European Transport \ Trasporti Europei (2015) Issue 57, Paper n° 6, ISSN 1825-3997

Parallels in Transport Modes and Revitalization of Railway Freight

Radim Prochazka

1. *Transport College and Secondary Transport School Masna (VOS a SPSDMasna), Prague*
2. *CD Logistics, Prague*

Abstract

The practice of the time-honoured principle of dividing the operation of roads from the operation of road transport by trucking companies was applied into the railway transport mode and became the basic parallel in railway transport with the aim of bringing the increased attractiveness of railway transport and its growth. Expected effects did not appear in awaited scale. But there are other parallels which could be applied from other transport modes into railway transport in order to help revitalization of railway freight transport and increase its efficiency.

*Keywords:*transport, railway, liberalization, single wagon, SWL, block train, parallel, transport mode, revitalization, infrastructure

Introduction

The liberalization of the railway market in the nineties was supposed to bring increased competition for the growth of the European railway market. The relationship between transport infrastructure and operating transport in other transport modes was taken as the model for railway transport. The same principle existing in other transport modes was taken as a basis for the liberalization of the railway market.

- A common network i.e. infrastructure which is public (public or state or municipally owned road network in road transport or as a common global network in maritime transport)
- More undertakings operating transport on that "common" network (many trucking companies acting on a public road network)

Such a principle of separate operating rail and separate operating railway transport did not exist in the railway transport mode at the beginning of the modern railway. Railway companies came into existence as separate railway undertakings owning the infrastructure for operating railway transport on their own infrastructure and selling their transport production through concluding contracts for the carriage of goods. Further development resulted in the concentration of railway undertakings and their particular railway infrastructures into one unitary railway company (usually state owned) with a united network throughout each country.

By implementing other parallel transport modes as in railway transport, in other words dividing the operation of the railway and the operation of railway transport, quicker more positive results were expected. Regrettably it seems now that such liberalization has not brought the expected results with the particular exception in the segment of the block trains (direct trains) market. The

market share of the railway did not increase; the transport volume (t) and the transport performance (tkm) are stagnating and the market share of the single wagon loads (SWL) segment has declined.

Table 1: Railway transport - goodstransported, by typeof transport (1000 t)[1]

GEO/TIME	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*
EU					1 828 913	1 796 955	1 465 618	1 596 643	1 699 969	
Belgium	55 732				66 248	64 648	45 718	54 476	55 876	
Bulgaria				21 881	21 905	19 716	13 284	12 939	14 152	12 470
Czech Republic	93 297	88 843	85 613	97 491	99 777	95 073	76 715	82 900	87 096	82 968
Denmark	7 711	8 162	7 706	7 477	6 901	7 198	6 163	8 121		
Germany	296 925	310 261	317 294	346 118	361 116	371 298	312 087	355 715	374 737	366 140
Estonia	65 588	65 647	68 187	61 284	68 538	52 752	45 954	46 705	48 378	44 725
Ireland		2 140	1 820	1 245	825	717	631	568	611	567
Greece		2 968	3 058	3 884	4 943	4 253	3 377	3 982	2 702	2 272
Spain	26 244	30 514	29 731	29 862	29 918	26 906	21 292	21 986	25 014	26 160
France	120 676	117 415	107 532	109 201	111 214	108 536	86 126	85 045	91 789	87 539
Croatia		12 234	14 333	15 395	15 764	14 851	11 651	12 203	11 794	11 088
Italy	74 293	83 533	89 755	102 169	105 314	95 810	76 336	84 435	91 811	88 505
Cyprus										
Latvia	48 355	51 058	54 861	48 731	52 164	56 061	53 679	49 164	59 385	60 601
Lithuania	43 447	45 555	49 287	50 225	53 503	54 970	42 669	48 061	52 330	49 377
Luxembourg	14 798	15 757	10 739	12 133	16 532	8 548	6 446	7 626	6 973	
Hungary	42 940	51 726	50 850	54 705	51 523	51 543	42 277	45 794	47 424	46 884
Malta										
Netherlands	29 697	33 709	35 009	37 267	40 700	40 569	33 594	35 536	39 174	37 925
Austria	82 091	92 930	101 829	110 779	115 526	121 579	98 887	107 670	107 587	103 920
Poland	161 816	282 919	269 553	291 394	245 307	248 860	200 819	216 767	248 606	230 878
Portugal	8 718	9 559	9 587	9 775	10 556	10 426	8 947	10 094	9 975	9 701
Romania		72 738	69 176	68 312	68 772	66 711	50 595	52 932	60 723	55 755
Slovenia	15 813	16 193	16 344	17 052	17 575	17 271	13 774	16 234	17 024	15 828
Slovakia	50 521	50 445	49 310	52 449	51 813	47 910	37 603	44 327	43 711	42 599
Finland	43 503	42 663	40 722	43 560	40 288	41 937	32 860	35 795	34 827	35 267
Sweden	57 874	60 157	63 198	64 944	67 809	65 632	56 466	68 329	67 907	65 789
United Kingdom	89 417	118 561	103 263	109 194	104 383	103 180	87 666	89 241	100 364	115 225

