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**DEREGULATION OF RAILROADS AND FUTURE
DEVELOPMENT SCENARIOS IN EUROPE -
LITERATURE ANALYSIS OF PRIVATIZATION
PROCESS TAKEN PLACE IN US, UK AND SWEDEN**



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RESEARCH REPORT

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**Deregulation of Railroads and Future Development Scenarios in Europe –
Literature Analysis of Privatization Process Taken Place in US, UK and Sweden**

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ABSTRACT

European Union decided already over decade ago that railways should be privatized in all of the member countries, and UK was planned to serve as an exemplary nation to start the implementation process. The main idea in European deregulation is the diffusion of ownership in the rail infrastructure, and railway operations. The first one is intended to be at the disposal of one organization, which is selling the track availability for operators, and then latter ones are competing intensively with each other from passengers and cargo loads. However, in the US, as well as in other Latin American countries, the situation is so that companies are vertically integrated and own tracks, trains, trailers and passenger coaches.

In UK privatization was considered firstly as a great failure; after a while, rigid outsourcing strategies were applied in rail infrastructure maintenance, trains were having difficulties to be on time, and eventually several hazardous accidents happened. In a business-wise, things also developed rather unfavorably; rail infrastructure operator was forced to be taken out of London Stock Exchange, and government was needed to support badly indebt, and marginally invested company (although, capacity was in great need). Also rail operators were in financial trouble, and only consistent government actions were able to help this industry out of its deepest troubles. However, among these very negative side effects, whole industry was able to bring growth to the railway markets. Passenger and cargo flows were constantly increasing, and declining trend, already started in 1970's, was for the first time surpassed. Another European country, having longer-term experiences from privatization, has been Sweden. In here the case has been rather conservative, as being compared to the situation in UK; only limited number of routes were under competition, and contracts to operate these were awarded for a longer time horizon. Swedish deregulation has been proved to be successful one, since productivity level has been steadily raised, and market share with respect of other modes, especially in a case of passenger transportation, has considerably increased. However, competition is still rather marginal in this country, and much better gains are expected to be realized, if deregulation is continued further on. The last country of our analysis, US, has used to free its railway competition by vertical integration principles, and this has produced once again different results. Basically this structural choice has favored cargo flows, instead of passengers, and in this case created different companies to take care of these two named group of customers. US deregulation has just very recently showed indications with different respects, that remaining railway companies are turning to be profitable, able to share dividends, and have improved their shareholder value.

In this research report we are trying to sketch, what kind effects privatization process will have in European countries, which have already just previously deregulated their railways, or soon going to be. We will review, which of these three alternatives is the most probable one, and suggest how countries could avoid unwanted side effects. Based on the evidence gained from three country analysis, and brief statistical analyses concerning the effects of culture on railway demand, we could argue that railways do have a future in Europe, and properly applied deregulation process is the key for it.

Keywords: Deregulation, railroads, future

TIIVISTELMÄ

Euroopan unionissa päätettiin jo yli vuosikymmen sitten, että rautatieliiketoiminta vapautetaan kilpailulle. Iso-Britanniasta oli määrä tulla esimerkkivaltio tämän prosessin käyttöönotossa. Pääideana oli säännöstelyn keventäminen, jolloin omistuspohja toimialalla laajenee ja rautateiden infrastruktuuri sekä toiminta parantuvat. Infrastruktuuri on määrä olla yhden organisaation hallinnassa ja raiteiden käyttöoikeus on kaikilla lupaehdot täyttävillä operaattoreilla, jotka kilpailevat keskenään matkustajista ja tavararahdeista. Kuitenkin Yhdysvalloissa ja eräissä Latinalaisen Amerikan maissa kilpailu on vapautettu siten, että rautatieyrittäjä omistaa raideinfrastruktuurin, junat, tavarankuljetus- sekä matkustajavaunut.

Iso-Britannian yksityistämistä pidettiin aluksi isona epäonnistumisena: nopealla aikataululla sovellettiin jäykkiä transaktioperusteisia ulkoistamisstrategioita infrastruktuurin kunnossapitoon, jotka lopulta johtivat junien jatkuviin myöhästymisiin ja muutamaa tuhoisaan onnettomuuteen. Liiketoiminnallisessa mielessäkään ei oikein onnistuttu: infrastruktuurista vastaava yritys jouduttiin listaamaan pois Lontoon pörssistä, ja hallituksen oli pakko luoda tukipaketti pahasti velkaantuneen, vain marginaalisten investointien kohteena olleen yrityksen toimintaa varten (vaikka kapasiteettitarvetta oli markkinoilla). Myös rautatieoperaattorit olivat taloudellisessa ahdingossa ja vain määrätietoisten hallituksen laatimien pelastuspakettien avulla ala nousi syvimmästä kriisistään. Tästä huolimatta näiden negatiivisten sivuvaikutusten ohella koko ala pystyi kasvattamaan kysyntää, niin matkustaja- kuin rahtiliikenteenkin osalta. Vähenevän kysynnän trendi, joka alkoi 1970-luvulla, otti käännöksen parempaan. Toinen eurooppalaismaa, jolla on pitkät kokemukset yksityistämisestä, on Ruotsi. Tämä maatapaus on melko konservatiivinen verrattuna tilanteeseen edellisessä; vain rajattu määrä reittejä on avattu kilpailulle ja sopimukset tehdään kerralla pitkäksi aikaa eteenpäin. Ruotsin säännöstelyn purku osoittautui menestykseksi, koska tuottavuus on ollut vakaassa kasvussa ja rautateiden markkinaosuus erityisesti matkustajapuolella on noussut merkittävästi, verrattuna muihin kuljetusmuotoihin. Kuitenkin kilpailua on käytännössä vähän tässä maassa ja parempia tuloksia on lupa odottaa, kun vain säännöstelyn purkaminen jatkuu. Viimeinen tutkimuksemme kohteena oleva maa on Yhdysvallat, joka alistutti rautatiet kilpailulle jo 1980-luvun alussa, käyttäen jo edellä mainittua vertikaalista integraatiota; tämä valinta on taas johtanut hyvin erilaisiin tuloksiin. Vaihtoehtoinen rakenteellinen uudistustapa on suosinut rahtivirtoja matkustajiin nähden, ja lopputuloksena tämä tapaus synnytti yrityksiä huolehtimaan toista näistä kahdesta pääasiakasryhmästä. Viimeaikaiset tulokset tästä yksityistämisprosessista ovat olleet hyviä: jäljelle jääneiden yritysten voitot ovat kasvaneet, osinkoja ollaan kyetty jakamaan ja osakkeiden arvostus on noussut.

Tässä tutkimusraportissa yritämme kolmen maatapaoksen kautta esittää, miten yksityistämisprosessi tulee vaikuttamaan Euroopassa, kun kilpailu rautateillä vapautuu. Me käymme läpi, mikä näistä kolmesta maaesimerkistä on kaikkein todennäköisin ja esitämme ehdotuksia siihen, miten valtiot voisivat välttää ei-haluttuja sivuvaikutuksia. Kolme maaesimerkkiä, ja lopuksi esitetty lyhyt tilastollinen analyysi osoittavat, että rautateillä on tulevaisuuden potentiaalia Euroopassa, ja kilpailun vapauttaminen on avain tämän potentiaalın realisointiin.

Avainsanat: Säännöstelyn vapauttaminen, rautatieliiketoiminta, tulevaisuus

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1. INTRODUCTION

Railways in the whole world context are under tremendous change due to privatization and deregulation; for example in US, New Zealand, Mexico and Japan government has decided to keep companies vertically integrated (Gomez-Ibanez 2004), and railway companies compete from long-term contracts to operate particular routes; in contrary EU has decided that infrastructure should be separated from the freight and passenger operations. In the beginning of year 2007, all of the EU member states will face situation, where railway transportation operations are open for free competition, in the beginning most profitable segment, namely freight transportation is about to be liberalized (passengers will follow a bit later). However, warning examples, especially in EU, from painful privatization process (Tyrrall 2003; Grompton & Jupe 2003), but in the end in longer-term perspective desired outcomes could be found from UK (Mathieu 2003), although Sweden (Holvad, Preston & Huang 2003) and the Baltic States (Ojala, Naula & Queiroz 2005) have showed much better process as well as similar results. Despite this significant change in this industry going to appear, there exist small amount of research concerning the about to appear liberalization of railways.

