Luxembourg Rail Protocol: estimated impact on rolling stock financing cost in Europe

Prepared for

RAIL WORKING GROUP

oxera
compelling economics

Objectives

1. Develop a solid evidence base with 20 countries across Europe
2. Develop a robust assessment of economic benefits, based on the evidence
3. Help RWG, UNIDROIT and their members to consider the country and market impact of the Protocol
4. Help governments consider the effect of the Protocol before its adoption
5. Complement the legal analysis supporting implementation / adoption of the Protocol

Summary

Direct micro-benefits from 20 countries assessed at

€19.4bn

Many additional micro and macro benefits expected in addition

Context

1. Global market volume of the rail industry of €159bn per annum, including €54bn in rolling stock
2. Total market for rail supply is set to continue its growth of recent years at 2.6% per year
3. Growth in the rail market is currently constrained by the availability of funding
4. Luxembourg Rail Protocol improves availability of funds

Source: UNIFE and Roland Berger (2016), ‘World rail market study – forecast 2016 to 2021’.

Contents

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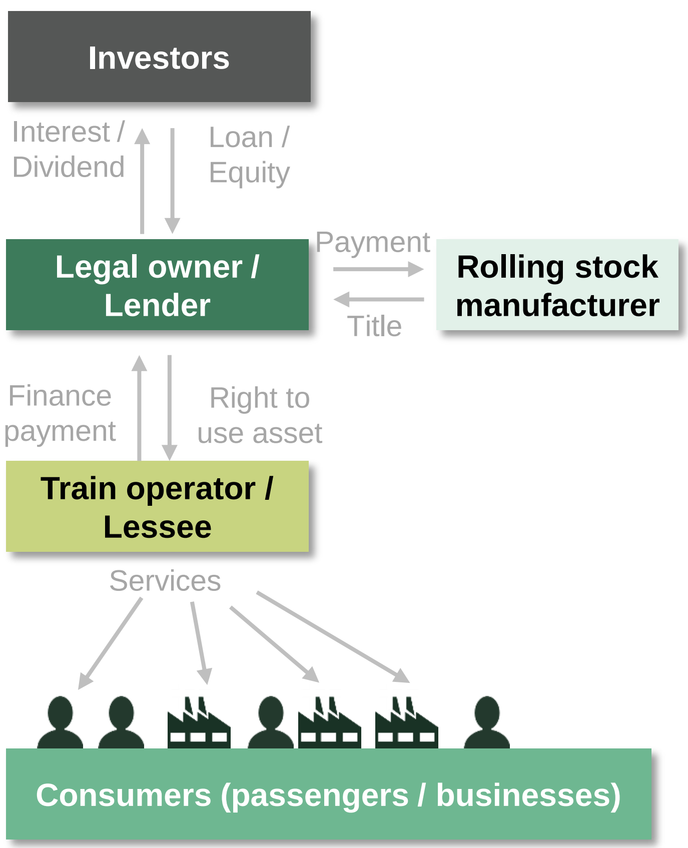
Benefits from the Luxembourg Rail Protocol (LRP)

The Luxembourg Rail Protocol (LRP)

Financing the rail industry



Issue with bringing in private capital due to:

- uncertainty around the repossession of collateral for creditors
- limited legal infrastructure and tracking of assets
- cross border risks, no international registry
- no common system for identifying railway equipment worldwide

Solution: Luxembourg Rail Protocol

New global legal systems for the recognition and prioritisation of security interests held by creditors