[1](2013) Railway transport - Goodstransported, by typeof transport. Eurostat. http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=RAIL_GO_TYPEALL. Accessed 20 March 2014

Table 2: Railway transport - goodstransported, by typeof transport (milion tkm)[2]

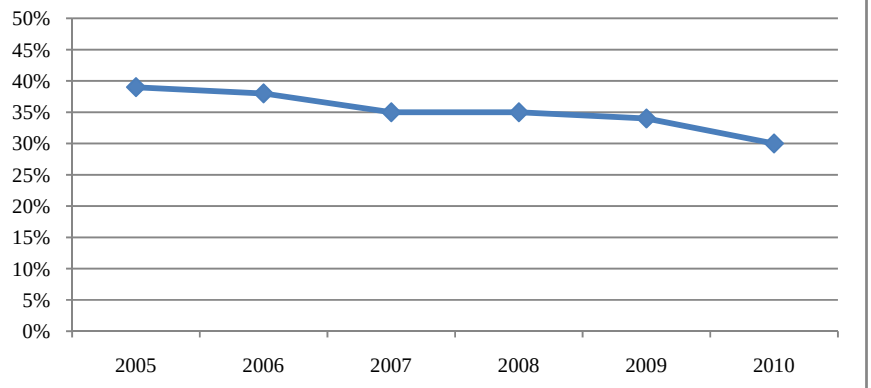
GEO/TIME	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*
EU					451 989	442 763	363 672	393 827	419 980	
Belgium	7 293				9 258	8 927	6 374	7 476	7 593	
Bulgaria				5 396	5 241	4 693	3 145	3 064	3 291	2 907
Czech Republic	15 862	15 092	14 866	15 779	16 304	15 437	12 791	13 770	14 316	14 267
Denmark	1 985	2 321	1 976	1 892	1 779	1 866	1 700	2 239		
Germany	78 464	86 409	95 420	107 007	114 615	115 652	95 834	107 317	113 317	110 065
Estonia	9 670	10 488	10 639	10 418	8 430	5 943	5 947	6 638	6 271	5 129
Ireland		399	303	205	129	103	79	92	105	91
Greece	456	592	613	662	835	786	552	614	352	283
Spain	11 743	12 436	11 585	11 541	11 237	10 971	7 937	9 211	9 948	9 957
France	46 835	45 121	40 701	41 179	42 612	40 436	32 129	29 965	34 202	32 552
Croatia		2 493	2 835	3 305	3 574	3 312	2 641	2 618	2 438	2 332
Italy	20 299	22 183	22 761	24 151	25 285	23 831	17 791	18 616	19 787	20 244
Cyprus										
Latvia	17 955	18 618	19 779	16 831	18 313	19 581	18 725	17 179	21 410	21 867
Lithuania	11 457	11 637	12 457	12 896	14 373	14 748	11 888	13 431	15 088	14 172
Luxembourg	525	559	392	441	574	279	200	323	288	
Hungary	7 614	8 749	9 090	10 167	10 048	9 874	7 673	8 809	9 118	9 230
Malta										
Netherlands	4 705	5 831	5 865	6 289	7 216	6 984	5 578	5 925	6 378	6 157
Austria	16 866	18 757	18 957	20 980	21 371	21 915	17 767	19 833	20 345	19 499
Poland	47 407	52 332	49 972	53 622	54 253	52 043	43 445	48 705	53 746	48 903
Portugal	2 073	2 282	2 422	2 430	2 586	2 549	2 174	2 313	2 322	2 421
Romania		17 022	16 582	15 791	15 757	15 236	11 088	12 375	14 719	13 472
Slovenia	3 018	3 149	3 245	3 373	3 603	3 520	2 817	3 421	3 752	3 470
Slovakia	10 113	9 702	9 463	9 988	9 647	9 299	6 964	8 105	7 960	7 591
Finland	10 047	10 105	9 706	11 060	10 434	10 777	8 872	9 750	9 395	9 275
Sweden	20 170	20 856	21 675	22 271	23 250	22 924	20 389	23 464	22 864	22 043
United Kingdom	18 734	22 552	21 427	21 919	21 265	21 077	19 171	18 576	20 974	21 444

