

## **CHEAPER, SIMPLER ROLLING STOCK FINANCING: THE BENEFITS OF THE LUXEMBOURG RAIL PROTOCOL**

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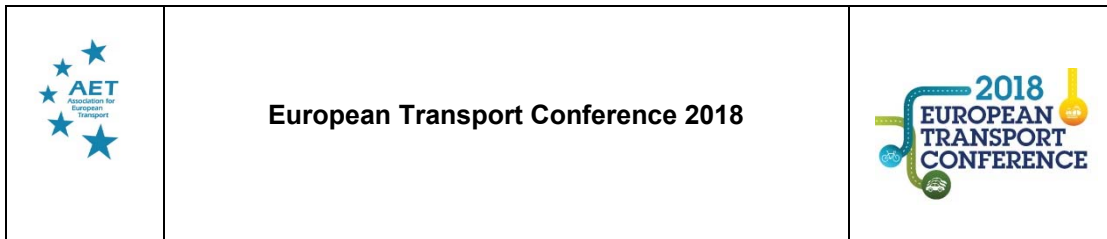
### **1. INTRODUCTION**

The Luxembourg Rail Protocol (LRP) to the Cape Town Convention on International Interests in Mobile Equipment is a new global treaty that will make it much easier and cheaper for the private sector to finance railway rolling stock. The Protocol sets up a new system for recognition, priorities and enforcement of creditor and lessor rights, which will be registered in an international registry based in Luxembourg and accessible to everyone over the Internet 24/7. It will also create a system, for the first time, for uniquely identifying rolling stock globally in a common way. The Protocol is due to enter into force during 2019, but in the meantime it is accumulating signatures and ratifications from countries across the world.

As governments and operators look to banks, lessors, institutions and other private investors to assume an increasing role in financing railway equipment without recourse to state underwriting, there is no commonly accepted system for securing creditors. Also, existing laws in many states do not provide sufficient protection for these financiers, discouraging their participation in the market or increasing the cost, due to the higher risk. Moreover, when a train (or individual item of rolling stock, such as a wagon) moves from one country to another and its owner/debtor or lessee does not maintain financing or lease repayments, there is a risk that the financier becomes unable to repossess the rolling stock—at least not without extensive legal costs and time. Avoiding this situation currently requires extensive financial engineering at the point at which the rolling stock is financed. This does not always work as a matter of domestic law, and there remains a major issue of conflict of laws and rights, especially as financing structures in today's global market can mean that title or security interests may be held concurrently in various jurisdictions.

However, in countries where the LRP has been ratified, the financier no longer bears the risk that, in the case of debtor/lessee default, it would not be able to repossess its collateral. Its credit risk has reduced, and it will be able to reduce the financing costs associated with the rolling stock loan or lease.

By way of context, the global market expenditure on the rail industry amounts to €163bn, of which €53bn is spent on rolling stock. Furthermore, the total market for rail supply is expected to continue to grow at 2.7% per annum.<sup>1</sup> However, national public sector budgets are constrained, and while **funding** (i.e. payments into the rail sector from the farebox, freight customers, third parties or public



funds) will largely continue at the national level, private **finance** offers a way of bridging the gap between initial outflows of cash (e.g. for a new wagon) and the receipt of payments from users of the asset (e.g. future freight customers).

Oxera has undertaken analysis of the benefits of the LRP on behalf of the Rail Working Group, a Swiss not-for-profit rail and finance industry group focused on the Protocol's adoption and implementation. By combining assumptions on the reduction in financing costs associated with the LRP's introduction with data on rolling stock deliveries across a number of European countries, and on 'deficits' in the rolling stock fleets (measured using assumptions on deliveries required to reduce the overall fleet age), we have estimated the reductions in direct financing costs over typical fleet asset lives by country. This paper discusses the Protocol, and the Oxera analysis of it, in detail.