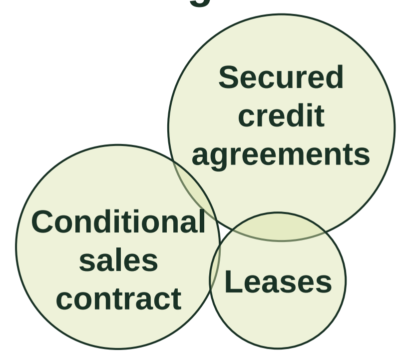
Debtors covered

all debtors in ratifying state

Vehicles covered

all vehicles running on tracks or above, on, or under a guideway

Financing covered



Features of LRP deliver both micro- and macro- benefits

Single central global registry

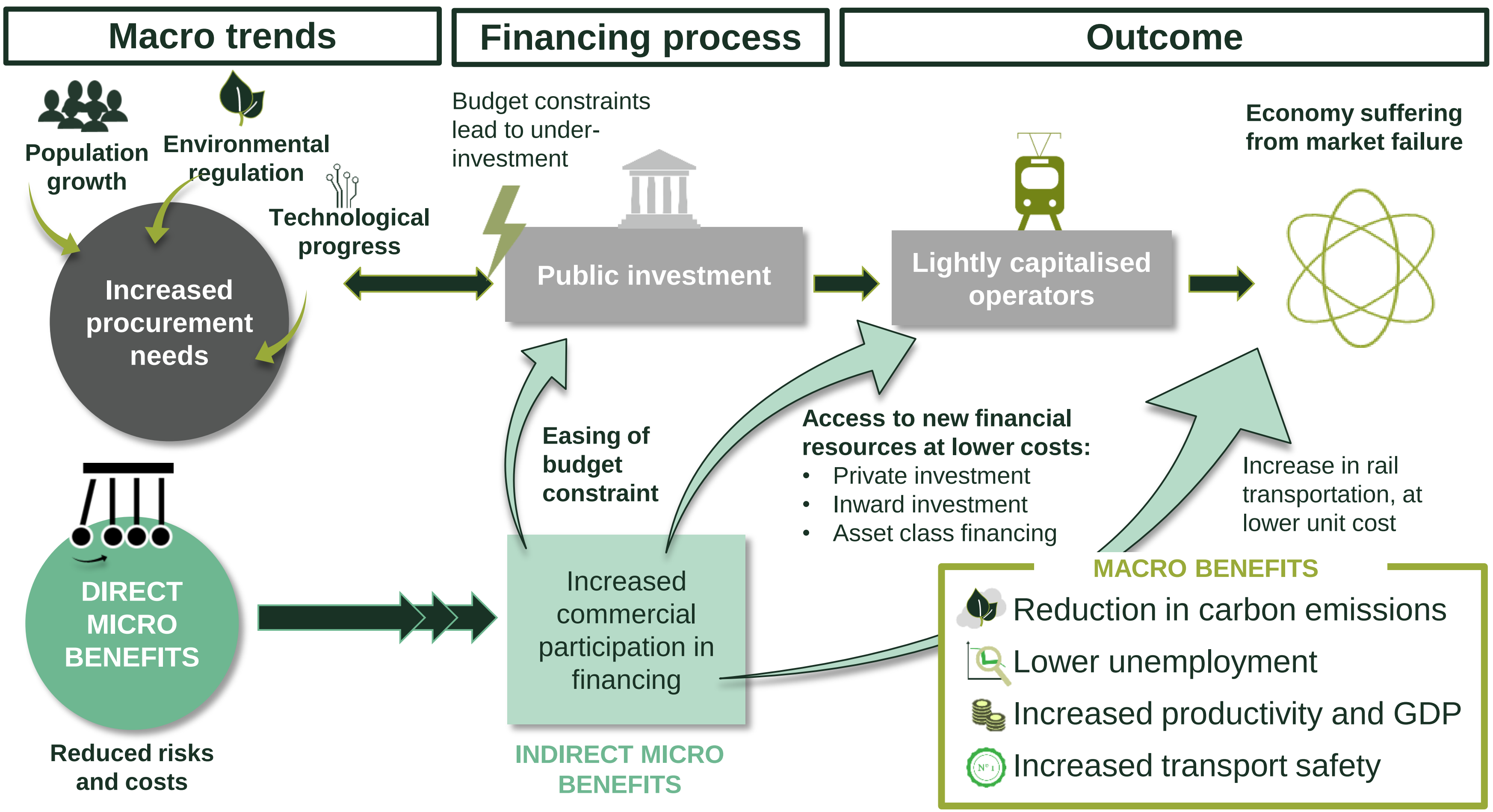
- **Facilitates** local **recording**, international interests and universal numbering system
- Establishes **clear priority** among **creditors**
- Provides for **real time monitoring** – creditors can check rival claims to related rail equipment
- **Eliminates unnecessary restructuring** of security interests as transactions change

