The Hungarian railway reform process and the implementation of periodic timetable (Taktfahrplan)

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Abstract

This paper is about how the Hungarian railway sector and the government has coped with the problem of sharply declining ridership and significantly growing operations costs and subsidies, while the whole sector had to be reorganized to meet the criteria of the EU railway regulations. There is hardly any comprehensive descriptive literature about the management and financing of the Hungarian transport system, and the relevant data are also hardly available, especially in English language. This paper explains the special features of the Hungarian passenger rail market, gives an overlook on how a transitional economy could manage its railway sector in the last decades, using EU funds. The transportation policy, the institutional background, the fare system, the timetabling issues (including the debate over the frequency of trains, and the rural lines) is also discussed. The main result of the research is, that the significant investments on infrastructure, rolling stock and timetable improvements contributed to the image of railways and stopped the decline of ridership, however, the long distance trains are still losing passengers. On the other hand the improvements in the urban-suburban rail services in and around Budapest significantly attract passengers, so the suburban services should be further improved, while long distance supply should be reconsidered.

Keywords: transport policy, railway ridership, subsidy, crisis management

1. Introduction

Hungary is a medium sized (93 thousand square km) country in Central Europe, with slightly less than 10 million inhabitants. During the Cold War the country used to belong to the Eastern Block (Soviet zone of influence), but after many years of transition has joined the European Union in 2004.
The Hungarian public transport system has some unique characteristics, such as the highest modal share in the European Union [1], and, on the other hand, the lowest cost-coverage by rail passengers [2]. The rolling stock is over aged, the reliability of the services are relatively is low [3], and the reputation of the railway sector is not high either [4]. Based on the data of passenger-kilometer, the share of cars is around 80 per cent in the EU, while in Hungary it is around 67 per cent, and railways have a significant market share.

2. The methodology

According to the UIC Railway Statistics 2015 Report [5] published by the International Union of Railways (UIC) the modal share of railways is the highest is Japan (around 30%), followed by Switzerland, Austria, Denmark, and – on the 5th place – Hungary. The following countries are UK, France, Sweden, Germany and the Netherlands. In terms of rail passenger kilometer per inhabitant Hungary is the 8th in the EU, following the above mentioned highly developed countries (and Italy). Hungary as a transitional economy seems to be an outlier among the most developed countries, however, there are good reasons for the popularity of rail transport. This paper briefly discusses these issues.

2.1. Legal framework

The Hungarian law on passenger services (effective from 2012) categorizes the domestic services as local, suburban, regional and national. Local (urban) transport services (within the city limits) are

authorized and financed by each local government, however, all other is by the Ministry for Innovation and Technology (ITM).
There is hardly any private or commercial(open access) passenger rail operators is Hungary for bus and rail, however, the Czech train and coach operator Regiojet announced launching a new train service on the Budapest-Vienna-Praha route from June 2020. Until then almost all transport services are provided under Public Service Obligation (PSO), hence operators receive cost-compensation for those expenses which are not covered by income from passengers, based on EU regulation 1370/2007. In the railway sector the public service contracts will expire in 2023 (for buses and coaches in 2019).

2.2. The significance of railways in transport policy

The Hungarian transport policy – independent from political wings – understands the significance of public – and especially railway – transport. The new law on passenger transport services provides priority for railways “as much as possible”. This unclear statement makes a perfect basis for justifying any railway project.
The share of railways in the current infrastructure development programs is also very high. Between 2014 and 2020 the government spends around HUF 1500 billion (EUR 5 bn) on railway projects, using mainly EU funds like CEF (Connecting Europe Facility). By using these funds the value of railway projects (tracks, signaling, railcars, etc.) are tripled compared to previous years, and these altogether mean a kind of renaissance in the Hungarian railway industry. Hungary has the biggest fleet of STADLER FLIRT EMUs in the world (123 sets at MÁV and 20 at GYSEV), and further rolling stock renewal is under way, using 100% EU funds. Most of the EU funds are spent on infrastructure renewal, and it generally (but not in every case) contributes to raising speed and capacity. In many cases the complete reconstruction of a line replaces the low level maintenance of the previous decades.
How could it happen? In the early 1990s the decline of railways seemed to be unstoppable. There were frequent strikes, the rolling stock was covered by graffiti, more than half of the network could be used only with speed restriction due to the lack of funds for maintenance. Railways have accumulated huge debts which were regularly taken over by the state. This was similar to the “oyakata hinomaru” phenomena in Japan. Railway officials believed that the services they provide are obviously necessary, so “the government will bail them out” in any case. In spite of this, many reform ideas were emerging, but none of these were successful. There were plans for dividing the state railways on regional basis (like in Japan), on service basis (like in Germany), but finally – based on the EU expectations – the division of commercial operation and track maintenance happened.
The real renaissance happened in the last 15 years, as the country became an EU member, and railway development became more important. ‘Railway is not a company, but a socio-political issue’ [6]. This statement is from former transport minister János Fónagy, who is currently responsible for harmonizing rail and non-rail transport services, appointed by Prime Minister Viktor Orbán. This statement clearly summarizes the railway-oriented transport policy of the current right-wing government in Hungary.
This non-economic approach to railways may be explained by the fact that in 2014, less than 20% of the cost of passenger railway operation was covered by passengers, Hungary is the last on this list in the EU [2]. Therefore the Hungarian railway service is a typical public service, which require huge amount of subsidy.
Railways are important for policy makers not only for domestic reasons, the development of international services is also an issue. There are millions of ethnic Hungarians living on the other side of the country borders, and the provision of adequate international public transport services for them is essential. The international railway services are integrated into the domestic timetable and fare system, and until the border station these operate as a Public Service Obligation (PSO)., i.e. financed by taxpayer money. This policy is difficult to harmonize with EU regulations, which expect international services to be provided clearly on a commercial basis.