[2](2013) Railway transport - Goodstransported, by typeof transport. Eurostat. http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=RAIL_GO_TYPEALL. Accessed 20 March 2014

Table 3: Shareofrailway in modal split offreight transport (% in totalinland)[3]

GEO/TIME	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*
Belgium	11	12	13,4	14,2	15,3	15,9	12,8	14,5	15,2
Bulgaria	34,3	29,2	25,4	27,1	25,1	20,5	11,9	10,7	11,4
Czech Republic	25,4	24,7	25,5	23,8	25,3	23,3	22,1	21	20,7
Denmark	7,9	9,1	7,8	8,2	7,8	8,7	9,2	13	14
Germany	18,4	19	20,3	21,4	21,9	22,2	20,9	22,2	23
Estonia	70,9	67,3	64,6	65,3	56,8	44,7	52,7	54,2	51,5
Ireland	2,5	2,3	1,7	1,2	0,7	0,6	0,7	0,8	1
Greece	2,3	1,6	2,5	1,9	2,9	2,7	1,9	2	2,8
Spain	5,7	5,3	4,7	4,6	4,2	4,3	3,6	4,2	4,5
France	18,1	17	16	15,7	15,7	15,9	15	13,5	14,9
Croatia	23	21,7	23,1	24,3	25,2	21,8	20,6	21,2	20,2
Italy	10,4	10,1	9,7	11,4	12,3	11,7	9,6	9,6	12,2
Latvia	72,5	71,6	70,2	61	58,1	61,3	69,8	61,9	63,8
Lithuania	50	48,7	43,9	41,6	41,5	41,9	40,1	40,9	41,2
Luxembourg	5	5,3	4,1	4,6	5,5	2,9	2,3	2,7	3,1
Hungary	27,9	28	25	23,9	20,9	20,6	17,1	19,6	20
Netherlands	3,8	4,2	4,4	4,8	5,5	5,4	4,9	4,9	5,1
Austria	28,7	31,4	32,8	33,8	34,8	37,4	36,4	39	39,9
Poland	35,5	33,7	30,8	29,4	26,4	24	19,4	19,4	20,5
Portugal	7	5,3	5,4	5,1	5,3	6,1	5,7	6,1	5,9
Romania	30,4	27,8	21,7	19,4	18,9	19	19,4	23,5	28
Slovenia	30	25,9	22,7	21,8	20,8	17,8	16	17,7	18,6
Slovakia	37,5	34,3	29,5	30,9	25,5	23,4	19,6	22	20,9
Finland	24,5	23,8	23,3	27,1	25,9	25,7	24,1	24,8	25,8
Sweden	35,5	36,1	36	35,8	36,4	35,1	36,8	39,3	38,2
United Kingdom	10,1	12,2	11,7	11,7	11,1	11,6	12,1	11,2	12,6

Graph 1: Market Share of SWLs in EU



[4]

[3](2014) Modal split offreight transport. Eurostat. http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=TSDTR220. Accessed 20 March 2014

[4]Marinov M, Woroniuk C, Zunder T H (2012) Recentdevelopmentswith Single WagonLoadservices, policy and practice in Europe. ProceedingsoftheFederatedConference on Computer Science and Information Systems. https://fedcsis.org/proceedings/2012/pliks/58.pdf. Accessed 20 March 2014

The aim of this article is to search for more parallels in other transport modes which could be used for the revitalization of railway transport in at least EU countries and with a particular focus on the segment of single wagons loads /SWL).
This study focuses on searching parallels in operating railway transport and operating other transport modes. It does not focus on parallels in operating infrastructures, although the main parallel – the existence of a single European railway area – the existence of a single European railway network determines global revitalization of the railway transport mode. The main aim of this article is to study certain parts of technology, equipment, effectiveness and external costs in the operation of some particular transport modes and to consider if some other parallels or similarities can be used or applied in operating railway transport in favour of its revitalization with a special focus on the declining segment of railway single wagon loads (SWL).