Clear legal framework and enforcement

- **Covers contracting states and all debtors therein** without differentiating across the type of financing structures
- Provides for **clear creditor rights** on termination, default, and insolvency
- Recognises and regulates the **security interests** of financiers and other parties
- Opens the way to **secured finance** with recourse only to the **assets**

DIRECT MICRO-BENEFITS	INDIRECT MICRO-BENEFITS	MACRO-BENEFITS
	Not quantified	Not quantified

LRP will reduce costs and help growth in rail transport



This study focuses on the direct micro-level benefits

Luxembourg Rail Protocol

Easier repossession of collateral on default → Reduced risk for creditors

Improved and standardized legal and operational frameworks across borders → Reduced transaction costs

Direct micro-level benefits

- Reduced risk for creditors
- Reduced transaction costs

→ Reduced financial costs for train operator

→ Better value for money for customers

→ Macro benefits

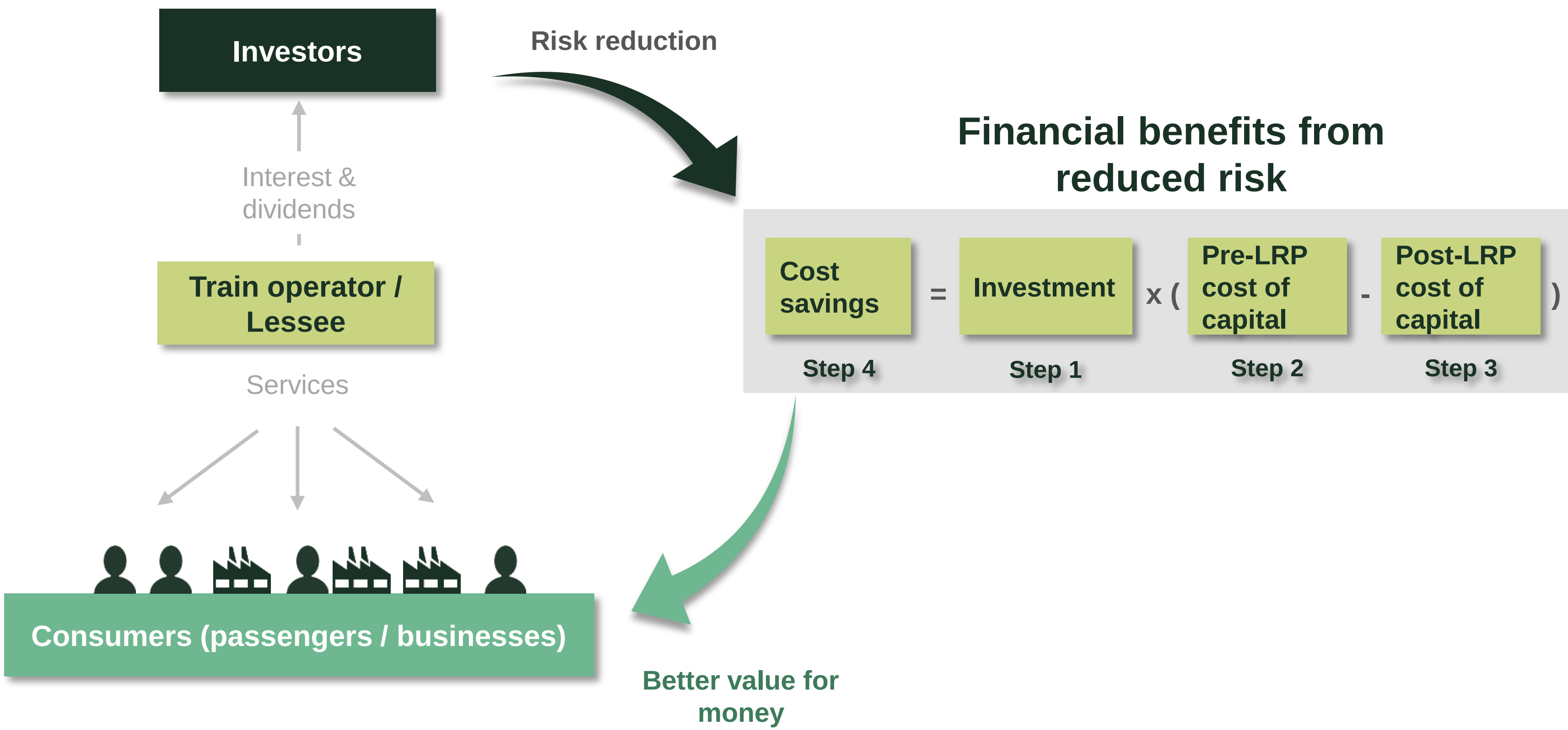
Indirect micro-level benefits

Not quantified

- facilitates **operating leases**
    - opens up the market to new competition
    - drives standardisation of equipment and economies of scale in manufacturing
- potentially cuts **Export Credit Agency finance premia** following the Aircraft Protocol
- enables **unique global identifier** enabling tracking and leading to insurance, maintenance, and many other cost savings
- registration of creditor claims provides **cross-border creditor protection** even if no ratification in the state

Assessing direct financing cost reductions: methodology

Methodological approach



Step 1: Investment to finance

Key assumptions

- **Investment:** assume that both the financing of new rolling stock and the refinancing of the current fleet are affected by the ratification of the LRP. Refinancing occurs when the age of a RS unit reaches 10 years or 20 years.
- **Source of financing:** assume that (i) only private financing benefits from the LRP; (ii) the share of public financing will decrease by half by 2023 due to the catalyst effect of the LRP and then remain constant from 2023 onwards.
- **Periods:** forecast from 2018 to 2047 – terminal value calculated at 2047.

<u>2018-2022:</u> forecasts of new deliveries are assumed to offset retirements based on assumed asset life of 30 years.

<u>2023-2032:</u> model a catch-up period of higher deliveries for countries where average age of fleet exceeds 20 years, i.e. where the LRP will unlock new finance and deliveries to replace aging fleet.

Investment

Financing using LRP

Financing new rolling stock

Freight

Passenger

Data (sources)

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)

Investment to finance | Pre-LRP cost of capital | Post-LRP cost of capital | Financial benefits

