic conditions of SCP paradigm refer to the branch-specific features, which can be seen in the demand and supply of the market. Market structure refers to the number of buyers and sellers on the market; the market entry possibilities are also linked to the market structure. The competition activity refers to the competition behaviour of the companies within the industry. The performance is often considered to indicate how efficient the industry is in terms of national economy. According to Scherer and Ross (1990) the performance of a branch is illustrated by employment rate and income distribution, for instance. (see Lindberg 1992, 44–45.) A more detailed description of the components' contents will be given in Table 2.

Table 2. Contents of SCP paradigm components.

Basic conditions		**Companies' behaviour**
Demand	**Supply**	Advertising
Price elasticity	Raw materials	Research and product development
Growth stage	Technology	Pricing strategies
Substitutes	Product's service life	Other company strategy
Marketing method	Value/ weight of the product	Production level choices
Purchase method	Companies' attitudes	Investment in equipment
Sensitivity to economic fluctuations	Judicial bases	
	Entrepreneurs' interest groups	
Market structure		**Performance of the branch**
Number of buyers and sellers		Production efficiency
Differentiability of products		Allocative efficiency
Barriers for entering the branch		Development of the branch
Cost structures		Branch employment rate
Vertical integration		Equal distribution of income
Number of diversified companies		

Sources: Scherer 1980, 4; Scherer & Ross 1990; Linberg 1992, 46.

The components of SCP paradigm – basic conditions, market structure, competition activity, and performance – can overlap with each other, in which case the same characteristics can be seen in different components. Changes in one component may also affect the components preceding the component in question. Markets functioning without regulation and without any restrictions may not necessarily achieve the best possible resource allocation and performance of the industry, which has been used to justify the government's intervention in the operation of market forces and their regulation. (Lindberg 1992, 44–47; cf. Kerosuo 1987, 20–41.) Scherer and Rossi (1990) state that market regulation and competition policy has been regarded as the most powerful ways for the government to affect the structures and competition activity of various industries. (see Lindberg 1992, 47.)

Market entry preconditions and barriers are found in SCP paradigm sections on basic conditions and market structure. According to the model, the government authorities' decision to open rail freight transport to competition affects the market structure and companies' competition activity. These, consequently, affect the basic conditions of the branch and the performance of the sector.

3.2.3 Summary of market forms and socioeconomic efficiency

According to a neoclassical microeconomics theory, perfect competition and monopoly comprise the extremes of market forms. A functional market mechanism that requires the conditions of perfect competition distributes economic resources in the best possible way. The conditions of perfect competition cannot be achieved, although highly competitive markets may, at best, resemble them. A monopoly yields less profit with a higher price than markets with perfect competition conditions. Consequently, the consumer surplus is higher in competitive markets than in a monopoly situation. A company cannot influence the market price on the perfect competition market, whereas a dominant operator on a monopolistic market can set the price as it sees fit. Therefore it can be supposed that the pricing of the dominant rail freight operator contributes to the functionality of the market and market entry as well. Railways have been considered an example of a natural monopoly. This is, however, connected to the assumption that rail maintenance and transport would be produced most efficiently in a single unit. Nevertheless, with regard to the economics theory, it can be stated that opening rail freight transport to competition will be socially a more efficient

solution than maintaining the monopoly[1], even though this framing of a question is no longer relevant after the vertical separation.

The government can contribute to the operation of market mechanisms by removing the imperfect effects of market forces, and as a result increase socio-economic efficiency. Central factors contributing to the market forces' defectiveness include external effects, monopolistic competition, and public commodities; each of them has at least little effect on rail freight transport. The government can, through its actions, affect the efficiency of rail transport[2], as the welfare economics theory and SCP paradigm suggest. The opening of rail freight transport to competition tries to achieve better quality, lower prices, and new innovative service solutions by means of industry competition.

According to the welfare economics theory and SCP paradigm, the government can affect the market structure and performance. Improving the socioeconomic efficiency, however, requires knowledge of existing problems and also evaluations of the necessary actions and their effects. In the following section, I will examine the operation of the market and market entry barriers in the light of other theories. A good way to approach the operation of the market is to study the competition and market entry from the point of view of the industry and a new operator. The operation of the market can be examined by placing a company into its operating environment. Factors central to a new operator include the market entry barriers and the ways in which the companies operating on the market can prevent newcomers from entering the market.

3.3 Operation of the market and Porter's five forces

The operation of the market can also be examined from the point of view of the industry. According to Porter (1998a, 3–5), as far as the company is concerned, the competitive situation should always be analysed and the competition strategy created on the basis of the company's operating environment. The competitive situation of a company can be reviewed structurally in five dimensions, which in addition to the industry competition include new entrants, substitute products, the power of buyers, and the power of suppliers. (Porter 1998a, 3–7; Porter 1979, 2–3; Räsänen 1997, 98–99.)

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[1] This is an interesting topic, and it could be examined in more detail, but I will not go into it, because it is not connected to my research objectives.

[2] The efficiency of rail network use and rail maintenance, and as a result also socioeconomic efficiency, could be increased with an infrastructure charge system whose pricing would be based on willingness to pay. However, this topic will not be discussed in this work, because it is not connected to my research objectives.

The industry competition refers to operators of the same branch who sell similar products or services and are each others' competitors. The threat of new entrants is one of the central competitive forces, and the scale of the threat depends on the market entry barriers of that specific industry. The suppliers of industry resources and production factors as well as customers buying the products or services belong to the same logistics value chain. Naturally, the suppliers and buyers seek to maximise profits in their operations; and the influence of these dimensions is based on their negotiation power. The threat caused by substitute products or services refers to other competitive industries or companies who offer alternative ways to satisfy the need of branch-specific products or services. (Porter 1998a, 3–33; Porter 1979, 3–10; Porter 1998b, 4–11, 33–61, see also Robinson & Fairchild 2002.) The threat of substitute products is based on the different price-quality ratio of products or services of different branches or companies; the ratio may also change (Pirjetä 2000). It must also be noted that in addition to the five forces the government can influence the operation of the market, as stated in Section 3.2 Socioeconomic efficiency and competition.

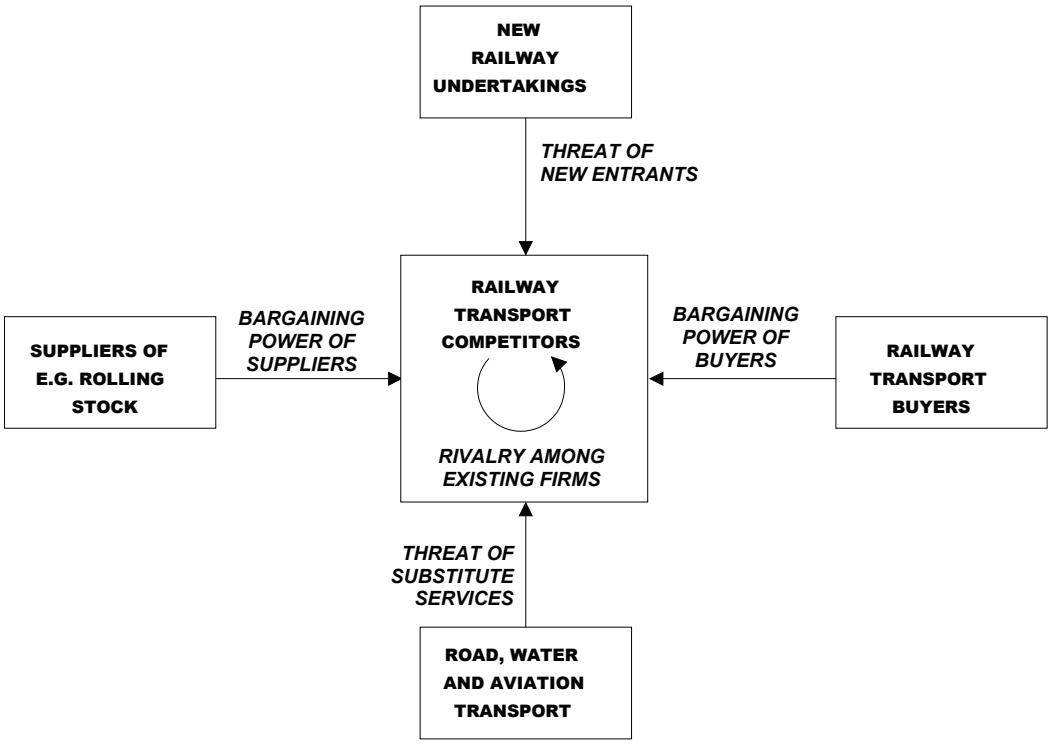

Figure 14. Porter's five forces and rail transport competition.

Porter's model of five forces is ideal for describing the railway markets. If adapted to rail freight transport, Porter's five forces would be industry competition, new railway undertakings, substitute modes of transport, the power of customers buying freight transport services, and the power of suppliers (Figure 14). It is evident that the buyers' influence plays a big role on the rail freight markets and in creating competition within the branch. This is to say that compa-

nies entering the rail freight market would compete for the other factors of the value chain, customers and resources in the competition within the branch.

3.4 Market entry barriers

The market entry barriers are important for economics theories and competition legislation, because their existence means that competition is imperfect and that non-competitive behaviour is possible (Kurokallio 1990, 6). As stated earlier, the conditions of perfect competition require free market entry and exit, i.e. a company can enter or exit the market very quickly and without extra costs (Mankiw 2004, 290; Pekkarinen & Sutela 1981b, 96–97; Virtanen 2001, 72). Naturally, these types of conditions are not found on any markets: starting and ending production requires resources, i.e. time and money. Therefore it can be thought that the further the competition is from perfect competition, the more time and costs are required for entering and exiting the market. (Virtanen 2001, 72–73.) The markets are not striving for perfect competition as such, but instead for functional competition that is close to perfect competition within the realms of possibility.

3.4.1 Different schools of competition research

The research on competition and market entry barriers can be divided into two schools, Harvard and Chicago. The best-known researchers are Joe S. Bain and George Stigler, of whom Bain represent the Harvard and Stigler the Chicago school. The Harvard school can be further divided into three research trends, i.e. structuralism, behaviouralism and strategic behaviour, which have developed in this particular order.

Bain and the Harvard school

Bain's definition[1], according to which the companies already operating on the market have an advantage over the new entrants, is often used as the classical definition of market entry. The advantage can be seen in the fact that companies operating on the market can raise their prices over the competitive price level

[1] Bain's definition is based on the results of his studies (1956), which showed a positive correlation between the industries' concentration and return on capital, which he believed to arise from the market force of highly concentrated industries (Lindberg 1992, 48). The first person to use market entry barrier as a concept was Donald Wallace (1936, 79) when he explained the central political principles of monopolistic competition (McAfee 2003, 1).

based on marginal costs without new entrants coming to the market[1]. Bain's definition of a market entry barrier refers to a matter that allows a price level that is higher than in the competition situation[2]. (Bain 1956, 3; Nahata & Olson 1989, 236; see also Ross 2004, 91–92; Chappell, Marks & Park 1983, 991–1000.) In other words, if companies could enter and exit the market without any barriers, the price would settle on a marginal cost price level (McAfee, Mialon & Williams 2003, 3–4). Bain believes that market entry barriers are due to absolute cost benefits, product differentiation, economies of scale, and need of large capital to enter the market (Bain 1956, 3). According to Bain, the market entry barriers are mostly structural market factors, based on which the market entry is either possible or impossible. Bain separates the structural barriers from the ways in which the companies can influence the market entry either in a positive or negative way. (Bain 1956, 3, 17–18; Bain 1959, 237–264; Geroski, Gilbert & Jacquemin 1990, 7–8; Virtanen 2001, 72–73.)

Bain's research on the market force of highly concentrated industries continued in the 1960s in many places as econometric studies. In the United States, these studies focused especially on the connection between the concentration and the profitability of an industry. Based on the results of his research Scherer (1980) gave up on the structuralism that Bain represented and started to emphasize two dimensions that differed from Bain's ideas. The behaviouristic school stated that the companies' competition with each other and their competition behaviour mould the structure of the industry, and have a significant effect on the efficiency of the industry. The school felt that studying the causal connection between the market structure and performance alone was not enough to explain the factors that contribute to the performance of the industry. (see Lindberg 1992, 47–48, 51.)

The latest school, founded on the Harvard school, is an analysis of strategic behaviour, based on a behaviouristic view of competitive forces. Nevertheless, the strategic school emphasises among others the following: a large number of companies does not guarantee efficient competition in the industry, concentration is not always detrimental, concentration alone cannot explain the market entry barriers, and strategic behaviour can create market entry barriers. Furthermore, a game-theoretic dimension has a central role in the research methods. The school felt that companies' strategic behaviour and actions to influence the competition

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[1] According to an economics theory, the price on perfect competition markets is based on marginal costs. Therefore Bain believes that the price can exceed the marginal cost price due to market entry barriers.

[2] The paradox of Bain's definition of a market entry barrier lies in the fact that the definition does not take into account to strategic method used to prevent market entry, i.e. limit pricing, even though the research on limit pricing has began from Bain's own writings (Kurokallio 1990, 7).

conditions, such as creating more market entry barriers, is hard to prove, which makes the development of competition policies very challenging. To do this, one should be able to see the difference between purposeful, harmful strategic behaviour and innocent actions that belong to the company's business strategy or tactics. Contrary to the behaviouristic school, the school of strategic behaviour believes that competition policy does not always guarantee free market behaviour and efficient operation of the branch. (Lindberg 1992, 51–53.)

As stated before, Bain (1956, 3) regards economies of scale as one of the central market entry barriers. It will take a quite long time before there are operators equal to VR Limited on the market, which means that economies of scale and its effect as a market entry barrier will be seen for a long time. Based on the views of the school of strategic behaviour analysis, which is based on the Harvard school, the social benefits of opening rail freight transport to competition can be questioned: will the opening of competition and large number of railway undertakings create efficient competition within the industry? Judging from the viewpoint of European railway policy, international research and experience, and also pricing of various market forms and socioeconomic efficiency – it will. In accordance with the Harvard school, it is also good to keep in mind when evaluating the operation of the dominant company that not all of its strategic competition moves are part of purposeful construction of market entry barriers; they may just as well be innocent business strategy actions.

Stigler and the Chicago school

Stigler who is considered an important representative of the Chicago school, has defined a market entry barrier as a cost that arises in a company about to enter the market, but not in a company already operating on the market (Stigler 1968, 67; McAfee et al. 2003, 2). Therefore Stigler says that if $C_i(x)$ and $C_e(x)$ represent the costs of the incumbent (i) and entrant (e) for a production volume x, then the size of the market entry barrier is $C_e(x)$-$C_i(x)$. The biggest fundamental difference in Stigler's and Bain's definition is that in Stigler's definition the entrant and incumbent are compared with each other after the market entry. Therefore, if the companies are not equally efficient when the costs of market entry are taken into account, a market entry barrier exists. (see Geroski et al. 1990, 8–10.)

The roots of the Chicago school, which takes a critical stand on the Harvard school, lie in the competition policy developed at the University of Chicago based on various competition cases. The school believes that the concentrated market structure of the industry does not translate directly into poor performance, but instead the concentration tells about the efficiency of companies in that branch. In contrast to the Harvard school, the Chicago school feels that performance and

competitiveness will mould the market structure. Companies who do not succeed in the industry competition will exit the market and efficient companies will perform well in the competition, which is why the Chicago school feels that the concentration of the industry portrays its efficiency and profitability. (Lindberg 1992, 54–55.)

As stated before, there are several differences between Bain's and Stigler's definitions, one central difference being that Bain regards economies of scale as a market entry barrier and Stigler does not. According to Bain, economies of scale are a market entry barrier, because the market entry leads to a situation where prices and profits go down. Stigler says that the higher costs of an entrant are due to the fact that it has to produce smaller volumes because of market demand, not because of a market entry barrier. (Geroski et al. 1990, 10; Stigler 1968, 67–69; Perrakis & Warskett 1986, 58–71.) According to Nahata and Olson (1989, 238–239), Bain's and Stigler's definition do not differ that much when reviewed from the viewpoint of economies of scale: According to Stigler, if the demand on the market is not sufficient, there is room for fewer companies on the market. If there are fewer companies on the market, economies of scale are a probable market entry barrier, and companies operating on the market can set the prices above the competitive price level. The significance of economies of scale decreases when the number of companies on the market increases, which also means that Bain's and Stigler's definitions get closer to one another. (Nahata & Olson 1989, 238–239.)

According to Stigler's definition and the Chicago school, the costs of entering the market presents a market entry barrier. This barrier can be expected to be big in highly regulated and capital intensive industries, such as rail freight transport. The market structure and the efficiency of the industry can be evaluated when the competition opens up and new companies enter and exit the market. The Chicago school believes that a concentrated industry structure does not cause inefficiency, but just the opposite. Therefore, the efficiency ideology of the Chicago school cannot be applied to the rail freight transport competition – at least not in the beginning of the competition, because the railways' monopoly situation is not an efficient solution with regard to the social economy, which is based on the pricing models of market forms and welfare economics theory that prevail in national economics. However, it must be taken into account that monopoly, too, can be efficient, which according to the efficiency ideology of the Chicago school means that there would not be any new entrants. In other words, the lack of new entrants means that the monopoly is efficient or that there are entry barriers on the market.

3.4.2 Market entry and market exit

The concepts and meanings of market entry and market exit barriers are different, but they can be studied simultaneously. These barriers have certain connections to each other; for example the meaning of economies of scale as a market entry barrier is quite big, but it does not have the same effect on exiting the market. Market exit barriers include, for instance, long-term contracts and valuable production factors with poor resale markets. The overall picture can be illustrated with a simple situation where the barriers can be either low or high (Table 3). As far as the industries' profits are concerned, the best alternative is a situation where the market entry barriers are high and the exit barriers are low. On these types of market, incumbents can prevent market entry and unsuccessful competitors will abandon the industry. If the entry and exit barriers are both high, the situation allows high profits but the operation includes more risks. In this case, even though the market is difficult to enter, the unsuccessful companies will remain and compete on the market. (Porter 1998a, 22–23; see also Kotler & Keller 2006, 345; Geroski et al. 1990, 59–63; Ilmakunnas & Topi 1999, 283–300.) Competition and market entry and exit barriers are interconnected, i.e. there is a positive correlation between the growth of companies on the market and market entry and market exit (Eriksson 1984, 52–65).

Table 3. Market entry and exit barriers, and the profit and risk of business operations.

		Market exit barriers	
		Low	**High**
Market entry barriers	**Low**	low, steady profits	low, uncertain profits
	High	big, steady profits	big, uncertain profits

When discussing the rail freight transport competition, the capital-binding railway stock can be considered to have a big role on the market entry and market exit. The availability of rolling stock and the functionality of rolling stock markets will lower the entry and exit barrier, but non-functional rolling stock markets will complicate market entry and, due to the difficulty of selling rolling stock, also market exit. Therefore it can be assumed that the functionality of railway stock markets has a great effect on the market structure of rail freight transport and on the business operations of companies in the industry.

3.5 Strategic prevention of market entry

A monopolistic company can prevent competitors from entering the market through its own actions. This type of operation is called strategic prevention of market entry. A monopoly company can create market entry barriers by means such as pricing, investments in production capacity, and contracts.

3.5.1 Limit pricing

One of the ways to deter competitors from entering the markets is a pricing model referred to as limit pricing. The term *limit pricing* as an entry barrier was first introduced by Bain (Bain 1949) in his article, where limit pricing was presented on price–volume coordinates. After Bain's article, limit pricing has been modelled with game theory. In the limit pricing model, the price set by the company operating in the markets acts as a deterrent. The monopolist determines its prices according to the potential profits to be gained from the markets. (Kurokallio 1990, 12; Friedman 1979, 236.) Limit pricing can be specified simply as follows: Let us suppose that competitors have free access to the markets, in which the monopolist operates. Price p* is a limit price, if

1. none of the competitors will enter the market once the monopolist sets its product price at p, so that $p^* \geq p$; or if
2. competitors will enter the markets when the price is at $p^* < p$ (Friedman 1983, 182).

Scherer's static limit pricing model

Scherer (1980, 232–243) presents the monopolist pricing problem with a static model. In a competition, products are either homogenous or differentiated, and the monopolist is the obvious market leader. The competitors and the potential entrants are too small to have an influence on the market price. Therefore, the competitors must accept the price the monopolist has set as such. In such cases the monopolist can unilaterally set the price to maximise its profits, still taking into account the competitors' production.

The static limit pricing model is presented in Figure 15. The aggregate demand is described on curve D[1]. The aggregate supply of the monopolist's competitors is described on curve $S–S_F$. When the price is less than S, the competitors must cease their production as the price is below the product's marginal costs. When

[1] The demand and supply curves are linear to make the graph easier to comprehend.

the monopolist sets the price higher than S, the competitors can start producing their articles. The higher the price, the larger the competitors' output. The monopolist is aware of the competitors' output volume, thus it is able to calculate how much they are producing at certain price, and what is the remaining volume that it must produce itself. Once the price is less than S, the monopolist will rule the markets alone. When the price is G, the competitors produce the entire demand at that price. (Scherer 1980, 232.)

The monopolist demand curve G–B–D between the prices S and G is calculated by subtracting from the aggregate demand (D) the competitors' output with each price. The monopolist is maximising its return by producing volume X, where the marginal cost MC meets the marginal revenue MR[1]. Thus the monopolist sets the price at P, in which case the monopolist's output is P–Z and the competitors' aggregate output is Z–A. In this case the overall markets are balanced once the demand is P–A and the supply, P–A[2]. The grey area in the figure illustrates the monopolist's return in relation to the average total costs curve ATC. (Scherer 1980, 232–233.)

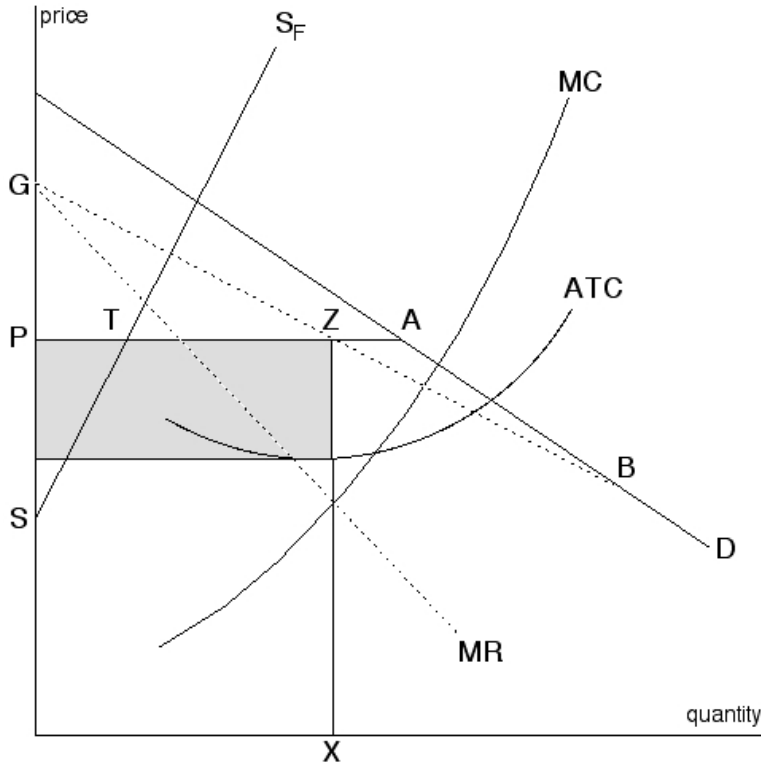

Figure 15. The initial equilibrium.

[1] The G–MR curve indicates the monopolist's marginal revenue.

[2] Corresponds to the curves P–Z and Z–A.

The above initial equilibrium is stable in a short term. Once the monopolist's set price yields return for the competitors, they will enhance their output capacity in the long run. Potential return will also attract new operators in the markets. The newcomers and the enhanced output capacity will move the competitors' supply curve S–S_F* to the right (Figure 16). The monopolist's demand curve G*–B*–D will respectively move down and to the left. The monopolist will then optimise its return according to the new demand curve by setting a lower price P*, where the marginal cost MC meets the marginal revenue MR*. This will reduce the monopolist's return (the grey area). (Scherer 1980, 233; Kurokallio 1990, 14–15.)

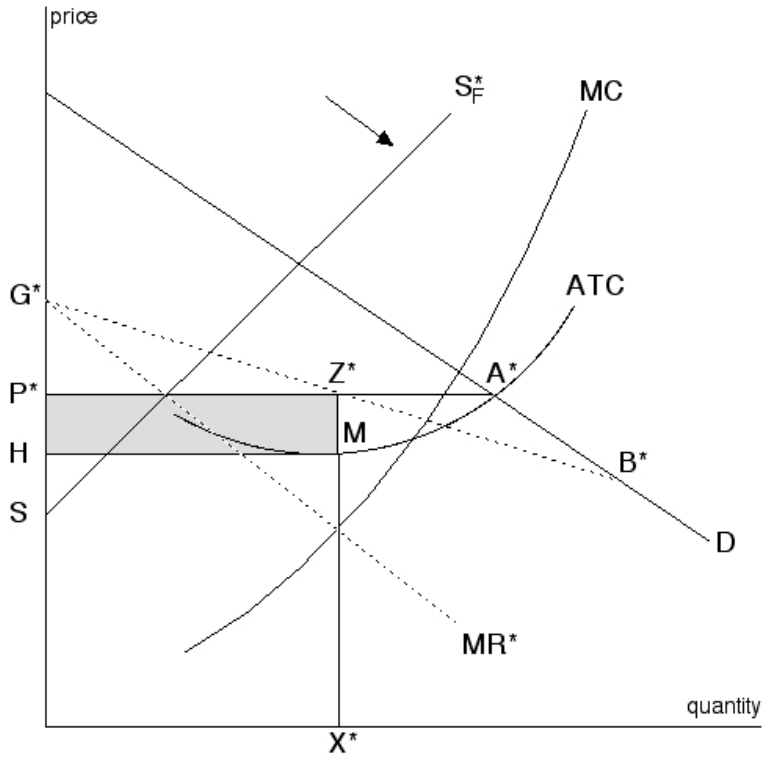

Figure 16. The equilibrium with higher competitor supply.

The above equilibrium with higher competitor supply will not be stabile in the long run either, if price P* yields return to the competitors. The return will once more gradually increase the competitor supply, which will move the monopolist's demand curve further down. At the same time, the monopolist's return and market share will decrease. If the monopolist constantly operates according to the classic logic of maximising short-term returns, it attracts new companies in the markets. This leads into a situation where the monopolist's high prices and good returns will create a vicious circle, where the monopolist's market share and return will decrease. (Scherer 1980, 233.)

Figure 17 presents the monopolist's pricing tactics. Curve D describes the monopolist's initial demand[1]. Let us suppose that the competitors and the potential entrants are so small compared with the total market volume that they cannot influence to the price with their supply. Furthermore, let us suppose that with the competitors' supply volume, the lowest cost per unit that still yields profit to the competitors is P_0. If, in such a situation, the monopolist sets the price higher than at P_0, the competitors will yield more return. This will naturally encourage the competitors to increase their output, and new competitors will emerge in the markets. Furthermore, if the price set by the monopolist is at P_0 or lower, it is not economically viable for any competitors to enter the markets[2]. (Scherer 1980, 233–234; Kurokallio 1990, 15–16.)

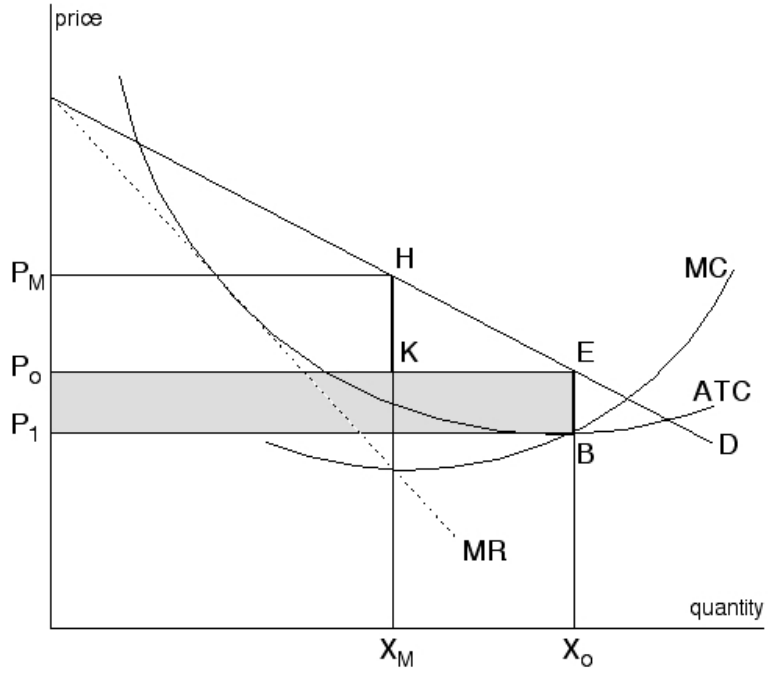

Figure 17. The equilibrium when the monopolist is applying limit pricing.

In order to dominate the competition and deter market entry for new competitors, the monopolist keeps the price slightly lower than at P_0, which is the limit price. At this price, the monopolist will produce the volume X_0. When deterring market entry, the profitability of the monopolist depends on its cost per unit at output volume X_0. In Figure 17, it is assumed that the cost per unit is less than P_0 and thus lower than the price of the existing and potential competitors, which may

[1] Possible competitors' demand has been deducted from this. On the other hand, if there are no competitors, i.e. the monopolist has a monopoly, the demand curve represents the aggregate demand. (Scherer 1980, 234.)

[2] Initially, the monopolist set the price according to the marginal cost (MC) and the marginal revenue (MR), and consequently produced the volume X_M at the price P_M. New competitors would enter the markets if the price is at P_0, so the monopolist must set the price at P_1.

derive from e.g. economies of scale. In such a situation the monopolist may set the limit price P_0, and dominate the competition and yield steady returns (the grey area[1]). (Scherer 1980, 234–235; Train 1991, 303–306; see also Scheffman & Spiller 1992, 432–433; Montagna 1995, 318–327.)

According to the limit pricing theory, the market situation may be described as a simple dichotomy: the monopolist can either maximise short term returns by allowing market entry and market share to new competitors or it can apply limit pricing and deter market entry. It remains to be seen, whether limit pricing will be used as an entry deterrent in Finland once rail freight transport competition is actually realised.

Another pricing tool for deterring competitors from entering the markets is called marginal cost pricing. The marginal cost BSM model[2] is based on[3] that the company or companies operating in the markets almost in a cartel-like manner determine the output, even if new operators entered the markets. The entrant will not yield return if the market price is below the entrant's average cost. (Geroski et al. 1990, 23–24; Lehto 1991, 75–77.) In comparison with other industries, a specific feature of rail transport is that a new operator cannot simply enter the markets and take over a share of the market return, because the market entry process takes time[4] as described in chapter two. Therefore the BSM model is not applicable to rail transport.

3.5.2 Market entry deterrence in situation of imperfect information

As presented above, the limit pricing theory derives from the idea that the monopolist may set the price low enough to make it unprofitable for new opera-

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[1] The initial return equals $P_M–P_0–K–H$. The monopolist's return when dominating the markets equals $P_0–P_1–B–E$.

[2] The acronym comes from Bain, who originated the theory, Modigliani (1958), who developed it further and Sylos-Labini (1962), who developed their ideas into a model. Thus the model is called the BSM model. (Lehto 1991, 76; cf. Friedman 1983, 192.)