Methods
The used methods for analysis and for the later formulation of results are the empirical method of observation and the comparative method. The comparison of the development of the railway transport with the situation in other transport modes and the study of some parts of technology or equipment in particular non-railway transport modes and then comparing them with the technology of the railway mode should help to find out if some parallels or similarities can be used or applied in operating the railway transport in favour of its revitalization. The following realms in operating transport are compared:

1. Differences in development in transport modes
2. Production of transport modes
3. Universality of transport means
4. External costs

Differences of development in transport modes:
The description of the whole development of railway transport has been simplified and only the main characteristics have been taken into consideration for this article.
The development of foreign trade required the internationalization of railway transport. The railway companies (unitary companies operating rail and operating railway transport respectively) the appropriate state bodies prepared and concluded the necessary contracts, rules in the commercial and technical spheres for effecting international railway transport. Specifically it was the “Convention Internationalesur le Transport de Marchandise par Chemin de Fer” created in 1893 which was revised by 8 conferences. The 8th conference made substantial changes leading to the creation of the organization “OTIF” with the task to improve and to facilitate international railway transport in all respects. This organization formed the uniform rule COTIF 1980. In the context of the liberalization of railway transport a new Appendix B CIM was attached as a result of signing of the Vilnius Protocol which came into force in 2006. This reform aimed at the harmonization with conventions in other transport modes, and it especially followed the CMRconvention .
During this long development, these rules enabled the co-operation of railway undertakings, infrastructure managers and owners of wagons etc. These rules and agreements enabled concluding contracts concerning the carriage of goods in order to ensure the transport needs of customers in international transport. They took care of cargo during transportation, defined responsibilities, became the basis for wagon management, and they cared about the safety of the railway transport properly. They enabled efficiency to be taken into consideration, but they did not enforce efficiency on international railway transport. Each company in each country was responsible for efficiency and for economic results connected to their own (state) network, in

their country. Abroad, the economic influence of a railway undertaking was very limited. Mostly it was connected with the time in which their wagons were abroad, out of their own company network. This state has lasted more or less still up to the present.
In comparison with such developments in railway transport which lacked economic pressure on cooperating railway undertakings abroad, there was always a direct economic interest concerning transport undertakings in other transport modes. In fact, they affect the transport on complete transport routes connected with their transport mode by themselves and they have a direct influence on the effectiveness of consecutive journeys.
Production of Transportation by Railway Transport and by other Modes:
There are two main characteristics of the structure of railway production which substantially distinguish railway transport from other transport modes:

- Point to point (direct trains, block trains)
- Hub and spoke (usage of shunting yards) i.e. transport of single wagon loads SWL.

The point to point service or block trains or direct trains production can be divided into

- Direct trains for conventional transport affecting transport by all types of wagons;
- Direct trains serving as the railway part of a multimodal transport chain (they contain wagons specialized for transport of intermodal units, or they contain other different types of wagons).

This type of block train or direct train service is easily comparable with other transport modes. The shipment (block train) leaves the station of dispatch for the station of destination directly in this railway system, from one point to the other point. Other transport modes are characterized by direct deliveries from point A to point B, too, e.g. by road transport from place of dispatch to place of destination, by sea transport from port of dispatch to port of destination (when disregarding feeder systems which could utilise some railway marshalling).
Direct trains for conventional cargo represent the segment of the railway transport market in which the foreseen competition of railway undertakings came to exist. New railway undertakings relatively easily got the possibility to enter the market by the acceptance of the necessary legal acts in the countries as per EU regulation. Legal acts were similar in all countries of the EU, although applied in partly different ways in single countries. There were even some ways of application which were the subject of criticism, because they did not correspond with the aim foreseen by EU regulation. The common and most usual requirements for enabling the entry of new railway undertakings (also called “new comers” or “the thirds” or “private operators”) were:

- A licence for operating railway transport
- Concluding of contracts with an infrastructure manager
- Compliance with other requirements (professionalism, clean record, financial capacity)
- Allocation of rail capacity by a rail operator and the like.