Catch-up through reducing average age of fleet

Rational and methodology

Assets older than 40 years assumed to be gradually retired

Average fleet age therefore gradually reduces to 20 years

Countries with younger fleets

Countries with older fleets

Luxembourg Rail Protocol

Increase in access to private financing for all operators

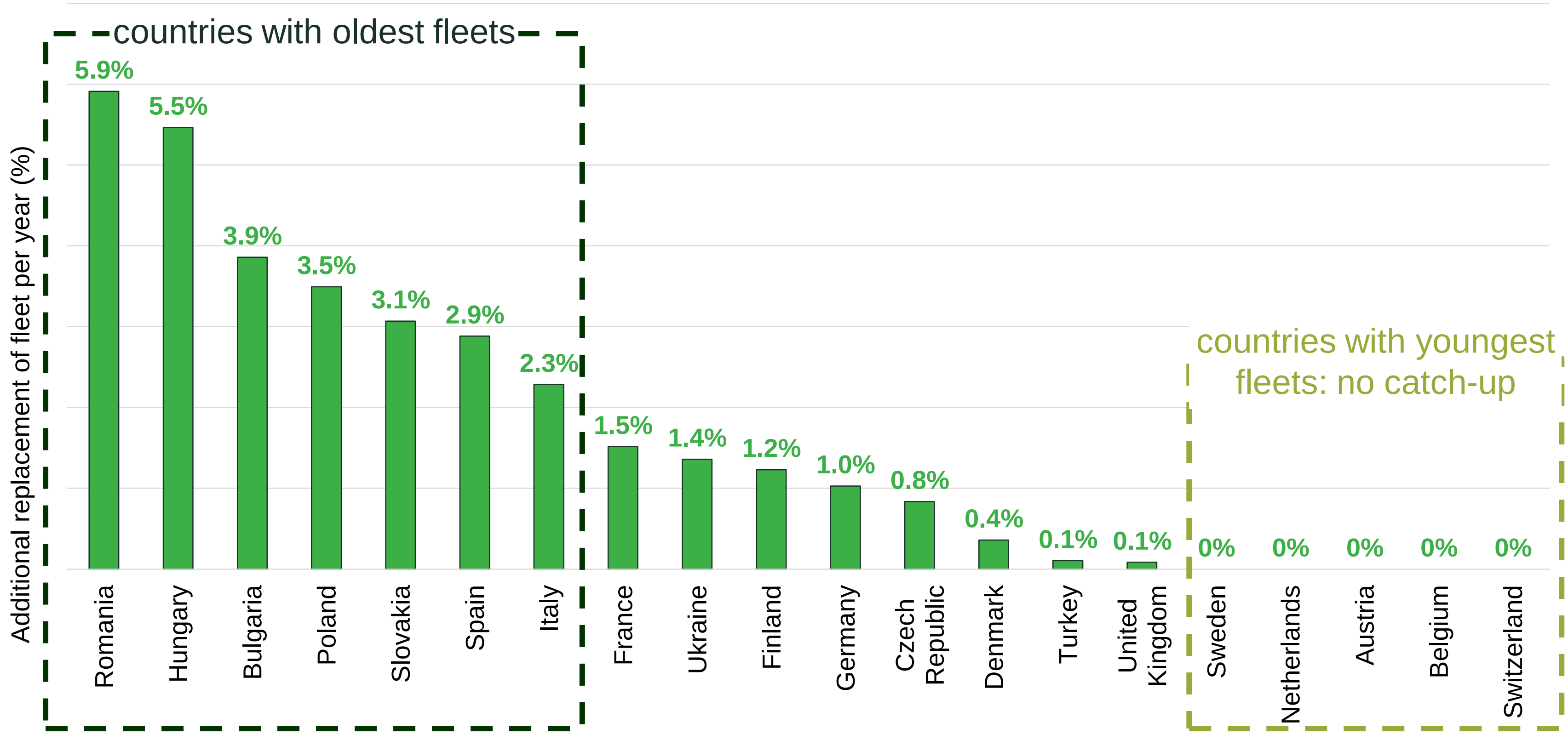
Higher rate of investment in new fleet over a catch-up period of 10 years until the average fleet age is 20 years

Investment to finance | Pre-LRP cost of capital | Post-LRP cost of capital | Financial benefits

Catch-up through reducing average age of fleet

Catch-up effect

Average fleet age assumed to be reduced to 20 years (i.e. based on 40 years asset life) over 10 years, which drives additional fleet replacement



Step 2: pre-LRP cost of capital

Pre-LRP cost of capital

weight : E / (D+E)

weight : D / (D+E)

Cost of equity

Levered beta x Equity risk premium + Domestic sovereign yield adjusted for inflation

Cost of debt

Sovereign yield adjusted for inflation + Loan margin

Beta based on the European railroad transportation industry

Equity risk premium for a mature equity market

Yield on domestic government bond, adjusted by:

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

Loan margins by credit rating for **low collateralisation** used by the EC in State aid cases

Step 3: post-LRP cost of capital

Risk reduction (not quantified)

Cost of equity

Levered beta x Equity risk premium + Risk-free rate adjusted for inflation and country risk premium

Risk reduction (quantified)

Cost of debt

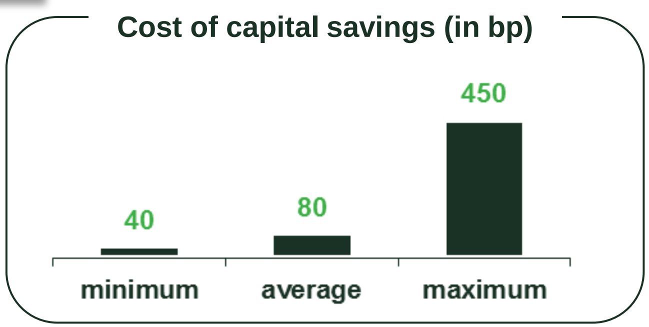
Risk-free rate adjusted for inflation and country risk premium + Loan margin