2.3. Market players

There are 3 main train operating companies. The biggest is MÁV-START, the passenger transport subsidiary of Hungarian State Railways (MÁV), carrying 140 million passengers a year, receiving an

annual cost-compensation of HUF 144 billion (EUR 500 million, 0.4% of GDP, 3.2 EUR/passenger, 6 EUR/passenger-kilometer). There is another (partly) state-owned railway company, the “Győr-Sopron-Ebenfurthi Vasút” (GYSEV), which is a Hungarian-Austrian joint venture, operating 8 lines in western Hungary, carrying 10 million passengers. Another subsidiary of MÁV, the MÁV-HÉV operates 4 independent suburban railway lines in the Budapest area, and carries some 80 million passengers. These lines used to belong to the city of Budapest and were taken over from the Budapest Transport Company (BKV) in November 2016. One of these lines is completely within the city limits of Budapest.
There are some 20 narrow gauge forest railway lines with passenger services; however, these mainly serve as tourist attractions, so these are not operating as a PSO. There is no private passenger railway operator at the time.
Regional buses and coaches had been operated for decades by 24 state-owned „VOLÁN” companies, generally one (or two or three) company in each county. Many bus lines are operating as feeder services to rail, especially in Pest and BAZ. county. There are some long distance coach lines which may be considered to be competitive and parallel to rail services. The public service contracts of the bus and coach operators expires in 2019, a tendering process is going on.
By January 2015 the then 24 VOLÁN companies were merged into 7 regional bus operators in preparation for the public tendering of services. The plan to further merging the companies into one national big bus operator under the name “Volánbusz” was announced in March, 2019, and will be completed by autumn 2019.
National, regional and suburban buses run some 366 million kilometers and carry around 420 million passengers a year (three times more than MÁV), and receive a cost-compensation of around HUF 80 billion (EUR 246 million, 0.58 EUR/passenger). This amount is increasing year by year; however, until 2006 these companies could operate profitably. VOLÁN companies also operate the urban buses in some 70 towns, carrying another few hundred million passengers. (Another 40 towns order local services from either small private operators or from their own bus company.)
There is some competition for passengers between bus and rail services, and also between neighboring Volán companies, however, its volume is often overestimated.

2.4. Institutional changes

MÁV used to have 132 thousand employees. After the changes in 1990, the number of railway employees had declined for years, and by 2019 their number is around 30 thousand. Many of them are no longer MAV-employees, or does not even belong to the MÁV Group. Many activities had been either outsourced or taken away by law such as train path capacity allocation, gardening, hospitals, education, symphonic orchestra. Until 2010 more than hundred companies operated under the MÁV umbrella, by 2019 most of these were integrated back to MÁV Group. In 2007, the passenger transport division was transferred to a subsidiary called MÁV-START, and a separate company was founded for maintenance, traction and such. The freight division was separated and sold to Rail Cargo Austria in 2008 for HUF 102 billion, the income from this transaction was spent on subsidizing the losses arising from passenger transport activity that year. In the early 2010s there were plans to create a holding for all passenger transport companies (MÁV, VOLÁN, etc,), but is was failed. In 2012 the traction and maintenance companies (MÁV-TRAKCIÓ, MÁV-GÉPÉSZET) were reintegrated, but not into the “big” MÁV, but into the passenger train operator MÁV-START. The main task of the “big” MÁV is reduced to track maintenance and traffic control, with some extras like building management. A 10 years long public service contract was signed with MÁV-START in 2013 for passenger train operations, and with MÁV for track maintenance in 2016. These long term contracts replaced the much shorter, usually one-year long “State-MÁV treaties”, and eliminated the need for the huge extra financial aids for the MÁV group, which used to be common way of financing railways every second or third year before 2013. After many changes, it finally stabilized the situation of Hungarian railways.