The liberalization of the segment of direct (block) trains on the railway market brought the main awaited result – more railway undertakings competing on the common rail network. This fact caused the reduction of transport prices of shipments by direct trains. The competitors were “newcomers”, and before liberalization, the existing traditional railway transport providers were called “national railways”. But sometimes it is doubtful if all the other outcomes which have appeared until now have been as positive as the reduction of the freight prices in this segment. Some other outcomes are:

- Higher exploitation of transport means of newcomers because of the limited number of wagons or locomotives in the possession of these companies.

- Higher exploitation of wagons of “national” railway transport operators. This is a result of the pressure of “newcomers” which caused a reduction of an unnecessary large fleet of wagons of “national” railway undertakings without employment, and optimization of their fleet as per actual needs in respect of the advantage of universality of transport means.
- Pressure on searching for backloads in order to increase efficiency.
- The contribution of decreasing the single wagon load (SWL) market share because of the stopping of cross-financing of SWL from funds gained from direct train traffic at “national” railway undertakings. These have not provided sufficient financial means for cross financing SWL because of gaining lower profits from direct trains, where they had to reduce the freight prices as a result of newly existing competition.

The hub and spoke railway production type has no equivalent in other transport modes. Hub and Spoke transport, or also single wagon loads (SWL) in railway transport, are characterized by marshalling and by the transport of wagons by regular trains in compliance with time tables. This system is time-consuming and susceptible to delays. It suffers from the lack of backloads which have a bad influence on the effectiveness of that railway transport operating type.

Single wagon loads (SWL) were strongly influenced by the liberalization of railway transport and the number of SWL on the railway market decreased substantially as it shows on table No.….. The volume and the speed of decrease differ in individual countries. The main influence on the decline of SWL have been the direct competition of truck transport and competition from the market of direct trains. SWL can hardly compete with:

- Costs of truck transport, or costs for railway transport by direct trains.
- Speed of truck transport.

A strongly limiting factor for the competition of SWL against trucks is the absence of backloads in the SWL railway transport. The back loads rate reach 80-90% in returning trucks, while in the international railway transport back loads are almost non- existent. The absence of back loads as SWL in railway transport and the existence of back loads in road transport are connected with the different technology of organization of transport in both modes, and with the non-existence of a single European railway network and the existence of a single European road network.

Trucking companies have an overview through their dispatchers about their transport all the time. The dispatcher is in charge of the complete business of a certain exact amount of trucks in the company. He is responsible for all activities which are connected with effecting the transport business of the certain number of trucks assigned for him. Inter-alia he is responsible for back loads for trucks dispatched by him. The trucking companies follow several basic indicators of economy of the company. The indicator of percentage of back loads is one of those. The existing European database of availableloads and truckseverydayisanimportanthelpfortruckingcompanies to organizethe transport ofbackloads.

The “Newcomers”, or new railway undertakings did not start to compete on the SWL market. The SWL railway market remained a domain of “national” railway undertakings. But some of these companies strongly limited their service in this segment. Others provide this kind of SWL transport with low profit, or no profit, or at a loss. The technology of the actual flow of transportation of SWL in international transport is connected with undertakings affecting the transport in single countries on the way. Such transport runs from the station of dispatch to the border of the neighbouring country, then to the following border/s (if more transit countries are on the way), and finally to the station of destination in the country of destination. The transport route is divided into several country stretches, on several country railway infrastructures. Inside the single countries the SWL are transported by regular trains as per timetables. The railway routes (infrastructures) of the countries are technically connected, the railway operators are

connected technologically and the railway transport operators are connected technologically, too. But a common business connection of railway transport operators on the way is missing. Each railway transport operator mostly concentrates on domestic customers, or intends to be involved in transit transport through the country where it makes its railway transport operating activity in. No sophisticated system important for organizing the transport of back loads from countries of destination in international network exists. The railway undertaking arranging the transport in the country of destination has no motivation for the acquisition and arranging of transport of back loads in the same wagons in which the shipments arrived. Until now, present rules and praxis prefer the return of the empty wagons without any back loads to the railway undertaking in the country of dispatch. The railway undertaking which organises the transport in the country of destination prefers to arrange the transport in their own wagons to the same country, while the original wagons are returned empty. At present, the organizing of backloads of SWL is possible, but quite complicated administratively. The motivation for arranging back loads in the SWL market is very weak for partners on the other side of the transport route.