[3] The model included two periods; a pre-entry and a post-entry period. Market entry may only occur in the second period. In the first period, the companies operating in the markets will try to make the markets appear unprofitable, and in the second period, the potential entrant decides on whether to enter or not. Furthermore, the model assumes that the companies operating in the markets are able to determine a certain output level, which can be maintained also in the second period. The assumption is referred to as the Sylos postulate (Sylos-Labini 1962), i.e. the entrant believes that each company operating in the markets will continue to produce at its pre-entry output rate also after the entry. (Lehto 1991, 76.)

[4] The market entry process begins with application of the security certificate and the operating licence. Once the licences are received, the operator assumably tries to make at least preliminary transport contracts with transport service buyers. Subsequently the new operator may apply for track capacity for its transport needs. The actual production in rail transport does not begin until the allocated rail capacity will be put to use.

tors to enter the market (see e.g. Roberts 1986, 75–92). According to Friedman (1979, 237) the pre-entry price level does not, however, have an effect on the entrant's decision if they have access to the necessary information. In such case, the entrant will assess its operations on the basis of the post-entry price level; therefore a rational monopolist will not lower its price to limit pricing, because this would reduce its returns. This is why researchers have created models where the assumption of perfect information has been rejected. In these models the monopolist has the advantage of knowing certain market-related information that is unknown to the entrants. Thus the monopolist may succeed in deterring the entry of new operators with limit pricing. The most famous of these models is the Milgrom and Roberts' (1982) model. (Tirole 1988, 367–368; Kurokallio 1990, 16–17; Lehto 1991, 82; Virtanen 2001, 82–83; Salonen 1988, 1–17.)

The Milgrom and Roberts' (1982) model consists of two periods and two companies. The monopolist (company 1) has a monopoly in period 1 and it defines the price P_1. The potential entrant (company 2) will decide on its entry on the basis of the monopolist's first period price. Once the new operator enters the market, the two companies operate as duopolists according to the Cournot model[1]. If the operator does not enter, the monopolist will maintain its monopoly. (see Tirole 1988, 368; Kurokallio 1990, 17–18.)

The monopolist's cost per unit is low (probability q) or high (probability 1-q). The monopolist indicates its price per unit with the price it sets in the first period. The entrant will become aware of the monopolist's actual cost per unit once it enters the markets. Therefore the game during the second period, with the entrant in the markets, is independent of the price set by the monopolist in the first period. The competitor will have a negative bottom line in the second period, if the monopolist's cost per unit is low. Equally, the competitor will have a positive bottom line, if the monopolist's cost per unit is high. If perfect information were available in the initial situation, the competitor would be aware of the monopolist's actual cost per unit from the beginning. Thus the competitor would enter in case the monopolist's cost per unit was high. The monopolist wants to secure its monopoly; hence it would be desirable for it to appear as a monopolist with a low cost per unit. In lack of direct means, the monopolist can indicate the above indirectly by setting a price in the first period that corresponds to the price of a monopolist with a low cost per unit: P^m_1. A monopolist with a high cost per unit could also set the price at P^m_1 instead of setting it at P^k_1, because the future monopoly returns will cover

[1] The Cournot equilibrium model assumes that companies are competing on output volume, in which case the price will be set by supply and demand (Tirole 1988, 209). The Cournot model is a special case of the Nash equilibrium (Kurokallio 1990, 11).

for the loss of the first period. It is, however, possible that becoming aware of the price P^m_1 is not enough to deter a potential competitor from entering. This is because the competitor is also aware of the monopolist's desire to appear as a company with low cost per unit and the fact that the price P^m_1 does not necessarily reflect its actual status. The monopolist, of course, knows this, and the competitor is aware of it knowing. (Kurokallio 1990, 18; Tirole 1988, 368–369.)

The Milgrom and Roberts' (1982) model has two potential equilibriums: a separating and a connective equilibrium. In a separating equilibrium, the monopolist, who has an output with low cost per unit will not set the same price for the first period that a monopolist with a high cost per unit would set, and thus the price in the first period indicates the type of the monopolist. Furthermore, in a separating equilibrium, the monopolist with a high cost per unit sets the monopoly price and thus allows a competitor's entry to the markets. A monopolist with low cost per unit sets the highest price P^*_1 for the first period, which, if applied by a monopolist with high cost per unit, would cause loss that would undo the profit gained from the entry deterrence. In the latter case, the competitor will not enter the markets. Due to imperfect information, the monopolist with a low cost per unit will reduce its price from the monopoly price to P^*_1. At the same time, the markets will yield better results for the common good. Competitors enter the markets only in situations that are parallel to situations in the state of perfect information. (Tirole 1988, 369–371; Lehto 1991, 86–89; Kurokallio 1990, 19.)

In the model's connecting equilibrium, the first period price is not dependent on the monopolists costs per unit, thus the competitor will not be aware of the monopolist's cost per unit on the basis of the first period. Therefore the monopolist has a low cost per unit in probability q. Depending on the equilibrium and the values of the model parameters, limit pricing in a state of imperfect information will produce different results. (Tirole 1988, 371; Lehto 1991, 89–91; Kurokallio 1990, 19.)

The imperfectness-perfectness of information also has an effect on competition in rail freight transport. In rail traffic, the imperfectness of information derives from the fact that the companies operating in the markets are aware of strategic information that is unknown to the potential entrants. The authorities contribute to the level of information by actively/inactively communicating instructions, regulations and processes. The buyers of rail freight transport services can reduce the effect of imperfect information by informing the potential entrants about costs etc.

3.5.3 Investments and output capacity as entry barriers

The BSM-model excludes an important dimension. The model assumes that the monopolist's output will remain constant once the competitor has entered the markets. The model, however, does not include a mechanism that would force the monopolist to produce the same volume in both periods. In fact, if a competitor enters the markets, the monopolist may benefit from altering its output. Consequently, if a competitor enters the markets and the competition is about output volumes, it is natural for both operators to compete according to the Cournot equilibrium model. Michael Spence (1977, 1979) and Avinash Dixit (1979, 1980) discovered the above weakness and suggested an additional mechanism, which would enable the monopolist to invest on something that could not be eliminated in the second period competition. In the model, the commitment is to production output. (see Lehto 1991, 79.)

In production output models, the monopolist has the advantage of making the first move. The monopolist can benefit from its position by investing on its output capacity, which is a binding and irreversible cost (*a sunk cost*), but not as temporary as an investment as e.g. marketing or product development costs. (Lehto 1991, 79; Kurokallio 1990, 20; see also Ross 2004, 91–92.) By investing in output capacity, the monopolist sends a signal to potential entrants about its intention to operate in the markets also in the future. Potential entrants may perceive the monopolist's investment as something that reduces their expected returns and makes the markets more difficult to take over. Therefore they may not enter at all or enter with a smaller volume. (Kurokallio 1990, 20.)

According to Spence's model, a monopolist may have extra output capacity if there is a threat of market entry. It may deter market entry by its overcapacity. The monopolist determines its output capacity and output volume in the first period before the potential entry of a competitor. With overcapacity and the ability to increase its output, the monopolist can reduce the demand for the potential competitor and its potential returns. The competitor's decision about market entry will be made according to its product demand (the market demand that is not satisfied by the monopoly), costs and the monopolist's choice of capacity. (Kurokallio 1990, 20–23.) According to the model, the competitor will not enter if the unsatisfied demand in the markets only yields zero profit due to the monopolist's extensive output. The difference between the limit pricing model and Spence's (1977, 536) model is that in the latter overcapacity model, the price may exceed the limit price and the output volume can be smaller than the volume accordant with limit pricing. Such a situation may have a negative effect on common good and market efficiency, because production is inefficient when there is overcapacity in the markets. (see Kurokallio 1990, 23–24.)

Dixit (1980, 95–96) questions the monopolist logic in Spence's model: is it worthwhile for the monopolist to realise its threat and actually produce the capacity, if the competitor enters the markets in spite of the monopolist's overcapacity? The model includes many opportunities depending on the rules of the game and the model's assumptions. The monopolist can influence on the outcome by manipulating the conditions. For example, by realising its investment threats the monopolist can contribute to its cost curves in future periods and the game equilibrium. (see Kurokallio 1990, 24–25.) According to the model, the monopolist may deter a competitor's entry even if the companies had identical cost structure, because the potential of commitment still exists. (Lehto 1991, 81.) In Dixit's model (1980) the period after the entry will be played according to Nash's rules, which means that the monopolist cannot produce idle capacity. An entry threat may cause the monopolist to choose a higher capacity volume than in a situation where a competitor is not contemplating entry. (see Kurokallio 1990, 31.) Waagstein (1983, 325–337) suggests on the grounds of his dynamic model that entry deterring investments may also be made on R&D and marketing, which also contribute to the company's know-how and goodwill. Furthermore, the company must determine whether it wants to deter market entry or not, and when deterrence is most useful (Waagstein 1983, 336; see also Scheffman & Spiller 1992, 432–433).

Investments and output capacity as entry barriers, or the limit pricing BSM model cannot as such describe the situation in rail freight traffic. This is because output capacity models are describing production of goods, whereas rail freight transport is derived demand, which cannot be equally described with demand-supply models.

3.5.4 Contracts as market entry barriers

A company operating in the markets may make monopoly agreements with distributors or producers of production factors, which then bind other operators to the company's operation. With a network extensive enough, the monopolist may create a situation where there is no room for competitors. (Schwartz 1986, 52–55; Virtanen 2001, 94–96.) The seller's objective is to secure its market share with the agreement and deter new companies from the markets. The buyer respectively benefits from a situation where there are several operators or several potential entrants in the markets. Because of the potential entrants and the competitors, the seller must take the competition into account when offering the buyer a new agreement. If the buyer declines an unfavourable agreement in a seriously competitive situation, market entry for new companies becomes easier. The

buyers are in favour of conditions that encourage new sellers to the markets. (Kurokallio 1990, 36–37.)

In the context of rail freight transport, contracts would become entry barriers if the company already in the market aimed at long-term agreements with transport service customers. This is exactly what VR Limited has aimed for (VR Group 2006, 12). The company could also aim at agreements with the suppliers, in which case the company would at its best dominate the entire value chain. These actions would naturally have an adverse effect on the emergence of intra-branch competition. In addition, those buying transport services have an important role: they can either complicate the emergence of competition with such agreements or facilitate it by making different contracts.

3.6 Summary: market entry theories and rail transport

In accordance with Community legislation, the Finnish Railway Act provides that rail transport operators acquire a safety certificate, an operating licence, rail capacity and a rail network access contract. Safety certificates are granted by the Finnish Rail Agency, and it also approves certificates granted elsewhere. The Ministry of Transport and Communications of Finland grants operating licences that are valid throughout the European Economic Area. Once these documents have been acquired, the railway undertaking can proceed to planning timetables for its traffic and applying rail capacity from the Finnish Rail Administration, RHK. RHK coordinates the rail capacity applications as provided in the Railway Act. Furthermore, RHK and the railway undertaking make a rail network access contract on the usage of the rail network and the rail traffic services, after which the railway undertaking can start operating.

In domestic and international research and reports the following factors have been identified as preconditions for impartial competition: access to services, traffic control, rail yard functions, priority order, and rail capacity allocation. Previous research has concluded that there probably will be competition. Once competition opens, it presumably decreases the prices. Moreover, the following have been identified as entry barriers: expensive stock, difference in rail gauge in comparison with other Europe, differences in voltage, difficulties in obtaining qualified staff, tight regulation and requirements in the railway sector, economies of scale and joint production, actions of the market dominating company, and difficulties in access to services.

According to a neoclassical microeconomics theory, the market mechanism that distributes economic resources in the most effective way can only operate in a state of perfect competition. Even though perfect competition is an abstraction

created by science, it is useful for analysing different market formations and competitive arrangements. In markets with perfect competition a company is faced with a horizontal demand curve, thus the market price has already been set. This is one of the differences between perfect competition and monopolistic markets, where the monopolist can set the price. In addition, the consumer surplus is greater in markets with competition than in a monopoly, because a monopoly produces less and with higher price. Therefore, on the grounds of economic theories of market forms and the welfare economics theory, it can be concluded that markets with competition are better and socio-economically more efficient than a monopoly. This is the reason why competition in EU rail freight transport has been opened.

According to the welfare economics theory and the structure–conduct–performance paradigm, the role of the government is important, because the conditions of perfect competition are unobtainable. The government can influence on the imperfectness of market forces, and thus add to the branch's capacity and socio-economic efficiency. As regards functional competition, entry barriers do indeed count, because they incur imperfect competition and non-competitive behaviour. Furthermore, the government has an important role also in creating functional competition, because it must ensure the impartiality of competition for all operators. As for the methods to influence industrial structures and competition activity, the government can apply regulation, taxes, pricing and competition policies. As far as Finnish rail transport is concerned, the above competition policies include passing laws that create preconditions for competition, creating structures for competition, and defining the methods for competition policies themselves.

The monopolist's activities influence on market entry opportunities and the quality of competition. The monopolist will, quite obviously, try to maintain its market position; hence it tries to deter market entry of new operators. The monopolist can deter entrants especially with its pricing and contracts. The pricing strategies associated with rail freight transport markets can be described with Scherer's limit pricing model, and Milgrom and Roberts' model. According to Scherer's limit pricing model, the monopolist must decide whether to: 1) maintain the pricing level of a monopoly that is higher than the price in competitive markets and thus allow entry and market share for new operators, or 2) set the price low, at the limit price, and debar any competitors. Scherer's pricing model is very strict and excludes the existence of any golden mean, because competitors will enter the markets when the price is higher than the limit price. For the monopolist, maintaining the monopoly with limit pricing may be a good competition strategy, especially if the monopolist still yields profit. The above competi-

tion strategy becomes less attractive when considered from a legal point of view; if a monopolist applies limit pricing, it may be regarded as an abuse of dominating market position and considered as predatory pricing. According to Milgrom and Roberts' model, the markets are not in state of perfect information, and as a result the monopolist may try to influence the entrants' views on the market appeal by setting certain prices. Furthermore, strategic business games involve mutual assessment of the competitors' actions, so the monopolist is not necessarily able to deter market entry, even by applying limit pricing.

4 RESEARCH METHODS

4.1 Research approach

The research approaches[1] used in business economics and industrial engineering and management studies are divided into four categories: concept-analytical[2], nomothetical[3], decision-methodological[4], and action-analytical approach. This division of research approaches comes mainly from the empirical review and classification of studies. Positivism using induction is best found in the nomothetical research approach. (Olkkonen 1993, 59–83; Näsi 1981, 6–10.)

The approach used in this research represents an action-analytical research. The action-analytical approach is influenced by the hermeneutic idea of science, and the studies aim for a global and in-depth understanding of the research subject and the phenomenon that is defined by the research questions. It is very characteristic of action-analytical studies that there are no external, objective or quantifiable observations of the research subject available. The interpretations based on the researcher's understanding are at the centre of these studies. (Olkkonen 1993, 72–75.)

4.2 Futures studies perspective

The internal international freight transport of the European Economic Area was opened up in Finland in 2003, and the national freight transport was opened at the beginning of 2007. So far the opening of competition in EEA transport has not lead to any new railway undertakings entering the Finnish railway market. It is believed that new competitors will arrive when the national market opens up. This

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[1] Terms research strategy or paradigm are also used in a certain context. The first-mentioned gives an implicit idea that the strategy can be selected freely and independent of the research problem, which is not true. The latter refers, in most contexts, to the established methods and assumptions of different fields or schools, and therefore to use it as a synonym for research approach is misleading. Due to the aforementioned reasons, I'll use the selected term.

[2] The objective of a concept-analytical research approach is to develop conceptual systems that are needed to describe and identify phenomena. Often used methods include comparison, analysis and synthesis.

[3] The objective of the nomothetical research approach is to look, in accordance with the positivistic idea of science, for dependancies and also causal and correlative connections in the research material. The methods are often quantitative and the material is examined using mathematical statistics.

[4] The purpose of the decision-methodological research approach is to develop mathematics-based methods. The results are often mathematical or other types of models that give recommendations for the conclusions to be made.

is to say that the subject of this research will realise in the future, and therefore this research has a futures studies perspective.

Ossip K. Flechtheim is considered an important developer of futures studies[1], who introduced the term futurology in 1943 and suggested it for a new field of knowledge. By futurology, he referred to critical, systematic and normative study of issues related to future. (Ketonen 1985, 18–19; Bell 1997a, 60.) According to Flechtheim (1972, 1151–1152), futurology aims at abolishing war, establishing peace, removing hunger, misery, deprivation and oppression, increasing democracy, stopping overexploitation of nature, fighting alienation, and creating a new man, *homo humanus* (see e.g. Ketonen 1985, 18–19; Mannermaa 1991, 16). The later established name of this field of knowledge is futures studies.

Futures studies is characterised by a future-oriented interest for information (Mannermaa 1993a, 21). According to Ketonen (1985, 11), the knowledge that different futures with different possibilities lie ahead of us is "just as certain as inductive information in general". According to De Jouvenel (1967, 5) all useful information is future-oriented, and according to Mannermaa (1991, 69–70) if the future is not included in the list of matters essential to research then science is useless (see also Malaska & Mannermaa 1985a, 50–53).

Futures studies refer to science-based "acquisition of future-related information and knowing about the future" (Malaska & Mannermaa 1985a, 42). Niiniluoto (1993, 13) points out that descriptive science can be as applicable in answering the "Why?" questions in future forecasting futures studies as in studies describing the present and the historical past. According to Niiniluoto (1993, 13–14), based on a descriptive scientific view, futures studies are a scientified form of predicting the future that utilises scientific methods. Futures studies are considered a separate field of scientific research with specific features and in part its own research

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[1] The field of knowledge referred as futures studies has been developed after the Second World War. It is, however, obvious that future has always been of interest to humans. Perhaps the best known of the early works of futures studies is Thomas More's (1984) Utopia, published in 1516, a novel in which he described a perfect community on an unknown island. More had in fact set his utopia in the present time but in a place unknown. (Mannermaa 1991, 15–16; Bell 1997b, 7–14.) The first work stressing the scientific nature of futures studies was Francis Bacon's New Atlantis, published in the era of scientific advancement in the 17th century. According to Bacon, the purpose of science is to produce new discoveries and powers to reduce and overcome the necessities and misery of the humankind. (Niiniluoto 2002, 69–70; Mannermaa 1991, 15.) Important works on futures studies in the previous century include Silent spring (Carson 1962), The Art of Conjecture (de Jouvenel 1967), The Limits to Growth (Meadows, Meadows, Randers & Behrens 1972), Our Common Future (WCED 1987), and the two volume Foundations of Futures Studies (Bell 1997a, Bell 1997b) often referred to as the fundamental work behind the futures studies. Interestingly, many of the widely acknowledged works relate to the awakening and growth of ecological awareness. Future oriented famous novels include 1984 (Orwell 1949) and Brave New World (Huxley 1932).

methodology. The present empirical research subject is reviewed in a multidisciplinary manner, and the objective is to use theoretical and empirical research to construct future development paths. Futures studies are placed close to social sciences and humanities, even though a multidisciplinary approach is often a central part of it. (Mannermaa 1991, 92–95; Mannermaa 1993a, 19–21; Malaska 1993, 6–12.)

Futures studies are quite essentially encountering an illusion of unfocused knowledge: Futures studies are producing uncertain knowledge of indeterminable or contingent subjects (Table 4, sources Malaska & Mannermaa 1985, 275 and Malaska 1993, 8). Knowledge about the future is uncertain. Moreover, future cannot be predicted, as the research subject is indeterminable: it cannot be known by predicting it at the time. Therefore, knowledge produced in futures studies should not be considered as reliable as knowledge produced in more conventional science, as the former is uncertain by nature and often associated with estimations of probability. (Malaska 1993, 6–8; von Wright 1985, 22–41; Niiniluoto 1993, 13–15; see also Amara 1978, 41–50; Cornish 1977, 93–102; Masini 1993, 23–25; Niiniluoto 1999, 23–26.) Nevertheless, the primary target of futures studies is not to predict future development, but to chart the possible futures, estimate their probability and analyse their desirability (Malaska & Mannermaa 1985a, 46–49; Niiniluoto 1993, 14–15; Bell 1997a, 75–97.)

Table 4. Futures studies are producing uncertain knowledge of indeterminable subjects.

		The object of research is	
		determined	**indeterminable**
The knowledge about the subject is	**almost certain**	natural sciences technical science accounting	ideologies prophecies prediction
	uncertain	history sociology marketing	futures studies

Because of its characteristics, futures studies have abandoned the ideal of value neutrality, which prevails in normal sciences. Instead of purely value neutral science, futures studies can be regarded as value rational knowledge production. This means that values and valuations are not shut outside the research. Futures

studies can estimate what is good, something to be aspired for, or beautiful. (Malaska 1993, 6, 9; see also Niiniluoto 1984, 327–329.)

Futures studies include three central premisses: 1) the future cannot be predicted, 2) the future is not deterministic, and 3) our choices can affect the future (Amara 1981; von Wright 1985, 22–41; Malaska & Mannermaa 1985a, 46–49; Niiniluoto 1984, 157–171; cf. Bell 1997a, 115–164; Seppälä 1992, 10–12). Tasks for futures studies can be determined on the grounds of three premises. As regards futures studies, the first premiss is that different perceptions of future can be formulated by describing possible paths of development. (Mannermaa 1991, 61–62; see also Asplund 1981, 87–96; Bell 1997a, 103.) The second premiss is that futures studies must study the probable options and associated paths of development in detail. On the grounds of the third premiss, futures studies must choose between different choices and assess the realisation of the development paths leading to these choices. (Mannermaa 1991, 61–67; see also Bell 1997a, 73–114, 150–154.)

Futures studies is a relatively new and developing field of knowledge, which does not have coherent and established traditions or doctrine. There has been plenty of discussion about the scientificity of futures studies due to its unestablished nature and unique characteristics. Because of its indeterminable research subjects, the uncertainty of the knowledge it produces, and its value rationality, futures studies are not considered a scientific field of knowledge by all scientists, especially by those supporting the positivistic ideal of science. These arguments claim that futures studies resemble the art of guessing. According to the other extreme, futures studies is a field of science, a specific discipline, which is perhaps an overstatement. This would imply that the futures studies had developed its independent paradigm with clearly established research methods, research subjects, and criteria for scientificity. This is not, however, the current status of the futures studies. A better way of describing the future studies is to combine several different methodological approaches, all of which aim at producing reasonable propositions of the future. (Mannermaa 1991, 13, 68–91; Mannermaa 1993a, 19–23; Masini 1993, 23–25; see also Bell 1997a, 73–114, 165–189; Borg 1993, 299–307; Asplund 1981, 22 112–130; Niiniluoto 2002, 13–16.)

Methods and methodologies applied in the field of knowledge include considerations of utopia and dystopia[1], various interviewing techniques and qualitative methods also used in other fields, as well as analogous and system theoretical

[1] The starting point of utopian thinking is to observe the present and its good qualities, and to assess the positive opportunities for building an even better future. The opposite of this method is dystopian thinking. (Malaska 1993, 9–11.)

thinking[1], the delfoi technique[2], trend extrapolation[3], models and simulations, scenarios[4], the futures table method[5], soft system methodology[6], and non-linear time series models[7]. (see e.g. Bell 1997a, 239–317; Malaska 1993, 9–12; Cornish 1977, 103–126; Masini 1993, 73–87, 90–113.) The methods applied in the present study – the delfoi technique and morphological scenarios – are introduced in more detail below. Futures studies are interested in phenomena, trends and changes. Therefore the field of knowledge uses plenty of terms that describe these three subjects. Phenomena are referred to with terms such as megatrend, weak signal or wild card, the latter of which refers to phenomena with low probability but high impact.

Modern futures studies have had two main trends: technocratic and humanistic. Characteristics of technocratic futures studies include positivistic ideal of science, quantitativeness, objectivity, self-evidence of value goals, and regarding the futures studies as a method for planning and controlling future developments. Many methods applied in futures studies, such as the scenario concept, have been developed in the technocratic trend. The humanistic trend is associated with qualitativeness, emphasizing the subjectivity of phenomena, problematising value goals, and perceiving futures studies as something that creates interaction and understanding in directing future development. This trend has underlined the non-informational nature of the future and the field's role in making the future. For example, the Club of Rome was created in the late 1960s as a result of humanistic futures studies. (Mannermaa 1991, 14, 23–28; Söderlund & Kuusi 2003, 256–260, 266–278; see also Masini 1993, 57–63.)

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[1] Analogous thinking draws a parallel between two things; the matter under study is compared with a well-known matter that corresponds mainly to the matter under study. Systemic theoretical thinking is based on the starting point that reality is composed of interacting systems that may realise as internal, external and an interface. (Malaska 1993, 11; de Jouvenel 1967, 63–65; Luukkanen 1993, 97.)

[2] The Delfoi technique is a method for collecting expert opinions, and it is used to assess the possibilities of development (Kuusi 1993, 133; Linstone & Turoff 1975, 3–5).

[3] Trend extrapolation is based on trend thinking, and refers to perception of a time series in the past and extending it to the future (Mannermaa 1991, 116–126; de Jouvenel 1967, 61–63).

[4] Scenario refers to description of a future situation or an image of the future and the related path of development. Scenarios can be created by applying different techniques and methods. (Godet 1991, 12–15; Asplund 1981, 91–94; Amara & Lipinski 1983, 41–44.)

[5] In the futures table method, a table is formed for determining internally non-conflicting images of the future (Seppälä 1984 20–41).

[6] Soft system methodology is a flexible problem solving principle for humane and inaccurate systems (Mannermaa 1993b, 89–95; Checkland 1993, 161–183; Niemi 1990, 44–45).

[7] Non-linear time series models attempt to describe non-linear systems by aligning them with several, empirical, possibly non-linear time series (Mannermaa 1991, 304–305).

4.3 Collecting the data

At the moment there is only one railway undertaking operating on the Finnish railway market, and therefore data related to the market entry cannot be collected from railway undertakings operating on the market. I have limited my research only to Finnish freight transport, which is to say that experiences from elsewhere in Europe or around the world will not give a satisfactory answer to the questions of this research. As the research subject cannot be examined in the present day, the research material will consist of future predictions of best possible reliability. The reliability of these predictions is improved by selecting an extensive group of experts to carry out the future predictions. The opening of rail transport and its preparations are political issues and can therefore evoke strong emotions. Therefore all positions – strong ones included – the organisation has explicitly and implicitly expressed, could restrict people's predictions of the future. Due to the aforementioned reasons I decided that the best method considering my research objectives[1] would be an anonymous argument collection method carried out by experts, i.e. the Delphi method.

Determining the central questions related to the market entry was necessary before drafting the Delphi questionnaire. My goal was to find factors that bear significance to the freight transport market entry and influence the market entry barriers. I believed that I would get the answers to these questions from the rail transport experts. The use of a questionnaire is suitable only in situations where the objective is to examine concrete and unambiguous phenomena (Hirsjärvi & Hurme 2001, 35–37; see also Uusitalo 1991, 90–93). I considered an interview[2], a theme interview in particular, as the best option for my research objectives as it is a suitable data collection method when the research is about examining the basic

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[1] Eskola points out that the idealisation of positivistic measuring and quantification can result in a situation where methods control the research, instead of research controlling the selection of methods. In this case, the framing of a question produces quantitative material, but the material is not fruitful to the disposition of the research. (Eskola 1981, 52–54; see also Kakkuri-Knuuttila & Heinlahti 2006, 11–14.) The hermeneutic idea of science and use of qualitative methods is not the most conventional choice in engineering, so as far as the appraisal of quantification is concerned, my choice of research methods could be described as "getting lost in the back streets", as Eskola (2003, 55) puts it.

[2] According to Hänninen (2003, 29), linguistic expressions are the only way for a researcher to enter a human mind. Linguistic expressions are a window to humans' inner world, when the language and mind are seen as movement of meanings. Hirsjärvi and Hurme (1984, 4) characterize interviews as "communication between two persons and based on the use of language". The problem of meaning, the meaning of the meaning of language, and logic of language, all connected to interviews, are interesting topics, but I will not deal with them in this study (see e.g. Hirsjärvi & Hurme 1984; Hirsjärvi & Hurme 2001, 48–53). One of the most interesting books on the logic of language is probably *Tractatus* (see Wittgenstein 1961; see also von Wright 1968, 266–280, 334–346; Hirsjärvi & Hurme 1984, 71–74; Alasuutari 1996, 93–110; Kakkuri-Knuuttila & Ylikoski 1998, 24–33).

nature and characteristics of the research subject and discovering hypotheses (Hirsjärvi & Hurme 1993, 40–41).

4.3.1 Theme interview

A theme interview is a semi-structured interview method, which was first presented in 1956 by Merton, Fiske and Kendall in their book *The Focused Interview*. Theme interview is placed between a form interview and open interview among the research interview methods. In theme interview, the researcher is not bound by the structured formulation and order of questions characteristic of a form interview, but instead the researcher can deepen the conversation with additional questions for as long as necessary for the research. Hence the name of the method: the interview focuses on certain themes, which are discussed. (Hirsjärvi & Hurme 1993, 28–38; Hirsjärvi & Hurme 2001, 47–48; see also Hukkinen 1993.)

I constructed the themes of the theme interview in a chronological order in relation to the market entry, i.e. the order of themes and discussion topics are linked to the progress of the market entry from a railway undertaking's point of view. The basis of the theme interview is attached (Appendix 1). Arranging the themes gave me a chance to discuss the problems related to the market entry in different stages. The other alternative for arranging the themes and topics of the theme interviews would have been to examine market entry and its problems in a theoretical context where the themes and topics would have been constructed around the market entry barriers. I felt that the latter alternative for arranging the themes and topics of the theme interviews could provide results that support my theory, and that the themes could provide too much guidance to interviewees who would see market entry barriers everywhere, which would make it hard to evaluate the probability and criticality of the market entry barriers. The perspective of the interview could also lead the discussion to an abstract level so that several more practical market entry barriers would not have been discussed at all.

I used a theme interview in this research in order to discover those key issues and factors that determine market entry in rail transport. My goal was to evaluate the meaning of these factors in the Delphi question rounds organised after the theme interview. The function of the theme interviews was to ensure that we manage to gather all issues relevant to the research problem in the Delphi questionnaire.

Persons selected for the theme interview were to be familiar with the strategic and operative issues related to operating rail transport, understand the railway sector's regulatory environment, and be able to review the market entry issues from a new operator's perspective. I chose altogether five rail transport experts from the

Finnish Rail Administration and VR Group for the theme interview. All of them had deliberated the aforementioned issues and other matters related to the opening of competition in their work. I arranged the interviews on the phone. The interviews were conducted in the interviewees' offices (2 interviews) and in my own office (3 interviews). All interviews were done during normal office hours. I had reserved 45 minutes for each interview, but their duration varied from approximately 40 minutes to over an hour[1]. Table 5 shows the time, date and duration of the interviews. The list of interviewed persons is in Appendix 2.

Table 5. Time, date and duration of the interviews.

	Time and date	**Duration [minutes]**
Person 1	7 March 2005 at 8:00 AM	39
Person 2	8 March 2005 at 1:00 PM	62
Person 3	9 March 2005 at 2:00 PM	46
Person 4	10 March 2005 at 1:00 PM	42
Person 5	21 March 2005 at 8:00 AM	50

According to Grönfors (1982, 137–140) it must be considered carefully when the tapes should be transcribed for reasons of expediency. I felt that the transcription would have not brought about any extra benefits, so I wrote a memo of each interview instead. This proved sufficient for my research. After all, I had access to the tapes at all times in case I needed to check something.