Post-LRP cost of capital

Lower transaction costs

assumption

-10bp



Margin reductions for **higher collateralisation**

OECD country risk classification for export credits	Reduction in margin from low to high collateralisation (in bp)
High-income OECD country	40
Grade 3	145
Grade 4	300
Grade 7	600

Step 4: Financial benefits

2018-2047 + **2048 onwards**

Cost of financing pre-LRP

Cost of capital pre-LRP x invested capital

\-

Cost of financing post-LRP

Cost of capital post-LRP x invested capital

=

Annual financial benefits

discounting

Present value of financial benefits over the period

Financial benefits in 2047 for investment in new rolling stock

growing in perpetuity

- growth rate: inflation
- pre-LRP WACC

discounting

Terminal value of financial benefits from 2048 onwards in present value terms

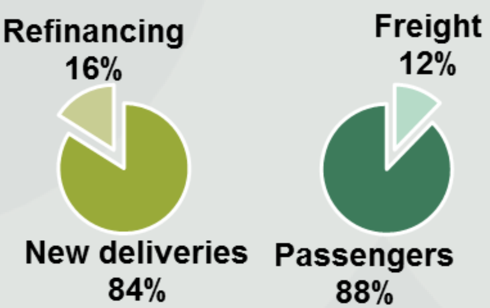
Country case studies

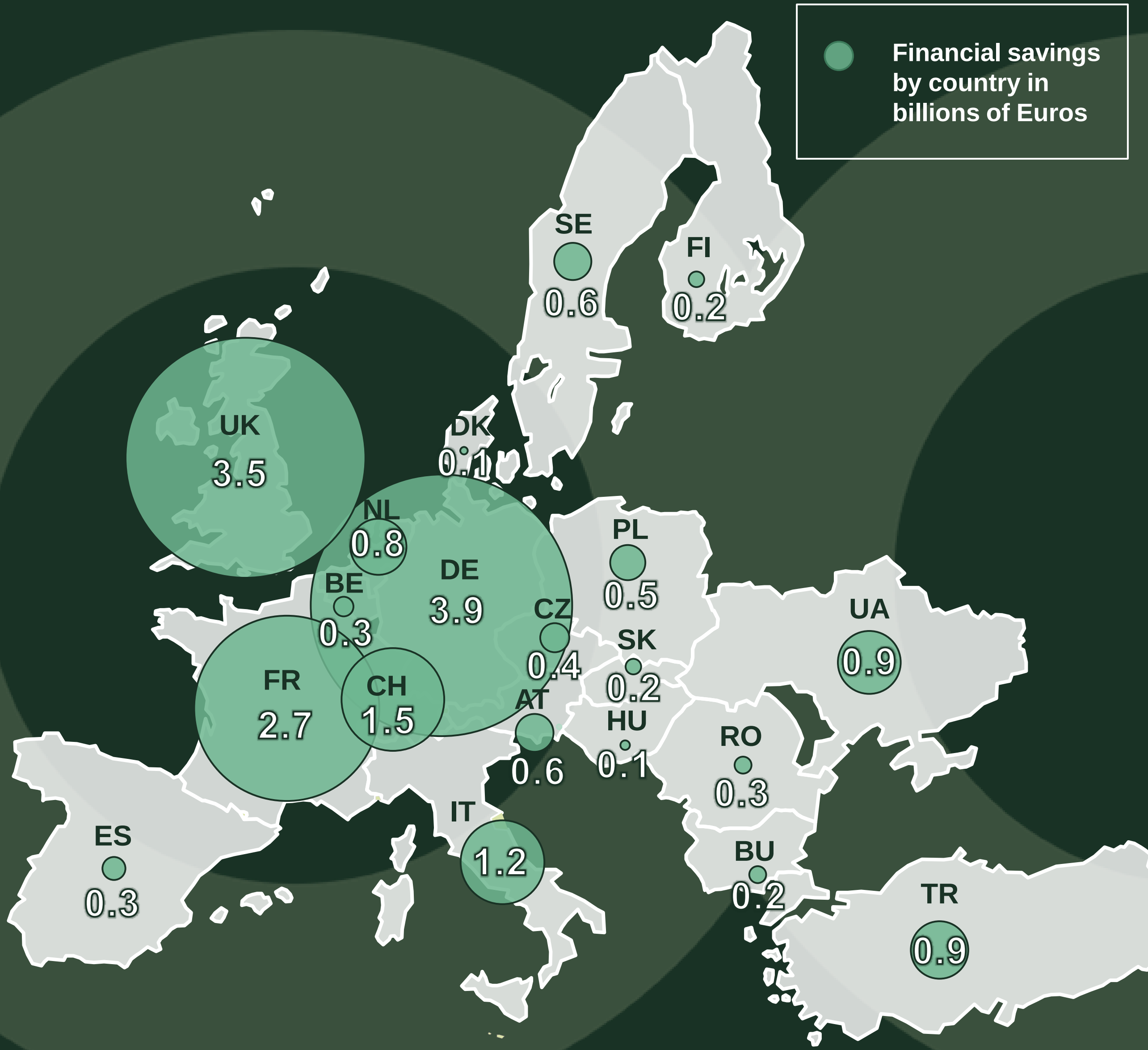
compelling economics

FINANCIAL BENEFITS

20 countries

€19.4bn total benefits





Country case studies 1/5

Present value of total savings

€3,546m

€54 per

Passengers **Freight**

Present value of total savings	
€3,501m	€45m

Present value of total savings

€336m

€7 per

Passengers **Freight**

Present value of total savings	
€313m	€22m

Present value of total savings

€2,738m

€41 per

Passengers **Freight**

Present value of total savings	
€2,526m	€213m

Present value of total savings

€1,243m

€21 per

Passengers **Freight**

Present value of total savings	
€1,191m	€52m

Country case studies 2/5

Present value of total savings

€289m
€25 per

Passengers	Freight
Present value of total savings	
€283m	€6m

Present value of total savings

€3,866m
€47 per

Passengers	Freight