## **2. KEY FEATURES OF THE PROTOCOL**

The LRP is the rail element of the Cape Town Convention 'family'. The Cape Town Convention and Aircraft Protocol are already in operation in 73 countries. The latter has supported the development of the worldwide aircraft leasing market, which has significantly enhanced the ability of world airlines to obtain new aircraft for their operations by increasing the supply of finance and reducing financing costs. The Rail and Aircraft Protocols will soon be joined by another member of the family, currently under negotiation, which is aimed at enabling financing of mining and agricultural equipment. Given the close synergies with rail equipment, it is expected that this new Protocol will accelerate the ratification of the LRP by national governments.

The LRP has two main features, as described below.

### **New international public registry**

Security interests held by creditors in railway rolling stock will be registered in a new international public registry, based in Luxembourg, that will be accessible over the Internet 24/7. This system will establish clear priority among creditors (who can check for the existence of alternative claims on an item of rolling stock) and real-time information. As ownership of assets changes, the registry will be updated, making transactions more straightforward.

As part of the development of the registry, a new global identification system for all railway rolling stock—a permanent and unique 16-digit number to be issued by the registry for each item of rolling stock—will be rolled out. This is in contrast to the present situation—there are currently no national registries recording security interests in rolling stock and permitting search by its identifier, nor in fact any common identification system for railway equipment.



### **Clear legal framework and enforcement**

The LRP applies where the debtor (i.e. the party leasing, or obtaining credit collateralised on, the item of rolling stock) is located in a country that has ratified the LRP. As such, the more countries ratifying the Protocol, the more benefits will emerge—both in terms of making it easier for private financiers to invest; and in providing cover for creditors when rolling stock moves, either temporarily or permanently, across jurisdictional borders.

The Protocol clarifies creditor rights on termination of the finance agreement, and any default by and/or insolvency of the debtor. In the absence of the LRP, these rights are subject to the legal framework in which the item of rolling stock currently resides. These frameworks typically are not designed for secured creditors in the rail sector, which increases the risk that the financier is unable to repossess the item or otherwise arrange the item's lease to an alternative railway undertaking. This increase in so-called **residual value risk** makes obtaining credit for new or second-hand rolling stock more difficult and expensive for rail companies, or involves significant financial engineering to isolate risks to the asset in question and its use by the proposed debtor. It also means that operating leasing is inherently problematic, denying the rail sector access to one of the key elements underwriting the considerable development of the aviation sector in the past 40 years.