4.3.2 The Delphi technique

The Delphi technique[2] is a method for collecting expert opinions, and it is used to assess the possibilities of future development (Kuusi 1993, 133). This method can

[1] Before starting the interviews, I reviewed the research agreement, which deals with research ethics, with the interviewee. I first told them what the research was about, and then about the interviewee's role in the research. I asked for their permission to record the interview and to include their name in an appendix to the research report. All interviewees gave their permission to record the interview and include their name.

[2] The name of the technique orginates from Delphi, which is a city of ancient Greece situated on the slopes of Mount Parnassus in Greece. The predictions of Apollo, the son of Zeus, were transmitted by the oracles of Delphi, the Pythians, who in a state of trance answered questions with ambiguous riddles that the priests then tried to interpret. (Kuusi 1993, 132; Linturi 2003; Linturi 2007, 102; see e.g. Waltari 1955, 14–31.) As a research method the Delphi technique is similar to the original metaphor: a researcher tries to interpret the answers of the panel that act as an oracle (Linturi 2003). The Delphi technique was first used as a research method in the 1950s by a US-based company, Rand, in their secret studies on military technology. (Bell 1997a, 261–262; Kuusi 1993, 132; Linturi 2003.) In Finnish, the method has had been called Delphi, Delfi and Delfoi. According to Kuusi (1993, 132) last mentioned is the best alternative, because it is the established name of the oracle.

be used to bring up values, new views and ideas. The method is especially great if the research problem is indefinable. (Kuusi & Linturi 1998.)

Traditionally, the Delphi technique has been used to find the most reliable consensus of expert opinions. According to the current conception, reaching a consensus is not a primary goal, but instead all deviating expert opinions are taken into consideration as well[1]. Policy Delphi and Argument Delphi have this kind of approach. (see e.g. Turoff 1975, 84–95; Kuusi 2003, 209–216; Kuusi 1993, 136.) The questionnaire is carried out in a group of respondents selected as the panel, and using successive questionnaires and question rounds. On question rounds following the first round, the respondents are provided with some limited feedback on opinions expressed earlier. For example, the respondents may be presented with the first round results on the second question round. (Kuusi 1999, 69–73; Linstone 1978, 274–275; Kuusi & Linturi 1998; cf. Bell 1997a, 262–263.)

Anonymity is typical to the Delphi technique, which means that the respondents do not know which participant has presented which idea. The objective of the anonymity is that experts would present real and genuine opinions and ideas, as they do not have to do it in public using their own names. The respondents are, however, often told which experts form the panel. (Kuusi 1999, 71–73; Kuusi 2003, 206; Linturi 2007, 103–107; Kuusi & Linturi 1998, Metsämuuronen 2000, 33–34; cf. Seppälä 1985, 78–81.)

My goal was to use the Delphi technique to collect such data that would allow me to evaluate the difficulty of entering the market. I formed the questions based on the theoretical framework and other issues that came up in the theme interviews. The questions of the first round of the Delphi questionnaire were based on the rail transport's market entry stages (Figure 3). I used the theoretical framework, prior studies and theme interviews to form questions that were related to each market entry stage. Most of these were open-ended questions. I also presented the panellists with questions that they had to answer using a 7-step Likert scale, and therefore the research also includes some quantitative data. The respondents were also allowed to depict their views of future by drawing[2].

I also asked the respondents how they felt about the opening of competition. Furthermore, I asked for the respondents' role in relation to rail transport: is the

[1] The methodological and epistemological background of the Delfoi technique has been given a lot of thought in futurology (see e.g. Mitroff & Turoff 1975, 17–36; Kuusi 1999).

[2] Inspired by the data collection method in Petri Tapio's dissertation (2002) I asked the respondents to draw a picture on the development of the new railway undertakings' market share and also on how the total freight transport volume will develop in the future.

respondent a general expert or a rail transport expert. I did not ask for the respondent's organisation; firstly, because the organisations' official views are well-known and secondly I wanted to collect experts' personal opinions, which they do not want or dare to give if they have to mention their organisation. Neither did I see the need to ask for industry of the respondent's organisation (e.g. public administration or industry), because it could have the same negative effect. I also did not ask for the respondents' age, because all respondents were chosen based on their expertise, and therefore age was of no significance.

I formed the questions for the second round of the Delphi questionnaire from those first round topics, on which – based on the given arguments – I could ask some more specific questions or where I saw significant differences in the respondents' opinions. In the second round, I presented the respondents with answers and arguments from the first round. According to the Delphi technique, the respondents were given the chance to re-evaluate their position and present counter-arguments to the opinions expressed in the first round.

I tried to form the panel so that it would consist of members representing the key interest groups related to the topic. I selected nearly all relevant authorities to the panel: the Ministry of Transport and Communications of Finland, the Finnish Rail Administration, the upcoming Railway Agency, and the Finnish Competition Authority. In addition, the panel included several experts from VR Group. I also included industry representatives and logistic specialists as well as representatives of labour market organisations who are closely connected to the opening of rail transport. As interviewees I selected persons who, thanks to their job, are familiar with the rail transport, freight transport markets, the opening of rail transport, or opening competition on a more general level (see e.g. Linstone 1975, 582–583; Scheele 1975, 68; Korhonen-Yrjänheikki 2005).

I used the available experts and different dimensions (gender, expert's role) to form various types of matrices, in which I reviewed the scope of the panel in various dimensions. Furthermore, I considered the respondents' organisational background and their attitude towards opening competition. My goal was to form a panel, in which all combinations of matrices and other variables would be represented, i.e. the scope of the panel would be as extensive as possible. I formed the final panel based on examining the coverage of the panel. The gender distribution of the respondents in the expert panel is not even; only 19 per cent of the respondents selected to the first round's panel were women. The small percentage of female respondents is justified because of the small number of women working in the railway sector. The respondents selected for the first round of the Delphi questionnaire are listed in Appendix 5, and the second round respondents in Appendix 9.

The first round of the Delphi questionnaire was organised in the early summer of 2005. I sent the Delphi questionnaire on 6 June, and the respondents could provide their answers by the end of June, i.e. in approximately 3 weeks. The Delphi questionnaire, cover letter, and the respondents selected for the first question round are attached to this study (Appendices 3, 4 and 5). I also sent the respondents a return envelope to make answering as easy as possible. The return envelopes were marked with identifiers, based on which I knew who had answered and who had not. On 7 July, I sent an email reminder (Appendix 6) for those experts who still had not answered and sent the questionnaire. The email message included as attachments the original cover letter, the list of respondents selected to the questionnaire in PDF format, and the Delphi questionnaire in Microsoft Word format so that it would be possible to answer electronically[1]. These persons were given until the end of summer, i.e. end of August, to submit their answers. 40 of the 52 respondents submitted their answers in the first round, i.e. the response rate was 77 per cent.

The second round of the Delphi questionnaire was in the late autumn of 2005. The respondents selected for the second question round were the same as in the first round[2]. I sent the questionnaire on 4 November, and gave the experts until the end of November to submit their answers. In other words, they had little less than four weeks to answer. The Delphi questionnaire, cover letter, and the respondents selected for the first question round are attached to this study (Appendices 7, 8 and 9). Just as in the first round, I sent email reminders based on envelope identifiers (Appendix 10) on 13 December to those respondents who had not sent in their answers. I gave them until the end of December to answer.

23 of the 51 respondents submitted their answers in the second round, i.e. the response rate stood at 45 per cent. The significant decrease in the response rate in the second round of the questionnaire raises questions: I constructed the questions and presented some first round arguments in a way that was supposed to inspire the experts to answer the questionnaire. This attempt to inspire did, however, have some effect, because there were some experts who did not answer in the first round, but did so in the second round. Pondering about the second round response rate, I cannot avoid the thought that the questionnaire used in the second round may have provoked some experts so much that they refused to answer. Therefore it is possible – even though this is only a study in which experts' opinions and arguments are mapped – that the questionnaire or research has been considered

[1] Submitting the answers in electronic format includes an anonymity problem. The panelists were given the chance to answer the original printed or an electric questionnaire. I left this choice to the panelists.

[2] I left out only one person who switched jobs.

dangerous, and the person has decided that it would be better not to answer. The second alternative is that the respondents had not carefully read the cover letter and had taken the questionnaire as a re-run of the first round, in which case they naturally would not have submitted their answers. The third alternative is time management: answering the first round of questions carefully was a lot of work and took so much time that answering a second set of questions did not seem interesting or meaningful.

4.4 Methods used to analyse the research material

For analysing the material I have used a qualitative content analysis, narrative approach, and morphological scenario working methods. I will now present my analytical methods and explain how I have used them in this research.

4.4.1 Content analysis

Content analysis has different nuances and even different meanings in different texts. Eskola and Suoranta (1998, 187) refer to different ways of categorising and organising data as the specification of the content of qualitative material[1]. According to Pietilä (1976, 52–53), studies that utilise content specification seek to statistically or verbally describe the content of the documents as a phenomenon in itself or to describe those phenomena that the content is thought to express. Pietilä considers content specification mainly a group of methods, which are used in accordance with the rules of science to make observations and collect information about the material. On the other hand, Tuomi and Sarajärvi (2002, 107) separate content specification and content analysis from each other. According to them, the former refers to quantitative description of the content of documents, whereas the purpose of the latter is to describe the content of the documents verbally. Unlike other authors, Tuomi and Sarajärvi consider the quantification of material a single analysis tool that does not belong to content analysis. Quantification is often used as a qualitative analysis tool, which can be used to manage and organise the research material, even though there is no need to draft any quantitative presentations (see e.g. Eskola & Suoranta 1998, 164).

Qualitative content analysis can be either data-oriented (inductive), guided by theories, or theory-oriented (deductive). Data-oriented content analysis combines concepts and tries to resolve the research task in that manner. The research material represents the phenomenon under examination, and the objective of the

[1] In literature, content analysis is also referred to as content specification (see e.g. Eskola & Suoranta 1998; Pietilä 1976).

analysis is to create a well-defined verbal description of the examined phenomenon. Using content analysis the material is organised in a compact and clear form, without losing any information included in it. Content analysis is based on interpretation and inference, which are used to create a more conceptual view of the examined phenomenon from the empirical data. (Tuomi & Sarajärvi 2002, 110, 115.) Eskola and Suoranta (1998, 165) point out that the objective of qualitative research is not only to clarify the phenomenon, but also to provide a comprehensive description or an interesting conceptualisation of the phenomenon. When making conclusions, the researcher should try to understand what the issues mean to the examined persons. The researcher's goal is to understand the examined persons from their perspective in all phases of the analysis. Content analysis is therefore an ideal method for examining human meanings – just like the narrative approach I will present in the following chapter. Content analysis focuses on discovering the meanings of the text. (Tuomi & Sarajärvi 2002, 105–106, 110, 115.)

Alasuutari (1995, 30) says that qualitative analysis consists of "simplifying observations and solving the puzzle". Eskola and Suoranta (1998, 174) state that qualitative analysis usually begins with thematisation, the objective of which is to analyse the material and bring up themes that shed light to the research problem. If the themes are maintained, it often leads to a different set of results or answers to the questions asked. This type of presentation of research results is often most beneficial to various practical interests. (Eskola & Suoranta 1998, 179.) The next step from theming, which Eskola and Suoranta describe as a tool to structure some kind of story group from the material, is often classification by type. Classification by type means that the research material is categorised into types or groups of similar stories that differ from each other. The purpose of these types is to condense and typify the material, after which it can be linked to various issues that cannot be found looking at single answers. At best, the types are very broad and interesting, but still compact descriptions of the material.

In this research I have used the qualitative content analysis in a data-oriented manner. I have put theming and classification by type under the qualitative content analysis umbrella, because in the end content analysis is about different ways of categorising and organising qualitative data (see Eskola & Suoranta 1998, 187). Typical to content analysis, my analytical approach has been an understand-

ing one. After the material is organised using content analysis methods, this research will proceed to discussion and conclusions[1].

4.4.2 Narrative approach

Narrativity[2] is considered in qualitative analysis as one of the possible dimensions for examining the material[3] (Alasuutari 1995). When examined from a narrative perspective, the research material is considered to have a plot[4]. According to Heikkinen (2001, 116), narrativity refers to an approach that focuses on constructive stories that transfer information. Heikkinen says that studies can include two types of narrativity: a narrative research can use stories as its research material, or the research can be seen as a method to produce stories of this world. (Heikkinen 2001, 118.)

The narrative perspective does not necessarily require the material to be a text or speech formulated as a story with a plot, but instead the narrative approach can be used to highlight important and surprising dimensions from the material. Neither is the narrative perspective, in the broad interpretation of the concept, about analysing the material so that it meets the criteria required for stories, such as having a beginning, middle and end. Consistent with Heikkinen's views (2001, 122), narrative analysis refers to the way of using the material to produce a new story that tries to highlight central themes in the material[5].

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[1] Tuomi and Sarajärvi (2002, 105) describe content analysis as text analysis that is best suitable arranging the material for making conclusions on it. The authors emphasise that presenting an organised material as research results without any meaningful conclusions will result in an unfinished study. This is naturally something I have tried to avoid in my research.

[2] The concept of narrativity is based on the Latin language, where the noun *narratio* refers to a story, and the verb *narrare* to telling a story. The corresponding English words are *narrative* and *narrate*. Hänninen (1999) uses a Finnish word *tarinallisuus*.

[3] In terms of science, the concept of narrativity has been referred to in at least four different ways. Narrativity can refer to a knowledge process, i.e. a way of knowing and the nature of the knowledge, in which case narrativity is closely connected to the constructionistic concept of knowledge. In research, narrativity is closely connected to the recently highlighted change in the concept of knowledge and science, where a postmodern and constructionistic concept of knowledge has emerged to coexist with a traditional concept of knowledge. Narrativity can also refer to the nature of the research material or method used to analyse the material. The fourth approach focuses on the practical meaning of narrativity. (Heikkinen 2001, 118–126.)

[4] A structuring method having a plot can be considered to rise from the intentional nature of human behaviour (Hänninen 1989, 52). Intentionality means that human behaviour is always connected to the environment, in which the prevailing reality presents itself to humans. Furthermore, the intentionality refers to the fact that the action is future-oriented, and quoting Hänninen (1989, 52) "it is projecting to something that does not exist at the moment". An effort to analyse events and life so that they have a plot is connected to humans' need for shape matters that exist to their own intentions.

[5] I have interpreted that the presentation of these themes does not have to be narrative, even though they have been highlighted using a narrative logic.

The narrative perspective can really enhance the analysis of the material, if combined, for example, with qualitative content analysis. This way narrative orientation can be used to examine what type of stories emerge from the examined phenomenon based on the research material and, for example, what kind of a story the research subjects tell about themselves to the researcher. Hänninen (1999) uses the term narrative identity to describe the essence that is produced by story-telling and structured to have a plot. Narrative analysis focuses on how individuals give meanings to issues through their stories (Heikkinen 2001, 129). An example of this is Hänninen's (1999) internal story, based on which people form their habit of analysing their environment, situations and their own role as an actor. In other words, narrative approach is interested in what the author of the text or other type of material has wanted to express and his/her attitude towards the material he/she is presenting (Apo 1990, 72).

The material I have collected for this research using theme interviews and the Delphi technique does not have a plot, but using a narrative approach I managed to produce some character descriptions of the stories emerging from the material. My goal was to use narrative analysis to highlight interesting dimensions that emerge from the material. With the character descriptions I tried to elicit the viewpoint of those who produced the material. In this research I have used a narrative-oriented analytic approach in profiling the views of the various expert types. Narrativity is also very present in the described scenarios.

4.4.3 The futures table and forming the scenarios

The futures table and morphological scenario-based working method is based on the FAR method[1] developed by Yrjö Seppälä. The English name of the method, *Field Anomaly Relaxation*, means that it can be used to screen out those images of the future that include states that are incompatible with each other. This method consists of seven stages, presented in Figure 18 (source of the figure: Seppälä 1984, 21). (Seppälä 1984 20–22; Niemi 1990, 29–30; see also Rubin 2002.)

The key tool of the method is the futures table[2], which includes all possible future

[1] The FAR method is based on a method with the same name that was developed in the United States in the 1960s. (Seppälä 1984, 20).

[2] The future table working is considered to be based on Zwicky's morphological analysis, where one forms a table in which lines are called parameters and the optional items given to the parameters are called values. In the actual analysis, the parameters represent the different features of the examined product, and values represent different technical solutions. The morphological analysis enables the researcher to form several combinations using the parameters' values. The number of options can be limited by eliminating technically poor and expensive solutions. The morphological thinking can be applied to the problems of futurology (Seppälä 1984, 25–26).

states. The futures table effectively limits the issue under review by defining a specific field, which will be examined more thoroughly. The futures table is already as such a futures studies result, because it represents those variables, which are connected to the selected field. The futures table is used to create images of the future, which are then developed into futures paths, i.e. scenarios. (Seppälä 1984, 24–41; Söderlund 1999, 31–43; see also Asplund 1981, 91–110; Mannermaa 1999; Rubin 2002; Amara & Lipinski 1983, 41–44.)

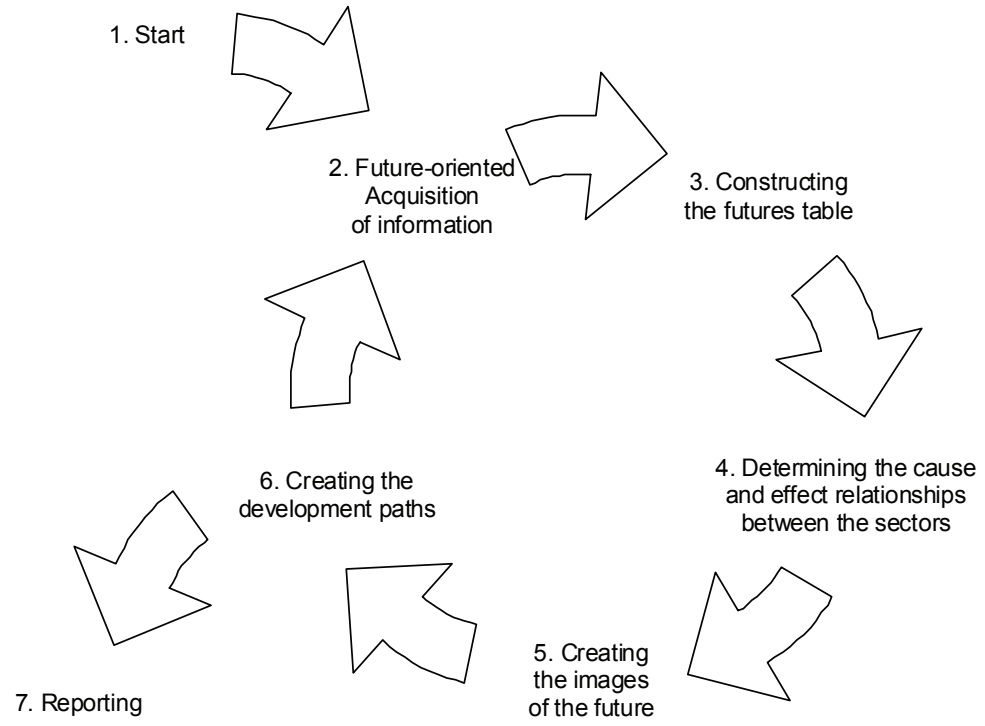

Figure 18. FAR method's stages.

The development paths or scenarios are created from the futures table as follows: 1) selecting the order of priority for the sectors, 2) selecting the initial and end image of the future, 3) moving from the initial image to the end image one sector at a time, 4) naming the development path, 5) describing the development path[1], 6) timing the development path, and 7) evaluating the development path. Defining the sectors' order of priority is crucial in order to create distinct cause and effect relationships. The result of selecting the priority is the defined order, in which the

[1] According to Seppälä, the difference between positivistic and hermeneutic scenario techniques is that the first tries to achieve puritan objectivity by forming abstract and simple scenarios, which makes them as universal as possible. The work can be complemented with cross-effect analysis, Bayesian conclusion, and Monte Carlo simulation with a priori probabilities. Hermeneutic futurology is characterised by the problematisation of matters usually taken for granted. The researcher is allowed to use his/her personality in creating the scenarios, which makes them open and subjective. A hermeneutic scenario is a result of the researcher's creativity. (Seppälä 1985, 81–84.) The scenarios in this research is hermeneutic by nature, but nevertheless I have paid attention on their objectivity when I have created them.

sectors are changed and which is observed in creating development paths. (Seppälä 1984, 42–51; Söderlund 2000, 25–27.)

According to the method, I collected all factors related to the field in the futures table[1]. Thereafter I gave different values to the different sectors of the futures table. My futures table is shown in Table 6. After selecting the two key sectors (size and market area of the company), I formed the scenarios so that other sectors received different values in various scenarios, and that these values reflected the key sectors causally. I chose the sectors' order of priority based on the market entry stages of a railway undertaking. In accordance with Masini's (1993, 8–10) instruction, I did not form the typical categorical arch-types: wanted, unwanted, credible and plausible. The scenarios are constructed from the perspective of a market entrant in order to show the various types of difficulties in entering the market and to review the market entry in various different ways. All scenarios represent probable and plausible scenarios.

Table 6. The futures table.

Sector		A	B	C	D
1	Size of the railway undertaking	Small	Medium	Large	
2	Railway undertaking's market area	Finland	the Nordic Countries	Europe	Russia
3	Business	Feeder traffic	Raw material transport for the industries	Product transport for the industries	Transports linked to a big operator's processes
4	Rolling stock	Own, new rolling stock	Leased	Used rolling stock	Modified Russian
5	Personnel	No need to recruit	To be trained	To be recruited from other operators	
6	Acquiring the safety certificate	No problem	Minor problems	Major problems	Cannot be done
7	Acquiring the operating licence	No problem	Minor problems	Major problems	Cannot be done

[1] Nevertheless, I did not form the table of impossible status pair, which is usually included in this method and could be used to check the internal consistency of the images of the future. I evaluated the consistency of images of the future without the aforementioned table.

8	Timetabling and requesting rail capacity	No problem	Minor problems	Major problems	Cannot be done
9	Allocation of rail capacity requests	RHK's solution is good	RHK's solution is decent	RHK's solution is poor	RHK's solution will be appealed
10	Actions of a monopolistic company	Promotes market entry	Neutral	Restricts market entry	
11	Access to services	No problem	Minor problems	Major problems	
12	Pricing of transports	No changes	Prices will go up	Prices will go down a little	Prices will go down a lot

4.5 Evaluating the results

I evaluated the research results in two different ways: 1) by comparing the results of this research with the results of earlier studies in order to see if the results and conclusions presented in this research support earlier studies, and 2) by evaluating the results through interviews. The evaluation of the results in the light of earlier studies will be presented in connection with the introduction of the results of this research. In addition, section 6.4.1 will include a summarized review.

I drafted the basis of the interview, which I used to evaluate the research results, by summarizing the key results of this research into various themes. I then added a question, which required a comprehensive answer, into each theme. The basis skeleton of the evaluation interviews is attached to this research (Appendix 11). Categorising the results into various themes allowed me to have comprehensive theme-related discussions. Experts selected for the results' evaluation interviews were to be persons, who due to their jobs had followed and familiarised themselves with issues connected to new operators entering the market and operating rail transport. I selected the European experts from various countries so that the group would include representatives of different types of operators. Most of the interviews were arranged on the phone. I also sent email messages to some of the experts. After arranging the interview and its time and date, I sent the basic skeleton of the interview to them by email. I conducted the interviews mainly on the phone (8 interviews), and a few of them (2 interviews) in my office. The duration of the interviews varied between 19 and 45 minutes[1]. Some interviewees

[1] Before I started the actual interviews, I told them what the research was about, and about the role of the interview and interviewee in the research. I asked for their permission to record the interview and to include their name in an appendix to the research report. All interviewees gave their permission to record the interview and include their name. As for those who responded by email, I asked for their permission to include their name.

(5 persons) answered the questions by email[1]. I considered the email answers sufficient, because they included versatile and comprehensive consideration. Table 7 shows the duration of the interviews and their date and time in the local time of the person being interviewed. The list of interviewed persons is in Appendix 12. The results of the research results' evaluation interview are presented in section 6.4.2.

Table 7. Time, date and duration of the results' evaluation interviews.

	Time and date [local time]	**Duration [minutes]**
Person 1	12 June 2007 at 3:30 PM	42
Person 2	13.6.2007	by email
Person 3	14.6.2007	by email
Person 4	15 June 2007 at 1:00 PM	28
Person 5	15 June 2007 at 1:30 PM	30
Person 6	21 June 2007 at 9:30 AM	32
Person 7	25 June 2007 at 1:00 PM	19
Person 8	26 June 2007 at 1:30 PM	26
Person 9	26 June 2007 at 2:00 PM	19
Person 10	27 June 2007 at 10:30 AM	45
Person 11	3.7.2007	by email
Person 12	5 July 2007 at 9:30 AM	23
Person 13	13 July 2007, 18 July 2007 at 9:00 AM	by email, 25
Person 14	20.7.2007	by email
Person 15	3.8.2007	by email

As with the theme interviews, I did not consider transcribing the evaluation interviews necessary (see Grönfors 1982, 137–140). However, I wrote a memo of each interview. I printed the email answers and wrote a memo of each interview, so I had all essential information on paper. I also had access to the recordings of the interviews in case I needed to check something.

[1] One of the interviewees responded by email, and I also interviewed this person on the phone.

4.6 Summary of the research methods

In this research I used theme interviews and Delphi technique to collect research material (see figure 19). I carried out the theme interviews based on the market entry and its related barriers and also on the theoretical framework of the rail transport operating environment. I also took notice of prior studies. The first round of the Delphi questionnaire was based on completed theme interviews and theoretical framework. The second questionnaire round consisted of first round questions that caused the most dispersion and some specifying questions. The research material consists of the Delphi questionnaire rounds. The research material has been analysed by forming expert profiles and market entry scenarios. The results of this research have been evaluated against the results of earlier studies and also based on the results' evaluation interviews.

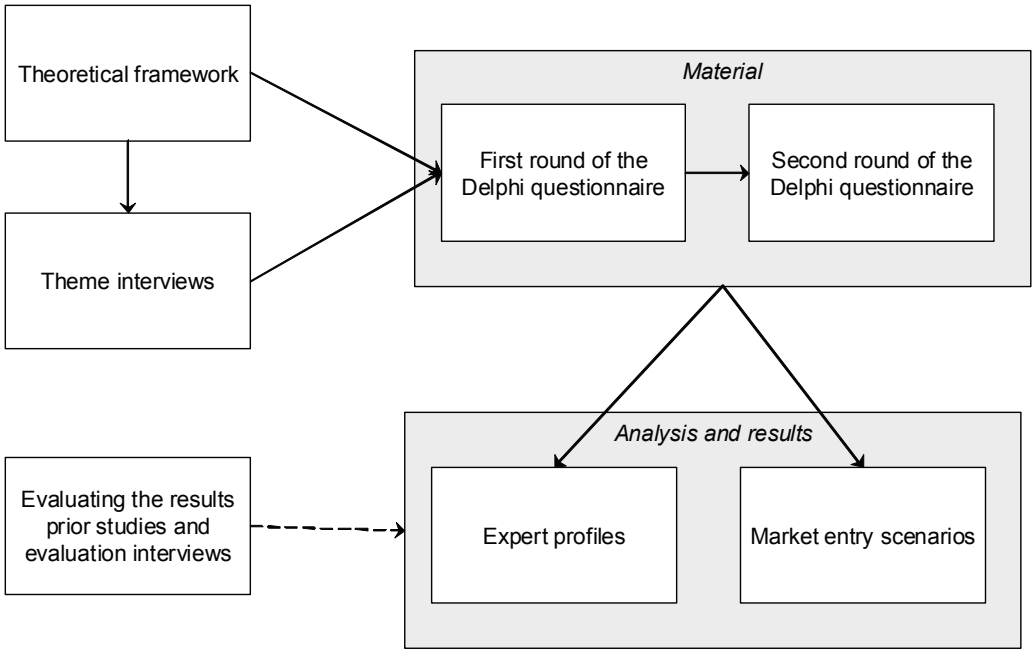

Figure 19. Diagram on collecting and analysing the research material.

5 PRESENTING THE RESEARCH MATERIAL

In this chapter, I will present the data collected with the Delphi questionnaire. The data is presented chronologically, an entry phase at a time (see Figure 3): acquisition of stock and staff, application of the safety certificate and the operating licence, timetable planning and application of rail capacity. I will also present the data regarding the practising of rail traffic and the creation of preconditions for competition.

5.1 The phases of market entry

5.1.1 Stock acquisition

Rail traffic is considered as a branch that restricts capital, which is why I phrased the first statement[1] of the Delphi questionnaire quite flatly: "It is nearly impossible for a new operator to acquire the necessary stock because of the high prices and the Finnish rail gauge that is different from the European standard." On the first survey round, nearly ¾ of the respondents did not agree with the statement. The railway experts[2] assumed the stock acquisition to be slightly harder than the general experts. In the second round, half of the respondents re-evaluated their opinion, i.e. their answers differed from those of the first round. The reason for this evidently was that they were able to review the answers and arguments of the first round. In the second round, stock acquisition was considered as easier. The expert evaluations of the difficulty of stock acquisition on the first (light grey) and the second round (dark grey) are presented in Figure 20.

[1] Statements and questions are typical of the Delfoi method (see e.g. Linturi 2007, 107–108).

[2] The respondents chose their status as a railway expert or a general expert themselves.

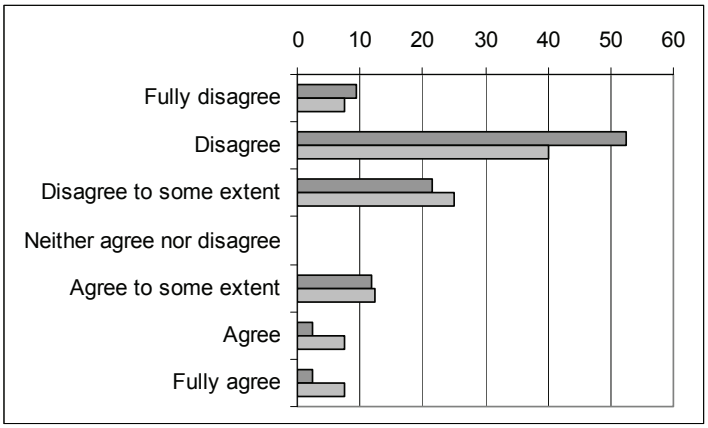

Figure 20. The expert evaluations of the statement "it is nearly impossible for a new operator to acquire the necessary stock because of the high prices and the Finnish rail gauge that is different from the European standard" in the first (light grey) and the second (dark grey) questionnaire round.

According to the answers, stock acquisition is difficult because of the expensiveness of the stock, i.e. the argument is the same as in the statement given on the questionnaire template. The investments on stock were considered so great that it would be difficult to make business operations profitable. In some of the responses, the Finnish rail transport markets were perceived as small. The Finnish rail gauge was also perceived as a factor that increases the investment demand, because manufacturing batches for the Finnish markets are small and thus expensive.

> "…the special conditions naturally make the carriages more expensive than those intended for the European standard gauge." *a railway expert*

> "Stock is available, but the prices may be daunting" *a general expert*

According to the research material, the respondents believed the markets of stock that is suitable for the Finnish rail network are immature. The respondents assumed that demand will gradually create functional railway stock markets. Some of the respondents felt that the stock markets are operating well already, because it is possible to lease stock. The response material also included doubts whether such a small market would attract any manufacturers or leasing business. Another doubt concerned the availability of used stock; there may not be any available. The responses arguing that access to stock was easy were based on the fact that in Finland, in addition to VR Limited, the industry also has some railway stock of its own. In addition, the former Soviet railway stock was perceived as a potential source. However, the Russian stock would need modification to meet the Finnish requirements, because for now, the Russian standard carriages are not as such operable in EU internal traffic, which was considered as something that may

come as s surprise to railway undertakings. In addition, the respondents assumed that the access of the Baltic countries to the EU will change the railway stock market situation. Furthermore, some argued that a new operator can only purchase new stock.