2.5. Coverage, accessibility

There are 3152 settlements in Hungary, around 800 of them may be approached by rail services. Rail timetable provides enough services for the vast majority of the people in villages to commute to the

nearby town to school, to work in typical work shifts or for shopping. However, there are 20 lines where the number of services is very low, 2 to 4 trains a day. The frequency of the timetable on the main lines is usually attractive, trains operate on a periodic, clock-face schedule, a.k.a. “taktfahrplan-concept”.
The coach network is also extended, however, diminishing. Major towns and cities are directly connected with each other, the capital Budapest may be accessed from all bigger towns, except for those served by very good and frequent rail services. Most long distance services carry significant number of short-distance passengers, these lines are more or less integrated to regional service structure.

2.6. Fare system

Fares in Hungary are based on the same scheme countrywide, depending on the distance travelled, being slightly regressive. During the transition period (from late 80s to early 2000s) fares used to have a small annual hike; however, there has not been any fare hike since 2010. In 2007 the rail and bus tariff level was unified in 2 steps, which meant a more than 30% increase in rail tariff, and some 5% for buses and coaches. The relatively small surcharge which is applicable on InterCity trains was introduced on most highway buses in 2012. A minor surcharge for rapid trains – which was previously abolished in 1991 – was reintroduced in 2013. The same year 15, then in 2014 a further 10 (altogether 25) percent discount was introduced on 30 rural lines with low traffic volume.
The railway company MÁV-START used to apply discounted tickets on lines parallel with highway buses, but it was almost completely abolished in 2013, and fares were set to be equal on trains and buses. Pre-purchased seat reservation tickets on trains costs HUF 180 (EUR 0.6), except for the peak days (Friday and Sunday afternoon) or when it is bought on the day of travel, when it costs HUF 300 (EUR 0.9).
Passengers pay only a very low percentage of the cost of operating the railway. The rest is paid either by the employer (in the case of commuter passes), or by the fare adjustment (subsidy) by the government (in case of the socio-political discounts), and the remaining part is covered by the public service compensation. Commuter monthly pass holders are entitled for 86% compensation from their employer by law; however, some employers are reluctant to do so. Students (and many other groups like the handicapped or those with lower income) enjoy 50% discount on the basic fare and 90% on the commuter passes. The remaining 50% (or 10%) used to be covered as a social expenditure, however, nowadays it appears partly in the form of public service compensation. Pensioners may travel with 90% discounts (i.e. pay only 10% of the ticket price), and passengers over 65 (and under 6) years old may travel free, including EU citizens, however, the surcharges must be paid.
Tariff alliances are almost non-existent. However, in the Budapest area the suburban commuter passes may also be combined with the Budapest Pass (which covers the whole area of Budapest) since 2007, and hence passengers enjoy some discounts comparing to those travelling around smaller towns. Lately there are pilot projects for combined bus and rail passes in the Budapest and GYSEV area.

2.7. Changes in ridership

Like many railways in the world, the MÁV started to suffer from declining passenger and freight volume, especially in the late 80s. MÁV carried 405.6 million passengers (15 billion passenger-kilometer, bn pkm) at its peak, in 1965. The ridership gradually declined to 342.8 million in 1975, and to 232.4 million on 1985. In 1989, when the political and social changes started, ridership was just about to stabilize at 225 million (11.8 bn pkm), however, by 1993 it fell sharply to 158 million (8.4 bn pkm).
The decline was accelerated by various factors. After the end of the Cold War and the collapse of the socialist regime, dramatic political and economic changes took place. The transition from planned economy to market economy, and privatization of the industries resulted in the appearance of the formerly unknown phenomena of unemployment, therefore the number of commuters declined, both on daily and weekly frequencies. The GDP was decreasing, just as the production of (especially the heavy) industry, it made freight volumes sharply drop. Thousands of blue collar and construction workers used to commute from the Eastern part of Hungary to work at and to build the capital city Budapest, many of them became unemployed. The inflow of used cars from Western Europe made driving an affordable