It is well known that in terms of efficiency and productivity, great differences exist among EU nations (Christopoulos, Loizides & Tsionas 2001; Jorge & Suarez 2003). It is also well known that passenger transportation is less profitable (e.g. in US railway passenger transportation is very un-favored option for traveling; Blackshaw & Thompson 1993), and most often supported by local governments, and therefore the future of railway transportation depends solely on the freight transportation, and its competitiveness with regard to other transportation modes. In European context we have faced in the past two decades constant demand decline in the railway operations (in the former Eastern Block countries, we could even call this development as “demand collapse”; see Burian 2001, Lukasiak 2001), especially on the freight transportation side, so therefore it is important to examine soon to happening liberalization of this sector through three country examples (US, UK and Sweden).

Research methodology in this paper applied is the literature review of three case countries, where deregulation process has been implemented already some time ago. We also use second-hand data to support our observations. So, our approach is

literature review namely in three different countries; using Arbnor & Bjerke's (1997) methodological framework our research is positioned using systems approach, and combining both qualitative and quantitative analysis. Our results are proposing normative instructions for EU member states, which are still in the process of taking their first steps in the deregulation process. So, in Kasanen et al.'s (1993) framework our research methodology reminds quite a much 'decision-oriented approach'. Based on case study research literature analysis of logistics presented by Häkkinen & Hilmola (2005), this research work is positioned in these two methodological frameworks in quite frequently used logistics research positioning areas; although majority of logistics case study research uses systems and qualitative approach (or sometimes combining quantitative issue as well), and normative features are quite often present. However, it should be reminded that this research work does not position itself primarily as a case study research; it is a literature review, using case countries as an analysis dividing point to understand the deregulation process better. This research work seeks answers for two following research questions: (1) how privatization, deregulation and market mechanism has worked in the three observed countries, and (2) what are the key-factors determining the deregulation success.

This paper is structured as follows: In the second section we will examine the performance and position of railways in Europe with long-term perspective. As our analysis shows, this sector has been incapable to increase volumes as international trade has increased within last decades. Mostly the reason has been the lack of support for international trade; transport market has not increased that much inside of single member states. At the moment it seems to be the case that railways are between three other major transportation modes with its characteristics of cargo volume and value, and in the longer term this mode has lost market share heavily, especially for road, but as well as to air and sea transportation. After this literature as well as industry environment analysis, we will continue with three case countries, namely US, UK and Sweden. We analyze railway deregulation occurred in these countries with second hand long-term statistics as well as with literature analysis, concerning selected number of articles dealing with liberalization of these three countries. Our analysis concludes, that liberalization has produced in a longer term growing demand, in some cases either on passenger or cargo side (or both), but short- and medium-term development has been different, and undesired effects could be found from completed decisions, and opportunistic behavior of actors in this industry. In the discussion

section of this paper we will propose framework concerning deregulation of railways, and in here we propose that infrastructure as well as level of free competition determines outcomes of deregulation process. However, numbers of other different market environment factors do have implications as well. In the final section we will conclude our paper, and provide avenues for further research.

2. RAILWAYS IN EUROPE, LONG-TERM PERSPECTIVE

Railways were the leading innovation in the early 19th century, and economic long cycle research (Ayres 1990) has argued it to have leaden the economic prosperity in that time (industrialization, and especially steam power, iron and cotton textiles were the enabling factoring in the first approx. 55 year long wave). Sahal (1981) has reported that innovation activity in this sector halved as 19th century and 58 years of 20th century are being compared with each other. After the early 20th century all the main innovations, including diesel and electricity trains were invented, and eventually put into mass production. Railroads developed all over the world in isolation, and all of the countries had own railway operating companies. Standardization was the issue from the start, and it has been reported that in the early 19th century London all of the railway operators had own railway gauge width. This same issue continued in the country level as well; in the Europe we have Central European railway gauge, but as well Soviet leaden standard. Countries belong either into one of these two standards, mostly due to their history rather than economical or business premises.

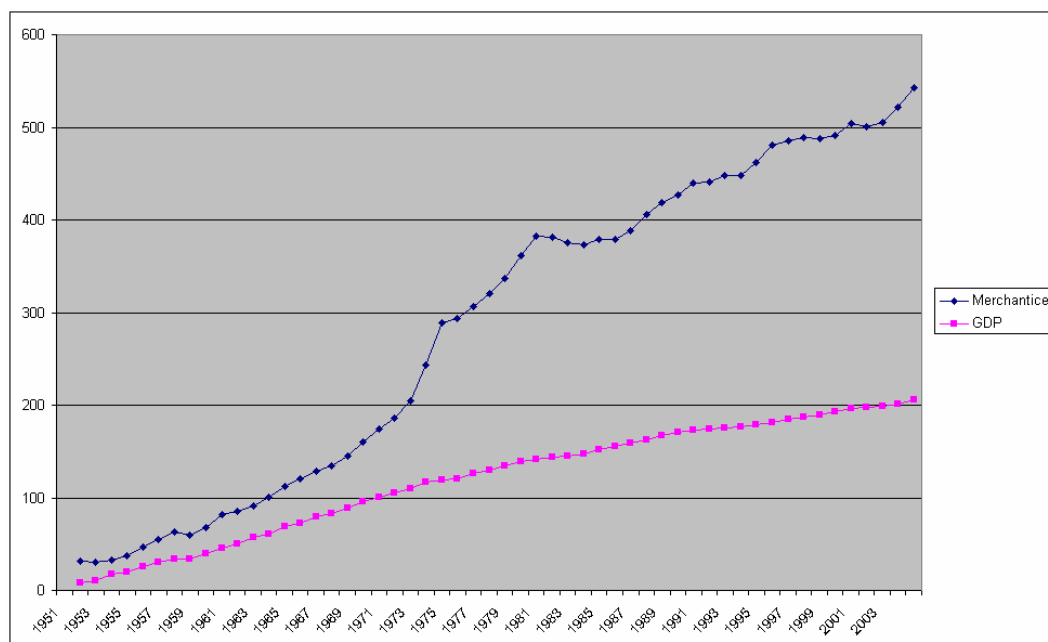


Figure 1. World trade and GDP development. Source: World Trade Organization

As Figure 1 shows, world GDP has increased steadily among last 50 years. However, as world trade is increasing by higher magnitude as compared to GDP, this means increasing amounts of transportation, especially international. So, it is not surprising to find out that all three others, namely road, sea and airfreight have increased their total transportation amount during decades. From these three most popular alternatives, airfreight has been predicted to grow annually 6.2 percent (Boeing 2005), nearly without any limits. Also infrastructure research related to transportation models supports this mode; infrastructure in airfreight transportation is constantly increasing, while e.g. road transportation has started to fall (Marchetti 1988). However, it is important to note that although there exist demand for international transportation work, proportional share and absolute amount of railroad freights have been in constant decline e.g. in Europe (Figure 2). Number of different authors argue that this decline has been due to collapse of communism/socialism, and overall changed production structure as European economies have developed through agriculture to industrial and further on information/service economies. We can't argue against these named factors; however, mostly the reason for this declining development in business side has been the lack of international cross-border scheduled routes as well as the flexibility to connect railway freights to other transportation modes.

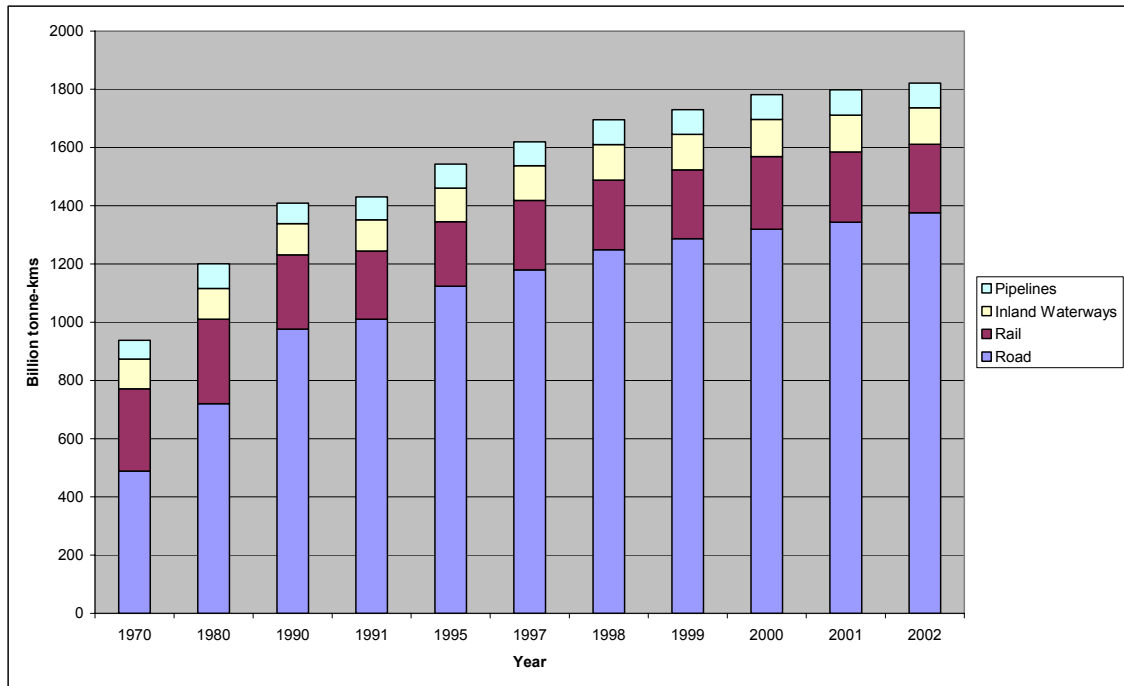


Figure 2. Freight transportation in EU-15 with respect of different modes in period of 1970-2002. Source: European Union (2004)