> "…Are the prices [of the stock] daunting? VR's prices indeed are, so the necessary financing will probably exist in the markets, provided that there are enough customers for railways." *a general expert*

> "As the demand grows, the markets for stock renting/leasing/financing will develop also in Finland…" *a railway expert*

Many respondents perceived railway stock as expensive, but it was considered as a normal part of business. In the response material, the railway branch was compared with other lines of business with a conclusion that launching a railway business is not different from any other as far as investments are concerned. It was estimated that the question is about the length of repayment period, and timely connections will make the railway business profitable. The respondents also noted that the price is not a problem, if rail transports are logistically suitable for the needs of the buyers of transport services. One of the general experts pointed out that rail traffic is a capital-intensive branch and "gaining instant profits is generally impossible." Some of the responses included arguments against the rail gauge statement of the questionnaire; according to them, the different rail gauge in Finland does not necessarily mean that stock acquisition is impossible. The acquisition of carriages and bogies was considered as less problematic than that of engines and, especially, the associated automatic train protection systems, which are not readily available and quite expensive. Some respondents, however, did not perceive the acquisition of the automatic train protection system as a problem. According to some responses, rail traffic is not comparable with any other business. One of the general experts was concerned about competition in rail traffic and suspected that competition will lead into dividing the markets so that operation is unprofitable for all, in which case the opening of competition is "a disservice to customers and the railway system on the whole".

> "The price level and the rail gauge are not necessarily interdependent" *a railway expert*

> "There are other capital-intensive branches where investors do exist. The rail gauge is not a problem in the acquisition." *a general expert*

5.1.2 Acquisition of staff

I formulated the statement regarding staff acquisition somewhat provocatively: "The acquisition of staff is not problematic to a new railway undertaking." The responses were diverging: 58 per cent of the respondents fully disagreed, disagreed, or disagreed to some extent. The majority of the respondents (40 per cent) disagreed to some extent. In comparison with the general experts, the railway experts regarded staff acquisition as easier.

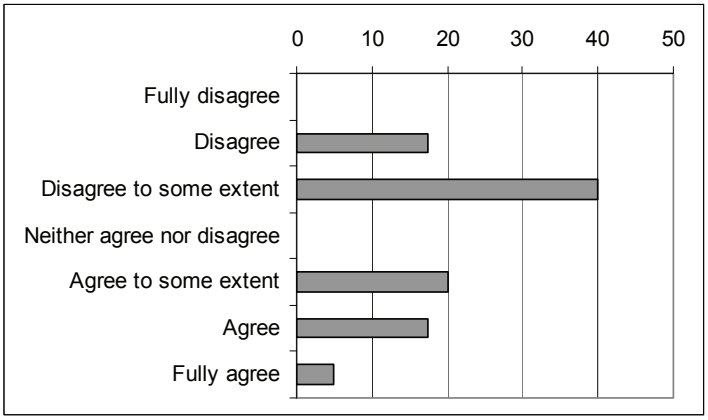

Figure 21. The expert evaluations of the statement "the acquisition of staff is not problematic to a new railway undertaking" in the first questionnaire round.

Those considering staff acquisition as difficult argued that skilled staff are already employed by the VR Group and its subsidiary, VR Limited. The respondents assumed that people are more likely to stay with a large operator. Furthermore, it was assumed that people would regard changing employees as a risk, because a new operator cannot necessarily assure the length of its stay in the markets. Therefore it was believed that a new operator must make an attractive employment offer in order to recruit staff from VR Limited. Some of the respondents, however, argued that a new, reliable operator could be attractive as an employee. Some of the responses discussed the possibility of excess staff, if VR Limited's market share is decreased by new railway undertakings and overcapacity in production is created. This would generate a natural flow of staff from VR Limited to other railway undertakings. One of the options for obtaining experienced staff was to recruit people who have retired from the VR Group. Many responses included this option and argued that because of the early retirement age in the VR Group, recruiting could be possible. Some of the responses assumed that former staff of the VR Group with entrepreneurial spirit could start-up small railway undertakings of their own, as has happened in Sweden.

> "The limited number of qualified staff may become a problem." *a general expert*

> "it depends on the employee and the offered jobs… there may be some problems at the start-up phase, but not – – once the company has established its position" *a railway expert*

The research material also introduced the option of training staff; a new railway undertaking could train the staff it needs. The necessary training services could be purchased from training institutions. Some of the respondents noted that there is no need to recruit or train the entire staff, but only certain part of the staff needs special training. In this context, many experts commented the presently available training. The role of the VR Training Centre was argued for and against. Some felt it offers training equally for all. Others believed that the VR Training Centre does not operate neutrally, and therefore training should be rearranged in Finland in order to become available for all.

> "Partly from other logistic branches (cargo handling) and partly from VR (traffic)" *a general expert*

> "The Swedish experience shows that recruiting can be a major problem, at the start-up at least. The organisation of public, independent training is important." *a general expert*

5.1.3 Differences in acquiring production factors

Large and small operators

Some of the respondents felt that there are no significant differences in acquisition of stock and staff between large and small operators. The argument was that both large and small companies must deal with the same issues. Same regulations apply to the practicing of traffic regardless of the size of the operator. In the research material, the discussion about the differences in stock and staff acquisition between small and large companies included the notion that it is easier to acquire a small number of staff. In addition, many respondents assumed that small operators are likely to purchase used stock, whereas large operators buy new – access to financing is easier for large operators. Some of the answers associated innovation with small operators. The underlying assumption was that small operators must find efficient ways of operating. In a small railway undertaking, the staff could also be the owner. Many respondents associated large operators with more secure capital base.

> "In small ones there are no barriers between jobs (The driver too can wash the engine windows)" *a railway expert*

> "A large operator can wait for the profit longer than a small operator – [a large operator] can use 'front loaded' investments to take over the markets." *a general expert*

Domestic and foreign operators

Some of the respondents felt that there are no significant differences in acquisition of stock and staff between domestic and foreign operators. These responses estimated that the practicing of rail traffic is similar in both cases. It was also argued that operators must comply with the Finnish legislation and authorities' provisions when operating in Finland regardless of their origin. In addition, cultural differences and language may complicate things, but the shared European regulation with common grounds is helpful. Foreign operators were often associated with viable financing in the research material. In the same context, foreign operators were considered as faster in their actions. Moreover, it was assumed that foreign operators' interests lie in maximisation of profits. Foreign operators were associated with large size. Small foreign operators may have difficulties in market entry. Some respondents suggested that foreign operators needed an agent to deal with things in Finland, at least at the start-up.

> "As far as railway stock is concerned, the foreign will modify foreign stock, and the domestic will try and acquire stock from Finland" *a railway expert*

> "A foreign [operator] tries to maximise profits by compromising the number and quality of staff and stock" *a general expert*

5.1.4 Rail traffic expertise

Rail traffic is regarded as a very technical field particularly in the internal discourse of the railway branch, in which the branch is regarded as challenging and dependent on top expertise. Slightly over half of all respondents agreed to some extent, agreed, or fully agreed with the statement that the special information of the traffic mode will constitute a problem for newcomers. Three quarters of these respondents agreed to some extent. The railway experts regarded the railway branch as challenging: 59 per cent agreed to some extent, agreed, or fully agreed with the statement. The corresponding figure for the general experts was 48.

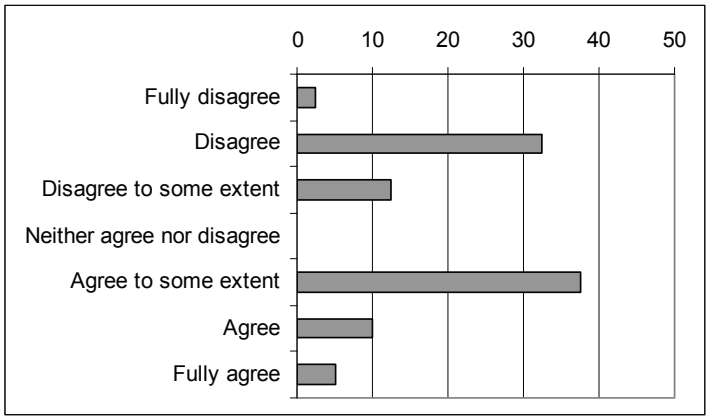

Figure 22. The expert evaluations of the statement "the special information of the traffic mode will constitute a problem for newcomers" in the first questionnaire round.

In the research material, the specific nature of railway information was emphasised by stating that the material is plentiful and in some estimations incoherent and, to some degree, open to interpretations. The language aspect was associated with the complexity of the railway-specific material: the material is mainly in Finnish, which may constitute a problem for foreign operators. In some answers, the language used in the railway branch was described as a "language of its own", based on the fact that the railway branch has a long history with only one operator, VR, the state railways. In the answers it was also stressed that in order to understand the railway language and the special features of railway operations, they must be adopted through experience. According to the material, another difficulty in absorbing the specific knowledge is that consultant markets do not exist for the field. Some of the responses realised the complexity of rail traffic related information, but argued that there is a good reason for it: newcomers must be familiar with the rail traffic rules. New operators must be able to operate correctly and according to the rules from the beginning. Some respondents did not regard the special knowledge as a problem, because they assumed that new operators are already operating in the branch and therefore familiar with it.

> "The same problem probably exists throughout Europe and makes it less attractive to operate on other countries' rail networks." *a general expert*

> "Newcomers must be familiar with the branch and its regulations! The safety aspects of rail traffic [are] important!" *a railway expert*

In some of the answers, the railway branch was compared with other branches. These answers pointed out that every branch has specific knowledge to adopt. It was assumed that these things can be learned. Comparisons were made with air traffic in some answers. It was argued that if new operators manage to start in the

air traffic, it is also possible in the train traffic. These respondents drew a parallel between air traffic and rail traffic: it is possible to enter a new branch.

> "Traffic regulation is somewhat universal…" *a general expert*

> "It is even more difficult to start up an airline, yet there are new companies in the markets." *a railway expert*

5.1.5 Acquisition of the safety certificate and the operating licence

The research material generally indicated that the acquisition of the safety certificate and the operating licence is not problematic if the requirements are met. In some answers it was hoped that the acquisition of the safety certificate and the operating licence would be easy. Some, however, argued that problems may arise in granting the certificate and the licence. It was assumed that the harmonisation of official handling in Europe may facilitate the licence acquisition. On the other hand, it was suspected that the harmonisation may create challenges for the Finnish Rail Agency and the Ministry of Transport and Communications of Finland. One of the difficulties associated with the acquisition of the safety certificate and the operating licence was the difficulty of describing the required issues. In this context it was assumed that operators will find it difficult to reliably describe entities (e.g. staff, stock, maintenance) that necessarily do not yet exist. According to the answers, the process will be especially laborious for new operators.

> "This is what I believe in international comparison. If the requirements are met, there should not be problems." *a general expert*

> "…if RHK or the Finnish Ministry of Transport and Communications are willing to co-operate. VR Limited was granted the safety certificate in 4 months + a claim of correction to the Ministry of Transport and Communications, which was approved." *a railway expert*

5.1.6 Requesting rail capacity

Traffic planning and application of rail capacity

Many railway experts perceived the application of rail capacity as a challenging task. The associated difficulties included the estimation of rolling stock circulation and the organisation of stock maintenance. Another associated difficulty was the estimation of necessary rail capacity, because operators are not likely to get the applied rail capacity as such. In some of the answers, the planning and application of rail capacity were considered separately: traffic planning was

perceived as difficult, and the application as easy. Some respondents felt it must be very difficult to carry out viable business, when the traffic has to be planned and the rail capacity has to be applied eight months in advance of the timetable period in question. Some answers, however, noted that new operators have contracts or letters of intent ready for future transports. In one of the responses it was argued that there is no need to apply for rail capacity eight months in advance, because urgent rail capacity applications can be made for the leftover capacity.

> "Demands specific skills that are to some extent different from general logistic knowledge…" *a railway expert*

> "…is it in accordance with today's requirements to have such a long delays/handling times? I believe RHK must develop its operations." *a general expert*

In some parts of the research material, the rail capacity application did not appear as problematic. It was argued that the application of rail capacity is a part of normal operational planning. It was assumed that new operators will start operating in a way that is easy to plan. In this context, some believed that new operators' volumes are so small that traffic planning or application of rail capacity does not require any specific planning skills or resources. Others believed that new operators will start by operating unit trains with easier timetable management.

> "If an operator has systematic and strong connections with consigner(s), everything is possible." *a general expert*

> "…the start-up situation is easy and simple." *a railway expert*

What if a railway undertaking does not receive the rail capacity it has applied for?

Many respondents considered it a great threat if a railway undertaking does not receive the rail capacity it has applied for. The threat would immediately manifest itself in the number of clients and the level of service of the specific railway undertaking. The respondents regarded the allocated rail capacity as one of the central elements of business operations, which should be reviewed in the first phases of operational planning. Passenger traffic has a higher priority order than freight traffic, which was considered as a threat for receiving the applied rail capacity. Some respondents suspected that the priority order can be misused for blocking other railway undertakings. Moreover, the traffic in the core rail network is busy enough to create a constant threat of inadequate rail capacity. Neverthe-

less, some respondents assumed that free rail capacity exists. Opportunities are available especially for operating traffic on other than main lines and at times when the rail capacity use is not at its busiest. Some respondents believed that not receiving the rail capacity applied for is not a threat. They assumed that new operators' traffic has formerly been operated by VR Limited, so the timetable and rail capacity are already there, only operated by a different operator. New operators were assumed to start planning their operations with rail capacity analysis in any case. The responses also indicated that the access to railway yards may be more important than route capacity.

> "The operator will go for truck traffic, if other parts of the transport chain are not flexible enough…" *a railway expert*

> "The threat is fatal. In order to do business, rail capacity must be certain. The authorities cannot just open the competition without ensuring capacity. Not a modern way to operate. The authorities are facing a major planning challenge + a challenge of developing their operational activities." *a general expert*

In the questionnaire, the respondents were asked to assess what it means for a railway undertaking not to receive the rail capacity it has applied for[1]. Figure 23 presents the respondents' estimations of the consequences for a railway undertaking of not receiving the applied rail capacity. In the figure, the scale signifies per cents, and the length of the column indicates the percentage of the respondents who have chosen the option in question. The number of experts answering this question was 37 (N=37), which therefore is the number of viable responses in the research. Eight of the respondents (22 per cent) chose all the options in the question. These respondents are highlighted in the figure with light grey. The respondents could also verbally assess other consequences of a situation where a railway undertaking does not receive the rail capacity it has applied for. These assessments showed a great variety. Some of the respondents regarded the rail capacity as a strategic production factor, and if the necessary rail capacity is not received, the consequences can be grave. In some responses, the same was expressed in an opposite manner: If a railway undertaking knows there is a serious lack of rail capacity on the route it needs, and has a reason to assume it will not get the necessary rail capacity, the company will not start operating.

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[1] RHK can offer optional track capacity for a railway undertaking, if the applied track capacity cannot be allocated. Ideally timetables change less than fifteen minutes, but in the worst case scenario RHK cannot allocate any track capacity if the section of track has a high utilisation rate, or the optional track capacity deviates greatly from the applied capacity, and thus does not meet the railway undertaking's needs. The underlying idea behind the question was closer to the latter, the worst case scenario. The respondents could, however, freely assess a situation where a railway undertaking does not receive the track capacity it has applied for.

> "The boundary conditions of business determine which one is more important: the rolling stock circulation or the transport time" *a railway expert*

> "[RHK's] bureaucratic gimmickry cannot be relevant! I'm worried, if this is possible!" *a general expert*

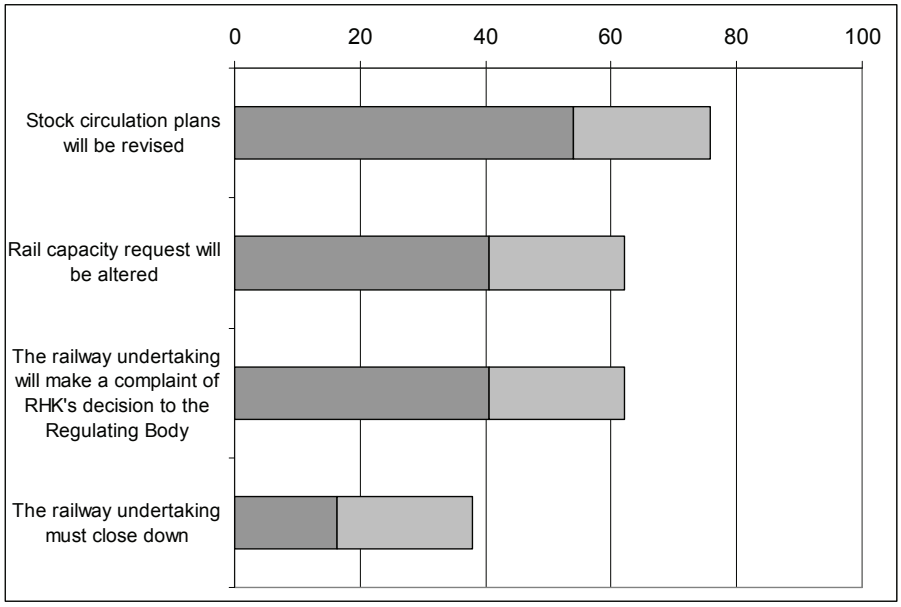

Figure 23. The expert evaluations of the consequences for a railway undertaking of not receiving the needed rail capacity in the first questionnaire round. Some of the respondents chose all options (light grey).

Impartiality of the Finnish Rail Administration's rail capacity decisions

Half of the respondents felt that the Finnish Rail Administration is able to make rail capacity decisions that are impartial for all railway undertakings. The opinions of the railway experts and the general experts, who had doubts about the equality of RHK's rail capacity decisions differed from each other. On the other hand, it was argued that RHK is able to make equal rail capacity decisions because the principles of legislation, the Railway act, administrative legislation and good administration all call for impartiality. It was assumed that RHK is impartial in its decisions, yet the difficulties of impartiality were also discussed: the other party may perceive the decision as undesirable.

> "I do trust in RHK's impartiality, but problems simply do not have only one correct answer." *a general expert*

> "impartiality depends on which side you are on, but I'd say that RHK can make decisions based on previously determined priorities, in which case the decisions are impartial in RHK's point of view." *a railway expert*

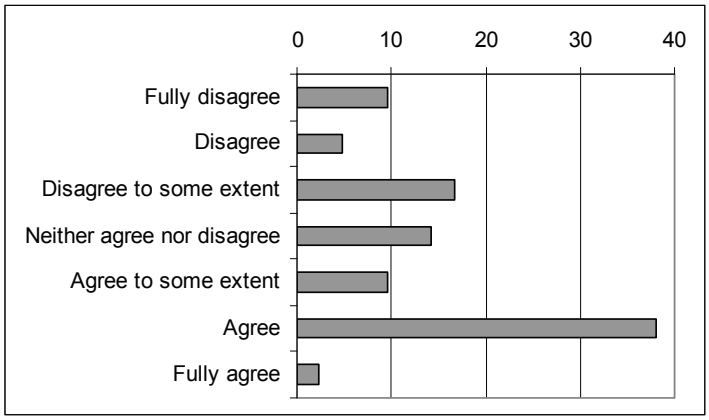

Figure 24. The expert evaluations of the statement "the Finnish Rail Administration is able to make rail capacity decisions that are impartial for all railway undertakings" in the first questionnaire round.

Some respondents felt that RHK is not able to make impartial rail capacity decisions. The views were generally based on three kinds of arguments. Firstly, a few respondents wrote that basically, impartiality is impossible. This claim is probably based on the thought that coordination cannot be impartial, because the changes in the timetables of different operators will inevitably vary. According to the second response type, RHK's rail capacity decisions are biased and in favour of newcomers. The third response type claimed that the rail capacity decisions are in favour of VR Limited and complicate the emergence of competition. The claim was rationalised by pointing out that the VR Group and VR Limited have a close link with RHK. Some respondents perceived the existing priority order for congested rail capacity as a sign of impartiality, because it assumingly favours passenger traffic and therefore also VR Limited. Other responses brought out the inadequacy of RHK's resources: in their view, impartial decision-making requires availability of necessary resources, e.g. tools and staff. These responses reflected the concerns about the adequacy of the existing resources and the fact that resources cannot be updated in a fast pace.

> "Capacity will run out on some track sections almost certainly. Elimination cannot be impartial, can it." *a railway expert*

> "There will be dissatisfaction with the decision-making. Court decisions in disputed cases will probably in time standardise RHK's profile." *a general expert*

The Finnish Rail Administration's role in traffic system design

83 per cent of the respondents felt that RHK must be proactive in finding out the rail capacity needs. Promotion of rail traffic also involves promotion of competition and attracting new supply. It was assumed that proactivity would facilitate

rail capacity coordination and instruct new railway undertakings on how to operate in different circumstances. Rail capacity was perceived as a product that RHK manages and sells, and so the body was expected to find out the demand for the product. However, railway undertakings may not be willing to discuss their plans and reveal their business secrets. In addition, proactivity also raised concern, as it was suspected to involve market distribution, advance marketing, or unofficial activities.

> "Optimal decisions are more likely when they are based on longer-term demand profile/estimation than just a cross-section." *a general expert*

> "things should be dealt with in advance and within timetables and procedures that are notified in public…, but decisions cannot be made on the basis of 'unofficial' contacts…" *a railway expert*

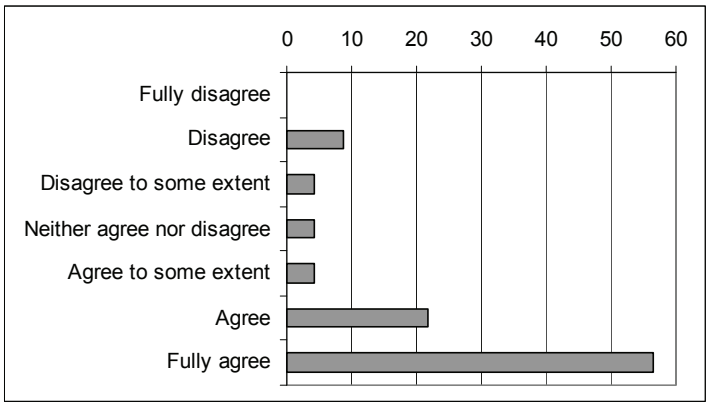

Figure 25. The expert evaluations of the statement "RHK must be proactive in finding out the rail capacity needs so that the rail capacity applications could be coordinated as well as possible" in the second questionnaire round.

Nearly 90 per cent of the respondents felt that RHK should, in cooperation with railway undertakings, build a traffic system that caters for all operators and bear the responsibility for its development. In some responses, the responsibility for the traffic system was also directed to the Ministry of Transport and Communications of Finland and the Finnish Rail Agency. These experts noted that the development of traffic system cannot be the task or responsibility of a single railway undertaking. It was assumed that RHK-driven development will ensure efficiency of the rail network usage and secure competitive operational conditions for the rail traffic. RHK will need time and resources for the traffic system development. Impartiality is essential in the development, because favouritism creates inefficiency and problems with the competition legislation.

> "A single-line network is particularly challenging. RHK must have information about its customers' future needs (incl. prognoses)." *a railway expert*

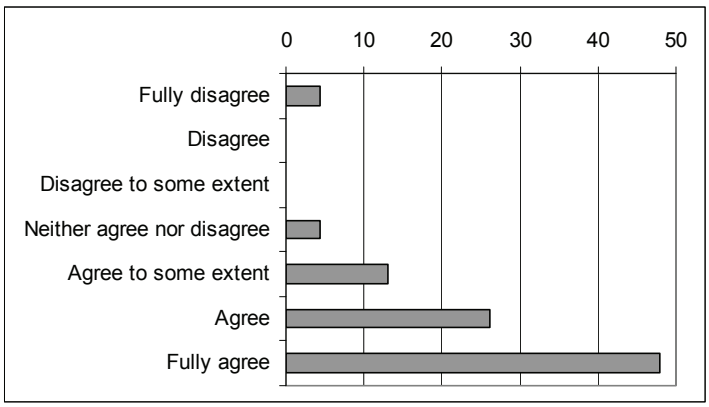

Figure 26. The expert evaluations of the statement "it is RHK's responsibility to develop a traffic system that serves all" in the second questionnaire round.

5.2 Practicing of rail traffic

5.2.1 Organisation of traffic control

Nearly a fifth of the respondents evaluated that the existing organisation of traffic control under VR Limited does not constitute a problem as regards impartial competition. The railway experts had a more negative view of the current situation than the general experts. In the second round, slightly less than a half of the respondents re-evaluated their opinion, i.e. their answers differed from those of the first round. The second round answers were more critical towards the existing organisation. The expert evaluations of traffic control organisation on the first (light grey) and the second round (dark grey) are presented in Figure 27.

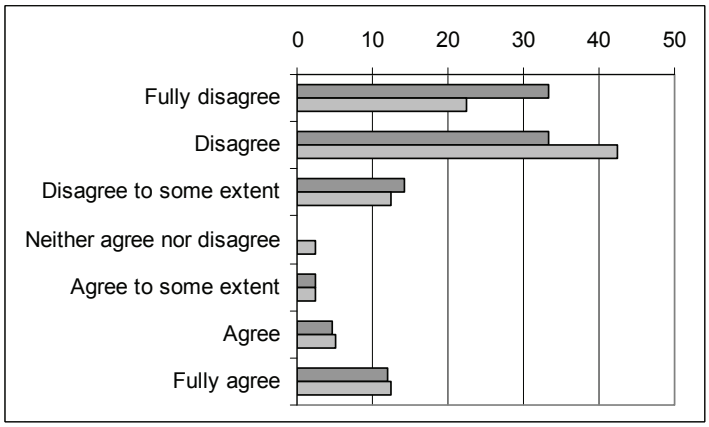

Figure 27. The expert evaluations of the statement "the existing organisation of traffic control under VR Limited does not constitute a problem as regards impartial competition" on the first (light grey) and the second (dark grey) questionnaire round.

Those who were in favour of the existing organisation of traffic control argued that traffic control's task is to implement the traffic system that is based on the

decision of rail capacity allocation. Furthermore, it was argued that operations can be pre-determined, in which case RHK could have a mere monitoring role. Nevertheless, the majority of the respondents perceived the existing organisation as problematic for impartial competition, traffic control's impartiality, and the transparency of activities. Furthermore, the existing organisation apparently causes problems to track maintenance firms as well. In the respondents' view, traffic control has a strategic task, and it must be neutral in its dealings with the railway undertakings. The issue was reviewed from the point of view of a new operator; it is not the case how things are, but also how they appear to be. Some respondents suggested that neutrality may be forgotten in practice in spite of agreements and promises. Others suspected that the traffic control will report the transport information of competing companies to VR Limited.

> "Capacity will be allocated in advance. Exceptions will be dealt with according to the guidelines" *a general expert*

> "In the field everybody will act according to their own interests no matter what has been discussed." *a railway expert*

Nearly half of the respondents would separate the traffic control entirely of VR Limited, whereas more than a third believed that the separation of the national train control motoring centre alone would secure the neutrality of traffic control. Less than fifth of the respondents believed that impartiality would be realised if RHK specified instructions for managing fault situations between railway undertakings. In addition, RHK should monitor the consequences of the decisions.

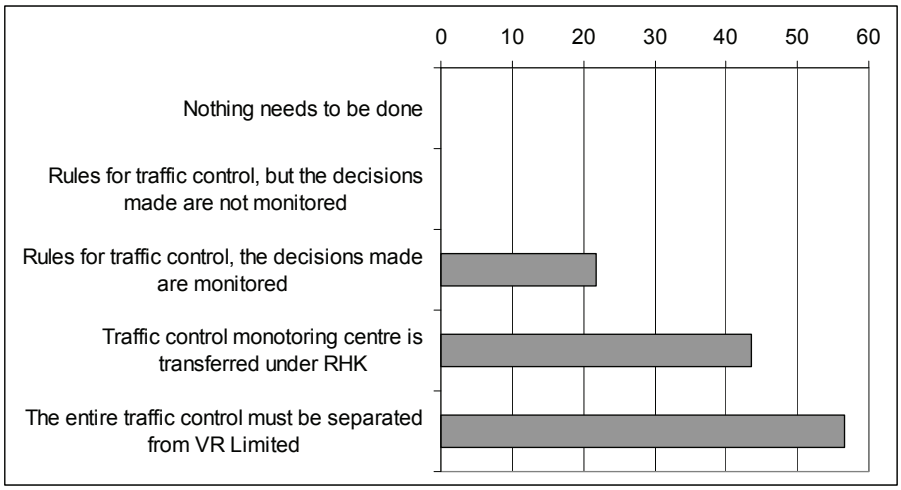

Figure 28. The expert evaluations of how the traffic control should be organised in order for it to be impartial in the second questionnaire round.

5.2.2 Access to services

The statement regarding the access of new operators to VR Limited's[1] services (e.g. depots, maintenance points) at a reasonable charge distributed the expert opinions quite evenly (Figure 29). The general experts were more optimistic about the access to services than the railway experts (Figure 30). In their view, the newcomers' access to services at a reasonable price is based on legal provisions. Access could be ensured with proper monitoring of the application of the impartiality and fairness provisions. It is in the interests of VR Limited to offer access to services for new operators if it benefits from it; e.g. if the companies are practicing traffic together. The responses included doubts about the fairness of pricing. It was argued that in competition, each operator will try to secure their position by any means possible. Therefore it was suspected that VR Limited will not grant access to services unless it is bound by regulation and monitored. Furthermore, services may be overpriced, because assessing the fairness of pricing is difficult. Nevertheless, prevention of access to services could be regarded as an abuse of dominating market position.

> "'A monopolist' is a COMPANY that has a form of a limited liability company, and therefore is bound by the Act on Limited Liability Company. VR cannot be expected to operate against the law, and therefore it must be able to charge the correct price + projected profit + development contribution for its services." *a general expert*

> "Other monopolistic branches in Europe, e.g. telecommunications, have shown that new operators are not allowed to enter even at a fair price, and these issues have been taken to respective special courts. This will be the case in the railway branch in Finland." *a railway expert*

[1] I used the term "monopolist" in the questionnaire, so that the respondents would also assess the situation in other branches' terms. Other optional terms were e.g. the largest operator in the markets, incumbent and VR Limited. One of the respondents wondered about the choice of the term monopolist.

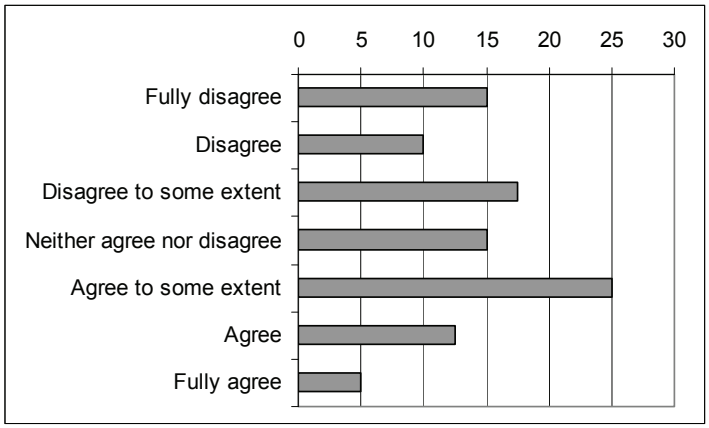

Figure 29. The expert evaluations of statement "the railway market monopolist will allow access for new operators to its existing services, e.g. depots and service points, at a reasonable price" in the first questionnaire round.