Present value of total savings	
€3,272m	€595m

Present value of total savings

€833m
€49 per

Passengers	Freight
Present value of total savings	
€812m	€21m

Present value of total savings

€1,518 m
€181 per

Passengers	Freight
Present value of total savings	
€1,324m	€194m

Country case studies 3/5

Present value of total savings
€429m
€41 per

CZ

Passengers	Freight
Present value of total savings	
€347m	€82m

Present value of total savings
€231 m
€43 per

SK

Passengers	Freight
Present value of total savings	
€207m	€24m

Present value of total savings
€561m
€64 per

AT

Passengers	Freight
Present value of total savings	
€463m	€98m

Present value of total savings
€135 m
€14 per

HU

Passengers	Freight
Present value of total savings	
€128m	€7m

Country case studies 4/5

Present value of total savings

€517m

€14 per

Passengers	Freight
Present value of total savings	
€437m	€80m

Present value of total savings

€113m

€20 per

Passengers	Freight
Present value of total savings	
€111m	€2m

Present value of total savings

€553m

€56 per

Passengers	Freight
Present value of total savings	
€517m	€37m

Present value of total savings

€230m

€42 per

Passengers	Freight
Present value of total savings	
€188m	€42m

Country case studies 5/5

Present value of total savings

€934m

€21 per

Passengers	Freight
Present value of total savings	
€413m	€521m

Present value of total savings

€853m

€11 per

Passengers	Freight
Present value of total savings	
€571m	€283m

Present value of total savings

€251m

€13 per

Passengers	Freight
Present value of total savings	
€223m	€28m

Present value of total savings

€247m

€35 per

Passengers	Freight
Present value of total savings	
€223m	€23m

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