Regionalisation of demographic and economic projections

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Joint Research Centre
the European Commission's
in-house science service

Regionalisation model

What…

- Regionalisation: Downscaling of projected macro variables (GDP, employment, population) from country to regional level.
- Ensuring full consistency with the country totals from the reference projections.

Why…

- Demographic and economic projections are available only at national level: for policy assessments in domains with a strong territorial dimension, this is not sufficient.

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Regionalising the 2015 Ageing Report's projections:

Input data:

- **Historical** (2000-2011) data per NUTS3 from Eurostat.
- **Projections** (2015-2060):
  - DG ECFIN projections on **GDP and employment** at national level: *2015 Ageing Report* (EC 2015)
  - Eurostat **population projections** at NUTS3: *Europop 2013*

Are based on assumptions but do not consider specific policies

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Regional growth scenarios:

1. Trend scenario:

Employment and GDP

- Projected independently;
- Sector growth rates start regionally in 2015 and gradually shift to the national rates by 2035.

Population

- Taken from ESTAT at NUTS3

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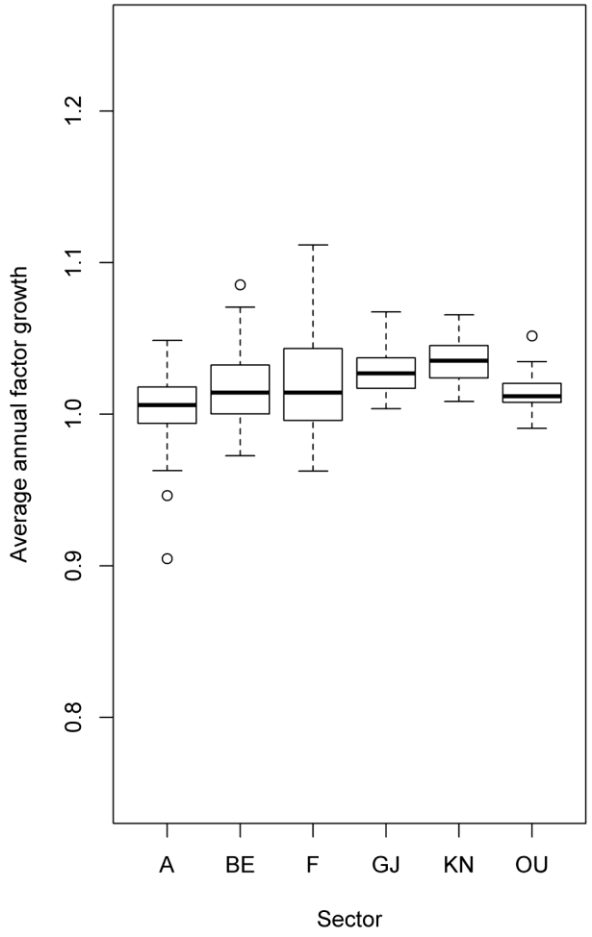
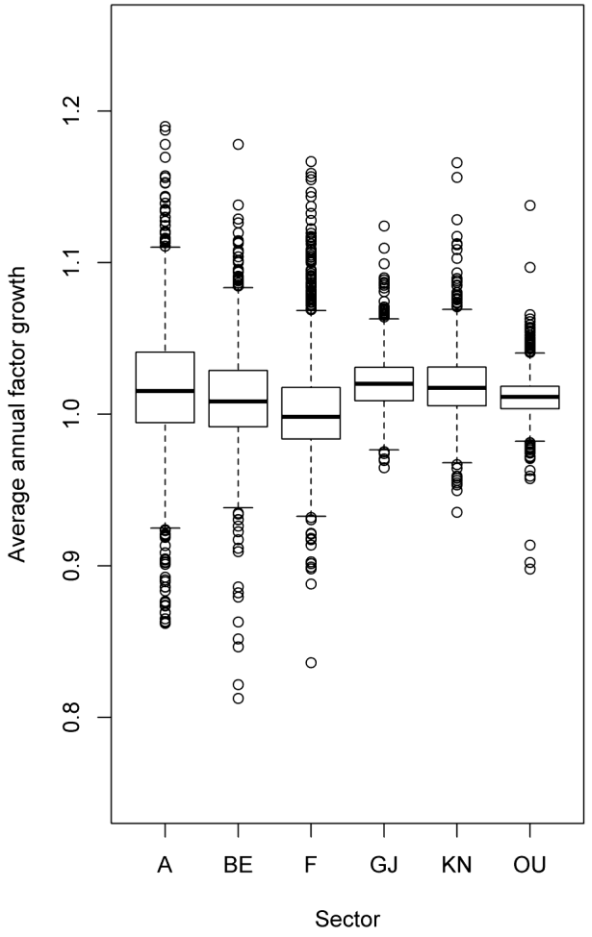
GVA growth rates (2000-2011) per sector, NUTS0, NUTS3