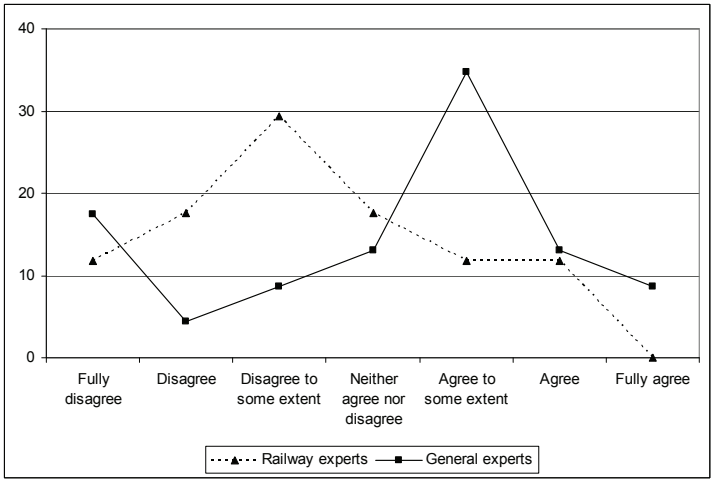

Figure 30. The evaluations of the railway experts and the general experts of statement "the railway market monopolist will allow access for new operators to its existing services, e.g. depots and service points, at a reasonable price" in the first questionnaire round.

5.2.3 Rail traffic business activities in competition

VR Limited and its contribution to pricing

The majority (82 per cent) of the respondents believed that the opening of competition will have an effect on pricing (see Figure 31). It was assumed that the mere threat of competition will have an influence on prices. The buyers of transport services will search for competing options, and the price of the most wanted transports will be influenced by the fact that competition will specifically accumulate on these transports. VR Limited will aim at keeping its market position by using price reduction as one of its methods. In some responses Finland was compared with the European situation: the examples show that prices will decrease also in Finland. It was also suspected that in a situation where there are

many operators in the network and the prices are determined in the markets, VR Limited may increase its prices where competition does not exist. Assumingly, the price war would lead into elimination of unprofitable transports. Some respondents, however, assumed that the opening of competition will have no effect on VR Limited's pricing. The reasons for this view were the following: firstly, that competition already exists: rail traffic is competing against other modes of transport, and therefore prices are already determined by the competition in the transport markets. Secondly, it was argued that new operators will be regional or too small for actual competition to emerge, thus there will be no changes in the prices.

> "It must have an effect, that's the whole idea. Competition with motor traffic is a different matter. VR's cost structure is not transparent." *a general expert*

> "Will influence on pricing decisively. Nobody will be able to apply the 'skim the cream' pricing, because the most profitable transports will attract most of the competition. The customer benefits." *a railway expert*

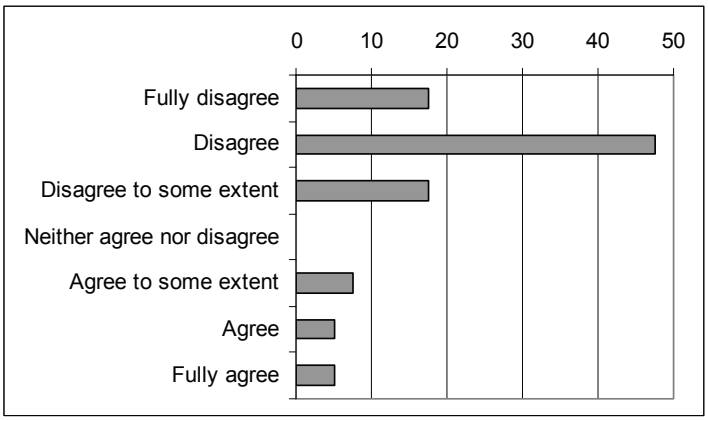

Figure 31. The expert evaluations of the statement "the opening of competition will not influence on the monopolist's pricing" in the first questionnaire round.

Financial profitability

In the questionnaire, the respondents were asked to assess the financial profitability of new railway undertakings' operations; the respondents had to assess the profitability of a small domestic, a small foreign, a large domestic, and a large foreign railway undertaking[1]. Many respondents argued that it is not possible to give any general assessments, because profitability depends on the company and its service concept. Therefore some respondents did not answer the question.

[1] The panellists may also have interpreted the question differently: is it *possible* for a certain type of company to be profitable.

However, 25 (N=25) responses were given. Figure[1] 32 shows how the majority of respondents perceived all types of railway undertakings as profitable. The greatest profitability estimate (80 per cent) was given to a small domestic railway undertaking. The smallest profitability estimate (52 per cent) was given to a small foreign railway undertaking, which also was the object of uncertainty: 20 per cent of the respondents did not assess the profitability of a small foreign railway undertaking. Moreover, 28 per cent of the respondents estimated that a small foreign and a large foreign railway undertaking cannot operate profitably.

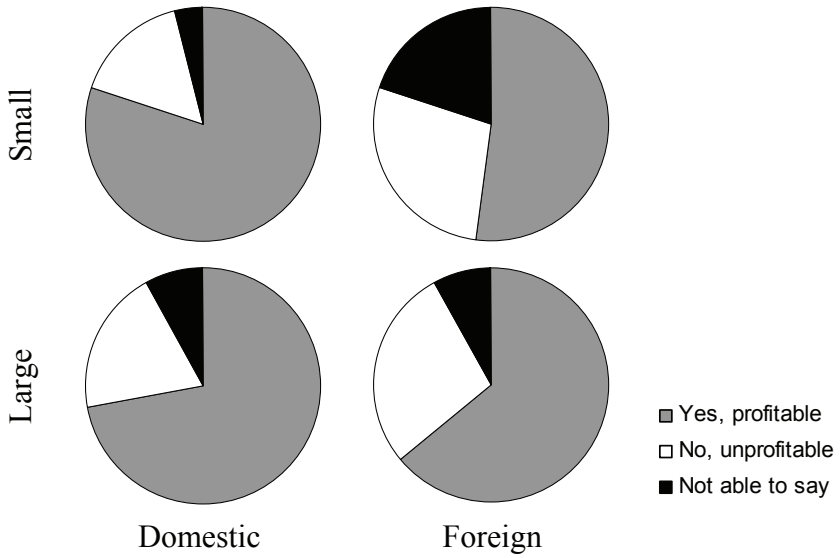

Figure 32. Prospective new operators and the profitability of their operations in the first questionnaire round.

The respondents assumed there will not be new operators of any size or nationality in the markets, if the business is not profitable. The respondents perceived profitability as something that depends on many factors. Market entry requires an adequate customer potential and finding the right market niche. One of the general experts pointed out that even though capital-intensive branches are favouring large operators, the Swedish example shows that smaller operators can be successful in specialised niche markets[2]. Small general expenses and flexible use of staff were perceived as the strengths of small operators. The respondents believed that small operators can focus on their operations, whereas large operators may have to struggle with overcapacity or delivery problems. However,

[1] In the figure gray means yes (operation is profitable), white means no (operation is not profitable) and black means the respondent cannot say. If a respondent had assessed the profitability of one or more operator types, but left some unassessed, I assumed that the respondent could not assess the profitability of the ignored operator types.

[2] Niche markets mean small market segments, where operators can apply the right kind of business strategies for the segment in question (Porter 1998b, 15–16; Räsänen 1997, 105).

large operators assumingly have better tolerance for unprofitable business. All in all, the markets were considered as too small for large foreign operators.

> "All the others except for the small foreign have good potential for profitable business. Small foreigners do not have the necessary 'insider' knowledge, or financial support (expensive stock acquisition etc.), in other words: start-up can be problematic." *a railway expert*

> "A small operator is faced with enormous initial investments and business risks… A large solid operator can get through the unprofitable start-up phase." *a general expert*

> "A large foreign operator may apply predatory pricing at first." *a general expert*

5.3 Other issues associated with railway market entry

5.3.1 The length of the entry process

The respondents were asked to assess the length[1] and the character[2] of the entry process. The options chosen by the respondents (N=32) are presented in Figure 33[3]. Nearly 60 per cent of the respondents assumed that the entry process takes too long. Furthermore, over half regarded the market entry as bureaucratic and involving too many phases and authorities. Some, however, thought that the process could appear simpler if it was clearly described. Due to the length of the process, market entry was considered as hard: the market situations change fast, and long-term commitments are difficult. Some responses assumed that market entry may take unreasonably long for a small operator. Many respondents realised the length of the period, but pointed out that entering the railway branch requires patient planning in any case. The authorities should develop their procedures, and they should be able to be customer-oriented and flexible in order to facilitate the

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[1] The statement in the questionnaire included information about the procedure: the Finnish Rail Agency (in the questionnaire, the Finnish Rail Administration was mentioned as the grantor of security certificates) handles and solves security certificate approval issues in four months. The Ministry of Transport and Communications of Finland handles operation licence applications in three months. These must be preceded by a business plan and a production factor acquisition plan. Railway undertakings must apply for track capacity eight months before the beginning of the timetable period, if other than leftover capacity is applied.

[2] The respondents were asked to assess which ones of the following statements were true: For railway undertakings, the period between the business plan and the actual operation in the markets is too long. The market entry process is easy, there are a small number of phases. The market entry is bureaucratic, it involves too many phases and authorities. In addition, the respondents were asked to comment the statements in their own words.

[3] In the figure, the scale signifies per cents, and the length of the column indicates the percentage of the respondents who have chosen the option in question.

market entry process as much as possible. Moreover, the authorities should consider offering all the related services, or all information at least, in one place. The responses also considered the impact of EU legislation by arguing that all the phases of market entry "have not been jointly considered in the EU regulation".

> "The process is tsarist and prevents free competition, the expected planning and commitment period is too long for customers as well" *a general expert*

> "The consecution of the phases is probably unnecessary: the applications could be pending at the same time. It is not necessary for RHK and the Ministry to use the whole term." *a railway expert*

> "The required time must be taken into account in the start-up process. Consider, for example, a production plant: it must be built before the production can start (and the necessary environmental and construction licences must be applied)." *a general expert*

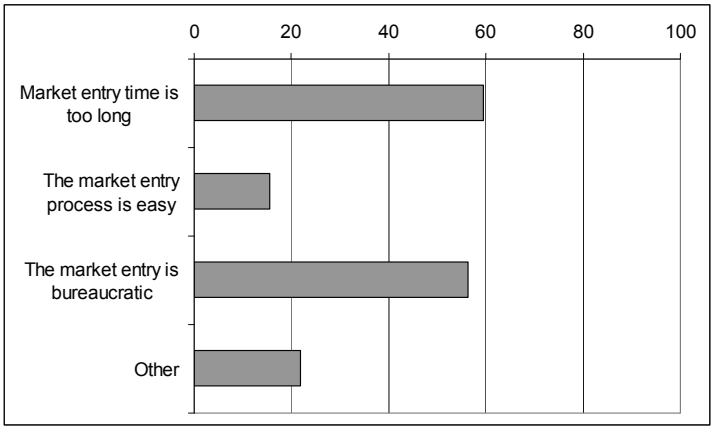

Figure 33. The expert evaluations of the length and the character of the market entry phase in the first questionnaire round.

5.3.2 The operation of the largest railway operator in the markets

The largest railway operator in the markets and its influence on the authorities

The majority of the respondents assumed that VR Limited will actively try to influence the opinions and decisions of RHK and the Ministry of Transport and Communications of Finland. This was especially suspected by the general experts. Only in a few of the answers, it was assumed that there are no such aspirations. Some of the respondents regarded such influencing as normal interest group activity: large industries try to influence the authorities in important issues. Many argued that in addition to regular interest group activity, if there is any, VR Limited influence includes negative elements. The respondents perceived the

interest group activities as something that was done to prevent competition or secure the existing market position. The influencing was particularly evident in context with preparation of decisions and legislation. Some respondents thought that the influence of the interest group activities has been more evident in the Ministry of Transport and Communications, whose perceptions of the state's and VR Limited's roles have not always corresponded to the requirements of opening competition. It was assumed that the influencing was channelled straight to the political level, past official preparations. Some responses suggested that VR Limited wants to ensure functional rail traffic also in markets with competition.

> "Every company tries to influence" *a general expert*

> "There are many examples of operating behind the scenes" *a railway expert*

> "Probably part of the business – even the dinosaur screams before the metamorphosis" *a general expert*

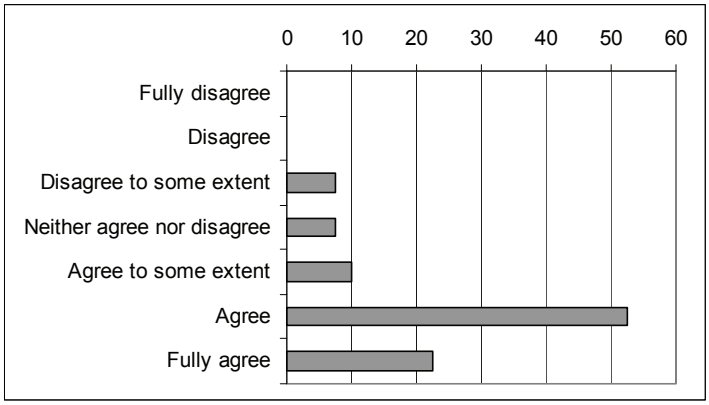

Figure 34. The expert evaluations of the statement "the monopolist will actively try to influence on the opinions and decisions of RHK and the Ministry of Transport and Communications" in the first questionnaire round.

Promotion and prevention of competition

Some of the respondents assumed that VR Limited will promote the opening of competition especially if the new operator is willing to co-operate as a subcontractor. This assumption is based on the idea of such a co-operation as a win–win situation for VR Limited and the new operator. The actual means of promoting competition were leasing and selling of stock, and sharing and exploiting of data systems. In addition, it was assumed that VR Limited will promote the opening of competition by openly and co-operatively contributing to the work of the teams that are creating operating models and processes for the future competition. Some respondents felt that VR Limited is neither promoting nor preventing competition.

> "No prevention, no promotion. Operates on market conditions, complies with the regulations." *a general expert*

> "I do not think there's prevention of competition, but it is expected to be fair." *a railway expert*

Many respondents shared the opinion that VR Limited will try to prevent competition by several means. The assumed motive for this was that competing companies are not likely to promote competition, but quite the opposite: every operator dreams of a monopolistic or dominating position. Many respondents perceived VR Limited's activities as lobbying that embraces all, including politics and trade unions. A few responses suspected that VR Limited will try to complicate the market entry and traffic operations of new operators by portraying them as unreliable in the media. Other preventive methods included using the functions within the VR Groups range for their own benefit, e.g. the traffic control and the VR Training Centre. Furthermore, competition could be complicated by preventing the transfer of production factors, populism, political gimmicks, extortion and negative attitude on change and branch development.

> "Will justify it by its experience of operating in Russia, obligations as a producer of a public service, and the existing practices that are functional in its own point of view" *a general expert*

> "The public image will be influenced by suspecting the professional capacity and integrity [of a new railway undertaking] etc." *a railway expert*

> "passenger traffic's purchase financing to the Finnish Ministry of Transport and Communications, centralised administration (the Ministry), so that VR can have influence on Finnish political level, complaints on RHK's decisions, predator pricing, service improvement!" *a general expert*

6 ANALYSIS AND RESULTS

In this chapter I will present the analysis of the research material and describe the results of the research. In the first part of this chapter I will present the expert character descriptions that I have formulated on the basis of the material. The expert character descriptions successfully structure the multi-dimensional material gathered with the Delphi technique and offer a good cross-sectional view of the material. In addition, the expert character descriptions give a good background for the market entry scenarios of the different companies presented after the character descriptions. At the end of the chapter I will present some results arising from the research material and the analysis.

6.1 Expert profiles

6.1.1 Expert profiling based on the answers

I reviewed the experts' answers over two-dimensions to place the experts in different categories. As the two dimensions, I chose topics that are central to the material and in which the respondents' answers showed the greatest discrepancy[1]. The first dimension is the estimated amount of competition. I compared each expert's estimation of the market share of new railway undertakings to the estimation of all the experts. I distributed the respondents over the dimension by placing the respondent with the smallest value at the beginning of the dimension, the median value at the middle, and the respondent with the greatest value at the other end. I placed the experts linearly, according to their response values, between the minimum and the median, and between the median and the maximum[2].

The other dimension is the need to create preconditions for competition. I placed the experts over the dimension according to their answers. The respondent who emphasised the necessity of creating preconditions for competition the most was placed at one end of the dimension, and the respondent feeling the most indifferent about creating preconditions for competition was placed at the other end. The

[1] The experts could be analysed with several combinations of various dimensions. I considered that the best expert categorisation is achieved by choosing fundamental questions which showed divergence of answers. Additional categorisations would not have added value to the research, because the purpose of the expert character descriptions was to structure the material and to create background for the scenarios, for which categorisation in two is adequate.

[2] At the same time this means that the minimum-median-maximum dimension is not a commensurable continuum, but it describes the relative difference between the experts' answers.

respondents, whose attitude towards creating preconditions for competition was neutral, were placed at the middle of the dimension. In this dimension, the median of the answers was higher than the middle point of the dimension, which signifies that majority of the respondents felt that the creation of preconditions for competition is important.

I created a matrix of the two described dimensions, in which the experts were placed according to their answers (Figure 35). In the matrix, each dot represents an expert, who has answered to either one Delphi questionnaire or both used in the research.

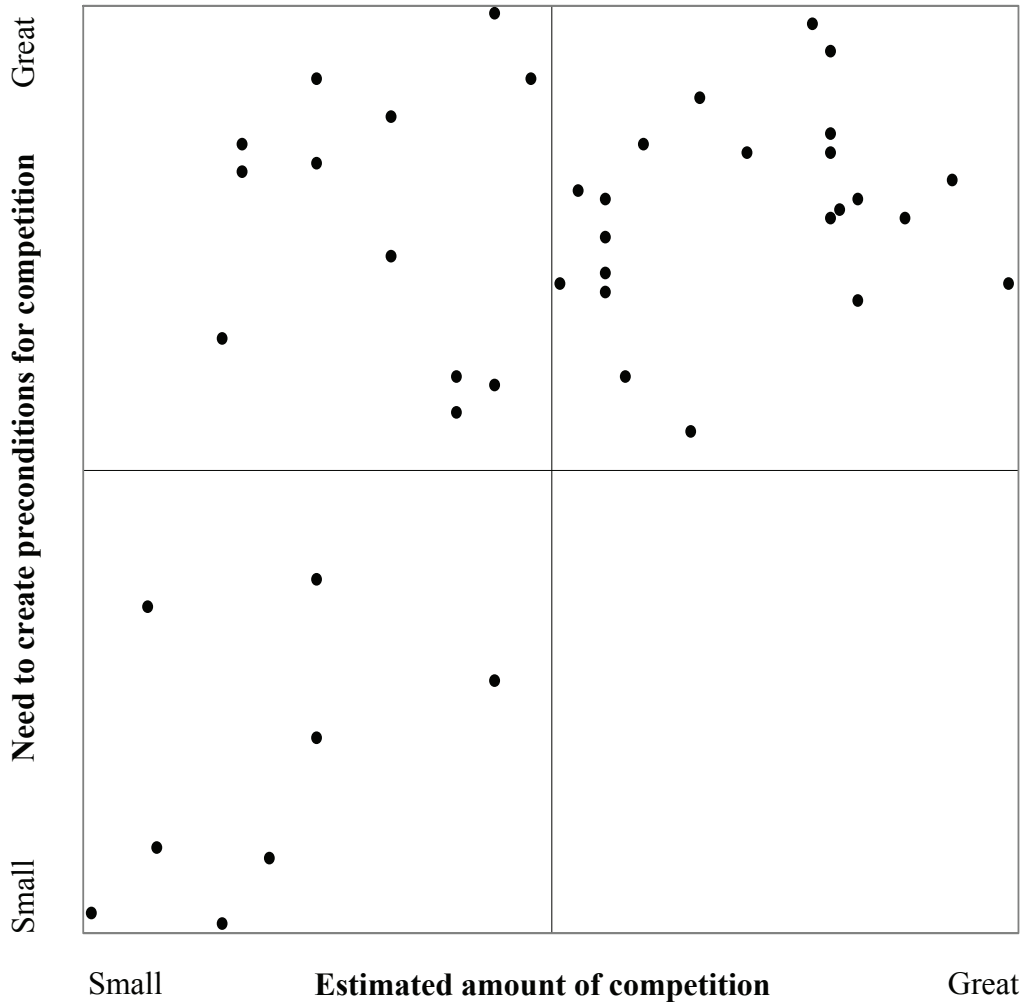

Figure 35. Expert distribution over the dimensions "Amount of competition" and "Need to create preconditions for competition".

6.1.2 Descriptions of expert characters

The review of the expert distribution over the Estimated amount of competition/Need to create preconditions for competition matrix interestingly shows that the respondents are distributed over three of the four fields. The field representing

a situation with a great amount of competition, but no need for creating preconditions for competition is left empty. Such answers were, however, not given for obvious reasons. Even though the respondents did not take this view, there could, however, in theory be answers belonging to the fourth field. In this case a respondent would estimate a large number of new operators in the markets with an ability to take over the markets, but at the same time the respondent would not see neither a reason for changing any structures nor a need for creating preconditions for competition. Such a view would mean that market entry for new operators and the subsequent take-over of the markets was something that could easily be done. This would consequently mean that the existing company in the market is operating inefficiently. The small need for creating preconditions for competition signifies favouring of a large operator, or presumes functional markets.

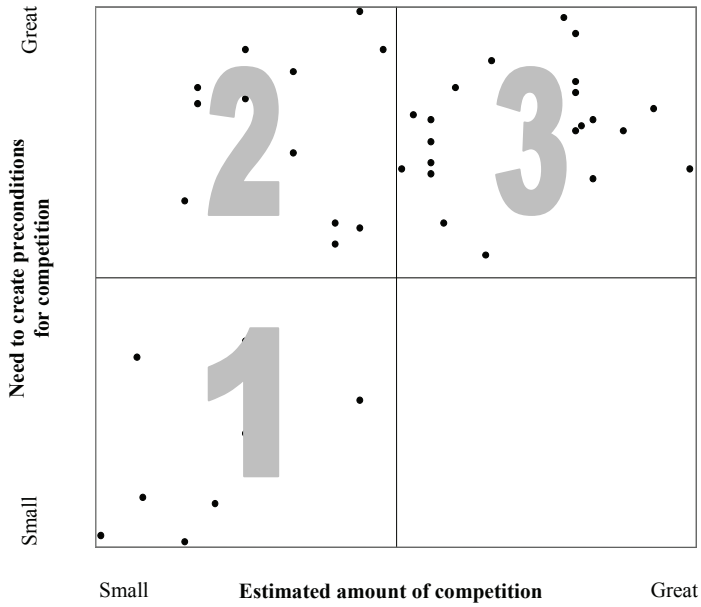

Figure 36. Amount of competition and the need to create preconditions for competition: grouping based on character descriptions.

The experts were divided in groups in accordance with their answers as described above (Figure 36). In this chapter I will describe the expert profile in each group, and the position of each group by creating character descriptions for the expert groups. I have given the expert group types the following names:

- Group 1: Moderate sceptic (small amount of competition, small need to create preconditions for competition)
- Group 2: Optimistic anticipator (small amount of competition, great need to create preconditions for competition)
- Group 3: Believer in change (great amount of competition, great need to create preconditions for competition)

The Moderate sceptic: "There will not be competition, nothing needs to be done"

For the Moderate sceptic, rail transport is in a competitive situation as it is, because competition exists between modes of transport. Because of the competitive situation or some other characteristics of rail transport, the Moderate sceptic is not foreseeing internal competition within the sector at all or only insignificantly. He does not see any need for opening competition, because in his view, rail transport is functioning well in Finland.

The Moderate sceptic considers the highly expensive railway stock as a great obstacle for creating profitable business in the sector. As for the staff, it is easy to recruit or train people. The Moderate sceptic has some doubts concerning the authorities. He feels that the safety certificate and the operating licence can be acquired moderately well, if the authorities find nothing to comment on. However, he considers the operation of authorities as slow and bureaucratic. According to him, authorities should develop their operations. The Moderate sceptic assumes that the authorities would like to see competition emerge. Therefore he suspects that they may unintentionally, or even intentionally, favour the newcomers.

The Moderate sceptic considers the rail transport business a difficult sector to operate in. In his opinion, due to the highly technical and demanding nature of the sector, not anyone can practise rail transport. In the Moderate sceptic's view the specific knowledge typical of rail transport creates an entry barrier. As an example, he considers timetable planning as a factor that makes rail transport different from other modes of transportation. The possibility of poor timetable planning in new railway undertakings is seen as a threat to the reliability of the rail traffic system as a whole. The Moderate sceptic feels that Finnish Rail Administration is to some extent able to fairly allocate rail capacity between the players. He would not, however, trust RHK's decisions as such, but scrutinize them thoroughly. A clear presupposition of the Moderate sceptic is that the initial decisions made by RHK need to be claimed for correction in the Finnish Rail Agency.

The creation of preconditions for competition is irrelevant for the Moderate sceptic, who hardly believes in any competition in the future. He sees no need for creating structures for competition, because they would only make practices more complex. In addition, the Moderate sceptic does not feel there is a need for a change in organising traffic control, because to them, the organisation of traffic control under VR Limited does not constitute a problem, because the traffic controllers are treating all railway undertakings in an equal manner. To him,

specification of certain instructions, e.g. on managing fault situations would be enough.

The Optimistic anticipator: "Preconditions for competition have to be created, even though there will not be real competition"

To the Optimistic anticipator, the opening of competition is a positive thing. He feels that the changes in the rail transport's legislative framework necessitate a structural change irrespectively of the amount of competition. The Optimistic anticipator estimates an emergence of few new players in the markets once the domestic freight transport opens for competition. In his view, their market share and significance will, however, remain low. The Optimistic anticipator expects competition in smaller traffic flows, especially in feeder traffic.

He feels that the market entry will be extremely difficult because of the sectors' capital binding nature. Optimistic anticipator considers the highly expensive railway stock as a significant barrier for market entry. Staff acquisition is not seen as problematic, because suitable staff can be recruited or trained.

He also feels that the safety certificate and the operating licence can be acquired smoothly, if the authorities find nothing to comment on. However, the descriptions expected in the safety certificate application may constitute a problem for operators who have not made adequately specific plans of their future operations. Therefore the Optimistic anticipator expects the authorities to be customer friendly and instruct the newcomers.

In the Optimistic anticipator's view, specific knowledge of the railway sector is a great challenge for new railway undertakings. He doubts that the companies considering a rail transport business cannot guess the multitude of technical provisions to be absorbed before transporting can actually be practised. The Optimistic anticipator does, however, admit that the information is available to be mastered. One of the tasks calling for specific knowledge in the Optimistic anticipator's view is the rail traffic planning. He considers the planning of functional timetables and rolling stock circulation as a specific challenge for new operators, which requires correct and reliable estimation of the available rail capacity. The Optimistic anticipator suspects that new operators may be too optimistic in planning the timetables, which could result in incompatibility of the actual, acquired rail capacity and the planned, efficient rolling stock circulation.

In his view the preconditions for competition must be created even though competition was not expected. He feels that the structures related to practising of rail traffic should be transparent and equal. Therefore the environment should be

favourable for competition in case it emerges. In the Optimistic anticipator's view, training services for traffic controlling and railway sector should be organised and offered with equal criteria for all.

The Believer in change: "Competition will emerge and the markets are changing. That is why the structures should have been created already"

The Believer in change considers the opening of domestic freight transport to competition as a positive and anticipated thing. He feels that the lack of competition has had a negative effect on the rail traffic. The Believer in change is certain that open competition will create an emergence of new railway undertakings, which will consequently change the markets. Therefore in medium term, or in long term at the latest, the rail transport market and the competition between the sector's companies will operate similarly to, for example, road transport. He feels that the structures of the sector should be changed equal for all companies. The Believer in change supports the idea of opening Russian-bound traffic to competition in addition to the domestic freight transport.

The acquisition of stock and staff does not constitute a problem as far as the Believer in change is concerned. Other sectors with a large, invested capital also have several operators and competition, he argues. He feels that demand creates supply and competition. The Believer in change believes in criticality of a viable business idea, which will then bring along the necessary financing and stock.

The Believer in change considers the authorities and their actions as somewhat passive. He expects the authorities to openly and actively inform about the opening of competition and the market entry opportunities. He has doubts about the dual role of the Finnish Ministry of Transport and Communications in relation to the opening of competition. On one hand, the Ministry of Transport and Communications is guiding the creation of the sector-specific structures and speaks for the importance of equal competitive situation, and on the other, it is responsible for many, too moderate decisions, slow preparatory work, and guidelines that are supporting the position of VR Limited. However, the Believer of change believes in smooth acquisition of operating licences from the Ministry and safety certificates from Finnish Rail Agency, as long as the adequate information is available and the necessary discussions are held.

The Believer of change realises the vast amount of the specific knowledge associated with rail transport, but in his opinion, it does not constitute a barrier for start-up or market entry. He also equates traffic planning skills with any other planning skills. The Believer of change is cautiously positive about RHK's ability to equally allocate rail capacity between the railway undertakings, based on the

fact that it is an independent body. In addition, he believes in the central role of the authorities in the creation of a traffic system that is satisfactory for all railway undertakings. The authorities should assume a proactive role in the coordination.

The Believer in change is emphasising the importance of creating preconditions for competition in enabling market entry for new railway undertakings and competition. He prioritises healthy competition supported by functional structures. The authorities should create a market structure that ensures equal opportunities in competition for all railway undertakings. Therefore the Believer in change would rather see VR Limited as one of the operators, and the VR-related services dissolved: traffic control and staff training should become independent of the VR Group. Traffic control, especially, should be separated from the VR Group.

6.2 Market entry scenarios

By applying the futures table method (Table 6), I developed three scenarios based on the research material. The scenarios describe the market entry phases of a small domestic railway undertaking, a large domestic railway undertaking, and a large foreign railway undertaking. The material indicates that a small, foreign operator is not likely to enter the Finnish rail freight transport, and therefore the option was left without a matching scenario. The purpose of the scenarios is to describe and clarify through narratives the problems, barriers and solutions associated with market entry. I have excluded some issues from the scenarios that are essential for a railway undertaking business, such as the client interface and the freight products, to keep the focus of the scenarios at the issues pertinent to the study.

6.2.1 A small, domestic railway undertaking: "Jussi's Train"

A small, domestic railway undertaking Jussi's Train saw many opportunities for building a business model. Thanks to its low fixed costs, the company believed it could manage small-scale transport needs that other players in the markets cannot take on because of their heavy cost structure. In addition, Jussi's Train weighed the option of seeking co-operation with VR Limited in feeding deliveries to a larger collection point, or as a subcontractor.

As a factor of production, staff is already solved: the managing director of Jussi's Train plans the operations, sells the transport services, takes care of small-scale maintenance of the stock, and operates the train. As for the stock, Jussi's Train set out to look for more affordable, used rolling stock. Jussi's Train believed that in practice, its only option was to operate on used stock. Pulling stock is scarcely

available, but Jussi's Train managed to buy a diesel engine from an industrial company. The acquisition and installation of the automatic train protection system into the old engine was difficult and expensive, which Jussi's Train had not expected. It was much easier to acquire the needed number of used railway carriages. In addition, Jussi's Train used carriages owned by industries.