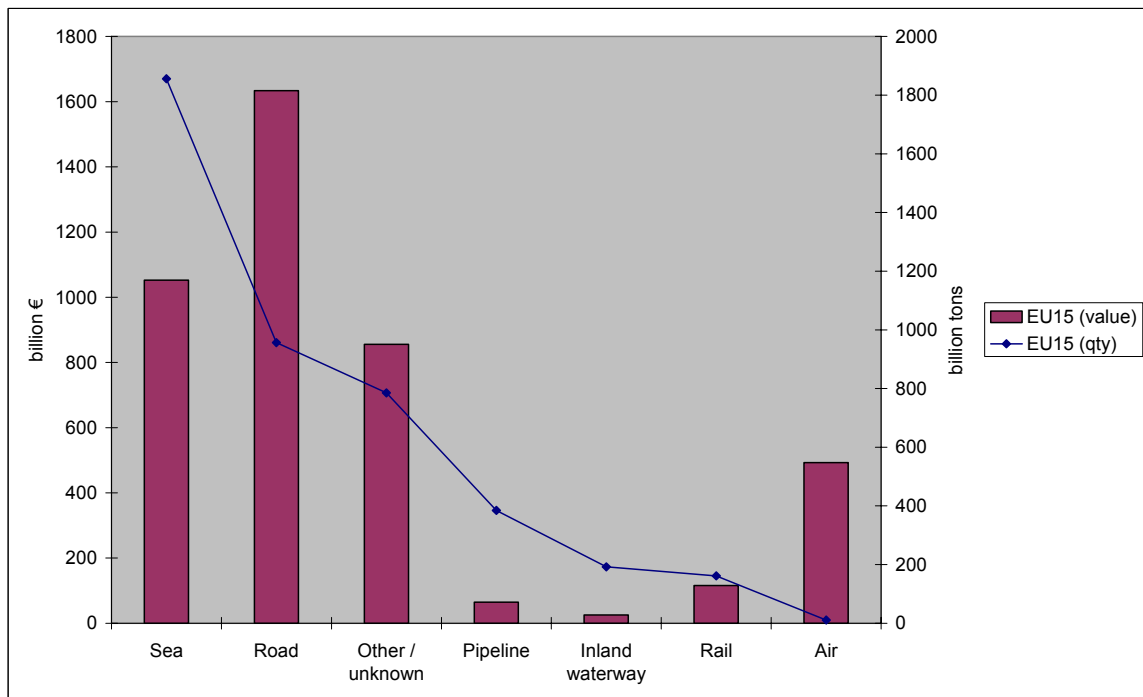


Figure 3. European Union 15 member states, and their external trade transportation with world during 2003 regard to different transportation modes (value as well as weight measures). Source: European Union (2004)

Theoretically speaking, Europe could use railway with all of the eastbound related countries ending up to Asia, and among both import and export transport directions. In the late 90's it was estimated by United Nations (1999) that only a small fraction from container transportation proceeds through this route (below 5 %). However, current situation is nearly opposite; railway transportation is following all three major transportation modes (see Figure 3) as we measure the total value of transported items (pipeline and inland waterway is following behind). If transportation volume is measured with transported tonnes, situation does not change that much: Railway follows road and sea. If we combine information from Figure 3, it could be argued that both road and air take care of transportation of more valuable world trade cargos of EU15, while rail and sea are concentrated on volumes and less valuable goods transportation. It seems to be the case that railway transportation is situated in the between of four rival modes: Air transportation and road attracts all of the valuable cargos, while sea represents most cost efficient solution for invaluable transports.

3. COUNTRY ANALYSIS

3.1. Vertically Integrated – Privatization of US Railways

Railway transportation was deregulated in US early on 1980's with Staggers' act; this meant that railway companies were allowed to compete with each other, and set the transportation prices freely (Association of American Railways 2006). However, it should be remembered that US railway deregulation is built up within the principle that infrastructure is owned by the operators (e.g. Gomez-Ibanez 2004), and barrier to entry is much higher for new entrants (as compared e.g. to situation in Europe, where infrastructure is owned by government, and hired to competing operators). US railways have been used as a primary example of deregulation success in literature; total modal share from other competing modes has approached level of 40 % (as measured with tons), and it is in the long-term continuously increasing. It is good to remember that in the early 1950's Europe and US were in the parity with railroad transportation share from total transportation work (Thompson 2000).

Also the amount of employees has been on sharp decline; according to World Bank (2006) class I railways employed during 1980 approx. 458 thousand people, while in year 2000 this has declined to 168 thousand. Also other capital investment factors have been on constant decline (like amount of total route, and total number of locomotives). Average freight leads (km) have also constantly risen in US (approx. 1350 km for freight during year 2000). How railway companies have been able to push out this kind of impressive improvements? With intensive concentration to cargo, among long productive container trains (intermodal connection plays important part), and entirely neglecting passenger transportation. So, companies have concentrated on volume, and changing their product mix entirely. This could be compared to manufacturing company, which neglects all of the high-end items, and concentrates only into mass markets and mass manufacturing.

The US government has not found the proper balance private and public involvement in the railways industry. The Staggers Act was the right move but it did not generate a spirit of "cost control". Under competitive market rules there was no assurance that the railways sector as a whole will and be able to increase its share among other forms of transport. As road transport is generally held more efficient in

comparison with the rail industry, the operators had to invest more into the business to fight back in some way and as a consequence the revenues coming from the sector are continually decreasing. Productivity improvements cannot and could not outweigh the negative effects of mergers and service inefficiencies in certain regions. As productivity enhancement is in essence a consequence of a series of business process reengineering projects - from termination of money-losing services, use of more effective equipment, more flexible work rules, and large scale layoffs in employment, there have been no significant change in the structure of the industry making it possible to search for revenue increasing possibilities (Spychalski & Swan 2004, 177). The Staggar Act did not pay attention to the capital assets available to operators, and only served as a mean to solve conflicts between businesses. The core problem has been all the time the disagreement between actors about the extent how railways would be allowed to push upward the prices. One could argue that in the long run far too much deregulation led to decreasing rates in revenues of operators while not having given incentives for service users to rely on more on railways.

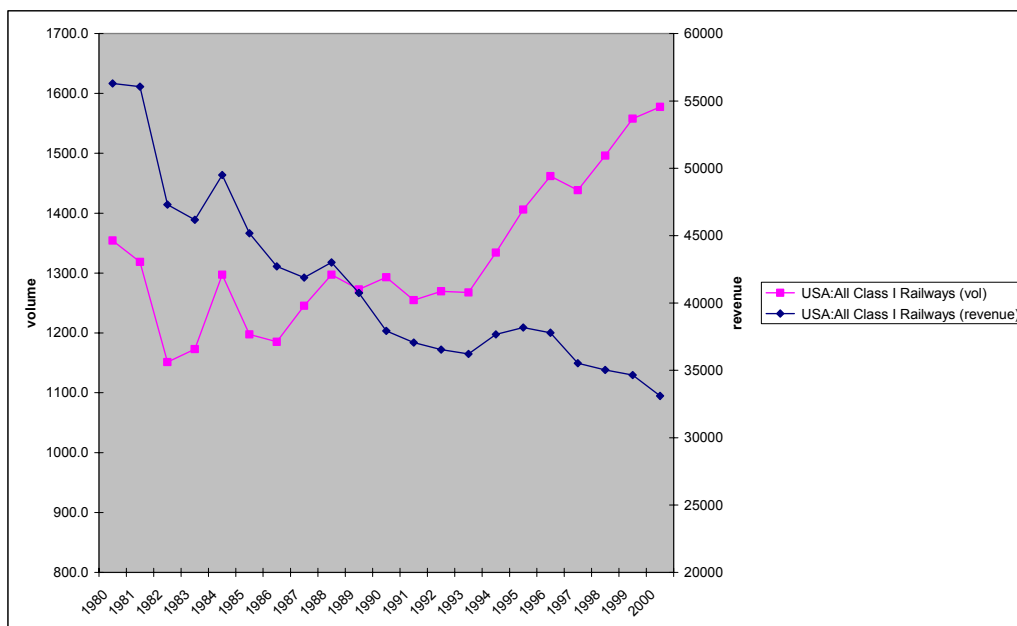


Figure 4. Transported cargo tons and revenue of US class I railways in a time period of 1980 to 2000. Source: World Bank railway database (2006).