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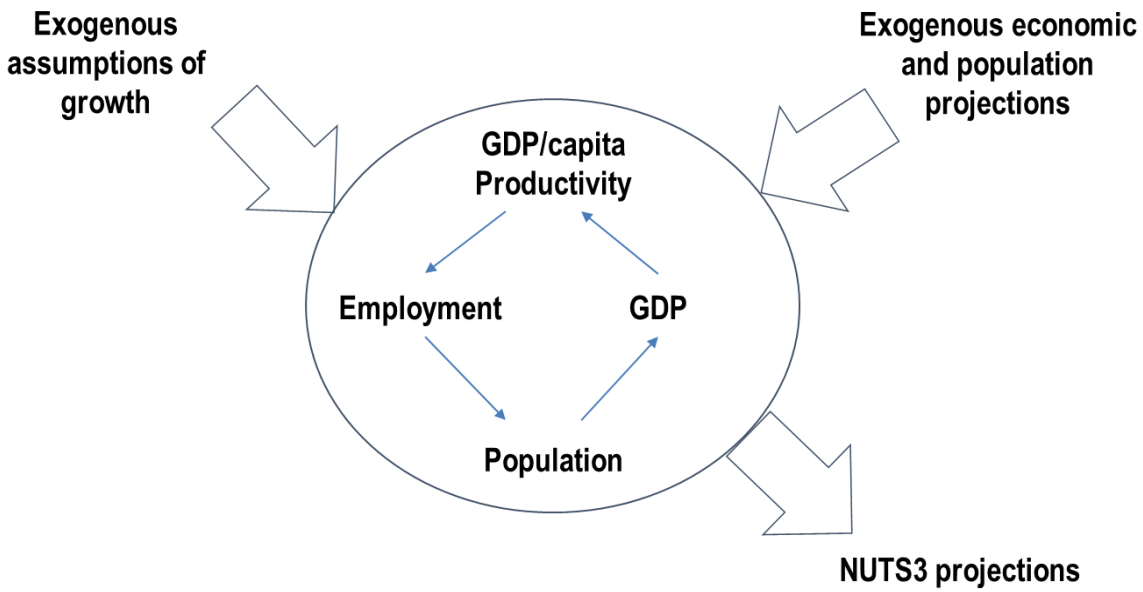
Regionalisation model: current setup (*)

The model includes a set of linked equations, integrating assumptions regarding future regional growth, and estimated in a dynamic and recursive fashion.



(*) *Component of the* LUISA Territorial Modelling Platform

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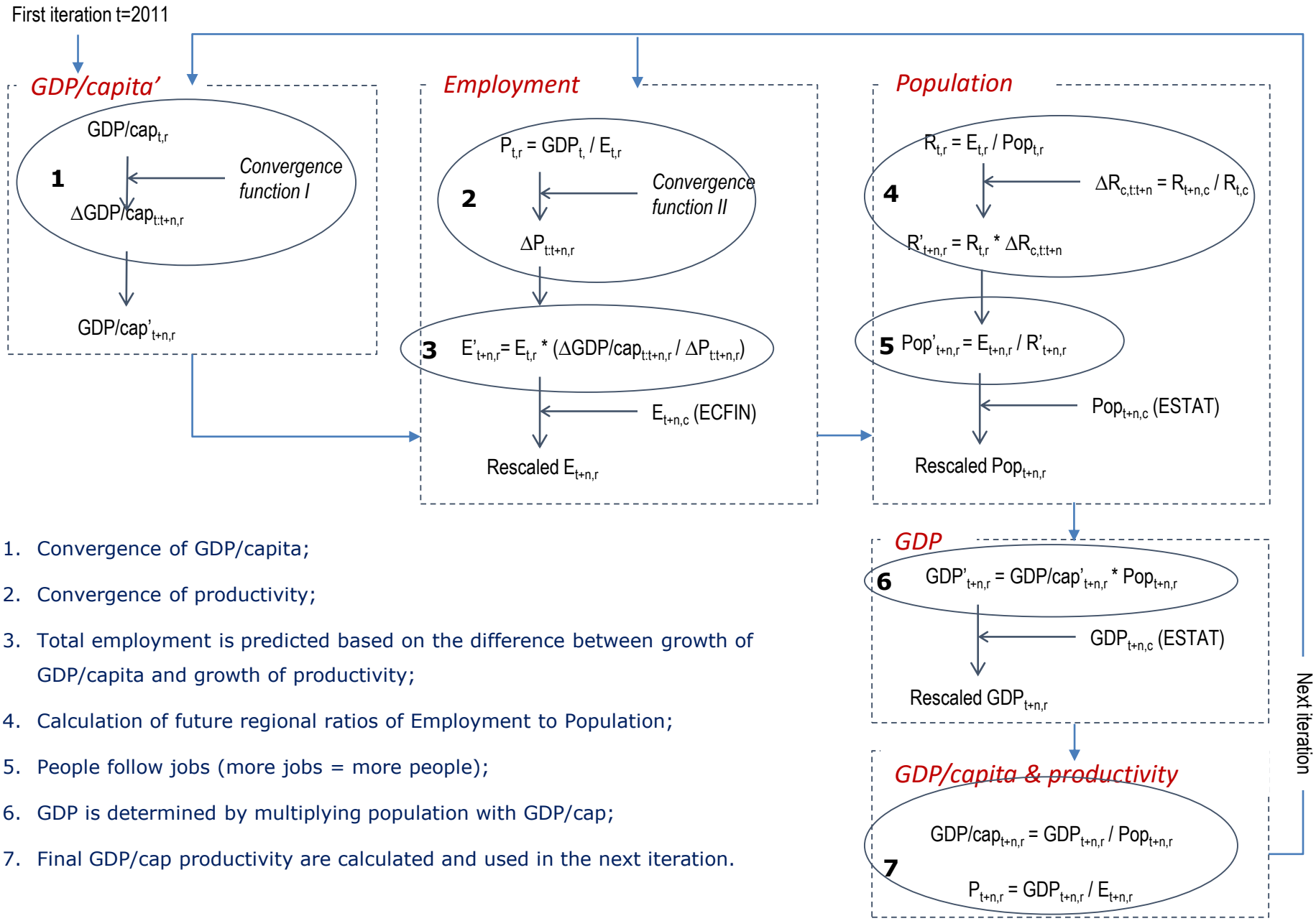
2. Convergence model