Jussi's Train believed the necessary safety certificate and operation licence were relatively easy to acquire once they put their minds into it. The degree of detail in the description of safety management system that was required for the safety certificate surprised the company. Jussi's Train received guidelines for applying the certificate from the Finnish Rail Agency; nonetheless there were some unclear points and difficulties in delivering the descriptions. The system required descriptions of safety management methods for situations that Jussi's Train could not have imagined in advance. The Finnish Rail Agency replied to the safety certificate application with a request for further clarification. The Finnish Rail Agency, however, provided assistance for the points Jussi's Train had had difficulties with. Because of the difficulty of the safety issues and their description, the acquisition of the safety certificate took sixteen months, which is over twice the time originally estimated. At the stage when was assumed that the Finnish Rail Agency had been provided with final clarification, Jussi's Train started the process for applying an operating licence. Jussi's Train contacted the Ministry of Transport and Communications several times on the application matter. The description of the information required in the operating licence application was much easier than those needed for the safety certificate.

It was necessary to apply for other than leftover rail capacity eight months in advance of the beginning of the timetable period, which in Jussi's Train's point of view was much too early. It was difficult to start transporting at the middle of a timetable period, because the transportation and effective rolling stock circulation had to be fit in between the other traffic and other operators' rail capacity. At first Jussi's Train felt it was impossible to operate and transport only on leftover capacity. Jussi's Train's rail capacity was reasonable for some of the timetables, but mostly it involved long transporting hours. The company's customers did not, however, complain. Therefore Jussi's Train went on to carefully plan its timetable needs for the next timetable period, and applied for rail capacity accordingly. The coordination of the rail capacity application for the period revealed overlapping timetables with some other railway undertakings' applications. RHK enquired after the reasons for Jussi's Train's plans and the ability to make adjustments. As regards the overlapping timetables, the negotiations produced a fairly good overall outcome for Jussi's Train. On the whole, the second timetable period involved

more effective transporting, because Jussi's Train had the opportunity to apply for the rail capacity at the stage when it was all applicable.

In timetable planning, Jussi's Train needed to contact RHK's traffic analysts. Jussi's Train would rather have seen them plan the company's timetables and rolling stock circulation entirely. The traffic analysts assisted by providing the basics for timetable planning and checking Jussi's Train's plans. Timetable planning is a challenging task with loading and unloading times and margins, and regular maintenance to consider. The plans had to cover a couple of months ahead; this way the planned rail capacity could be applied for at the point when the regular traffic changed its rail capacity. Other emerging needs and changes had to be applied with urgent rail capacity applications. The timetable planning and application of rail capacity was demanding at first, but over the first operating year it became a routine part of the production planning.

Jussi's Train purchased the maintenance services for its rolling stock from VR Limited. The maintenance price was considered as slightly high but reasonable. The majority of Jussi' Train's transports were small-scale, and too small for VR Limited. Therefore Jussi's Train's transport mainly consisted of new rail transports. The customers considered Jussi's Train's transport prices as competitive.

6.2.2 A large, domestic railway undertaking: "Industrial Rail Transport"

The business model of Industrial Rail Transport (IRT) was based on a calculated ability to offer transport services to few large industrial companies. IRT was initiated, because the industry was very interested in the emergence of competition in rail transport. Industrial companies were not interested in starting up a rail transporting subsidiary, but wanted to concentrate on their core business and outsource as much as possible. There evidently was a demand for new operators in the transport market.

IRT began by pinning down its business opportunities. At first, IRT discussed the transport needs with some industrial companies, and inquired about their transport tendering procedure. IRT established a non-restricting letter of intent on market entry and rail transport with two companies. These two companies became the foundation of IRT's business. One of the companies decided to purchase the special carriage stock, and buy the pulling service through a tendering procedure. IRT provided services for the other company with IRT's own general purpose rail transport stock. IRT leased the pulling stock and the carriages. Its leased pulling stock included a couple of new electric locomotives, and in addition, the company purchased two used diesel engines. IRT easily recruited retired engine drivers for

its engines. All other services including stock maintenance and timetable planning were purchased from other service providers.

Getting the safety certificate was not as easy as IRT had expected. Very detailed descriptions of the safety management system and other safety matters were required. After the first discussion with Finnish Rail Agency, IRT estimated it more profitable to hire a safety consultant to describe the company's operations and write the necessary documents, than use their own time. After the decision, the application of the safety certificate went smoothly. IRT started to apply an operating licence as soon as it took action on the safety certificate application. The process of acquiring the operating licence was completed without drawbacks.

IRT based its competitiveness on cost effectiveness; effective operations and production. The starting point was to hire only the necessary number of people with specific skills on rail transport. Therefore the company did not hire any timetable analysts, and outsourced the expertise for rail capacity application after planning effective production itself. After a few rail capacity applications and some coordination discussions, IRT's production analyst noticed that timetable planning and rail capacity application did not differ from other planning activities, and started to plan the timetables and apply for rail capacity.

IRT had some difficulties in making a contract for certain services with the market dominating company. The market dominating company justified its refusal to offer the services by stating it needed the whole service capacity itself and therefore could not sell any of the capacity to the new operator, even though both parties were willing to do so. An agreement was reached on some of the services, but IRT felt the price of the contract was beyond reasonable and made a complaint to the Finnish Rail Agency. In addition, IRT considered that the market dominating company had abused its dominating market position, and made another complaint about the dominating company's operations to Finnish Competition Authority. As a result of the Finnish Rail Agency's and the Finnish Competition Authority's notion, the market dominating company had to make its service pricing more reasonable. IRT's pricing on transport services was 20–30 per cent lower than that of the dominating company.

6.2.3 A large, foreign railway undertaking: "European Railway-logistics Services"

European Railway-logistics Services (ERLS) is a large international operator in the transporting markets. ERLS owns a large number of carriages in Russia that are used for transport service production for its customers. Moreover, ERLS practices road traffic. The company had contacted Finnish industrial companies

before Finland's domestic rail freight traffic opened for competition. ERLS's primary object was to offer transport services for companies transporting to Russia, i.e. the Russian-bound traffic. When ERLS was preparing for operation, it was surprised when it learned that the opening of competition did not include Russian-bound traffic. Both ERLS and some Finnish industrial companies were puzzled by the fact that in spite of opening competition, the Finnish Government would secure a monopoly for VR Limited in the Russian-bound traffic with a contract that Finland has with the Russian Federation. The operators did, however, anticipate the opening of the eastern traffic at some point, because they felt that in the end, the Government objective would be to promote competition instead of securing a monopoly for a single company. The underlying idea was that competition would decrease market prices and business logistic costs, and consequently improve the competitive strength of companies and the industry. In the meantime, ERLS decided to enter the market with domestic transport services and wait for the opening of the Russian-bound traffic. ERLS offered raw material and product transportation for the industry.

For ERLS, entering Finnish rail freight traffic markets was a strategic choice, and therefore the costs of the market entry were not central to the new operation plans. The company purchased the necessary number of new electric and diesel engines suitable for Finnish conditions. Some of the company's Russian carriages were modified to comply with the Finnish regulations. The modified carriage stock was able to serve both Finnish and Russian railway network. ERLS tried to recruit engine drivers from VR Limited, but was not successful and the necessary number of drivers was not hired. The drivers were committed to their employee, earned a good living and were not interested in leaving for a new company, where employment was less certain. Consequently, ERLS hired the rest among retired drivers.

ERLS did not expect any trouble in acquiring the safety certificate and the operating licence, even though it lacked specific knowledge about their requirements. Therefore the company did encounter some problems in acquiring the safety certificate at first. The level of detail in the safety descriptions was not expected, and ERLS found the application process quite bureaucratic. The application process was not properly begun until ERLS hired a consultant to deal with the application issues. The Finnish consultant was familiar with the railway markets and the related regulations and therefore able to define and describe ERLS's operating methods as required in the safety certificate application. After hiring the consultant the process of applying and handling the safety certificate speeded up and took four months. The consultant also had an important role in the process of applying for the operating licence, where the definition of some issues

was quite time consuming. Generally, the application process went reasonably well.

Thanks to its background in rail transport, ERLS did not have any trouble in planning timetables and applying for rail capacity. The company started operating in the middle of a timetable period, and had to settle for the available rail capacity that was left over from the previous rail capacity allocation. ERLS planned its timetable for the next period as carefully as possible to ensure effective circulation of rolling stock and staff. The rail capacity application based on the plan overlapped with that of VR Limited, and so RHK began with the coordination work.

The results of the coordination that in the Finnish Rail Administration's view enabled efficient use of the railway network did not satisfy either of the applying parties; the coordinator was therefore forced to interrupt the negotiations. RHK tried to come up with a solution that would be best for the rail traffic system. The solution required transferring of many trains, and therefore it was decided that in this particular coordination case, RHK's priority order in congested rail capacity situations would be deviated from. RHK presented its final solution for rail capacity coordination in an allocation proposal. Both European Railway-logistics Services and VR Limited informed in their statements, related to the proposal's hearing, of their dissatisfaction with RHK's proposal. In addition, both companies made a claim for rectification of the allocation decision to the Finnish Rail Agency. The Finnish Rail Agency decided that RHK had complied with the Railway Act and thus the claims for rectification were groundless. However, the rail capacity allocated for ERLS in the allocation proposal and its confirmation was quite reasonable, because the utilisation of the proposed rail capacity enabled the satisfaction of customers' needs and the fairly efficient employment of both rolling stock and staff.

ERLS encountered great difficulties in trying to agree with VR Limited on the use of certain services. At first VR deviated from the agreement, and at a later stage agreeing on the services was progressing very slowly. An agreement was finally reached based on the opinions of the Finnish Rail Agency and the Finnish Competition Authority. The price was high, but quite fair considering the situation. For these reasons ERLS began constructing facilities of its own for its service needs.

6.3 The results arising from the research material and the analysis

6.3.1 Market entry

A central barrier for rail freight transport market entry in Finland is stock acquisition. The same applies to continental Europe, even though the railway stock market is much advanced there. In rail traffic, the production factor markets in terms of stock have not developed in the same way as those of the air traffic because of differences in railway technologies over the countries. The unification of the technologies is being sought with interoperability regulation. The fact that Finland's rail gauge differs from the rest of the Europe entails even larger risks in investing on railway stock. The research material, however, indicates that Russian stock is modifiable to the Finnish requirements. The modified Russian railway stock could speed up the development of Finnish production factor markets, which would decrease the relative significance of stock as a barrier to market entry. Although it is difficult to acquire expensive and capital binding stock, the research material strongly indicated that the investment risk was taken as a normal part of the business. The question is about the relationship between costs and return as in any line of business. With a feasible business plan, financing is not a problem and therefore, neither is the stock acquisition. The type of stock depends on the type of the railway undertaking as the market entry scenarios show. Expensive railway stock acquisition as an entry barrier fits well in Bain's definition.

The research material and the analysis suggest that recruiting is not easy for a new railway undertaking, but not entirely impossible either. Skilled people work for the VR Group, and new railway undertakings may try recruiting them. The material and the market entry scenarios consider the retired railway workers as a potential recruitment source. This result is comparable, yet slightly less optimistic, to a result obtained in Sweden: new players were able to recruit skilled staff from a larger player. It is also possible to train new people in the VR Training Centre. The research material, however, clearly indicated that the VR Training Centre does not have the characteristics of a neutral training institution. These findings are not parallel to the proposal made by the Finnish Ministry of Transport and Communications' working group (LVM 2006b, 28–30) for assessing the status of the VR Training Centre. The working group considered the existing organisation of training as a part of the VR Group as adequately impartial and transparent, because training fulfils the neutrality provisions of the Railway Act.

The research material and the analysis suggest that the acquisition of the safety certificate and the operating licence from the Finnish Rail Agency and the Ministry of Transport and Communications does not constitute a problem for railway undertakings, if the issues required in the documents are in order and adequately described. In the research material, the authorities were suspected of passiveness and even deliberate impeding. One of the results of the study is that the authorities are expected to be active and customer oriented. The special knowledge of the rail traffic branch was considered as challenging, especially by the railway experts. The practicing of rail traffic includes extremely high safety requirements, which makes the whole branch very regulated. There are plenty of regulations and other rail traffic documentation mainly in Finnish, which complicates the market entry.

In the research material, timetable planning was considered as a challenging task especially for newcomers because of the multitude of things to coordinate. However, timetable planning was equated with any other demanding planning. A specific challenge for a new railway undertaking is to reconcile the business goals and the operable stock into realistic timetables which also take into consideration the adequate margins, stock circulation and maintenance. With several operators in the railway network, it is very likely for the rail capacity applications to overlap. Such cases need to be reconciled by the Finnish Rail Agency. Consequently railway undertakings may not receive the applied rail capacity, which may be fatal for some companies. The allocated rail capacity may not agree with the planned stock circulation, which means that the company may have to purchase more stock. In the worst case scenario, railway undertakings will not be able to serve their customers within the limits of the allocated rail capacity, which may lead to cancellation of transport contracts and bankruptcy.

The material and the analysis indicate that RHK is, in practice, capable of making rail capacity allocation decisions that are equal to all railway undertakings. Nevertheless, in principle, its objectivity is seriously doubted by all. The material and the market entry scenarios clearly indicate that unsatisfactory rail capacity allocation by RHK leads into complaints to its regulating body, the Finnish Rail Agency. An air of suspicion is evident: some fear that RHK is favouring newcomers, and others doubt that VR Limited is being protected. The material clearly shows that RHK must be proactive in finding out the rail capacity needs. According to the material, the responsibility of the development of a traffic system that serves all the railway undertakings belongs to the Finnish Rail Administration. The co-developers included the railway undertakings and if necessary, the Ministry of Transport and Communications and possibly the Finnish Rail Agency.

The expert profiles, the market entry scenarios, and the research material all indicated that the market entry takes too long and the process involves excessive bureaucracy. On the other hand everybody appears to understand the long-span planning required for market entry and the strict requirements of the railway branch. It should be recognised that the strictness of railway safety imperative may appear to be in conflict with the need for customer orientation. In any case the authorities should be able to serve the operators planning for a market entry in such way that the market entry process turns out as customer friendly, flexible, simple, and as fast as possible.

6.3.2 Practising of rail traffic

The material and the analysis clearly indicate that the authorities must create impartial structures for rail freight markets. The equality and transparency of all activities related to the practicing of rail traffic, and specifically traffic control, should be ensured. All the expert responses showed that the existing situation is not satisfactory and changes are expected. The material indicated a need for change in traffic control organisation: in order for it to become equal, RHK's rules and careful monitoring were required as the bare minimum. Arguments were also given on behalf of a traffic control motoring centre that would be controlled by RHK and separating the entire traffic control from the VR Limited. These options were supported more as the need for and effect of the change grew. The experts who answered the survey would implement more dramatic solutions than those presented by the traffic control working group assigned by the Ministry of Transport and Communications. The authorities can essentially influence on the markets and the emergence of competition by creating equal preconditions for market entry, as suggested by the structure–conduct–performance paradigm: public policy and authorities' operations are used for influencing the market structure and the competition activity of companies, which creates preconditions for the branch's performance.

As the material and the analysis indicate, services can be accessed more easily if the new operator in question practices feeder traffic associated with VR operations. The service access was justified on the grounds of the Railway Act, which obligates the service provision. Withholding the access to services was considered as an abuse of dominant market position, which was considered as something that VR Limited would naturally want to avoid. In the material, general experts were more optimistic about the service access than the railway experts. Nevertheless, the material and the analysis – the market entry scenarios especially – suggest that problems may be associated with the service access, because it was considered that VR Limited may apply certain methods in order to secure its position. These

considerations included unreasonably high service prices. Denial of service access or unreasonable pricing will have serious consequences for new railway undertakings. If a new operator is forced to build service facilities of its own, the investment may become too large in relation to the company's transport volumes. As a consequence, the new operator may regard the practicing of rail traffic and the market entry as too expensive. Therefore service providers have the power to bar new players from the markets. Thus service access is a central issue among the market entry barriers.

It appears that competition in the rail traffic – or perhaps the mere threat of it – will decrease the rail transport prices, as predicted by economics theories. This means that the objective of the government in improving market performance and increasing socioeconomic efficiency is actualised according to the welfare economics theory. In the beginning, with small competition, the prices will decrease locally where there is competition. It is therefore expected that as the competition opens, the prices of easily operable transport will go down, but as regards more demanding transports that necessitate special equipment et cetera, competition will not have similar influence on prices. According to the expert evaluations, the rail freight market will operate in competitive situation as shown in the comparison of different economical market geographies: a monopoly yields less profit with higher price than markets with competition. It remains to be seen how VR Limited will set its prices in competition. The material included quite confident opinions on VR Limited's willingness to secure its market position by reducing its prices.

According to the Scherer model, VR Limited must make a choice when competition becomes reality: it can either maximise short term return by allowing market entry and market share to new competition or it can apply limit pricing, which bars new operators from entering the market. The latter option, however, may have consequences as an act of misusing a dominating market position. Therefore it can be concluded that VR will not choose limit pricing but allows market entry for new operators with its pricing. In any case, new operators must convince the transport service buyers of their reliable service level in order to challenge VR Limited. The reason for this is the changing of railway undertakings requires a combination of good service level and reasonable price. Entry deterrence in a situation of imperfect information according to Milgrom and Robert's model is interesting: VR Limited may try to communicate its cost per unit to a company that plans market entry. The fact that competition or a threat of competition will reduce rail transport prices is a message to the new players: it is time for new pricing, and VR's costs per unit are so low that it is able to make its transportation prices more affordable. According to Milgrom and Roberts' model, the companies

considering market entry must estimate whether it is profitable or not. On the other hand, the abovementioned restraining from limit pricing means that the prices of VR's transport services will decrease but not to the degree that it would have consequences as regards the competition law. In the light of the research theory, the material, and the analysis, VR Limited's pricing will not deter market entry from new operators. The buyers of transport services will benefit from the opening of competition in rail freight traffic, because the competition decreases the prices regardless of the company receiving the transport job – VR Limited or a new operator.

On the grounds of the material, and as presented in the market entry scenarios, it can be assumed that operating must be profitable for small and large, domestic and foreign railway undertakings alike. Theories on corporate strategy and the Act on Limited Liability Company state that the purpose of a company is to make profit. The respondents argued that companies will not start operating without knowing it is profitable. Many respondents felt that small foreign players would encounter the greatest problems in operation start-up and gaining profitability. It appears that new domestic railway undertakings may be small or large, but the foreign railway undertakings entering the Finnish markets are likely to be large.

On the basis of the material and the analysis, VR Limited will actively try to influence the opinions and decisions of RHK and the Ministry of Transport and Communications. Among the experts some considered this as normal interest group activity, whereas others thought that VR does this to debar competition and secure its existing market position. In the light of the SCP model, the ideal of influencing would be having an effect on the government policy and market structure in order to secure current position. In the context of the above issue, the operation of the authorities, RHK and, in particular, the Ministry of Transport and Communications was questioned: the neutrality of the authorities seems to vary. However, frequent discussions between the authorities and the largest railway undertaking are understandable: VR Limited has a significant social role and the company encompasses extensive railway expertise. The authorities must keep their cooperation with the VR Group transparent and acceptable to other players.

6.3.3 The number of new railway undertakings, their market share and total haulage

The number of new railway undertakings and their market share

In the questionnaire, the respondents were asked to estimate the number of rail freight transport railway undertakings operating in Finland in 2015. The smallest estimate[1] was two[2] and the largest, twelve. The average of the responses was 5.4 and the median, five. Table 8 presents the key figures calculated from the respondent estimations.

Table 8. The expert estimations on the number of railway undertakings in 2015.

	The number of railway undertakings
Minimum	2
Lower quartile	3,5
Median	5
Upper quartile	6
Maximum	12

In the survey, the respondents were asked to draw their idea of the development of new rail freight traffic companies in 2007–2015 on a template. I coded the drawn valued into numerical values, and calculated a minimum, a lower quartile, a median, an upper quartile and a maximum for each year according to the estimations. The figures calculated for each year are graphically presented in Figure 37. The expert estimations varied greatly. Even though many experts expected only a minimal market share from new railway undertakings, and their drawings included few per cent's market shares, the minimum value for each year's market share was zero. The highest estimated market shares for new companies were 8 % for 2007, 25 % for 2010, and 57 % for 2015. The corresponding median values according to the answers were 1 % for 2007, 6.5 % for 2010, and 16.5 % for 2015.

[1] Few respondents estimated the number of railway undertakings separately for small and large railway undertakings. In addition, four respondents gave their estimation with a scale of numbers. I chose the largest number of the scales, because it describes the respondent's view on the future better, as two of the four respondents had one as the smallest number on their scales. By using the smallest number of the scale, the lower quartile is 3, the average, 5.2 and the median, 4.

[2] Some respondents estimated the new players' market share as 0 %, as indicated below. The contradiction between the smallest number of railway undertakings and the market share may be explained by the fact that every respondent did not give estimation on the number of the railway undertakings.

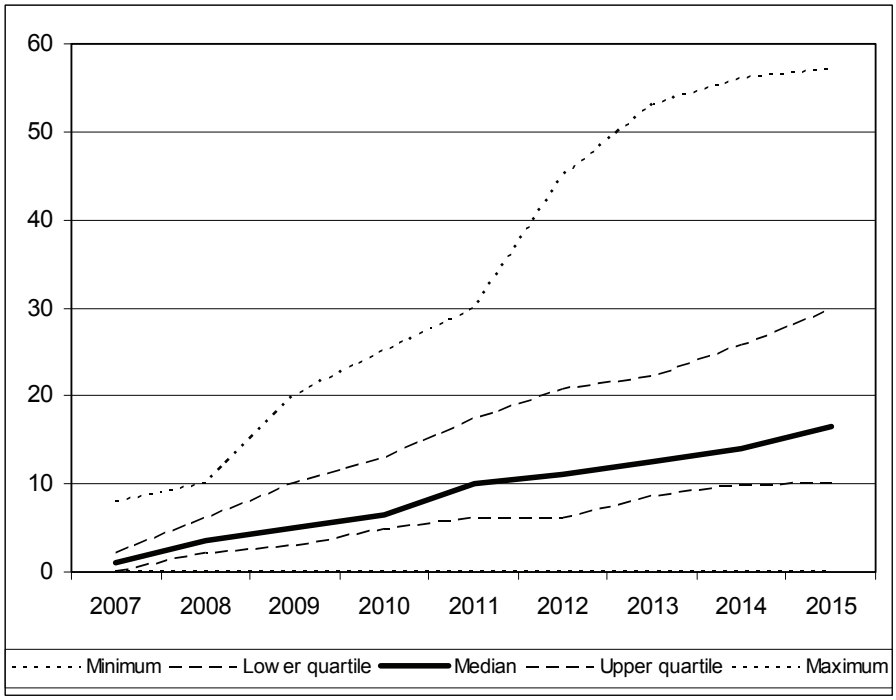

Figure 37. The development of new railway undertakings' market share.

The total haulage in rail transport

In the Delphi questionnaire, the respondents were also asked to draw on a provided template their estimation of the development of railway total haulage in 2005–2015. The template included a graph of the total haulage in 1995–2004. The respondents' level of background information varied; not all of them were familiar with the prognosis studies made on freight traffic. Similarly to the section regarding the market position of new railway undertakings, I coded the drawn valued into numerical values, and calculated a minimum, a lower quartile, a median, an upper quartile and a maximum for each year according to the estimations. The figures for each year and the historical data on total haulage are graphically presented in Figure 38.

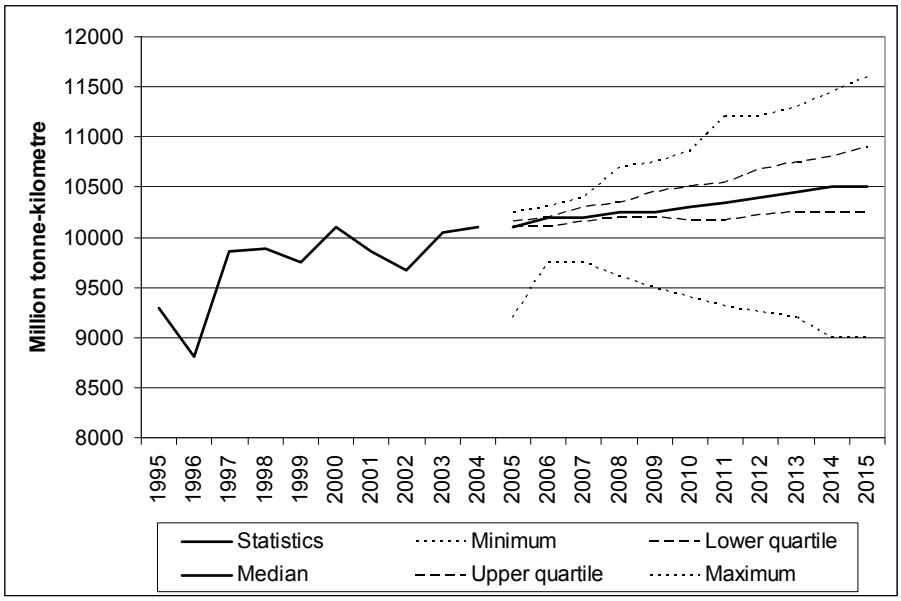

Figure 38. The estimations on rail transport total haulage in 2005–2015.

The expert estimations showed great divergence, which to some extent can be explained by the abovementioned differences in their background knowledge. The smallest estimate (minimum) of rail transport total haulage was 9.750 in millions of tonne-kilometres for 2007, 9.400 for 2010, and 9.000 for 2015. The largest estimate (maximum) was 10.400 for 2007, 10.850 for 2010, and 11.600 for 2015. The corresponding median value calculated from the respondents' estimates was 10.200 for 2007, 10.300 for 2010, and 10.500 for 2015.

The total haulage of new railway undertakings

It is possible to estimate the total haulage of new railway undertakings on the grounds of the respondents' estimations on new railway undertaking market shares and the total haulage of the entire rail freight transport[1]. The haulage values of new railway undertakings calculated on the basis of the respondents' estimates are the following in millions of tonne-kilometres. The smallest value is invariably zero, because the smallest estimated value of the new railway undertaking market share is zero. The highest value, in millions of tonne-kilometres, was 816 for 2007, 2550 for 2010, and 5814 for 2015. The corresponding median values according to the answers was 102 for 2007, 663 for 2010, and 1683 for 2015.

The total haulage of new railway undertakings in millions of tonne-kilometres can be converted into an estimation of the number of trains. I calculated the total

[1] The total haulage of new railway undertakings has been calculated by multiplying the respondents' total haulage estimation median value by the new railway undertaking market share minimum, lower quartile, median, upper quartile and maximum values.

haulage on the basis of an average transport, where the hypothetical mass, distance, and driving without freight distributes evenly over all transports. By applying the previous realisation value, I first calculated an average tonne-kilometre value for a single train. Then I divided the new railway undertaking total haulage values above by the tonne-kilometre value of a single train, in which case the result is the number of trains per year. A more concrete key figure is the number of trains on an average week day. According to the median value of the calculation, the number of new railway undertaking trains in the network on an average week day is as follows: 5 in 2007, 34 in 2010, and 87 in 2015 (Figure 39, Table 9). The network accommodates approximately 550 trains on a regular week day.

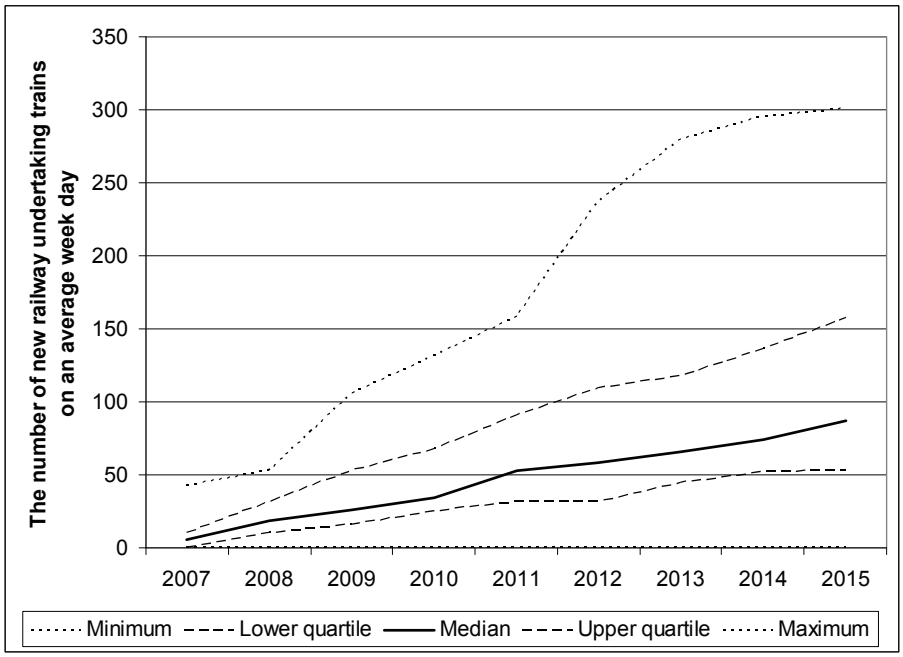

Figure 39. The number of new railway undertaking trains on an average week day.

Table 9. The daily number of new railway undertaking trains in the network (an average total for a weekday is approx. 550 trains).

	2007	**2010**	**2015**
Minimum	0	0	0
Lower quartile	0	25	53
Median	5	34	87
Upper quartile	11	68	157
Maximum	42	132	301

The material indicates that the market share and haulage volumes of new railway undertakings will constantly grow. When the extremes[1] of the material are ignored, 3–6 railway undertakings will apparently operate in the markets in 2015. The market share of new railway undertakings is between 10 and 30 per cents. The total haulage of rail freight traffic will slightly grow by 2015. According to these estimates, the competition in rail freight traffic would distribute the market over several players, but the total haulage would not significantly grow.

6.4 The evaluation of the research results

6.4.1 The results of prior studies

I estimate the results of the study in the light of the results of prior studies in the context with presenting their results. In this chapter I will briefly summarise the congruence between the results of the present study and the prior studies. The phases of entering the rail freight traffic markets are similar in all European Union Member States with enforced Community legislation. The administrative phases of market entry consist of the safety certificate, the operating licence, the rail capacity application and the rail network access contract. In addition, new players must acquire rolling stock and staff, and agree on transports with customers who purchase the service. The barriers of rail traffic market entry have been considered as high. As presented in chapter 2.7, according to prior studies the barriers of rail traffic market entry have included the high price of stock, a rail gauge and voltage different from the European standard, difficulties in accessing services, difficulties in recruiting staff, the advantages of large-scale production associated with rail traffic, railway regulations and branch specific expertise, the small size of the Finnish railway markets, the small number of large transport customers, the market dominating company debars new players from the markets and impedes their practicing of traffic, lack of market information, and lack of the necessary data systems or data system connections.

According to prior studies and reports, the opening of competition in rail freight transport will decrease the prices of transport services. A Swedish study found the price of transport services to be an important factor, but a clear difference between prices, roughly 10 per cent at a minimum was, however, required for changing transport service providers. On the other hand, prior research shows that the

[1] The extremes of the material include the minimum–lower quartile, and upper quartile–maximum, leaving as the remaining values the lower quartile–upper quartile, which represents 50 % of the estimates.

positive effects of competition are evident in places where competition actually exists.

In conclusion, the results of the present study support the findings of prior research. Nevertheless, it must be considered that prior studies in many of the issues, e.g. market entry, have not been carried out in Finland. The results concerning such issues should be compared to the corresponding results from other countries, with awareness of possible differences in the operating environments et cetera.