Great changes in US railways have not produced consistent results with every respect; for example revenue development in class I railways has constantly declined

within 20 year observation period. Thus, volumes (even ton-kms would) show major increase. However, if the performance is being evaluated with conventional business measures; return on investment, and shareholder value creation show disappointing performance. And latest research has generally concluded, that railways are barely able to show returns equal to the cost of capital (Association of American Railways 2006; Whitehurst & Clarke 2004). This sector also constantly requires investments, so it has been speculated, what kind of forward or backward merger and acquisitions wave is need to make corporations owning railways as profitable ones (with respect of conventional shareholder thinking). Thus, it should be remembered that US railways, in freight operations particularly, have been able to show profitability, and governmental subsidiaries could in this situation be avoided in the longer term. So, results have been impressive as thinking from public sector angle, but making these sustainable in the business sense is another story.

Table 1. Analyzed articles concerning US railway deregulation.

Author & Title	Major arguments	Other information
Wynns, Peyton L. (2004). The Limits for Economic Regulation: the U.S. experience	Traditional economic regulatory means such as entry -, exist controls and pricing have a disruptive influence on the economic performance of railroad industry. Non economic regulatory tools have to be emphasized.	The <i>Staggers Act</i> was by no means total deregulation: although carriers were given much more pricing flexibility and allowed to enter contracts with shippers, limits were placed on the amounts that could be charged captive shippers.
Whitehurst, C. H. & R. L. Clarke (2004). The coming North American rail mergers	To reap more benefits out of the railroads the government must examine the transportation system as a whole including highways, water, air, etc. Though the deregulation transformed the rail industry into a productive one, it is still underutilized.	There were, of course, major rail mergers before passage of the Staggers Act, but the largest and those with the most impact, occurred in the 20 years since its passage.”
Vassallo, Jose Manuel (2005). Nature Or Nurture: Why Do Railroads Carry Greater Freight Share In The United States Than In Europe?	Private long-term contracts were the essential tools that disseminated protection for shippers and railroad operators for making tailored investments. In the US there are no “boarders” blocking interoperability and the policies trigger incentives for railways operators to invest more into assets.	During the 1950s the share of freight carried by railroads was similar and declining in both the United States and Europe. By 2000 the railroads’ share of freight had increased to 38 percent in the United States while it fell to 8 percent in Europe.
Association of American Railroads (2006). Destructive Railroad Re-regulation	The Staggers Act functions as a balancing tool between the public and the private sector in the rail industry: re-regulation would break this balance. The re-regulation of market-based US railroads would lead to artificially reduced revenues. The US rail deregulation was a huge success.	Since the Staggers Act in 1980 the U.S. freight railroad performance have risen more than 150 per cent. Volumes carried have risen more than 60 per cent., but the revenues coming from the sector have actually decreased more than 10 per cent. However the cost of capital for railroads have decreased approximately 6 per cent while return on investment stayed approximately at the same level.
Rennicke, William J. (2004). Hearing on the status of the surface transportation board and railroad economic regulation	The largest benefits of the privatization have been delivered to customers in the form of reductions of price rates. Not only efficiency and productivity gains have been achieved but also innovations were fuelled. However the productivity gains and rate declines have been diminishing all the time but service improvements needed.	Railroads also are under pressure to invest in new capabilities to avoid losing customers. The hangover from the financial distress in the airline industry, in which many investors in aircraft lost money, and new international banking regulations are putting pressure even on traditional railroad equipment finance transactions.

Literature analysis suggests (Table 1) that US deregulation was major success after its introduction, and both companies as well as customers have benefited. Volumes have increased, especially in freight transportation, and productivity measured with different dimensions has considerably improved. However, in freight transportation side it is seen that intermodal and cross-sector linkages should be further developed. Alliances between railroads and sea operators were seen as vital part of the positive development. The use of railroads has considerably increased, but the beneficiaries are customers in terms of lower prices. This development is also considered as a threat for the level of long-term investments and profitability as well as shareholder value development. Staggers’ act was considered as a vital part of a change process, but major mergers between operators have occurred just very recently. Market restructuring seems to be major discussion topic even today.

According to the most updated information (Thomson Financial 2006), especially since 2004, the selected US Class I Railroad companies are not only showing increasing profits, but they have turned themselves into a positive path in terms of sales income too: The revenue flows jumped onto a new level and are steadily rising. In addition some of these operators share even dividend to their shareholders. Nevertheless the most significant change occurred with regard to future expectations, in some cases these are on an un-normally high level: For example, in the case of Kansas City Southern the Earnings Per Share estimate forecast envisages a growth of share over 800 % by the end current accounting year 2006. This might be a consequence of a consistent way of restructuring the sector via mergers and acquisitions: Kansas City Southern recently completed a merger with Mexican Rail Inc. in 2004, but in addition to that there are negotiations going on with Norfolk Southern Corporation. Other large-scale operators such as Union Pacific Corporation or CSX Corporation have similar figures compounded with mergers and acquisitions. The figures show without doubt that deregulation process is the right measure to embark upon if railways are meant to be turned onto the “increasing revenue flow – track”. It can be seen that investors in the US on the private sector are confirmed that railroads industry is definitely not a “sunset” area (see Nilsson 2002).

3.2. All or nothing – Privatization Process in UK

In the United Kingdom the railways sector is in the hand of private firms and the infrastructure company Network Rail Ltd (former Railtrack went into bankruptcy) that is a publicly listed enterprise. There are 25 train passenger service operators (TOC) and several freight operating companies. Two regulatory bodies guard the order: Office of Passenger Rail Franchising (OPRAF) – later Strategic Rail Authority (SRA), for overlooking franchise awards and controlling TOC agreements. Passenger train operating firms were granted contracts on a competitive tendering basis, franchises for 25 specified routes, which were mainly established on geographically segmented railway lines. The dominant company in the rail freight sector was English Welsh and Scottish Railways Ltd (EWS), a carrier of bulk goods. The other relevant player though much smaller was Freightliner Ltd, a provider of inter-modal traffic. The track access commission paid by the Freight Operating Companies (FOC) were

not necessarily at the same level as paid by the TOCs. One could refer to the fact that the FOCs do not contribute to Railtrack's fixed costs. (Sittle 2004, 403-405).

The process in Britain started with round negotiations within the government in the mid 1980's. In 1987 Adam Smith Institute came up with a draft to reconstruct the sector. The essential content of this document was the introduction of commercial contract model with the help of which parties to the scheme would optimize the benefits. Vertical separation was used as a tool to achieve optimal conditions of contracts. A separate company was established to manage infrastructural tasks with the mean of out-contracting. The result was a highly fragmented scheme: In the maintenance slice alone an estimate evaluates that there are approximately 2000 private operators participating in the business. It has generally been argued that the privatization process of a railway sector in UK was a failure. For example, railway infrastructure privatization resulted in to stock market listing, and afterwards delisting (and government intervention) in 2001 of Railtrack plc.; this has served as a good lesson of short-term investment gain thinking and in proper management of a company operating through long-term investments curriculum (Tyrrall 2003). Railtrack turned in 5 years into badly in-dept, and dividend sharing machine, and abandoned (as well as outsourced) infrastructure investments, and operative daily management of track scheduling as well as customer service (Tyrrall 2003; Crompton & Jupe 2003). During the privatization process this resulted on the following undesired effects: Passenger train accuracy was lower than ever (from above 90% to level of 60%; see Mathieu 2003), lack of infrastructure investments were increasing the points where rails were not in a proper condition, train accidents increased in the short-term, and instead of subsidiary savings, government was needed to provide huge financial package to support this industry.