The universality of transport means:

Another important comparison is the evaluation of transport means in transport modes in order to find if there is a parallel usable in favour of railway transport, or in the appointment of the railway in multimodal transport. Comparing the universality of vehicles, the railway has the most diversified fleet of wagons (basic types F, G, H, I, K, L, R, S, T, U, Z with many special technical modifications). Some of these types can be classified as universal or partly universal (some of types G, H, R, T – e.g. Gags, Habbins, Rs, Tams etc.), but some types are very specialized, e.g. Shimms, Falls, Faccs, Tads, Uai etc. which are for certain kind of freight only.

Most of the cargo transported by road transport is loaded on tilted trucks, semi-trailers, and special kinds of cargo on platforms. Isolated trucks and liquid tank cars or trucks for transport of heavy lifts can be considered as highly specialized means, and can be compared with corresponding specialized types of railway freight wagons. In maritime transport the vessels differ by size, but they do not differ too much by universality (the basic types of sea vessels are conventional ships, bulk carriers, container ships, tankers, ro-ro vessels and some combinations of these types).

External Costs:

External costs which are not part of the price of transport,t and which differ a lot in particular transport modes, are connected with accidents, air pollution, climate changes, nature and landscape, soil and water pollution, urban effects and congestion. The source for comparison of the external costs was the study of CD Delft External Costs in Europe, published in November 2011. The external costs of continents are external costs of road transport, railway transport and inland waterways. The CE study shows that average external costs for road transport are much higher than the external costs of railway and inland waterways. By the category of railway and road transport, these costs represent:

Table 4: Averageexternalcosts 2008 for EU-27* by costcategory and transport mode (excludingcongestion)[5]

	Totalroadfreight transport	*Totalrailfreight transport*	*Totalwaterbornefreight transport*
CostCategory	*€/(1,000tkm*a)*	*€/(1,000tkm*a)*	*€/(1,000tkm*a)*
Accidents	17	0,2	0
Air pullution	8,4	1,1	5,4
Climatechangehighscenario	14,9	0,9	3,6
Climatechangelowscenario	2,6	0,2	0,6
Noise	2,5	1	0
Up- and downstreamhighscenario	4,7	4,2	1,3
Up- and downstreamlowscenario	2,7	2,4	0,8
Nature and landscape	0,7	0	0,4
Biodiversity losses	0,5	0	0,5
Soil and waterpollution	1	0,4	0
Urban effects	0,9	0,1	0
Totalhighscenario	50,5	7,9	11,2
Totallowscenario	36,1	5,3	7,7

These figures show a parallel between the external costs of railway and inland waterway transport.
The external costs of road transport represent an anti-parallel here.

Results

The dividing of operating rail from operating railway transport was the basic step leading to a liberal railway transport market. Even now, at the present stage of liberalization, there is a more or less separately liberalized railway transport in each country and until now the foreseen liberalized railway common market in Europe or single European railway area is the question for the future. A future single European railway area will be then other and necessarily parallel to the existing single European road area (on which thousands of trucking companies ensure the road transport), or the existing international sea-ways for shipping and navigation. A single European liberalized railway area is supposed to bring wide ranging competition of European railway undertakings and to allow the local competition of small players which will have supporting roles on that railway area too.

Block trains

There is no doubt about the further existence and about the possibility of the higher effectiveness of conventional block trains. There is no doubt about their importance as a share of an environmentally friendly railway mode within the transport market. The further development of the segment of direct conventional trains is connected with a single European railway area. Such

[5]CE Delft, Infras, FraunhoferISI (2011) ExternalCostsof Transport in Europe. CE Delft. http://ecocalc-test.ecotransit.org/CE_Delft_4215_External_Costs_of_Transport_in_Europe_def.pdf. Accesed 20 March 2014

an area could actually allow the running of direct trains from point to point. It means that one railway undertaking could operate the train from point to point without the present existing interruptions at the borders. A single European railway area could remove most of the obstacles (- technical, administrative, technologic, commercial, etc.).