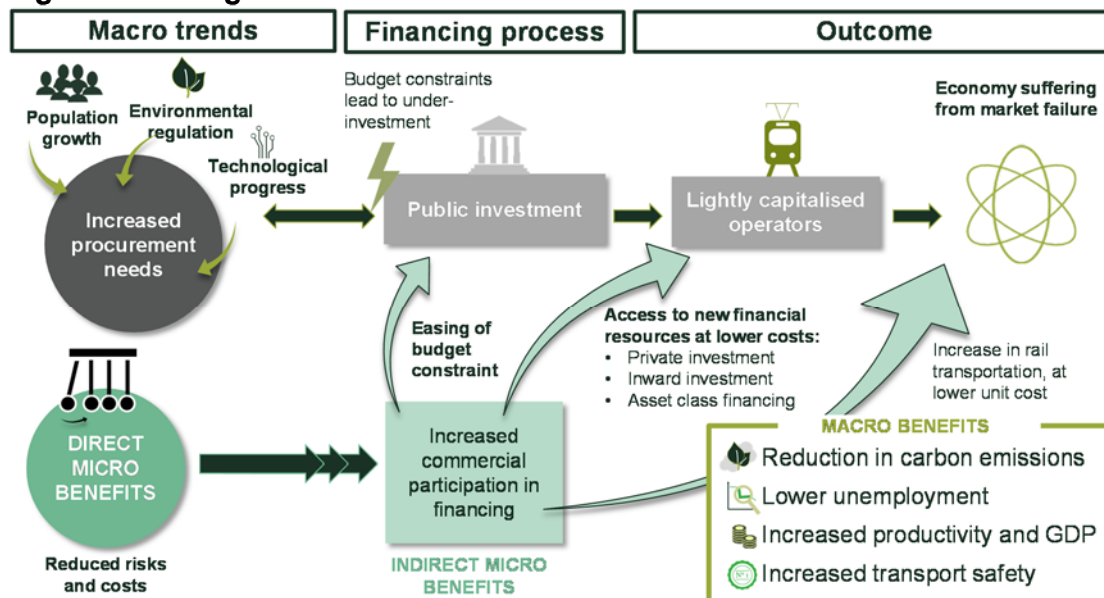
### **Application**

The LRP protects creditors financing rolling stock through leases, secured credits and conditional sale contracts. It covers all vehicles running on tracks; or above, on or under a guideway—from high-speed to light rail trains; from freight and passenger locomotives and wagons to trams and subways; and from people movers at airports to cable cars and gantries and cranes running on rails at ports. Even hyperloop vehicles will be covered.

## **3. BENEFITS OF THE PROTOCOL**

The figure below provides a representation of the benefits of the Protocol.

**Figure 3.1 Categorisation of LRP benefits**



Source: Oxera.

We discuss these benefits in more detail below:

- The demand for railway equipment, both increasing capacity and upgrading existing fleets, will continue to increase as long as:
  - populations continue to grow in many geographies, increasing demand for passenger rail services and for trade in goods;
  - populations continue to move from the land to cities, requiring much more investment in commuter light rail, subway and tram systems to alleviate crippling gridlock and asphyxiating pollution;
  - environmental regulations tighten, causing modal shift onto rail;
  - technological developments (at least in the short term) increase the attractiveness of passenger rail.
- Policymakers around the world are seeing the railways as a key agent for intra- and inter-continental trade and regional economic integration.
- Major technological advances will create a strong impetus towards re-equipment of fleets.
- Rail transportation competes against other modes, and against other (non-transport) uses of government money for funds. While rail has an excellent economic case, there are times when government funds are either constrained *per se*, or rail's offering is less politically attractive way for government to spend its money, causing under-investment in rail assets and inefficiency in their use.
- By reducing the risks and costs faced by potential providers of private finance for rolling stock, they are willing to provide finance at cheaper rates (reduced

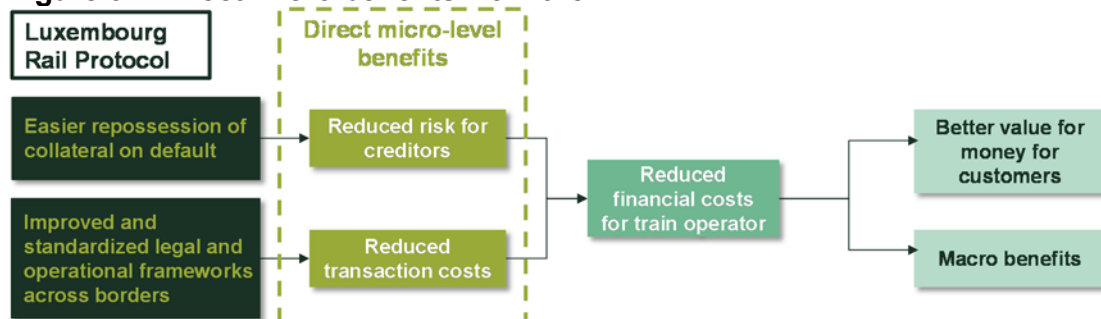
capital reserves and margins on debt finance, lower-cost equity finance, and reduced transaction costs across all types).

- Private financing takes the pressure off the provision of finance by public sector budgets, providing access to new financial resources. This is the case regardless of the structure of the rail industry in a particular country, but is especially helpful in cases where there is separation between infrastructure and operations. In this situation, the thinly capitalised railway undertaking is especially badly placed to provide the upfront capital required to purchase new railway equipment.
- Relative to a situation where the LRP does not exist and has not been ratified by the relevant countries, the increased investment in rolling stock enables the well-rehearsed **macro benefits** of rail transportation to be realised: lower carbon emissions and local pollutants; improvements in safety and efficiency in the transportation system; as well as jobs and economic growth.

### Focus of this paper

This paper concentrates on the **direct micro benefits** (illustrated in the figure below) expected to arise from the LRP, relative to a situation in which it is not supporting rolling stock financing.

**Figure 3.2 Direct micro benefits from the LRP**



Source: Oxera.