In the aftermath of UK railway privatization crisis, we may argue that in the medium as well as longer-term perspective, things developed in the favorable direction. As Figure 5 reveals, freight levels have steadily increased in UK, and are currently reaching the level of 1980's. After government intervention, mostly due to terrible Hatfield accident, the development of safety in railway transportation has considerably increased, and is currently in higher levels than ever. Passenger transportation has also turned as a real success, since in year 2003 it was 23 % higher than what was the case in the early 90's (see ATOC Report 2005).

So, privatization created markets and demand, which did not exist before, and have turned long-term trends into favorable direction (Mathieu 2003). In the UK the core problem is that the demand is too high for the rail services in general and maintenance services for tracks have been neglected. In addition the government hurried with the completion of the process putting in place too many changes at the same time: Both deregulating the industry and separating operational services from infrastructure. Lack of coordination and underinvestment are underpinning the railways sector. Private investors did not contribute enough to the financing operations and the state was not able to create a model under which these parties could have been motivated. This in turn was due to the fact that even within the government there was no common viewpoint reached as to how to implement the redesign process of this business branch. The whole sector suffered from the extensive commercial interest over social goals both within government and the private sector. The state could not provide an optimal solution with the help of which this dilemma could be solved.

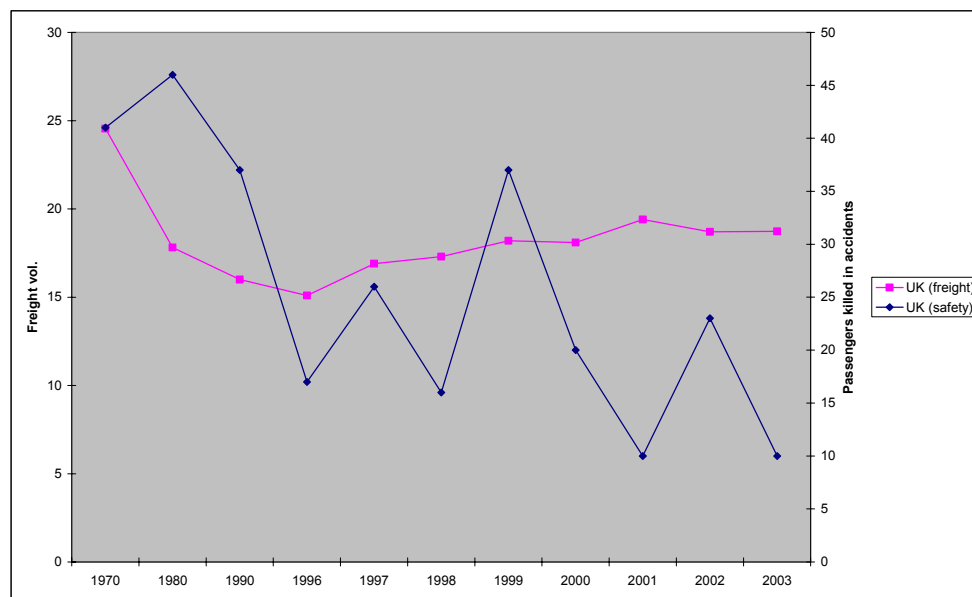


Figure 5. Railway freight and safety development in UK. Source: European Union (2004)

Table 2. Analyzed articles concerning UK railway deregulation.

Author & Title	Major arguments	Other information
Crompton, Gerald & Robert Jupe (2004). "Not fit for purpose": The franchising and regulation of the Train Operating Companies in Britain's privatized railway system	The principles of privatization do not fit into the railway sector, which is capital intensive: private investments are not enough. The basic driver behind privatization is ideology.	Regulation cannot remedy a flawed privatisation, which produced a "confused and fragmented" structure."
Murray, Ian (2005). No Way to Run a Railway: Lessons from British Rail Privatization	The real causes behind the failure of the railways structure redesign was the fragmentation of the industry and the disastrous over-regulation that accompanied it. The process led to collapse of investor confidence. Short run thinking is the mainstream.	Experience in the UK has shown that using regulation to force a degree of vertical separation on an industry that works best when integrated is extremely counterproductive, to the extent that it might force market failure."
Catalyst (2004). Renaissance delayed? – New Labour and the railways	From the early days British railways always has been suffering from a lack of strategic coordination and a chronic underinvestment.	The UK is one of the only European countries to have reversed a long-running decline in rail freight, which still is now 43 per cent up on the levels of 1995
Thompson, Louis S. (2004). Privatizing British Railways: Are There Lessons for the World Bank and its Borrowers?	The railway sector must have a continuous involvement by the government as there is inherent mix of commercial and social objectives. The transition for the organization structure and privatization was a rough one implemented with an excess of rush but with complex objectives:	Separation of infrastructure from operations did cause problems of complexity and cost (transaction costs). It did not cause increased accidents and it did support an increase in demand.
Brendan, Martin (2002). British rail privatization: what went wrong?	The combination of contracts and regulation cannot make the fragmented scene into a cohesive one: economic regulation undermines social rules	In January 2002, the SRA unveiled a 10-year investment plan to include around £34 billion from the private sector and around the same amount from public finance

Generally all of the analyzed literature from UK railway sector considers (see Table 2) that railway deregulation as a major failure, and identifies that market forces are just too short-term oriented, as social implications and replacement investments are needed to be considered through longer-term perspective. Numerous different reasons are mentioned; mostly market forces are experienced to be too crude for complex and fragmented transportation system, which European railway typically represents. Before deregulation privatization resulted in UK into very complicated,

and high transaction cost structure, since railways were separated into number of different business units (this similar approach is although used in Hungary as well as Poland at the moment!). Also history of UK's railway sector is taken to discussion, since strategic co-ordination, and long-term perspective has not been the main issue in railway development. Researchers argue that separation between infrastructure, and railway operations were one of the main reasons, why deregulation failed. This is supported by the fact that in the early 2002 UK government established 10-year plan to modernize railway system with £ 34 billion; this requires private sector commitment to investments as well.

At the same time if one takes a look at the most updated financial figures of the British Railroads companies it turns out that these days many of these firms managed to reap profit from their operations. For example the largest operator on the passenger side GNER managed to turn around its financial state: In the 1990's it was a stable grant taker from the government obtaining millions of pounds but in 2003 it was able to pay back 27 million pounds (GNER 2005). The largest freight operator English Welsh Scottish Railways (EWS) itself increased the amount of freight moved by 50% since its establishment in 1996 while having invested 500 million pounds to its operations (EWS 2006). This might be a sign of the ability of the sector to follow the path of the companies in the US. In this respects most of the research papers about the failure of the deregulation process in the British rail industry can be claim to propose too pessimistic evaluation about the outcome of the process.

3.3. Conservative Choice – Privatization Process in Sweden

One of the earliest examples from railway privatization in Europe, among UK, was conservative Sweden. The process started already during late 80's, and has generally been considered as a slow moving, and incremental privatization process (Swedish Competition Authority 2004). Sweden has well-developed train transportation system, having high technical novelty value, and at least average productivity performance compared to other European countries (Woxenius 1998). As in UK approach was to privatize railway maintenance, among passenger as well as freight transportation, and also list companies to stock exchanges, the privatization process in Sweden has been much slower moving (Bergdahl 2005; Swedish Competition Authority 2004). Only

in 2000 the Swedish National Railways Statens Järnvägar (SJ) was split up into six different independent limited liability companies the ownership of which stayed still in the hand of the Swedish state. SJ AB became the “invisible” monopoly holder of the passenger markets whilst Green Cargo positioned itself as the dominant player on the freight side (SJ Annual Report 2004).

In freight transportation side, competition was made free from the beginning, and Ikea as well as other private companies operate some number of “block-train” or “cherry picked” -type of scheduled routes (in Sweden as well as between different surrounding countries). In passenger transportation government selects the routes for open competition, and different companies just bargain to operate certain routes. The contract duration is in most cases five years. However, in passenger transportation there exist numbers of routes, which are not open for free market forces, and are still monopoly of government owned SJ AB. The government admitted a capital increase of 200 million EUR support packet for this firm in June 2003. There are long-distance transport services too that are not financially self-supporting and these are publicly co-financed by the national public transport agency, *Rikstrafiken*. In local and regional transport, the regional authorities are responsible for this funding. They finance short-distance passenger transport with subsidies between 30–50%. In 2003, the fare revenues amounted to €808 million and the total cost of procured traffic for the state amounted to €91 million of which €46.8 million was allocated for rail transport (Rikstrafiken, 2004). Responsibility for railway competition control is issued to the Swedish rail agency, Järnvägsstyrelsen established in July 2004. This agency is in charge for all matters included in the new railway act and safety regulations for undergrounds and trams. (EMCC 2006, 3).