6.4.2 Result evaluation interviews

The evaluation interviews suggest that the barriers of market entry according to the research results, i.e. stock acquisition, recruiting of skilled staff, and access to services, are significant barriers of market entry also in the rest of Europe. The interviewees noted that railway stock acquisition is an important barrier of market entry also in countries with railway stock markets that operate well. This means, that the relative and absolute significance of stock acquisition as a barrier is much greater in Finland because of the difference in rail gauge and the undeveloped railway stock markets. In Central Europe, the advanced railway stock markets, and the market entry of service companies hiring pulling service and staff, are lowering the barriers for market entry. The acquisition of staff was not considered as impossible, because it was assumed that new players can attract staff from the market dominating company with good conditions of employment. Access to services was presumed problematic, especially at the first stages of competition.

The administrative dimension of market entry, which was so clearly highlighted in this research, was considered as one of the major factors complicating the market entry. The administrative process of market entry appears complex to new players. In the interviews it was assumed that the adoption of the specific features and extensive regulation associated with practicing rail traffic will be troublesome for new operators. Therefore the application of safety certificate and planning of operable timetables, among other things, may prove to be difficult. The interviewees assumed that new operators are underestimating the significance of administrative issues in market entry. In the interviews it was suggested that new players should employ railway experts to prepare the issues associated with the market entry and practicing of rail traffic. Lowering the barrier to market entry in administrative terms requires an active and service-minded attitude from the authorities.

In the interviews, it was self-evidently expected that the authorities create an operating environment with equal preconditions for competition for all. On the

grounds of the interviews it can be concluded that, after the political decision has been made and the competition is legally open, the authorities must carry out the necessary activities to enable market entry and practicing of rail traffic for new operators. Proactivity was expected from the authorities. Some interviews highlighted the importance of a regulating body in the creation of an impartial, transparent and functional competition environment.

The research results concerning future competition were considered as realistic. Few experts regarded the 16.5 per cent market share of new players in 2015 as slightly high, and it was argued that in many countries the market share of new players has developed more moderately than in the present study. Nevertheless, some other respondents regarded the realisation of the presented market share as fully conceivable. A decrease in transport prices as a result of opening of competition was considered as obvious. As a result of new operators and lower prices, it was assumed that the rail transport total volume will grow and the quality of the transport services will improve. The interviewees felt that the market dominating railway undertaking will not try to facilitate the market entry for new players, but operate in a somewhat opposite manner. Some interviewees suggested that the market dominating company will try to complicate the market entry of new operators in many ways, as well as their practising of rail traffic once they manage to enter the markets. However, some interviewees suggested that excessive obstruction will turn on the company itself, because the transport service customers are expecting fair competition. On the whole, the result evaluation interviews appear to support the results of the present study.

7 DISCUSSION AND CONCLUSIONS

7.1 Discussion

The purpose of the present research was to study the issues associated with the opening rail freight transport competition in Finland. This research aimed to review the market entry of new operators and the resulting phases and the barriers of market entry. The research also aimed at evaluating the market change in case new railway undertakings start to operate in the markets. The research objectives were organised into specific research problems.

The greatest barriers for market entry are the railway stock acquisition and the access to services. Other barriers of market entry include long market entry phase, recruiting of staff, inadequate rail capacity, and the possible actions of the market dominating company to complicate market entry and competition. In addition, the difficulties in adopting the specific features of rail traffic may at first complicate the operation of a new railway undertaking. Examination of the list of market entry barriers shows their locality; they are bound to state-specific operating environments, even though the list also includes features that are typically European. For example, the acquisition of stock and staff differs greatly in the Member States. Therefore it can be concluded that the choice of limiting the study to examine the Finnish situation was a relevant one. In the light of Bain's and Stigler's market entry definitions, the barriers of rail freight transport market entry are great in Finland. The market entry and the significance of the associated barriers are different and depend on the railway undertaking, as the market entry scenarios presented in the study indicate.

The study shows how the barriers of rail freight transport market entry essentially include an administrative aspect in addition to the financial[1] and technical[2] dimensions. The administrative dimension encompasses the acquisition of the safety certificate and the operating licence, and the issues related to rail capacity application. The research indicated that new operators contemplating market entry are underestimating the significance of the administrative dimension and the associated work load. For these reasons, the administrative dimension creates a significant entry barrier for a prospective railway operator. Earlier reports and studies have discussed the difficulties related to the administrative dimension, but

[1] The financial dimension includes the business and economical issues.

[2] The technical dimension includes compliance with the regulations in the railway stock and staff qualification issues.

the administrative factors have been discussed separately, and thus their combined significance as an entry barrier has been ignored.

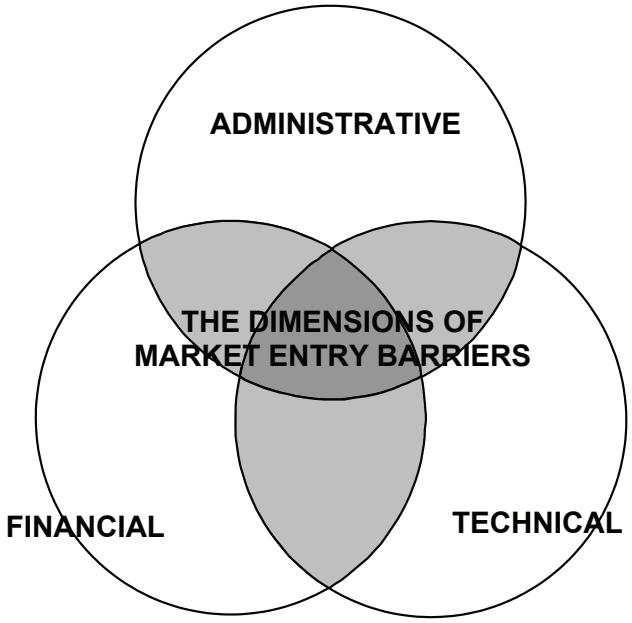

Figure 40. The dimensions of the market entry barriers.

The present research indicates that rail freight transport will have more competition than has been expected: according to the research and reports[1] prepared in Finland, new railway undertakings will acquire a few per cent market share similar to the early situation in Sweden. According to the present research there will be much more competition: over ten times more compared with the prior estimations. The estimation of competition volume was considerable also in comparison with European figures: with these figures, Finland would be in European top five[2]. However, as described above, the rail freight transport entry barriers are substantial, and in addition, the market dominating company, VR Limited, is able to react to the changing market situation and keep its market dominance. In addition the different rail gauge and the small size make the Finnish rail transport market quite limited, which makes the market entry less attractive. Therefore it is reasonable to estimate that the Finnish markets will change slowly. At the same time, it means that VR Limited's economies of scale and its effect as a market entry barrier will be seen for a long time.

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[1] For example, according to a publication of the Finnish Ministry of Transport and Communications (see Kirjavainen et al. 2002) the rail freight transport entry barriers are so great that even after the opening of competition VR Limited Company could preserve its monopoly, or the new operators might acquire a few per cent market share. However, more recent studies and reports (see e.g. Iikkanen & Siren 2005) estimate the change to be somewhat greater.

[2] Finland is placed in the middle group among European countries in Hofstede's Uncertainty Avoidance Index-Individualism coordinates: the framework is interpreted followingly: Finland is not excessively eager in regulation, and at the same time it is a quite individualistic country which relates to Finland's capacity of taking risks.

Competition intensity will also show as disharmony at the time the competition opens; market shares will be fought over, the transport prices will drop, and rectifications of RHK's decisions will be claimed. Companies will, quite naturally, try to keep their territory, and others will, equally naturally, try to take over the markets. According to the present research it appears that VR Limited will try to secure its market share by deterring or complicating the market entry of new operators, and in case of market entry, by complicating their operations. The research therefore concludes that competition in rail traffic will take such forms that active participation of competition legislation, Finnish Competition Authority, judicial authorities and Finnish Rail Agency as the regulating body and the competition monitor (Railway Act section 51, section 52) will be needed for creating rules for the competition. As regards competition intensity, competition will be turbulent even if the market share of new operators remained low for several years after the opening. Assumingly Finland will follow in Sweden's footsteps and VR Limited will operate similarly to Swedish Green Cargo (SJ). Rectification of RHK's decisions on rail capacity allocation will be claimed from Finnish Rail Agency as the regulating body. Moreover, rectification of one and the same decision can potentially be claimed by all the effected railway undertakings. It is also possible that solutions suggested by the regulating body will be first appealed in the Administrative Court and then in the Supreme Administrative Court. The role of the Finnish Competition Authority, the Finnish Rail Agency's regulating body and the judiciary, and the controlling impact of their decisions on competition will be seen in due course.

According to the research material, some respondents felt that the competition between traffic modes is adequate competition. Porter's Five Forces Model presented in the research theory places the above argument on competition into another context: competition between branches corresponds to substitutive products; it is not parallel to intra-branch competition. Perceiving the difference between these dimensions of competition is important: some transport cannot be practically organised through other modes of transport. This becomes evident, when the typical areas and characteristics of rail, road, water and air transport are examined. The mode of transport that offers the kind of transport services that correspond to the characteristics of the traffic mode will have the monopoly, in which case intra-branch competition is important from the transport service buyer's point of view. If a branch lacks internal competition, one service provider has an absolute monopoly. In a monopoly the price elasticity of supply is entirely different from the price elasticity of supply in markets with competition. Presentation of the theoretical competition between traffic modes as actual competition often remains rhetorical. The significance of the competition between modes of traffic should not, however, be understated: it occurs, for example, in raw wood

transportation. Even if optional modes of transport remain theoretical, they may have practical impact as negotiation assets for those buying transport services.

The present research implies that competition will occur in small transport flows of feeder traffic, and effectively operable – and thus attractive – strong freight flows. The industry is obviously more interested in the latter, because large flows equate greater cost savings. The result of the research therefore supports the results of the prior studies[1] conducted in Finland. The purpose for the industry is to purchase cost effective logistic solutions of adequate quality. Competition and availability of options are essential in cost effective transport service acquisition. Competitive bidding on transport services necessitates several transport service operators in the markets. In fact only a few operators are enough, if they offer the service convincingly and reliably. The above indicates that the industry merely wants the transport prices to decrease; the maximisation of new railway undertakings' market share as such is not among its goals.

According to economics theories, markets with competition are operating more effectively than a monopoly, and therefore their total production is higher and price lower. In accordance with the pricing models presented in the research theory, the reduction of VR Limited's transport service prices is a central strategic entry deterrence method. The research indicates that the opening of competition, or its threat alone, will reduce the rail transport prices. Therefore, according to the welfare economics theory, the objective of the government in improving market performance and increasing socioeconomic efficiency is realised.

According to the results of the study, the volumes of rail transport will grow, because competition and a lower level of prices may create new transport contents. Thus inadequate rail capacity may become a problem on certain track sections: some track sections simply cannot accommodate extra traffic. On one hand, the growing traffic reduces the number of so-called good timetables, slows down stock circulation, and makes traffic more prone to interruptions. On the other, growing traffic may also use the track sections with slower traffic. Passenger traffic and possibly growing freight transport use the same rail network, which means that priority order for congested rail capacity will play a great role – even on transport policy level. At that time, the dichotomies between logistic competitiveness, public transport promotion, the level of public service, the extent of the rail network, the balance between modes of transport and welfare economics theory concepts' socioeconomic efficiency, public commodity, and external

[1] E.g. the Finnish Ministry of Transport and Communications' publication Competitiveness of rail transport in Finland (Iikkanen & Siren 2005) and Rantala's (2006) dissertation.

effects will be discussed. In any case, the rail capacity needs of new operators and the rail network development needs may differ from the VR Limited's point of view, or they may be targeted to different sections of the rail network. As the competition opens, new challenges may emerge as regards rail network development and equal track maintenance.

The authorities are expected to create such preconditions for competition that enable less bureaucratic market entry and practicing of rail traffic. In addition, authorities are expected to be impartial, customer oriented and proactive. The operation of authorities can to some extent be simplified merely by open and active communication. The process of acquiring the safety certificate from the Finnish Rail Agency, and the operating licence from the Ministry of Transport and Communications should be straightforward, even though the content requirements are critical. In addition, specific attention should be paid on the equality of RHK's rail capacity allocation process and the associated communication, as its integrity is under suspicion. The market entry of new operators and the various timetable systems of the railway undertakings may in the future necessitate the building of a coherent optimisation system that serves all railway undertakings. The responsibility for constructing such a system is addressed to the Finnish Rail Administration. The experts responding to the Delphi questionnaire were ready to take the reorganisation of traffic control and the VR Training Centre further than what was suggested by the Ministry of Transport and Communications' working groups. The authorities should therefore assess the adequacy of the suggested actions, because according to the research material, the traffic control should be separated entirely from the VR Group, and the position of the VR Training Centre should become more neutral. The fact is that the transparency of a branch can be best evaluated from the outside; it also reveals how things appear to be, not only how they really are. The authorities' actions have a leading role in the opening of competition, because the deregulation alone does not necessarily create competition and change the situation in the markets. Actual emergence of competition requires equal preconditions for competition and concrete lowering of market entry barriers, and these are the tasks for the authorities[1].

[1] The socio-economic efficiency objective of the welfare economics theory and the structure–conduct–performance paradigm presented in the theoretical framework suggest this task to the government similarly to Mäkilä, Mäkitalo and Mäkelä (2004, 385–386).

7.2 Contribution, assessment and further research

7.2.1 The scientific contribution of the present research

The results of the present study support the results of the prior studies, thus the research amplifies the scientific view on rail freight transport market entry and the associated barriers. The market entry, entry barriers, and the market change have not been studied this extensively in Finland, and therefore the results of the study have practical value as new knowledge.

For the interest of the scientific community, the most significant finding is the administrative dimension as an entry barrier: the study clustered the administrative factors together, and the resulting administrative dimension apparently creates a substantial entry barrier in addition to financial and technical issues. What makes the administrative barrier even more effective is the fact that its significance as an entry barrier is underestimated: the magnitude of the administrative dimension as a barrier may surprise the entrant. Administrative factors as entry barriers have been discussed in certain reports and studies on opening competition and market entry, but the significance of the administrative factors as a whole, and as an entry barrier has been ignored.

The research result is significant in two senses: 1) Factors that were earlier regarded as separate, are now combined into an administrative dimension, which helps perceiving the entry barriers in their entirety. 2) The task of creating preconditions for competitive markets in rail freight transport has been regarded as belonging to the government. Actual emergence of competition requires, as stated above, equal preconditions for competition and concrete lowering of the market entry barriers. The administrative dimension is the entry barrier, which the government can influence on the most. Even though the government authorities have the opportunity to reduce the administrative dimension as an entry barrier, the entry requirements will not be facilitated by e.g. reducing the safety and security requirements. The government authorities must acknowledge the significance of authorities' actions as an entry barrier. Therefore they should actively create equal and transparent preconditions for competition in rail transport. Therefore, according to the findings of the present study, the future presupposition is that the administrative factors deriving from the authority interface do indeed create a significant entry barrier, but at the same time, it is the barrier that the authorities themselves can influence on.

The other key scientific contribution arising from the study is associated with the applicability of the research methods in the solving of the research problem, and the triangulation of different approaches. The Delphi technique, a futures studies

data collection method, combined with scenario analysis works well in operating environments that are defined by business operations and public administration, because the acquired research results can be considered as significant and reliable. The expert profile character descriptions formulated on the basis of the narrative approach that is associated with social constructivism, and the data collected with the Delphi technique give a good basis for the scenarios. The scenarios help clarify and organise both the data gathered with the Delphi technique and the research results. Furthermore, the expert profiling and the character descriptions gave a background to the scenarios created on the basis of the Delphi data. The expert profiling brings a great perspective to the different argumentation logics, which would not otherwise take shape in Delphi. The character descriptions assign positions for the panellists and a framework for their views, and at the same time, they facilitate the evaluation of the views arising from these positions and the panel composition. Therefore the narrative approach combined with Delphi technique introduces new aspects to the Delphi method itself.

7.2.2 Implications to practice

According to the research results, the most important entry barriers in rail freight traffic in Finland are stock acquisition, access to services and recruitment of staff. However, there is a strong administrative dimension to the barriers. The market entry process is seen as excessively long and bureaucratic. In addition, authorities were regarded as somewhat passive and their transparency and equality were under suspicion. Once the rail freight transport has opened for competition, the authorities should operate in an active, customer oriented and prompt manner, because the competition cannot be opened in theory only, but it must manifest itself as equal preconditions for competition. The Ministry of Transport and Communications of Finland, RHK, the Finnish Rail Agency, and the Finnish Competition Authority must understand their roles and responsibilities, and the needs and hopes imposed on them, so that they could wake up and carry out their tasks well. This is important because the barriers of entering the rail freight transport markets are great, and the authorities have the power to influence on one of them, the administrative issues.

According to the results of the present study, there will be more competition in the freight traffic than expected or estimated. This means that in addition to creating equal preconditions for competition, the authorities should ensure balanced practicing of rail traffic for all. With several railway undertakings operating in the rail network, the requirements and expectations will grow as regards access to services, the transparency and neutrality of traffic control, the interoperability of rail capacity and timetable data systems as well as the openness of their interfaces,

traffic disturbance management regulation, and railway yard user rights. Furthermore, competition sets new requirements for RHK's rail network management: the investments and maintenance are expected to be impartial. This adds pressure to RHK's knowledge of the traffic system and its development needs.

As provided in the Railway Act, RHK must allocate rail capacity to railway undertakings based on equal and non-discriminating criteria. In its decisions, RHK must accommodate the needs of traffic and rail management, and the effective use of the rail network. In practise, the coordination of rail capacity applications means coordinating the traffic systems of several railway undertakings. Optimisation of the efficiency of individual timetables reduces the effectiveness of the system as a whole, which means there is a risk of the coordination result becoming a compromise that weakens every railway undertaking's traffic system. Nevertheless, efficient use of railway network requires planning and proactivity. The construction of a traffic system that is accordant with the research results and equally optimises the entire rail network and serves all, is RHK's responsibility. RHK must be able to take the challenge, so that the rail network can be used systematically and efficiently once the freight traffic competition starts. Reduction of efficient rail network use due to reactive coordination of rail capacity applications would lead to reduction of rail capacity utilisation rate, which – combined with the slight growth in rail transport after the opening – would entail serious problems to the adequacy of rail capacity.

7.2.3 The reliability of the research

The credibility of studies is often evaluated based on their reliability and validity. The evaluation of reliability through these concepts befits especially quantitative studies. In qualitative research, however, the evaluation is more about the reliability of the entire research process than the research results. The reliability of qualitative research is built with detailed description of the research implementation, e.g. the research methods. (Hirsjärvi et al. 1997, 213–215; Eskola & Suoranta 1998, 208–233.) In this work, the research implementation is described in detail in Chapter 4.

The data collection methods used in the research produced an extensive research material, which made it possible to answer the research questions. As to the reliability of the research and the scope of research material, the response rate to the Delfoi questionnaire could preferably have been slightly higher. An optional approach to data gathering would have been to contact a larger number of respondents than the number of the desired panel. Before sending the questionnaire, I would have called the persons on the list and inquired their interests in

answering the survey. The final panel would have consisted of the persons interested in the research subject and the survey. This would probably have increased the Delfoi questionnaire's response rate. On the other hand, the size of the research material was adequate to accomplish a qualitative oriented study.

The study's expert profiling and character descriptions shed light on the different attitudes associated with the opening of rail freight transport competition, and the logic of the related thoughts and arguments. In addition, the descriptions indicate that there is no dichotomy among the attitudes on competition, but the opinions and thought structures are more complex than for or against. The market entry scenarios point out the entry barriers through examples of different railway undertakings. On the whole the thesis appears to have succeeded in answering the research questions. The study has revealed many issues for the authorities to implement and consider. Desirably, the thesis facilitates the creation of preconditions for railway market competition by highlighting the appropriate issues and encouraging toward change. This way also Kuusi's ideal of futures studies' objective, creating the future, would come true.

The results of the study are in many respects congruent with the results of studies conducted in Finland and other countries: the results are clearly in parallel with the research carried out in Sweden, the pioneer of European rail transport competition. The above also indicates that Finland will probably follow Sweden's footsteps and have similar experiences. In addition, the result evaluation interviews also support the results of the study.

The present results on the future market share of new operators, however, are substantially higher than the estimations of the prior studies. Does this make the result unreliable? It may, of course, be suspected that some of the respondents have – instead of assessing the market share of new operators – assessed the proportion of traffic with competition, i.e. the proportion which transport buyers have put out for competitive bidding. This proportion is larger than the realisable market share of new operators. This would explain the high estimations of market share for new operators. In addition, it could be suggested that the experts have not answered the question of market share in the Delphi questionnaire according to their best knowledge, but according to their wishes, which would then emphasise the optimistic and pessimistic views. On the other hand, if only a few industrial companies on the centralised buyer side of transport services in Finland changes a service provider for some of its transport needs, the market share of new operators will rocket. The markets will change, but only gradually. Overall, the research results can be regarded as reliable, especially keeping in mind the fact that the research was future-oriented and aimed at sheding light to different possible futures.

7.2.4 Topics for further research

The present research, its research material and results, give rise to certain topics for further research. Conducting a study with similar content and research problem with factual research material, not material based on expert evaluations, would be interesting once a number of new operators have entered the rail freight transport markets. The study could examine the practical phases of market entry and the barriers emerged and experienced. In the present study, the market change has been assessed as well. Further research could be carried out by examining the dynamics of the emerging and changing markets *a priori*, based on evaluations, or *a posteriori*, based on experiences. Such a study could also consider the demand–supply connection of the markets, and calculate the price elasticity of rail freight transport demand. Acquiring the price information can, however, prove to be difficult as companies may regard their transport prices as business secrets. At a later stage, the effects of the opening of competition could be studied. Such a study would review the effect of the opening on prices, transport volumes, operations of the authorities, and the level of service and safety, et cetera. The study could also evaluate who were the ones benefiting from the opening of competition and who found it disadvantageous. In addition, further studies could review the effects of the opening on the quality and punctuality of traffic, access to stock, and the need for new investments on infrastructure.

The holders of rail networks are describing issues related to market entry, rail capacity application process, and practising of rail traffic in their Network Statements. It would be interesting to evaluate the role of a Network Statement in reducing the entry barriers in a further study. In addition, such a study could examine what the essential issues in a Network Statement are for it to be as useful as possible for applicants of rail capacity. On a European scale, a study on how preconditions for competition are realised and service access is ensured could be carried out in the Member States. The purpose of such a study would be, for example, to compare the entry barriers in different countries. The research result would be significant in two senses: The study would contribute to cross-border traffic by conveying important information to railway undertakings and the Member States. In addition, on the basis of such a study, the European Commission could promote the harmonisation of regulation and the preconditions for practicing traffic in the Member States.

7.3 Conclusion

The goal of the Finnish Government is to promote the competitiveness of the Finnish industry and commerce, where logistics is a central factor[1]. The authorities must create equal preconditions for competition. In the meanwhile, VR Limited is allowed to attend to its interests, and new operators must fight for their market share. There will inevitably be conflicts of interests. The opinions on the opening of markets are diverse, and the conceptual fragmentation of the branch will continue because of the different basic tasks of the actors involved. Therefore, the era of consensus in the railway branch appears to be gone now, if not earlier. For the authorities, the creation of preconditions for competition presumes letting go of VR Limited on a certain level. The Ministry of Transport and Communications[2], RHK and the Finnish Rail Agency must regard the traffic operator VR Limited as any other railway undertaking. Neutral treatment is challenged by VR Limited's[3] position in the markets, its expertise, and the authorities' shrinking resources.

The research material clearly indicated a concern of the authorities' readiness in dealing with the issues related to the opening of competition. The authorities are expected to create an operational environment that offers the preconditions for market entry and competition. As regards issues related to market entry, the authorities are expected to be interactive, customer oriented and even proactive. Even though some preconditions for competition have already been created, operational models are continuously developed by officials and market entry is plausible – so far in theory only – the research indicated that the authorities' ability to create an equal and transparent operating environment is still under suspicion.

If problems emerge in market entry, who will bear the responsibility? The responsibility belongs to all parties, and there will probably be overlapping

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[1] Assumably, the government tries to promote the logistic competitiveness with all means in its use, especially those with a good socio-economical benefit-cost ratio. In political discourse, the means of improving logistic competitiveness are often limited to investments on infrastructure, while other means are ignored. It appears that it is easier to concentrate on trees and not the forest: systematic and holistic promotion of competitiveness. As regards rail traffic, track maintenance and electrification of individual sections of track appear to be more important than trying to improve the branch's performance with market structure or competition activity.

[2] The Ministry has a multi-dimensional role as the rail traffic policy maker, the controller of RHK and Finnish Rail Agency, the grantor of licences, the buyer of unprofitable railway passenger traffic, and the railway legislator.

[3] As opposed to other companies, the ownership steering of VR-Group Ltd was not assigned to the Prime Minister's office but it was the responsibility of the Ministry of Transport and Communications. According to Matti Vanhanen's second Government's programme (VNK 2007, 35), VR-Group Ltd's ownership steering was transferred to the Prime Minister's office in 1.5.2007.

responsibilities. RHK, the Finnish Rail Agency, the Finnish Ministry of Transport and Communications[1] and to some extent, the Finnish Competition Authority will have to create new practices, functions and processes, which naturally takes time. The research material, however, clearly indicated that RHK's staff resources were considered as inadequate for dealing with the issues related to the opening. It can be supposed that the Administration Board[2] of RHK has slowed down the creation of preconditions for competition by not establishing offices to RHK that deal with the opening of competition. The supposition is, however, disproved by the fact that the number of RHK's offices depends on the Ministry of Transport and Communications' projected result, which in turn is determined by the Ministry of Finance's national economy framework decision and its productivity programme. Paradoxically, the Ministry of Finance complicates the creation of preconditions for railway competition with its productivity programme while promoting liberal market economy.

The industry and commerce is a beneficiary of competition in rail traffic. Competition in rail freight transport and the promotion of competition are reducing their logistic costs and consequently improve their competitiveness. Another beneficiary is a company purchasing rail transport services, whose interest is to buy suitable and cost effective solutions. Because the branch involves such interests, the European Commission introduced as a part of its second railway package a notion of an *authorised applicant*, which stands for a buyer of transport services, who could apply for rail capacity. The authorised applicant could then conduct a competitive bidding for a transport company to operate on the allocated rail capacity. The proposal was, however, left out of the final railway package in the preparation phase. As provided in the valid Community and Finnish legislation, rail capacity that is suitable for a certain individual transport need of a company buying transport services can be applied by more than one railway undertaking. What if three railway undertakings applied for rail capacity for the same transport? Provisions for such cases are not included in the Railway Act. The overlapping rail capacity applications should be coordinated, which lacks logic, because

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[1] The Ministry of Transport and Communications of Finland is expected to steer the branch and make the necessary policies. Nevertheless, the research material indicated a concern regarding the direction of steering: is there an ownership steering by the Ministry, or so-called owner's steering by VR-Group Ltd. Concrete policy alignments and comments are expected from the Ministry, otherwise there is a risk of the Ministry's steering voice on railway policy turning into a mere sounding brass.

[2] In the interviews conducted for a report on the Administration Boards of the Ministry of Transport and Communications' administrative sector, the role of Metsäteollisuus ry's and VR's representatives in RHK's Administration Board was questioned (see Hirvelä 2005, 16). The new Administration Board assigned by the Government in autumn of 2006 did not include representatives of either organisation.

the prospective transport only necessitates one operator. Such a situation would impose a moral hazard on RHK, a situation where the decision making power is in the hands of someone without an economic interest. Ideally, RHK would consult the company buying the transport service and ask if it has or will have a transport contract with a certain operator. Thus the economic interest and the decision making power would meet. Another line of action would be pricing the rail capacity.

The opening of rail freight transport competition involves hopes and expectations, and doubt, concerns and resistance, as any deregulation process. The examples from Europe show that the opening of competition in rail traffic changes the markets only in the long run. The same conclusion can be made on the basis of the present study. However, the potential opening of competition in the Russian-bound traffic may accelerate the market change. It is to be hoped that the opening of competition will not lead to the opening of a Pandora's Box of threats, and the railway sector could grow and bloom in its renaissance.

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APPENDICES

Appendix 1: Theme interview; themes and questions

1. Creating the business idea and solving operational conditions
    - Is there any space on the market?
    - Acquisition of production factors (availability of stock and staff; stock approval)
    - What are the difficulties associated with acquiring the safety certificate?
    - What are the difficulties associated with acquiring the operating licence?
    - What knowledge is expected from an entrant? How to obtain critical information associated with rail traffic?
2. Requesting rail capacity
    - What are the difficulties related to traffic planning and rail capacity application?
    - Is it possible for a company to acquire the applied rail capacity? Will a new company inevitably undergo a coordination procedure and only acquire capacity that inhibits efficient stock circulation?
    - Signing an access contract
3. Operating traffic and access to services
    - What are the necessary services for a railway undertaking?
    - Which services are managed by the company itself and which need to be obtained from VR?
    - If traffic control is organised under VR, what kinds of problems will emerge?
    - What are the necessary ICT systems for a railway undertaking?
4. Summary
    - Are there any undiscussed issues or problems that an entrant must solve?
    - As regards the discussed issues, are there any that are likely to produce serious problems for market entry?

Appendix 2: List of persons interviewed in the theme interview

Haapala Mauno	VR Limited
Haapala Pentti	Finnish Rail Administration
Inkilä Juha	VR Limited
Mäkilä Mika	VR-Group Ltd
Salonen Jukka	Finnish Rail Administration

Appendix 3: The first round of the Delphi questionnaire

A study of railway market change

The first round of the Delphi questionnaire

Acquiring factors of production

Due to high prices and gauge different than elsewhere in Europe, it is almost impossible for an operator to acquire the necessary rolling stock.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Why? _____

_____

The acquisition of staff is not problematic to a new railway undertaking.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Why? _____

_____

How will the new operator acquire their staff?

_____

_____

_____

What are the differences in acquisition of staff and stock between a large and a small operator?

_____

_____

_____

What are the differences in acquisition of staff and stock between a domestic and a foreign operator?

_____

_____

_____

Acquiring the permits

Railway undertakings must obtain a safety certificate from the Finnish Rail Administration and an operating licence from the Ministry of Transport and Communications. Is it uncomplicated to acquire them?

_____

_____

_____

There is plenty of special knowledge associated with rail transport. Railway information includes several documents, e.g. railway safety regulations, technical orders and instructions about rail tracks, and a network statement. The special information of the traffic mode will constitute a problem for newcomers.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Why? _____

_____

Requesting and granting rail capacity

Transport timetables and operation of stock require planning skills. Railway undertakings must request for rail capacity not later than eight months in advance of the beginning of a timetable period. Will a new railway undertaking manage the traffic and stock planning and the rail capacity application? What are the potential problems?

_____

_____

_____

Other traffic limits efficient use of rolling stock. Many track sections have high utilisation rates, and trains must wait for others to pass, which means that the driving time may be substantially longer than what was pursued. In addition, passenger traffic has the priority in case of overlapping rail capacity requests. What are the consequences of the above for an entrant? What kind of threat is it for a new railway undertaking not to acquire the requested rail capacity?

_____

_____

_____

What are the consequences for a railway undertaking of not acquiring the requested rail capacity?

- ☐ Stock circulation plans will be revised.
- ☐ Rail capacity request will be altered.
- ☐ The railway undertaking will make a complaint of RHK's decision to the regulating body.
- ☐ The company must close down.
- ☐ No consequences
- ☐ Other consequences, please specify:

Reasons:_____

_____

The Finnish Rail Administration is able to make rail capacity decisions that are impartial for all railway undertakings.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Reasons:_____

_____

New railway undertakings and traffic

The existing organisation of traffic control under VR Limited does not constitute a problem as regards impartial competition.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Why? _____

_____

According to theories of market entry barriers, the market monopolist (the existing operator in the railway markets) can in many ways promote or prevent competition. In your opinion, which ones of the following will happen in Finland?