In addition to these macro benefits, we expect the following **indirect micro benefits** to emerge over time.

- Facilitation of **operating leases**:
  - opening up the market to new competition;
  - driving standardisation of equipment and economies of scale in manufacturing.
- Potential cuts in **Export Credit Agency finance premia** (as has happened in the case of the Aircraft Protocol).
- **Unique global identifier** enabling tracking of equipment status and location, and leading to more efficient, customised insurance and maintenance, as well as many other cost savings.

- Registration of creditor claims, providing **cross-border creditor protection** even if there is no ratification of the Protocol in the state.

We now turn to describing how we have quantified the direct micro benefits.

#### 4. QUANTIFICATION OF MICRO BENEFITS

Our analysis focused on the potential reduction in private financing costs associated with the rolling stock needs of 29 countries. It required four steps, as set out below.

**Figure 4.1 Approach to quantifying direct micro benefits**



Source: Oxera.

##### **How much investment is required? (Step 1)**

In order to quantify the rolling stock investment required on a country-by-country basis, we needed data on the value of each fleet (passenger and freight) and its age (and therefore the retirement profile). Assuming that the LRP benefits both the financing of new rolling stock and refinancing of existing rolling stock, we required forecasts of how the fleets would increase (growth in the number of vehicles), and how much replacement (of the existing number of vehicles) would be required. We assumed that refinancing occurs when the age of each item of rolling stock reaches 10 and 20 years.

We also needed to assume how much of this need would be financed from public and private sources. We assumed that the share of public financing in each country would decrease by half by 2023 due to the catalyst effect of the LRP, and then remain constant from 2023 onwards.

The investment profile we determined for each country was based on the assumptions and data sources set out below.



**Figure 4.2 Approach to developing the investment profile**

2018-2022	2023-2032	2033-2047	2048 onwards
Average annual market value of deliveries by type of RS by country	Theoretical CAGR over a 10-year-period to account for catch-up when average fleet age > 20 years	Steady state with annual market value growing with inflation in the EU (2%)	Growing into perpetuity using inflation as growth rate, and discounted at the pre-LRP WACC
(SCI Verkehr data)	(assumption)	(assumption)	(assumption)

Notes: RS, rolling stock; CAGR, compound annual growth rate; pre-LRP WACC is the financing cost that would prevail in absence of the LRP.

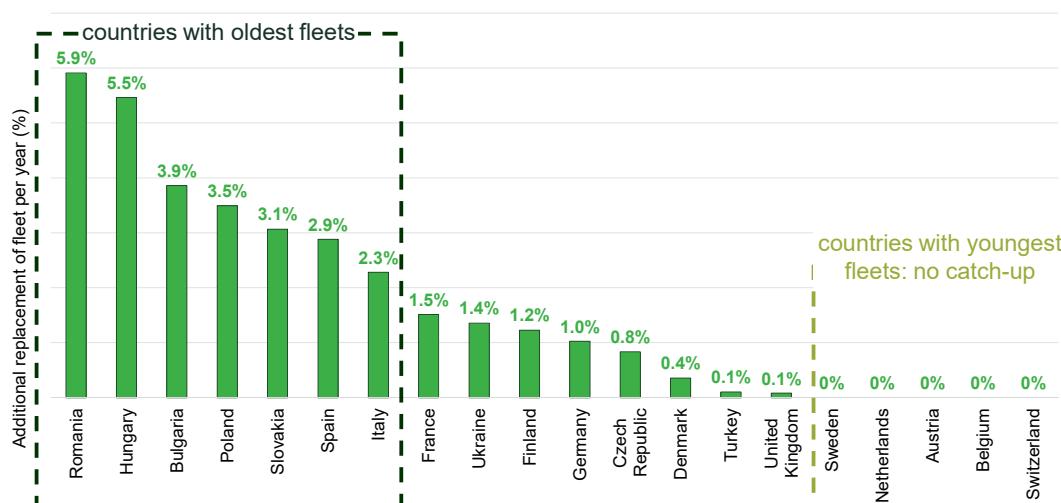
Source: Oxera.

There are two particularly important time periods described in the figure above.