In between SJ opted for illegal options for keeping itself on the top: In 1992 the court found this company guilty of under pricing while taking participation in the competitive bidding process (Berdahl 2004, 50). According to EU guidance, railway infrastructure management is still in the government owned control, although maintenance operations are some parts outsourced, and new business models have been developed for the companies operating in this cluster (e.g. railway maintenance company owns other “core competence” branch companies, like automatic guided vehicles manufacturer, Euromation). Undesired effect of privatization has been avoided in Sweden, and also long-term trends sound very reasonable. As Figure 5 shows, passenger transportation has gained considerable popularity (approx. 40 %

increase as being compared to the situation in the early 90's), and freight transportation has been able to push small improvements in the transportation amounts. However, it should be remembered that freight transportation is still dominated by governmental Green Cargo (nearly 80 % share from total market), even though number of competitors is quite large (from 10-15).

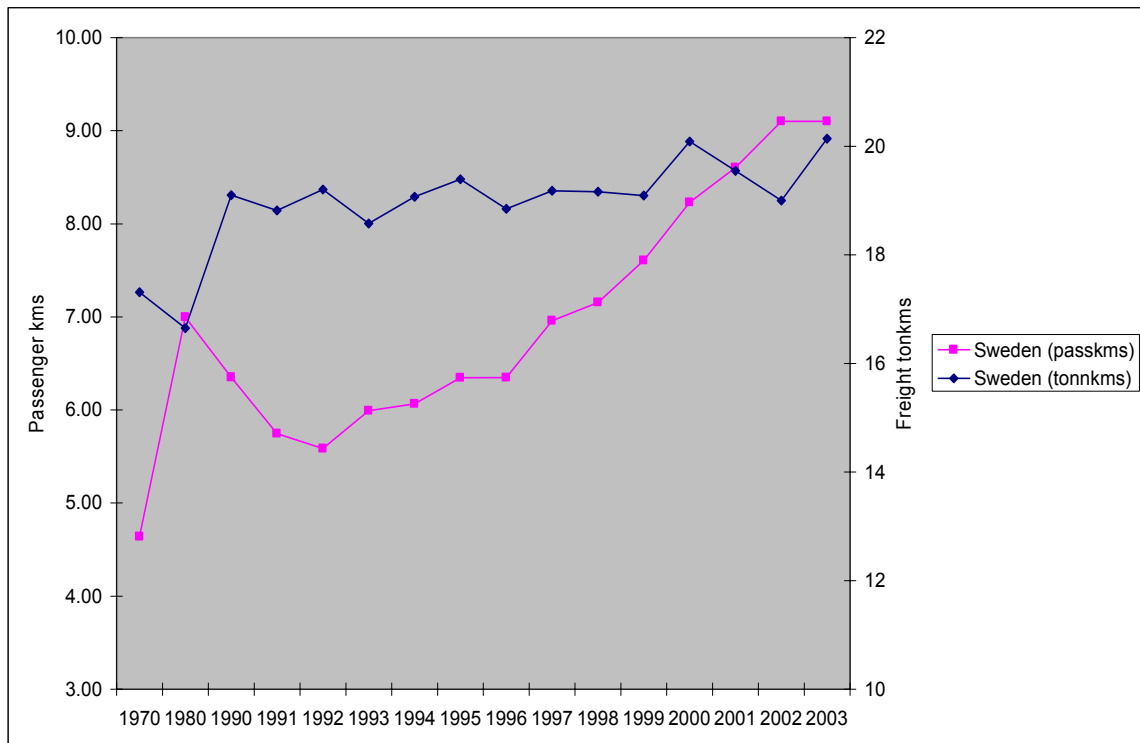


Figure 5. Passenger kilometers and freight tonnekms in Sweden during period of 1970 to 2003. Source: European Union (2004)

Table 3. Analyzed articles concerning Swedish railway deregulation.

Author & Title	Major arguments	Other information
Nilsson, Jan-Eric (2002). Restructuring Sweden's railways: the unintentional deregulation	Problems on demand side. Roads are better target for investments. Investments projects do not pay off.	Main advantage: bulk transport between limited number of nodes.
Alexandersson, Gunnar & Staffan Hulten (2005). Swedish railways: from deregulation to privatization and internationalization in a European context	No coherent regulatory framework, complete deregulation is possible, EU influence is decisive.	Operational compatibility needed for improving competitiveness.
Bergdahl, Pia (2005). Six deregulations: Liberalization of the markets - rail	There is inadequate restructuring of ownership of support, imbalances and lack of authority between SJ and its owner, the state. The quality of service offered by operators on the freight side is low.	In goods transport, rail has a uniquely high market share of Swedish domestic goods transport compared with other European countries.
Swedish Competition Authority (2004). Monopoly markets in transition	The organizational reform of the Swedish State Railways helped to clarify the roles and the responsibilities in the railways business, but further reform are needed.	In Sweden the rail freight market has been subject to competition to a greater extent than passenger services.
Carlson, Leif Herbert (2004). A case study of the Swedish Railway System	One of the main objectives of the 1988 legislative work was to put rail transport under a similar institutional framework with the road operations. SJ was to become a profit oriented company functioning according to market driven rules.	Proposals for new investment and maintenance are evaluated on a social cost/benefit basis with the highest ratio given the highest priority.

As Table 3 suggests, researchers have identified that railway deregulation needs more intensives in Sweden, and actions completed in 1988 have produced all of the benefits, which are as possibly to be gained under current framework. More competition in passenger transportation operations is one further step to be taken. Mostly further demand creation is considered to be hard to find, since rail modal share in freight transport in Sweden is even today near of 40 % (one of the highest in Europe). In freight side also the competition has mostly concentrated on lower costs rather than higher customer service. Investments need to be considered more carefully, and social as well as cost figures are currently considered. However, it is identified that roads are more favorable for further investments, since payback time for railway investments is longer. At the same time it can be noticed that in 2004 the Swedish National Railways Agency generated profit out of its operations for the first time (see SJ Annual Report 2004). Arguably one can say that these numbers will become even brighter in the near future as the EU drives in its technical

standardization directives to the industry. At the same time investments grow by nearly 800% from the level of 2003 and sales revenues increased when comparing to the figures of 2001. Based on these arguments one can propose that in the long run railroad business in Sweden has a chance to become a “sunrise” sector.

4. DISCUSSION – TOWARDS THEORETICAL FRAMEWORK OF RAILWAYS PRIVATIZATION

Based on the country analysis, we could identify that two different factors, namely (1) infrastructure separation from operations as well as (2) state of free competition, could be identified as two main factors determining implications for deregulation of railways. For example, as Figure 6 highlights, in UK both of these two main factors had extreme choices, while in Sweden and US either or both of the dimensions compromised with “partly” or “no” -areas. In the short-term success, this decision in the latter case could be considered as a one main point for success of deregulation.

However, in European countries infrastructure and operations separation is given above from EU, so only partly or entirely choices are available in this respect. We feel that “partly” mode would be the most convenient one; government should stay as the main owner in both infrastructure and railway operations, since this is the only way that medium-term thinking is enabled in daily decisions. Transition away from railway operations ownership should be ensured with long-term plan, and infrastructure should be kept under strict control, and eventually public ownership. As experiences in UK highlight, railway infrastructure is a convenient playground for investors, but leads to suboptimization of this entire sector, and as possibly collapse and serious malfunctioning without government intervention. In a case of US, as infrastructure and operations are not separated, private ownership seems to be appropriate working model. For example, Mexico, Japan, and Russia have planned or have already decided to follow the early example of US (Guriev, Pittman & Shevyakhova 2003; Gomez-Ibanez 2004). Sweden is so far one of the most promising examples from infrastructure policy decision-making based on EU regulations, and this positive case should act as guide for other EU countries as they proceed towards railway deregulation during year 2007.