The Hub and Spoke system –SWL and modifications

The development of competition in the segment of conventional direct trains brought an unwanted contribution of the decline of thesingle wagon load (SWL) market share which had been already under strong pressure from road transport competition. The development in the segment of conventional direct trains caused the stopping of cross financing of SWL from funds gained from direct train traffic at "national" railway undertakings. These have not sufficient financial means for cross-financing SWL, or subsidizing them, because of gaining lower profits from direct trains, where they had to reduce the freight prices because of newly existing competition.
The present situation in the SWL segment, when this service does not provide the "newcomers" railway undertakings and where this type of railway freight transport is only provided by old "national" railway transport operators, and because of effectiveness they have to limit this service, brings the question of whether the SWL segment can survive. There is a danger that without taking the necessary measures the disappearance of SWL could be expected in several years. The survival of the SWLsegment, and its partial modification supposes the application of some more parallels from other transport modes into the SWL railway system and its modification.
It is not generally acknowledged that already now the transport by SWL consumes less total transport costs in comparison with road transport. The direct costs which are connected with calculations of price in both rail and road modes are more or less similar, when on the transport market it is seen that SWL transport and road transport can compete by price. Taking the external costs of transport into consideration, the sum proves that total cost(direct + external) of railway transport are lower.The reflection of external costs in the price of transportation is a solution for each country and the EU through pricing the railway infrastructure for SWL.
It seems that this segment does not correspond with the speed of today´s world, and it cannot compete with the speed of road transport. It can hardly compete with prices in transport by road. Both these market disadvantages are connected with SWL technology, technical and IT equipment, existing law and the divided infrastructure in Europe. The solution of competition in speed is a question for the long term, connected with technical changes, investments (technical changes of transport means, e.g.. coupling) or infrastructure (- gauge, signalling, electric traction etc.), and on creating a single European railway network.
The sphere of prices, i.e. reduction of costs for SWL transport on the side of railway transport undertakings can make SWL more attractive and competitive. Two other parallels with road transport and sea transport should be applied or exploited:

- Backloads
- Universality of transport means.

These factors are closely related, and they both play a big role in the efficiency of any transport mode.

Regarding backloads, any dispatcher of a trucking company is aware that trucks cannot return without back loads. The indicator of backload share is watched very carefully in each trucking

company. The average share of backloads of tilt trucks in a trucking company is 80 – 90%. The assumption to move this indicator from the present almost 0 % to higher figures is the single European railway area in which the Europa-wide acting railway undertakings compete in the SWL segment. At present international railway transport actually consists of divided domestic transport sectors which are mostly connected at the borders of the countries. Europe-wide railway company undertakings are supposed to manage Europe-wide sales of their SWL railway transport production based on there and back load transports, or rather on consecutive voyages. An actual Europe wide operating railway company can gain advantages of undertaking on the domestic market with all the effects which could arise from it (e.g. organizing back loads, shortening of shifting of empty wagons or locomotives).

The universality of vehicles is connected with easier gaining of backload or a consecutive voyage. Generally it can be stated: the greater the universality of transport means, the less difficult it is to ensure the back loads. The greater specialization of transport means, the more difficult it is to obtain the back load. The railway is in a more difficult position from that point of view.

In order to keep the SWL system running, there are more attributes to be mentioned, although no parallels are seen in other transport modes:

- The pricing of railway infrastructure for SWLand the pricing of railway infrastructure for SWL backloads.
- Technical changes of transport means (e.g. coupling) or infrastructure (gauge, signalling etc.)
- Technological changes (in marshalling yards, constructing timetables etc.)
- Support for building; maintenance of railway sidings.
- Thinking about sustainability and about external costs, by appointing environmentally friendly railway transport.

The modification of the SWL segment by logistics chains containing direct trains of multimodal transport represents a substitution of the classic SWL. The railway part of the chain takes relevant parallels from other modes and the first and last mile of the transport is effected by other neighbouring transport modes. There are two types of such logistics chain – those containing direct intermodal transport trains or those containing conventional trains consisting of SWLs.

Direct trains appointed as the railway part of an intermodal chain using intermodal units gain the profitability and efficiency of other transport modes which are neighbours of the railway in the chain. These neighbouring modes work almost always with back loads. Almost all road trucks have back loads and this characteristic is transferred into multimodal transport when a swap body or trailer represents the multimodal unit in the chain. The railway part of maritime multimodal transport mostly has full loads in both directions, as well. Exceptions are shifts of empty containers per instructions of ship owners in order to have empty containers at places where the cargo is borne and where a sufficient quantity of containers is not available for that. But even the transport of empty intermodal units means back loads for transport by the railway.

Direct trains for the railway part of intermodal transport can be characterized by:

- Limited kinds of specialized wagons, which are all but universal for certain type of multimodal transport running in that specific point to point relationship (Saadkms for RoLa, Sgnss, Sgs, Sgjs, Sggmrss etc. for container transport, Sdgnss for the transport of trailers etc.)