alternative (previously there were 4-5 years long waiting lists for new cars). On the other hand gasoline prices were sharply increasing, partly due to abolishing gasoline-subsidies.
The demilitarization process also resulted in shrinking ridership, as less and less soldiers travelled home on their leave. Until the early 2000s, the growing number of university students contributed to maintain the market share on the long distance market, while suburbanization around Budapest contributed to the survival (and the increase) of the daily suburban commuter traffic around the capital.
Recently the fall of ridership has been slowed down, and there is a small increase to reach 140 million passengers at MÁV-START. However, the average distance travelled by a passenger has been continuously decreasing, it is around 40 km in 2018. As the highway system of Hungary is extended to almost all bigger towns, long distance passengers tend to choose their own car to travel, or even a car-sharing, car-pooling service. The significance of long distance coach services is – by government decision – also decreasing, no matter how much is spent on highway constructions.
MÁV's answer to the declining ridership was the improvement of services, in quality, speed and frequency. Comparing to 1988, the number of train servicers connecting the capital (Budapest) to other bigger towns has been significantly improved, doubled, tripled, or even more, while patronage has been shrinking. 30-40 years ago there were only 3-4 rapid train services a day to towns further than 200 kilometer, however, nowadays there is a high frequency periodic timetable, on the main lines trains run every hour or so. On the other hand, 30 year ago a long distance train has consisted of 7-8 cars, nowadays a 3-car train is typical (215 seats on each InterCity train).
The struggle of MÁV to keep its long distance passengers started with the 1991 introduction of InterCity (IC) train services which have either supplemented or substituted the rapid or express services. The IC trains offer higher speed, comfort and seat reservation for a little surcharge. By the end of the 1990s bigger towns were connected to Budapest by IC train services. On certain rural lines special feeder trains to InterCity trains were introduced under the name InterPici (literally Inter-Small). The InterCity brand became popular, and some 10 million passengers use IC trains annually. By the mid 2000s, the long distance train system became a little overblown, especially because in spite of the huge efforts, ridership was still decreasing. There was a huge need for innovation, and the solution seemed to be a completely new way of timetable planning, imported from Switzerland.

2.8. Integrated Periodic Timetable (ITF, taktfahrplan)

The integrated and supply-oriented periodic timetable, also known as the 'taktfahrplan concept' (or Integrierter Taktfahrplan, ITF) is a special method for transportation network and timetable planning, which is based on the belief that increasing frequency and providing good connections (repeating every hour) is the key of attracting passengers. The Swiss transport system is fully based on this concept, and many other countries utilize this method. The philosophy behind the theory is that the income from new passengers would exceed the cost increase arising from the extended supply of trains (and buses).
The first ITF-based timetable was introduced in 2004 on the Budapest-Vác-Szob suburban railway line and its sidings [7]. In 2006 the taktfahrplan concept was extended onto most main railway lines in Eastern Hungary, then in the South East, and finally by 2009 on the Transdanubian (western) main lines. In 2009 the whole bus system in the western suburb of Budapest was adjusted to the new railway system, also based on the taktfahrplan concept. On the suburban railway lines around Budapest the increased frequency and the introduction of rapid train services attracted many new passengers, however, on non-Budapest lines the taktfahrplan is not such a success story.
When promoting the idea of ITF, the main purpose of MÁV was increasing ridership and income. Extra services helped improving the accessibility of rail services and contributed to stabilize passenger numbers, however, the average distance of a rail trip has been decreasing sharply. Hence, implementing ITF could not turn back the process of losing long-distance rail passengers, however, it could attract passengers mainly on suburban routes.

2.9. Railway closures, reopening, and the 2012 passenger service supply reform

Hungary has a very vast railway network; however, many lines were closed in the 70s. In 2007 and 2009 the passenger railway operations was suspended on another 14 and 25 lines, 662 and 826

kilometres, respectively (before 2007 the route length was 7700 km). The new government elected in 2010 decided to reopen 11 lines (356 km), but later in 2012 the number of train services on most of these lines was cut to 2 per day per direction. Also in April 2012, most or all highway bus services were cancelled from Budapest to the following cities: Győr, Sopron, Szombathely, Szeged, Miskolc and Nyíregyháza. These lines were considered to be parallel with rail services. On 15, April, 2012, altogether almost 500 train and coach services were deleted from the timetable to meet the austerity measures.

3. Conclusions

The Hungarian railways was in crisis after the political changes in 1990, losing half of its passengers and freight volume. After many unrealized reform ideas, the state railways were divided – based on the European railway policy – to track maintenance, passenger train operating and freight division, the latter one was privatized. Using generous European funds the some main lines have been reconstructed and many of the worn-out rolling stock was replaced by EMUs. In spite of the declining ridership the frequency of trains were improved, based on the taktfahrplan concept. Improvements in the urban-suburban rail services in and around Budapest attracted many passengers.

Infrastructure projects also have positive effect on ridership, however, these should always be accompanied by other side projects like feeder bus services and easing in the tariff system. Railway operators should work harder to internalize the externalities, just like the Japanese railway companies do. The future of rural railway lines is a mental and emotional issue, not an economic.

The Hungarian experience is that spending on railway service improvements always have some return, but it hardly can exceed the cost of the investment and operation, when only one sixth of the costs is covered by passengers. Since 2004, when Hungary has joined the EU, railways are absolutely in an upward spiral in terms of investment, however, the efforts are not reflected in passenger numbers.

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