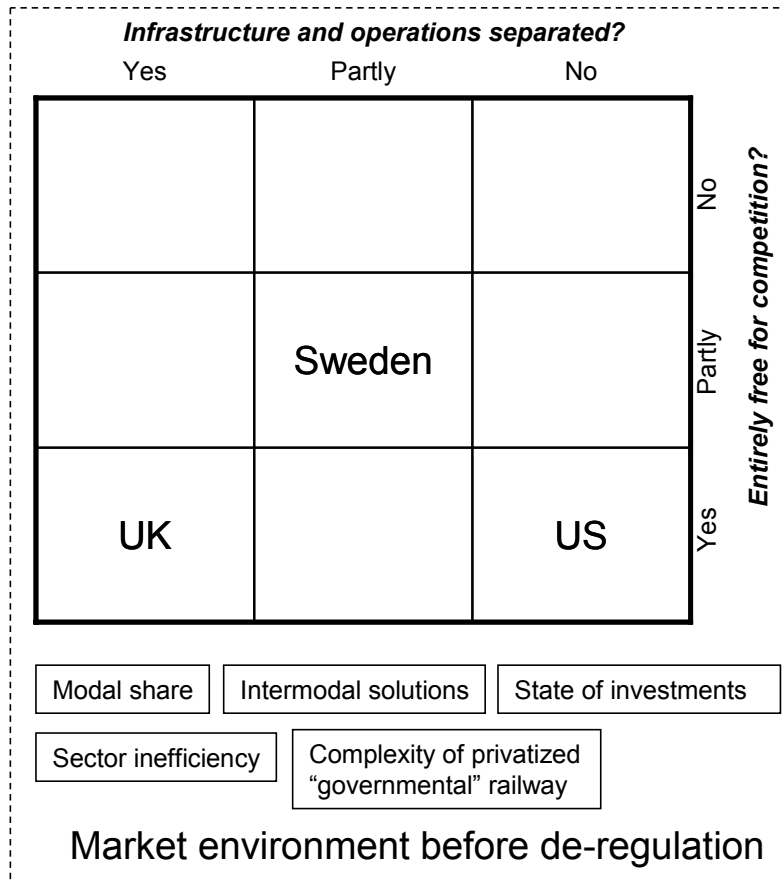


Figure 6. Deregulation framework proposed by the analysis of three case countries.

In the country level analysis we also found that market environment before deregulation phase has implications on the two major factors. For example, sector inefficiency was clearly identifiable in US before the Staggers' act; however, in UK the whole sector had been under constant productivity improvement before deregulation was eventually effective. Also in UK case state of investments were minimized before deregulation took off, and this also produced undesired side effects. Also modal share should be as low as possible, to further attract new companies and business models to build up industry once again; this happened in US with freight, in Sweden with passengers, and in UK with both of these groups. However, it is notable that in US with passengers as well as in Sweden with freight both of these had high share before deregulation period, which eventually was not good enough to provide dynamics into the markets.

In freight, as well as in passenger operations, intermodal issues, namely interchanges to other transportation modes in terms of total transportation package, is

important issue to be taken into account. In US, deregulation enabled further collaboration with harbors, since long-term alliances were easier to negotiate with railway companies (large container vessels require one time volume in transports, which cost efficient and customer oriented railway was able to offer). Also customer orientation improved a lot. In Sweden intermodal solutions in passenger transports were improved after deregulation; e.g. Arlanda city express, high speed train from Arlanda airport to Stockholm city was private investment, and has definitely improved integration of airline traveling as well as railways as a final-mile (or starting ground) for a trip, and further stressed that long-distance trains should be synchronized with airline schedules. Fifth, “before deregulation” issue to be taken into account is the complexity of privatized “governmental” railway. In UK whole railway industry cluster was just divided into very small business units, which enabled unwanted behavior during the process, where market forces took lead. We also believe that simplicity of railway companies in US was the key factor for railway survival, and rebirth. Companies in that case either operated in the passenger side or served freight transportation with vertical structures. Some might argue that this did not work at all in passenger side, but maybe even prosperity of freight transportation would have been threatened, if these two revenue groups had been under control of one company (or companies competing even with each other).

Further distinctions can be set up when looking at the cultural dimensions (Hofstede 1980) of the markets of the target countries. Two elements of this theory model are dealt with here (see Table 4): Individualism (the higher the IDV value, the higher is the individualism) can be argued to be more relevant with respect to passengers in railroads, while Uncertainty Avoidance Index (UAI, the greater the number in here, the more lower tolerance country and its residents have on uncertainty; needed more legislation and regulations to reduce this undesired effect) bear importance on freight cargo rail-transport. In a high individualism country people might prefer to buy cars rather than taking public transport. On the other hand, in a country with high ranking of UAI the deregulation process might counter with problems in the light of need for intense set of rules of law. According to this classification in Table 6 the US and the UK are highly individualistic countries, but both of them are highly risk taking: This might mean that people in these places prefer own devices such as cars to public transport while regulatory system plays a peripheral role in the railways sector. This might explain into a certain extent the fact

why the US managed to turn so naturally the deregulation process into such a success story especially when comparing to some European countries, such as France, which is in turn a highly regulated nation. It can be assumed that the UK will in the near future enter the "success story" path: As soon as private companies there are able to create such powerful alliances (maybe through mergers) as in the US. Sweden is a country actually with quite similar characteristics though they not follow into such a great extent individualistic values. There is a significant difference between Sweden, the UK and an average European country, where rule of law is emphasized in much more significant way in shaping the business environment for railroads.

Table 4. Cultural Dimensions: implications for the railways sector (adapted from Hofstede (2002)).

75-100	<i>the US, the UK</i>	<i>NL</i>		
50-75	<i>DK, SWE</i>	<i>IRE</i>	<i>CZE, FIN, GER, HUN, ITA, POL, Europe (AVG)</i>	<i>BEL, FRA</i>
IDV (%) 25-50			AT	SPA
0-20			<i>Asia (AVG)</i>	<i>GRE, POR</i>
	Uncertainty (%)			
	0-25	25-50	50-75	75-100

In relation to the Figure 7 one can argue that there is no linear regression relationship between the level of individualism and passenger km in a country of the EU in a sense that higher scoring on individualism does not necessarily mean less amount of km traveled. The first three in passenger km traveled – France, Germany and Italy – score relatively high in individualism – 67, 62 and 70. The fourth in the ranking is the UK positions itself as an extremely individualistic country with the result of 85. These results on the other hand clearly indicate that people in the EU consider traveling by railway very comfortable thus satisfying individual rights important for them. Therefore railroads can be stated having a bright future in the mind of European citizens.

At the same time when looking at the freight side (Figure 8) one can conclude that the higher is the score of uncertainty avoidance index, the increases in the freight volume are going to be rather minimal. If one considers very high UA countries, like Greece (96), Portugal (96) and Belgium (90), their score on the freight transportation dimension is very low: Greece (0.4 tonne-km), Portugal (2.1 tonne-km) and Belgium (7.3 tonne-km). Though there is France, where UA index is very high, and freight-km is significantly high too. However, one might argue this being an exception: Spain has rate of 80 in UA index and the score in freight km is low, only 11.7 tonne-km. The conclusion can be that in most cases that the lower amount of uncertainty tolerance (higher UA index) and more regulation, the less significant effect will be on the freight transported in a rail (if it has any connection at all).

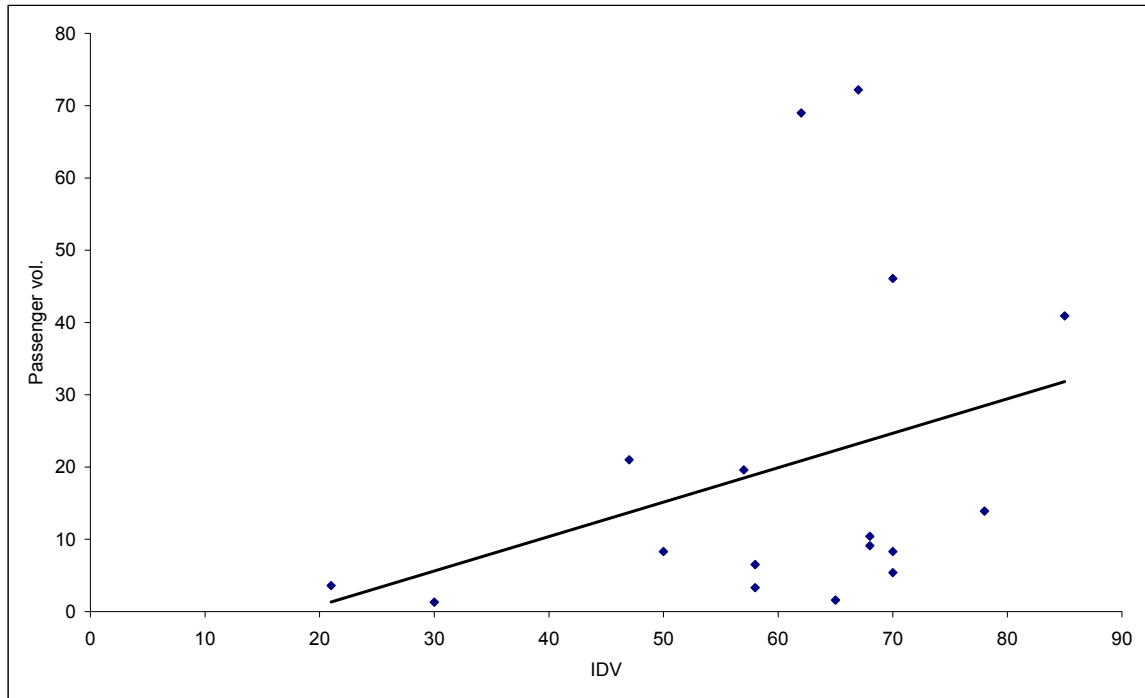


Figure 7. Individuality as a factor to explain passenger volume in European railways. See Appendix I for regression analysis details.