- Between 2018 and 2022, we assumed that new deliveries offset retirements (scrapping of vehicles) based on an assumed life of 30 years.
- Between 2023 and 2032, for countries where the average fleet age is greater than 20 years, we modelled a catch-up period of higher deliveries, on the assumption that the LRP will unlock new finance and deliveries to replace an ageing fleet.

To illustrate, the figure below shows the assumptions we made for a sample of European countries.

**Figure 4.3 Fleet age, and related increases in rates of fleet replacement**



Source: Oxera, based on fleet data from SCI Verkehr.



## **How much does rail finance cost without the LRP? (Step 2)**

Having established the quantum of rolling stock investment required in each country we were considering, the next step was to calculate the savings (in the cost of using private finance for the non-public investment requirement), relative to the situation in which there is no LRP. This required estimates of the current (this sub-section) financing cost (the ‘cost of capital’—measured by the weighted average cost of capital, or WACC) and the ‘with LRP’ WACC (the next sub-section).

We calculated the current LRP WACC as the combination of:

- the ‘cost of equity’ (the cost of raising finance from shareholders)—calculated by combining national market parameters (the current rate of interest on government debt<sup>2</sup> and historical rates of return on the local stock market), and the equity beta (which denotes the risk of investing in rail stocks, relative to the stock market as a whole);
- the ‘cost of debt’ (the cost of raising finance from bond holders)—calculated using the rate of interest on government debt and loan margins for higher-risk debt products;<sup>3</sup>
- weighted by typical leverage rates for rail finance.<sup>4</sup>

## **What saving in rail financing costs does the LRP enable? (Step 3)**

The next step was to make assumptions about the extent to which rail finance costs less with the LRP in place in each country. We were conservative, as we were not aiming to capture reductions in the equity beta across our country analyses, since there is not a firm basis for making this quantification. However, we expected that the LRP would indeed make rolling stock finance less susceptible to macroeconomic shocks (which beta largely picks up), given the reduction in default risk associated with the Protocol. Nevertheless, we assumed an overall reduction in transaction costs associated with raising equity finance for rolling stock, amounting to 10 basis points (bps, equal to 0.1%).

We then made various reductions in the cost of debt, depending on the country, by reducing the loan margin according to the OECD country risk classification for export credits:

- for high-income OECD countries, the margin reduction is 40bps;
- for ‘Grade 3’ countries, it is 145bps;
- for ‘Grade 4’ countries, it is 300bps;
- for ‘Grade 7’ countries, it is 600bps.

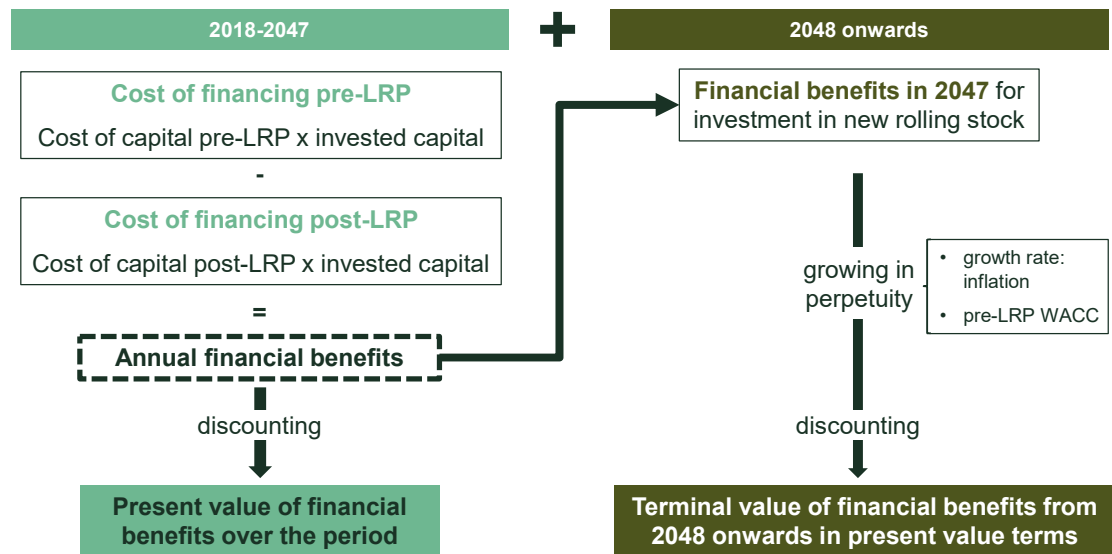
Having worked the above assumptions through the WACC calculus, we found total cost of capital savings on private financing of rolling stock of between 40bps and 450bps, with an average of 80bps.