The railway market monopolist will allow access for new operators to its existing services, e.g. depots and service points, at a reasonable price.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Why? _____

_____

The opening of competition will not influence on the monopolist's pricing.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Why? _____

_____

The monopolist will actively try to influence on the opinions and decisions of RHK and the Ministry of Transport and Communications.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Why? _____

_____

What other means the monopolist will apply for promoting or preventing competition?

_____

_____

_____

_____

_____

_____

The Finnish Rail Administration solves safety certificate approval issues in four months. The Ministry of Transport and Communications decides on operating licence issues in three months. These must be preceded by a business plan and a stock and staff acquisition plan. Railway undertakings must apply for rail capacity eight months before the beginning of the timetable period, if other than leftover capacity is applied. Which ones of the following are true?

- ☐ For railway undertakings, the period between the business plan and the actual operation in the markets is too long.
- ☐ The market entry process is easy, there are a small number of phases.
- ☐ The market entry is bureaucratic, it involves too many phases and authorities.
- ☐ Other, please specify:

Reasons:_____

_____

Is a new railway undertaking financially profitable if it is a

Small, domestic operator:	☐ yes	☐ no
Small, foreign operator:	☐ yes	☐ no
Large, domestic operator:	☐ yes	☐ no
Large, foreign operator:	☐ yes	☐ no

Reasons:_____

_____

In your opinion, what are the most significant barriers of market entry?

_____

_____

_____

_____

Railway market development

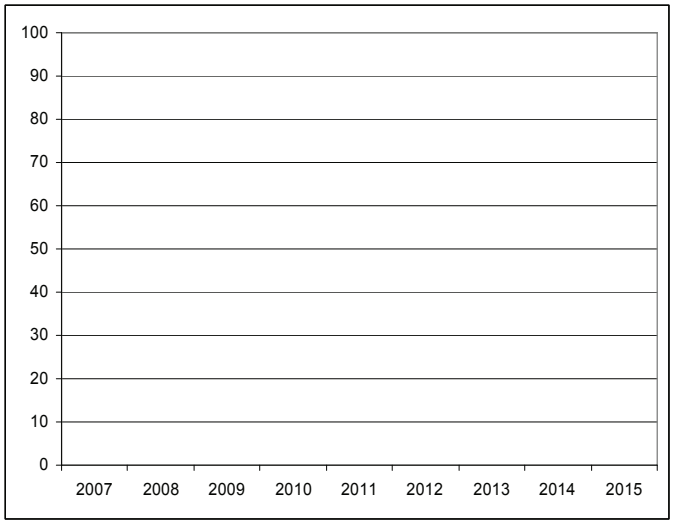
How many rail freight traffic companies will operate in Finland in 2015?

_____ company/companies

Reasons:_____

_____

Draw in the provided template the market share development of rail freight traffic companies in 2007–2015.



Reasons:_____

_____

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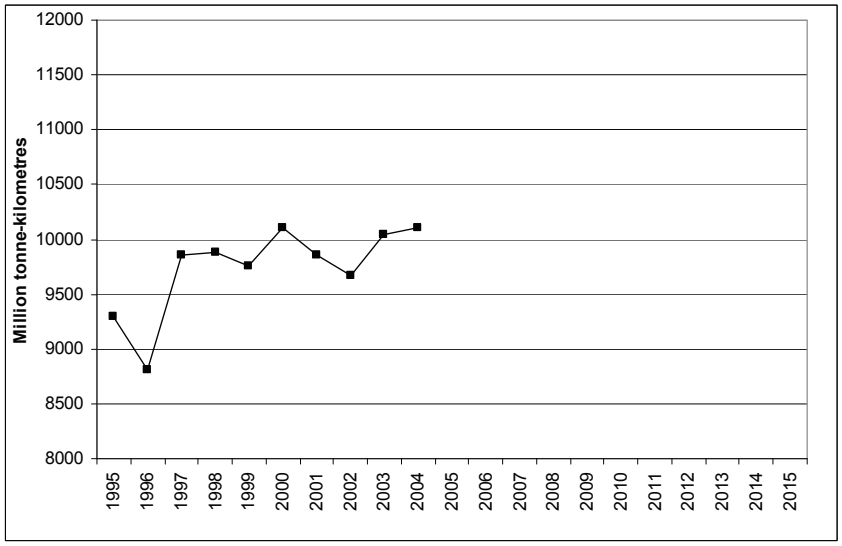
The graph below describes the total haulage (in millions of tonne-kilometres) of Finnish railways in 1990–2004. Estimate and draw the development of haulage in 2005–2015.



Reasons:

_____

_____

_____

_____

_____

_____

_____

Respondent profile

The opening of domestic freight markets is a positive thing.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

I regard myself as a (please select one)

☐ general expert ☐ railway expert

Appendix 4: The cover letter for the first round of the Delphi questionnaire

Finnish Rail Administration

6th June, 2005

Dear recipient

A STUDY OF RAILWAY MARKET CHANGE

The railway sector is about to change: the domestic freight traffic is opening for competition at the beginning of 2007. The Finnish Rail Administration is preparing for the opening, and the work involves a study of the opening of markets and market entry. The research data will be collected by the means of Delphi questionnaire, a method for charting arguments of experts. There will be two Delphi questionnaire rounds, the present questionnaire being the first of the two. The second round will take place in early autumn, during which the arguments given in the first round may be reviewed and commented.

We ask You to take part to the study by answering the enclosed questionnaire. Please respond according to Your personal views; the stand of Your organisation is not relevant. We ask You to pay particular attention to giving reasons for your views. There is extra space for your comments on the back side of the questionnaire. The responses will be handled anonymously, which is typical of the Delphi method. The response envelopes include an identification, which will only be used for prompting responses that have not been received. Hopefully, You will be able to answer by 30th of June. Please find enclosed an envelope for returning Your responses.

The study will also produce Mäkitalo's postgraduate thesis for Tampere University of Technology. If You have any questions regarding the questionnaire or the study, please contact the researcher (miika.makitalo@rhk.fi, 0400 762 974).

Director	Anne Herneoja
Senior officer	Miika Mäkitalo

APPENDICES List of respondents to the Delphi questionnaire, The Delphi questionnaire, A return envelope

Original in Finnish:

RATAHALLINTO-
KESKUS
BANFÖRVALTNINGS-
CENTRALEN

6.6.2005

Arvoisa vastaanottaja

TUTKIMUS RAUTATIEMARKKINOIDEN MUUTOKSESTA

Rautatiesektori on muuttumassa: Kotimainen tavaraliikenne avautuu kilpailulle vuoden 2007 alusta. Ratahallintokeskus valmistautuu kilpailun avautumiseen, ja osana valmistautumistyötä RHK:ssa tehdään markkinoiden avautumiseen ja markkinoilletuloon liittyvä tutkimus. Tutkimuksen aineisto kerätään delfoi-kyselyllä, joka on asiantuntija-argumenttien kartoittamismenetelmä. Delfoi-kyselykierroksia on kaksi, joista tämä on ensimmäinen. Alkusyksystä toteutettavalla toisella kierroksella on mahdollisuus nähdä ja kommentoida ensimmäisellä kierroksella esitettyjä argumentteja.

Pyydämme Teitä osallistumaan tutkimukseen vastaamalla liitteenä olevaan kyselylomakkeeseen. Vastatkaa kysymyksiin omien näkemystenne perusteella, vastauksissa ei haeta organisaation kantoja. Pyydämme kiinnittämään erityistä huomiota *näkemystenne perusteluun*. Perusteluja voi tarvittaessa jatkaa kysymyspaperin kääntöpuolelle. Tyypillisen delfoi-tutkimuksen tapaan vastaukset ovat anonyymeja. Ainoastaan kirjekuorissa on tunniste, jota voidaan tarvittaessa käyttää viipyvien vastausten hoputtamiseen. Toivottavasti ehditte vastata 30.6. mennessä. Liitteenä on palautusta varten kirjekuori.

RHK:n selvitystyön ohella tutkimus on samalla Mäkitalon jatko-opintojen tutkimus Tampereen teknilliseen yliopistoon. Jos kyselyyn tai tutkimukseen liittyen on kysyttävää, voitte olla yhteydessä tutkimuksen tekijään (miika.makitalo@rhk.fi, 0400 762 974).

Liikennejohtaja Anne Herneoja

Ylitarkastaja Miika Mäkitalo

LIITTEET Delfoi-kyselyyn valitut vastaajat, delfoi-kyselylomake, palautuskirjekuori

Appendix 5: The respondents selected for the first round of the Delphi questionnaire

Alahäivälä Alpo	VR Limited
Alppivuori Kari	Finnish Rail Administration
Asumalahti Hannu	Port of Rauma
Gröhn Jari	Ministry of Transport and Communications
Haapala Mauno	VR Limited
Haapala Pentti	Finnish Rail Administration
Haapasalo Samuli	Ministry of Transport and Communications
Herneoja Anne	Finnish Rail Administration
Hilska Lassi	Ministry of Transport and Communications
Holmberg Sirkka-Leena	VR Limited
Iikkanen Pekka	Ramboll Finland
Inkilä Juha	VR Limited
Isoaho Minna	VR-Group Ltd
Kaartama Maire	Confederation of Finnish Industries EK
Kainulainen Raimo	Kaakon Logistiikkapalvelut (Kaakko Logistic Services)
Kallberg Harri	Tampere University of Technology
Kallio Kari	Rautatievirkamiesliitto (Railway Salaried Staff's Union)
Konsin Kari	Finnish Rail Administration
Korte Tiina	Ministry of Transport and Communications
Lampinen Reino	Ministry of Transport and Communications
Lunden Mauri	Rautatieläisten liitto (Finnish Railwaymen's Union)
Melasniemi Mikko	Finnish Association of Logistics
Melkko Markku	Metsäliitto Group
Metsäpelto Rami	Finnish Rail Administration
Minkkinen Päivi	VR-Group Ltd
Myllymäki Tapio	VR Limited
Mäkelä Tommi	Tampere University of Technology
Mäkilä Mika	VR-Group Ltd
Natunen Mikko	Finnish Rail Administration
Niemimuukko Ossi	Finnish Rail Administration

Niemimuukko Heidi	Finnish Rail Administration
Nummelin Markku	Finnish Rail Administration
Nyberg Mikael	Ministry of Transport and Communications
Ottelin Juha	UPM-Kymmene Group
Paasikivi Jari	VR Limited
Pennanen Hannu	Ministry of Transport and Communications
Piironen Juha	Finnish Rail Administration
Poutiainen Yrjö	VR-Group Ltd
Pääkkönen Jussi	Finnish Competition Authority
Rumpunen Harri	Finnish Forest Industries Federation
Ruohonen Kari	Finnish Rail Administration
Ryhänen Riitta	Finnish Competition Authority
Salonen Jukka	Finnish Rail Administration
Seppänen Anne	Finnish Rail Administration
Seppänen Ilkka	VR Limited
Suvanto Tuomo	Ministry of Transport and Communications
Tamminen Harri	SeaRail
Tanner Timo	Veturimiesten liitto (Finnish Locomotive Men’s Union)
Vehviläinen Antti	Stora Enso
Vikeväinen Mauri	Rautaruukki Corporation/ JIT-Trans
Välipirtti Kaisa Leena	Ministry of Transport and Communications
Välke Timo	Finnish Rail Administration

Appendix 6: An e-mail reminder for the first round of the Delphi questionnaire

Sent: 7.7.2005

Sender: Miika Mäkitalo

Subject: Reminder: The Delphi questionnaire on railway market change

Attachments: a cover letter.pdf (28 kb); the Delphi questionnaire (103 kb); Appendix: respondents.pdf (22kb)

Dear receiver,

I approached You a month ago with a Delphi questionnaire regarding the change in the railway markets. According to the response envelope IDs I have not yet received Your response. Could you please answer the questionnaire by the end of August. Please find attached the Delphi questionnaire and a cover letter.

Have a pleasant summer!

Kind regards
Miika Mäkitalo

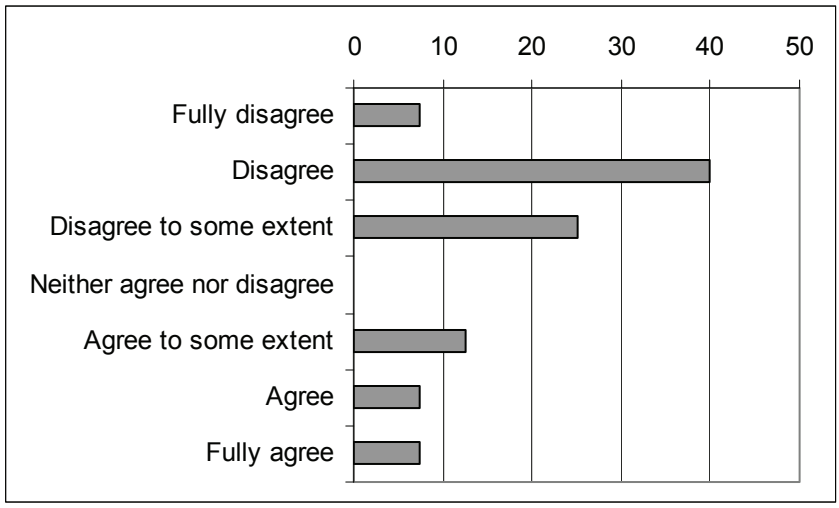
--
Miika Mäkitalo, Traffic Specialist
Finnish Rail Administration
Traffic System Department
Keskuskatu 8
Po.Box 185, FI-00101 Helsinki
Tel. (09) 5840 5026
GSM +358 400 762 974
Fax +358 (9) 5840 5108
miika.makitalo@rhk.fi, www.rhk.fi

Appendix 7: The second round of the Delphi questionnaire

A study of railway market change
The second round of the Delphi questionnaire

Stock acquisition

In the first round, the respondents were presented with the following statement: *Due to high prices and gauge different than elsewhere in Europe, it is almost impossible for an operator to acquire the necessary rolling stock.* The respondent assessments were divided as follows:



The respondents were asked to provide reasons for their opinion. For example, the following arguments were given:

- "…naturally the special circumstances make the cars more expensive than in those European countries using the European standard gauge."
- "Rolling stock is naturally available, but the prices may scare the buyers away"
- "Stock prices are so high that it is difficult to create profitable business."
- "Stock is available, if the operator perceives the business opportunities good enough for making the investment."
- "Carriages and bogies easier than locomotives and train control system"
- "As the demand grows, the markets for stock renting/leasing/financing will develop also in Finland…"
- "The industry has some railway stock of its own. In the former Soviet Union – – you can acquire stock and modify it to meet the Finnish requirements."
- "There are other capital-intensive branches where investors do exist. The rail gauge is not a problem in the acquisition."

Are there any counter arguments to the above statements you would like to give?

_____

_____

_____

_____

You may reassess your view in the first round question: Due to high prices and gauge different than elsewhere in Europe, it is almost impossible for an operator to acquire the necessary rolling stock.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Why? _____

_____

Traffic planning and application of rail capacity

In the first round, some questions were asked about traffic planning and rail capacity application. For example, the following statements were given:

- "Demands specific skills that are to some extent different from general logistic knowledge…"
- "Rail capacity application and coordination with the rolling stock may require special skills that may prove to be problematic..."
- "It is difficult to assess capacity needs. The requested capacity will obviously not be received as such."
- "…It is extremely difficult to conduct business by selling transport services a year in advance…"
- "Planning is part of normal activities. Not a problem in my opinion."
- "…the start-up situation is easy and simple."

Are there any counter arguments to the above statements you would like to give?

_____

_____

In the first round, another question pertained to the consequences for a railway undertaking of not acquiring the requested rail capacity. For example, the following responses were given:

- "The operator will go for truck traffic, if other parts of the transport chain are not flexible enough…"
- "The threat is quite fatal. In order to do business, rail capacity must be certain. The authorities cannot just open the competition without ensuring capacity. Not a modern way to operate. The authorities are facing a major planning challenge + a challenge of developing their operational activities."
- "…[a railway undertaking can] deny a competitor's capacity request based on token demand"
- "It is likely that a new company will not get the requested capacity. The consequences depend on how optimistic the business plans are."
- "Assumingly the authorities want to be flexible and even promote the entry of new railway undertakings, so I believe there is no threat."
- "More important than rail capacity – – is the priority the operator gets in a railway yard.…"

Are there any counter arguments to the above statements you would like to give?

_____

_____

_____

_____

Assess the following statements:
RHK must be proactive in finding out the rail capacity needs so that the rail capacity applications could be coordinated as well as possible.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Reasons:_____

_____

RHK should, in cooperation with railway undertakings, build a traffic system that caters for all operators. The responsibility for developing such a traffic system belongs to RHK.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Why? _____

_____

Organisation of traffic control

In the first round, the respondents were asked about the existing organisation of traffic control under VR Limited. The respondents brought out following statements:

- "Capacity will be allocated in advance. Exceptions will be dealt with according to the guidelines"
- "The capacity decision is decisive; VR implements. The staff is subject to official liability and has the expertise to manage traffic situation, not the employer."
- "The existing model requires strict monitoring and instructing from RHK, and an active response to potential faults."
- "It is already a problem for track contractors."
- "In the field everybody will act according to their own interests no matter what has been discussed."
- "Such a strategically important task cannot be occupied by a single operator. It is not believable this kind of a company could operate impartially. In addition it is not only about how things are but how they look."

Are there any counter arguments to the above statements you would like to give?

_____

_____

_____

_____

Which one of the following options would, in your opinion, fulfil the equality requirement in competition?

- ☐ Nothing needs to be done. The existing directions and type of action are adequate.
- ☐ RHK prepares rules for traffic control in multi-operator fault situations, but does not monitor the decisions made.
- ☐ RHK prepares rules for traffic control in multi-operator fault situations and monitors the decisions made.
- ☐ The national traffic control (roughly 10 persons) is transferred under RHK. This way RHK can monitor the national traffic control and make the necessary decisions related to fault situations.
- ☐ The entire traffic control must be separated from VR Limited.

Reasons:_____

_____

_____

You may reassess your view in the first round question: The existing organisation of traffic control under VR Limited does not constitute a problem as regards impartial competition.

☐	☐	☐	☐	☐	☐	☐
Fully disagree	Disagree	Disagree to some extent	Neither agree nor disagree	Agree to some extent	Agree	Fully agree

Why? _____

_____

Market entry and authorities' operations

Several of the first round questions touched the subject of authorities' operations, and they were assessed with following arguments:

Safety certificate and operating licence

- "This is what I believe in international comparison. If the requirements are met, there should not be problems."
- "…the two have a marginal role as entry barriers…"
- "…uncomplicated as soon as the authorities understand their role as customer advisors"
- "…if RHK or the Ministry of Transport and Communications are willing to co-operate. VR Limited was granted the safety certificate in 4 months + a claim of correction to the Ministry of Transport and Communications, which was approved."

Requesting and allocation of rail capacity

- "I do trust in RHK's impartiality, but problems simply do not have only one correct answer."
- "Capacity will run out on some sections of track almost certainly. Elimination cannot be impartial, can it?"
- "…is it in accordance with today's requirements to have such a long delays/handling times? I believe that RHK must develop its operations."
- "The attitude is in favour of new entrants"
- "…but the priority order of (congested) rail capacity is already in favour of VR's passenger traffic"

Market entry and the length of the entry period

- "The process is tsarist and prevents free competition, the expected planning and commitment period is too long for customers as well"
- "The consecution of the phases is probably unnecessary: the applications could be pending at the same time. It is not necessary for RHK and the Ministry to use the whole term."
- "The authorities must develop their operations. All the phases are necessary, but the process takes too long."
- "The authorities can facilitate the process by being flexible and customer-friendly"

- "bureaucracy exists, but apparently the quite tightly regulated (and conformable to EU) entry conditions of the branch are restraining the activities from becoming too 'wild west style'; the required licences and plans must not act as a means test and make it unnecessarily difficult to enter the branch"
- "The required time must be taken into account in the start-up process. Consider, for example, a production plant: it must be built before the production can start (and the necessary environmental and construction licences must be applied)."

Are there any counter arguments to the above statements you would like to give?

_____

_____

_____

_____

What should the authorities (Finnish Rail Administration, the Ministry of Transport and Communications, and the Finnish Rail Agency in the future) do in order to make the administrative aspect of market entry as clear and equal as possible for the competing parties?

_____

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Respondent profile

I regard myself as a (please select one)

☐ general expert ☐ railway expert

Appendix 8: The cover letter for the second round of the Delphi questionnaire

Finnish Rail Administration

4th November, 2005

Dear recipient

A STUDY OF RAILWAY MARKET CHANGE

The railway sector is about to change: the domestic freight traffic is opening for competition at the beginning of 2007. The Finnish Rail Administration is preparing for the opening, and the work involves a study of the opening of markets and market entry. The research data will be collected by the means of Delphi questionnaire, a method for charting arguments of experts. There will be two Delphi questionnaire rounds, the present questionnaire being the second of the two. During this round it is possible to review and comment the arguments given in the first round.

We ask You to take part to the study by answering the enclosed questionnaire. Please respond according to Your personal views; the stand of Your organisation is not relevant. We ask You to pay particular attention to giving reasons for your views. There is extra space for your comments on the back side of the questionnaire. The responses will be handled anonymously, which is typical of the Delphi method. The response envelopes include an identification, which will only be used for prompting responses that have not been received. Hopefully, You will be able to answer by 30th of November. Please find enclosed an envelope for returning Your responses.

The study will also produce Mäkitalo's postgraduate thesis for Tampere University of Technology. If You have any questions regarding the questionnaire or the study, please contact the researcher (miika.makitalo@rhk.fi, 0400 762 974).

Director	Anne Herneoja
Senior officer	Miika Mäkitalo

APPENDICES List of respondents to the second round of the Delphi questionnaire, The Delphi questionnaire, A return envelope

Original in Finnish:

RATAHALLINTOKESKUS
BANFÖRVALTNINGSCENTRALEN

4.11.2005

Arvoisa vastaanottaja

TUTKIMUS RAUTATIEMARKKINOIDEN MUUTOKSESTA

Rautatiesektori on muuttumassa: kotimainen tavaraliikenne avautuu kilpailulle vuoden 2007 alusta. Ratahallintokeskus valmistautuu kilpailun avautumiseen, ja osana valmistautumistyötä RHK:ssa tehdään markkinoiden avautumiseen ja markkinoilletuloon liittyvä tutkimus. Tutkimuksen aineisto kerätään delfoi-kyselyllä, joka on asiantuntija-argumenttien kartoittamismenetelmä. Delfoi-kyselykierroksia on kaksi; ensimmäinen kierros oli viime keväänä, ja tämä on toinen. Tällä kierroksella on mahdollisuus nähdä ja kommentoida ensimmäisellä kierroksella esitettyjä argumentteja.

Pyydämme Teitä osallistumaan tutkimukseen vastaamalla liitteenä olevaan kyselylomakkeeseen. Vastatkaa kysymyksiin omien näkemystenne perusteella, vastauksissa ei haeta organisaation kantoja. Pyydämme kiinnittämään erityistä huomiota *näkemystenne perusteluun*. Perusteluja voi tarvittaessa jatkaa kysymyspaperin kääntöpuolelle. Tyypillisen delfoi-tutkimuksen tapaan vastaukset ovat anonyymeja. Ainoastaan kirjekuorissa on tunniste, jota voidaan tarvittaessa käyttää viipyvien vastausten hoputtamiseen. Toivottavasti ehditte vastata 30.11. mennessä. Liitteenä on palautusta varten kirjekuori.

RHK:n selvitystyön ohella tutkimus on samalla Mäkitalon jatko-opintojen tutkimus Tampereen teknilliseen yliopistoon. Jos kyselyyn tai tutkimukseen liittyen on kysyttävää, voitte olla yhteydessä tutkimuksen tekijään (miika.makitalo@rhk.fi, 0400 762 974).

Liikennejohtaja Anne Herneoja

Ylitarkastaja Miika Mäkitalo

LIITTEET Delfoi-kyselyn 2. kierrokselle valitut vastaajat, delfoi-kyselylomake, palautuskirjekuori

Postiosoite/Postadress	Käyntiosoite/Besöksadress	Puhelin/Telefon	Fax	Sähköposti/E-post:	Kotisivu/Hemsida
PL 185, 00101 Helsinki PB 185, FI-00101 Helsingfors	Keskuskatu 8, 7. krs Centralgatan 8, 7 tr	(09) 5840 5111 + 358 9 5840 5111	(09) 5840 5100 + 358 9 5840 5100	kirjaamo@rhk.fi info@rhk.fi	www.rhk.fi

Appendix 9: The respondents selected for the second round of the Delphi questionnaire

Alahäivälä Alpo	VR Limited
Alppivuori Kari	Finnish Rail Administration
Asumalahti Hannu	Port of Rauma
Gröhn Jari	Ministry of Transport and Communications
Haapala Mauno	VR Limited
Haapala Pentti	Finnish Rail Administration
Herneoja Anne	Finnish Rail Administration
Hilska Lassi	Ministry of Transport and Communications
Holmberg Sirkka-Leena	VR Limited
Iikkanen Pekka	Ramboll Finland
Inkilä Juha	VR Limited
Isoaho Minna	VR-Group Ltd
Kaartama Maire	Confederation of Finnish Industries EK
Kainulainen Raimo	Kaakon Logistiikkapalvelut (Kaakko Logistic Services)
Kallberg Harri	Tampere University of Technology
Kallio Kari	Rautatievirkamiesliitto (Railway Salaried Staff's Union)
Konsin Kari	Finnish Rail Administration
Korte Tiina	Ministry of Transport and Communications
Lampinen Reino	Ministry of Transport and Communications
Lunden Mauri	Rautatieläisten liitto (Finnish Railwaymen's Union)
Melasniemi Mikko	Finnish Association of Logistics
Melkko Markku	Metsäliitto Group
Metsäpelto Rami	Finnish Rail Administration
Minkkinen Päivi	VR-Group Ltd
Myllymäki Tapio	VR Limited
Mäkelä Tommi	Tampere University of Technology
Mäkilä Mika	VR-Group Ltd
Natunen Mikko	Finnish Rail Administration
Niemimuukko Ossi	Finnish Rail Administration
Niemimuukko Heidi	Finnish Rail Administration

Nummelin Markku	Finnish Rail Administration
Nyberg Mikael	Ministry of Transport and Communications
Ottelin Juha	UPM-Kymmene Group
Paasikivi Jari	VR Limited
Pennanen Hannu	Ministry of Transport and Communications
Piironen Juha	Finnish Rail Administration
Poutiainen Yrjö	VR-Group Ltd
Pääkkönen Jussi	Finnish Competition Authority
Rumpunen Harri	Finnish Forest Industries Federation
Ruohonen Kari	Finnish Rail Administration
Ryhänen Riitta	Finnish Competition Authority
Salonen Jukka	Finnish Rail Administration
Seppänen Anne	Finnish Rail Administration
Seppänen Ilkka	VR Limited
Suvanto Tuomo	Ministry of Transport and Communications
Tamminen Harri	SeaRail
Tanner Timo	Veturimiesten liitto (Finnish Locomotive Men’s Union)
Vehviläinen Antti	Stora Enso
Vikeväinen Mauri	Rautaruukki Corporation/ JIT-Trans
Välipirtti Kaisa Leena	Ministry of Transport and Communications
Välke Timo	Finnish Rail Administration

Appendix 10: An e-mail reminder for the second round of the Delphi questionnaire

Sent: 13.12.2005

Sender: Miika Mäkitalo

Subject: Reminder: The Delphi questionnaire on railway market change

Attachments: the Delphi questionnaire (91 kb); a cover letter.pdf (66 kb)

Dear receiver,

I approached You in November with a Delphi questionnaire regarding the change in the railway markets. According to the response envelope IDs I have not yet received Your response. Could you please answer the questionnaire by the end of the year? Please find attached the Delphi questionnaire and a cover letter.

Happy Holidays!

Kind regards
Miika Mäkitalo

--
Miika Mäkitalo, Senior officer
Finnish Rail Administration
Traffic System Department
Keskuskatu 8
Po.Box 185, FI-00101 Helsinki
Tel. (09) 5840 5026
GSM +358 400 762 974
Fax +358 (9) 5840 5108
miika.makitalo@rhk.fi, www.rhk.fi

Appendix 11: The questions of the research result evaluation interviews

Market entry in rail transport

1. According to the results of the study, entry barriers in the rail freight transport are the difficulty in obtaining rolling stock, access to the services and recruitment of the needed personnel.

   - Obtaining rolling stock is difficult due to the difference in track gauge between most of the EU countries and Finland. And therefore the market of rolling stock is not developed.
   - Access to services is considered as an issue, because the incumbent railway undertaking, VR Ltd is the owner of the facilities.
   - All the railway experts are working in VR Ltd. Training of the personnel takes a lot of time in the VR Training Centre, whose equality of services is doubted.

   → ***What do you think are the main barriers to entry?***

2. There are financial and technical perspectives in the entry in rail transport. Besides those, there is also an administrational perspective. This means applying for operating licence and safety certificate, and tasks involved when requesting capacity. The study results imply that the importance of the administrational perspective is underestimated. It is also seen that market entry is bureaucratic and takes a lot of time.

   - Applying operating licence and especially safety certificate requires knowledge of railway details, which may be a challenge to an entrant.
   - It is possible that requested and actually allocated capacity differ considerably from each other. According to the study results timetable planning may be a demanding task for a new player. It is a crucial situation for the railway undertaking with its customer negotiations, if the allocated capacity is substantially different than what was optimistically requested.

   → ***What kind of significance administrational perspective has in market entry?***

3. Governmental authorities are expected to build up an equal competition environment. Sector and operating conditions are supposed to be such as authorities and administration are transparent and rail transports activities are equal.

   → ***What kind of role authorities should play in the creation of competition environment?***

4. Along with the study, competition will occur in feeding transports and in attractive strong industry transports. The median foreseen value for the market share of the new railway undertakings was 16.5 per cent in year 2015. It was estimated that transport service pricing will decrease, because of competition and already by the threat of competition. The incumbent railway undertaking, VR Ltd was expected to deter market entry and competition. All together, it was seen that rail transports competition will be intensive and fierce.

   → ***Do you think that these results are reliable?***

Appendix 12: The respondents selected for the evaluation interview

Achermann Rudolf	Schweizerische Bundesbahnen SBB, Switzerland
Gustavsson Hans-Åke	Hector Rail, Sweden
Hotz Harald	ÖBB Infrastruktur Betrieb (Railnet Austria), Austria
Kvernsveen Kjartan	Jernbaneverket (Norwegian National Rail Administration), Norway
Lewerentz Åke	Banverket (Swedish National Rail Administration), Sweden
Montfoort Wouter	Nederlandse Mededingingsautoriteit (The Netherlands Competition Authority), the Netherlands
Mäenpää Antti	Teollisuuden Raideliikenne TR-Group, Finland
Nafe Oliver	Railion Deutschland, Germany
Nemeth Réka	Vasúti Pályakapacitás-elosztó (Rail Capacity Allocation Office), Hungary
Pina Filipe Gomes de	Rede Ferroviária Nacional, Portugal
Risi Pasqualino	Network Rail, United Kingdom
Tysklind Åsa	European Commission
Wadman Peder	Branschföreningen Tågoperatörerna (The Association of Swedish Train Operators), Sweden
Wolf Hans	Banverket (Swedish National Rail Administration), Sweden
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