- Guaranteed back loads (the risk of back loads is on terminal operators, ship owners, truck owners, not on railway undertakings). Even empty intermodal units could be considered as full back loads for a railway undertaking
- The regularity of trains and timetables is built on requests of a subject ordering the trains and buying the railway freight as per flow of units (cargo) in neighbouring transport modes in the chain. The terminals which connect the transport modes in the chain, are as buffer if necessary.
- Speed –the technology of railway transport enables it to ensure the required speed of transport in the segment of direct block trains (in this case terminal – terminal trains, or sea port – terminal and vice versa directions).
- Utilizing the advantages of the present stage of liberalization of railway transport in Europe.
- The contribution of the railway to sustainability acting as an environmentally friendly transport mode through its share in multimodal transport

The other specially mentioned case of the conventional direct trains segment on a railway transport market is the railway part in a multimodal conventional transport system. This system of multimodal transport with a railway share is fully within the intentions of the White paper concerning EU transport policy. Here, in such logistics chains, the trains from point to point represent the direct trains from terminal to terminal. In the terminals the cargoes are trans-loaded and the first and the last miles in the transport chain are effected by trucks. This role for direct trains brings the contribution for solving the problem of the disappearance of single wagon loads. Such chains (places of dispatch - trucks – terminal – direct train – terminal – trucks – places of destination) help to replace SWL, or to substitute SWL. But here the "danger" of competition from direct road transport must be taken into consideration (from all points of view: actual costs of transport, transport policy, and environmental questions). The co-operation of trucking companies and railway undertakings could solve the question of back loads for the railway. Costs calculations and the operational technology of road transport always reflect the question of backloads. In that context railway undertakings could take the profit from connected truck transport. Terminals for transloading cargo between rail and road, or vice-versa, have to be stressed as a very important part of these logistics chains and the network of such terminals can bring the required effects. While building or widening the network of terminals, the question of their commercial neutrality has to be taken into consideration, too. It means that public terminals must also become a part of the network. They can provide a service for single transport companies neutrally. Private terminals belonging to railway undertakings or to trucking companies cannot be neutral. In any event they are important points of the network, too.

Discussion

The practice of the time-honoured principle of dividing the operation of roads from the operation of road transport by trucking companies was applied into the railway transport mode and became the basic parallel in railway transport with the aim of bringing the increased attractiveness of railway transport and its growth.

However there are other parallels in the road transport or other transport modes and their application can lead to the higher effectiveness of railway transport with result of ability to compete on the continent with the aim to keep at least its market share.

The parallel of dividing the operating railway from the operating railway transport itself brought some effect in the domestic block trains transport segment, or in some transit stretches of international transport. The total application of that parallel depends on the existence of a single

railway area which will be a parallel to such a public road transport area. The forming of a single European railway area is a political question together with the solutions (technical, technological, administrative, HR, and problems connected with considerably large investments).
Other parallels helping to maintain the quantity of freight transported by SWL at present should protect a certain share of SWL itself and modify certain present SWL into multimodal transport using the railway transport in the logistics chain. Such key parallels to be applied in railway transport from other transport modes are:

- The solution of the transport of back loads or consecutive full load transports is interlaced with the shortest passes between the stations of destination and the next stations if dispatched on a single European railway area;
- Increasing the universality of transport means of railway transport, also with regard to the modification of some SWL cargo into intermodal transport shipments;
- The optimizing of wagon parks with regard to their universality and quantity at railway undertakings (the concentration or scrapping of some wagons);
- Competition among Europe-wide acting railway transport operating companies also in the SWL segment and its modification;
- The pricing differently of the usage of railways for SWL transport and the pricing of road transport with regard to sustainability.

List of References

Study CE Delft, Infras, Fraunhofer ISI (2011) External Costs of Transport in Europe. CE Delft http://ecocalctest.ecotransit.org/CE_Delft_4215_External_Costs_of_Transport_in_Europe_def.pdf.Accesed 20 March 2014

Study Marinov M, Woroniuk C, Zunder T H (2012) Recent developments with Single Wagon Load services, policy and practice in Europe. Proceedings of the Federated Conference on Computer Science and Information Systems https://fedcsis.org/proceedings/2012/pliks/58.pdf. Accessed 20 March 2014