### Quantifying the benefits (Step 4)

Having identified the benefits to apply to the size of the investments in rolling stock, we combined the two together, as shown in the figure below.

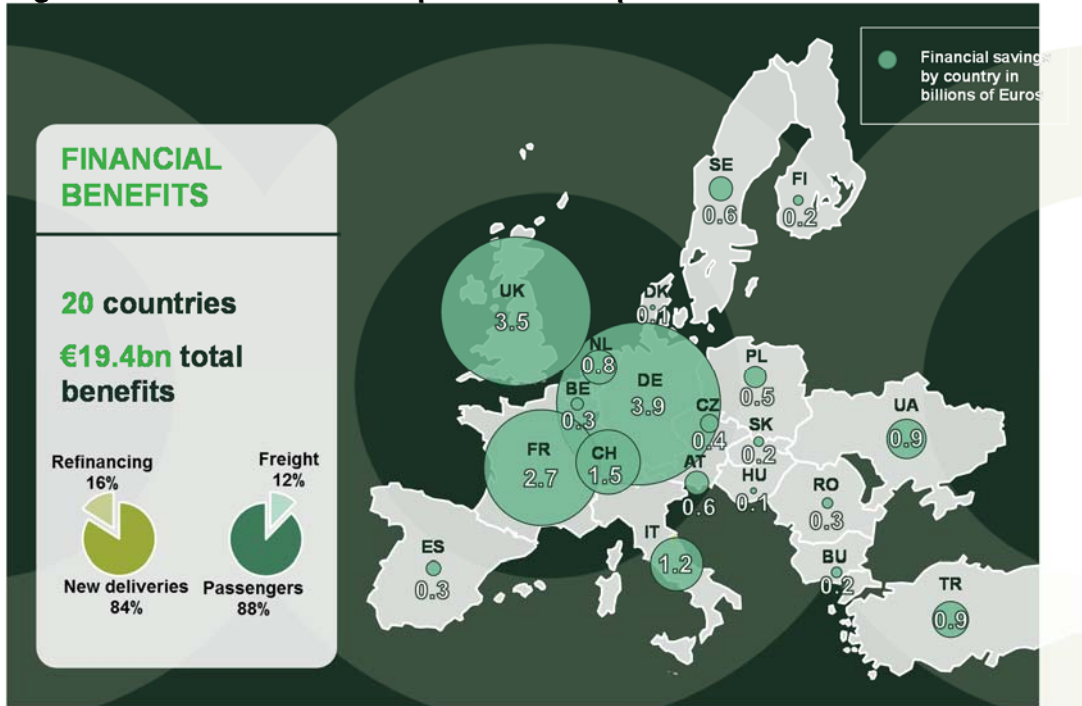
**Figure 4.4 Apply LRP WACC reductions to the investment requirement**



Source: Oxera.

Our initial set of results were for a sample of 20 European countries—see figure below.