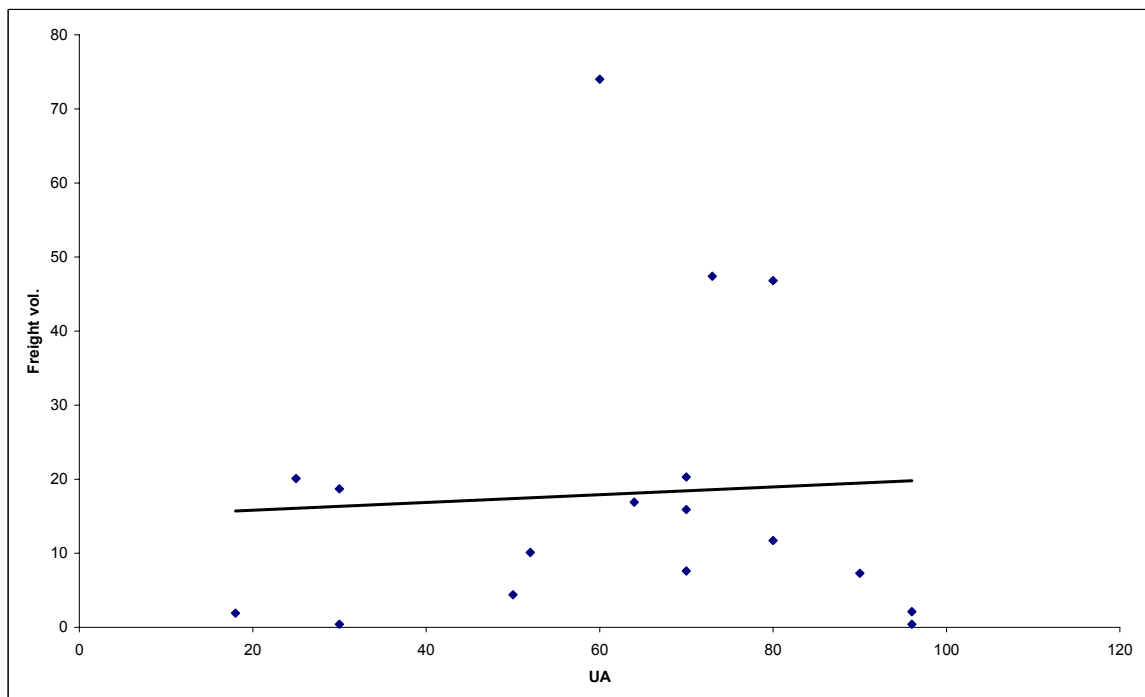


Figure 8. Uncertainty avoidance as a factor to explain freight volume in European railways. See Appendix I for regression analysis details.

From the analysis above it can be concluded that the railways industry has become separated from the cultural context of one independent country and business interest passed by cultural influences of a single country: globalization and global business culture leads to a state of situation where railways are customer centric integrating larger inter-country areas as part of inter-modal solutions. The process of privatization of railroad sector is the result of global business culture: in the first phase government decision is reached on the establishment of private companies to take care of formerly centralized functions and it is decided whether to keep infrastructure and operational services together or not. The second phase includes the introduction of competition between these firms whilst during the third phase mergers emerge between operators as a consequence of play off for profits. Only in the fourth stage the railroad business starts to become profitable and investors begin to invest more into it. Sooner or later the cost of capital will be covered. The biggest problem of this privatization process is the time scale: Practically in all the countries analyzed above it took more than 10 years to reach the fourth phase. In overall one can claim that the cultural dimension factor supports our hypothesis of the future scenario of the railroad industry though uncertainty avoidance does not have any influence on the freight market of railroads.

5. CONCLUSIONS

Based on the three country deregulation examples, we could conclude that in the European context, we will experience growing demand for railway transportation as deregulation takes off in the early 2007. Vassallo (2005) have estimated that this will results on the modal share of 15 % in the longer-term, as characteristics of environment are taken into account, and the calculations are based on the success of US railway freight sector. However, there is no way to go for “free lunches” in this sector; as case analysis have shown, in US revenues from freight transportation have constantly declined, although volumes have considerably increased. Experiences from UK and Sweden also both show that number of actors, e.g. in freight transportation sector increases as competition increases. As EU has decided to separate operations from actual infrastructure, the market entry for new companies is relatively low, as compared to e.g. US, where this sector is vertically integrated. So, efficiency and productivity improvement programs are present in the future too.

From the newest data from the markets it is clear that a sign appeared showing the rebirth of the railways industry. In the US rail operators have been able to increase their sales revenues and the future expectations of the owners are on a sky-high level: a positive chain reaction have occurred that will spread sooner or later to Europe as well. As the technical standardization process progresses far enough in the EU, further financial improvements can be expected. Though there are countries that are not that much behind the deregulation: Sweden recently has set up a new governmental agency in 2004 – Järnvägsstyrelsen – and this move might indicate that the state of this country may be willing to contribute to the future of the industry in a significant manner.

However, as this is the case, government actions as the owner of infrastructure as well as owner of former monopoly privileged railway company is critical for short and medium term implications and performance of this sector. Thus, environment should be created in a such manner that it creates market dynamics a bit below of what was the case in UK, but considerably more than what is the situation in Sweden. Increasing demand among changing technology (e.g. the case of high speed trains) creates pressures for larger one time investments in this industry, and it should be ensured that enough capacity exist for operators to provide services for their customers, and possibly use free capacity as a competitive weapon to remedy issue

with fluctuating transportation service demand. So, infrastructure pricing should provide investment ability for infrastructure owning companies, but examples of increasing dividends, expanding debt and lack of investments in UK manner should be avoided. The goal is to optimize the regulation to smooth the different viewpoints among commercial and social interests.

As a further research in railway logistics, great attention should be given for long multiple country routes of passenger as well as cargo traffic formulation. For example, in Europe we have examples from cross-border traffic between Belgium and Italy (Belifret), but as well from Ikea's furniture train operations between Sweden and Germany. There also exist indications that more routes in north-south direction will be developed; one possible alternative is the planned high-speed passenger train between Baltic States, Poland and Germany. These new emerging routes within Europe as well as e.g. between Europe and Asian countries (e.g. through Trans Siberian / Asian Railway system) provide organizational implications too. It would not be great surprise to find that mergers and acquisitions will occur as these international connections develop large enough. As a part of these investigations one of the issues to be scrutinized could be the following: How to squeeze the process of privatization? Useful knowledge could be gained from the number of railway mergers realized among US operators. Another interesting avenue for further research is the productivity and efficiency development in different European countries within their railway industry, after deregulation has really produced its implications (in five or ten years period). At the moment, some research works argue that European railway restructuring need is minor, while others indicate more significant difference. Although, research work combining all EU member countries (25) is needed, since current research works are including only 15 members states, or just the core West European countries. Productivity and efficiency of railways is often considered as a problem of former East European countries, but currently in e.g. Baltic States freight operations are constantly increasing their demand, and mostly structural problems appear e.g. in Poland, Hungary and Romania.

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APPENDIX I – Regression Analysis Results

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.336
R Square	0.113
Adjusted R Square	0.054
Standard Error	22.289
Observations	17

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	946.15	946.15	1.90	0.19
Residual	15	7452.33	496.82		
Total	16	8398.48			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-8.694	21.504	-0.404	0.692	-54.529	37.142	-54.529	37.142
IDV index	0.477	0.346	1.380	0.188	-0.260	1.213	-0.260	1.213

a. Dependent Variable: Passenger vol.

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.064
R Square	0.004
Adjusted R Square	-0.062
Standard Error	20.753
Observations	17

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	26.678	26.678	0.062	0.807
Residual	15	6460.182	430.679		
Total	16	6486.860			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	14.742	14.024	1.051	0.310	-15.150	44.634	-15.150	44.634
UA Index	0.053	0.211	0.249	0.807	-0.397	0.503	-0.397	0.503

a. Dependent Variable: Freight vol.