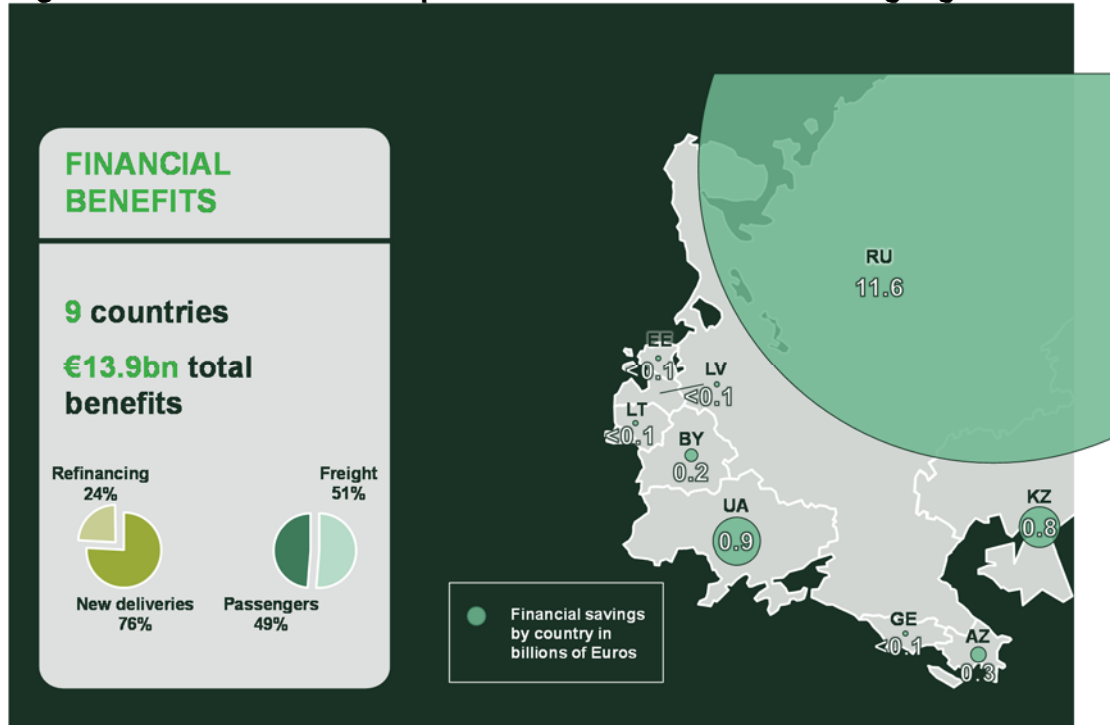
**Figure 4.5 Benefits for a sample of 20 European countries**



Source: Oxera.

Our second set of results focused on the ‘1520’ broad gauge countries with an overlap of one country, Ukraine—see figure below.

**Figure 4.6 Benefits for a sample of nine countries with broad gauge rail**



Source: Oxera.

Using the same methodology, we also quantified the benefits from South Africa adopting the LRP at €1.3bn, and Mauritius at €2.2m.



But even this analysis does not tell the whole story. Practitioners will register security interests even where the debtor is not domiciled in a contracting state, since it is the only public registry available. The Protocol will bring direct benefit to contracting states which are financial service centres.

## 5. CONCLUSIONS



Relative to a situation in which the LRP is not available to creditors seeking to provide rolling stock financing, we have identified direct micro benefits amounting to €33.7bn across 29 countries.

Further benefits are expected to emerge from the development of insurance and tracking products associated with the new unique global identifier; and the increase in supply of finance (including Export Credit Agency-related products).

Put together, these benefits are expected to increase the availability of improved rolling stock to passenger and freight train services, increasing the overall situation of rail relative to its modal competitors.

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The more countries that ratify the LRP, the more countries will start to experience the effects of more modern and efficient rail rolling stock across all potential uses.

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## NOTES

<sup>1</sup> Source: UNIFE and Roland Berger (2018), 'World rail market study – forecast 2018 to 2023'.

<sup>2</sup> Yield on domestic government bond, adjusted by:

- the difference between long-term forecast of domestic inflation and ECB target (to account for expected exchange rate depreciation / appreciation vs Euro);
- country risk premium, which is implicit in the domestic sovereign yield.

<sup>3</sup> As determined by the European Commission in state aid cases. Source: European Commission (2008), 'Communication from the Commission on the revision of the method for setting the reference and discount rates.', 2008/C 14/02, 19 January, p.8.

<sup>4</sup> Source: Damodaran A. (2017), 'Cost of capital by Industry Sector: Europe', updated on 5 January 2017. Available at: [http://people.stern.nyu.edu/adamodar/New\\_Home\\_Page/datacurrent.html](http://people.stern.nyu.edu/adamodar/New_Home_Page/datacurrent.html)