Input data:

- Historical data at NUTS3 level.
- Projections at NUTS0 level.

Assumptions:

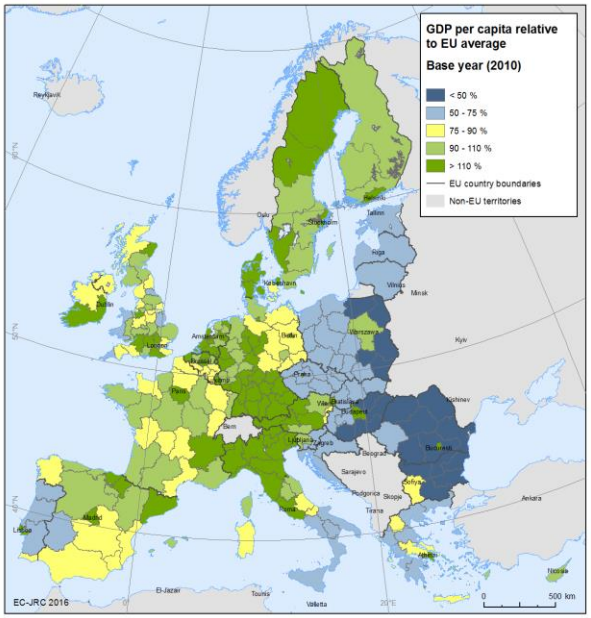
- Growth assumptions: GDP/capita and Productivity converge.
- Employment growth is a function of GDP/capita growth and productivity growth.
- People follow jobs.



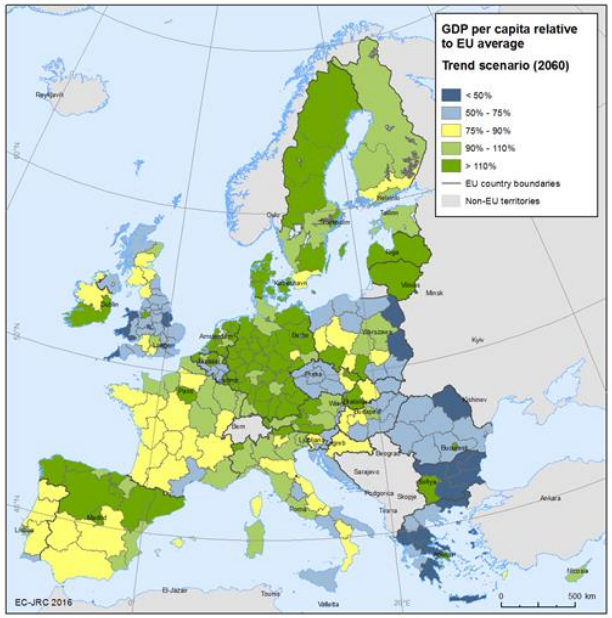
1. Convergence of GDP/capita;
2. Convergence of productivity;
3. Total employment is predicted based on the difference between growth of GDP/capita and growth of productivity;
4. Calculation of future regional ratios of Employment to Population;
5. People follow jobs (more jobs = more people);
6. GDP is determined by multiplying population with GDP/cap;
7. Final GDP/cap productivity are calculated and used in the next iteration.

EU outlook: trends 2015- 2060

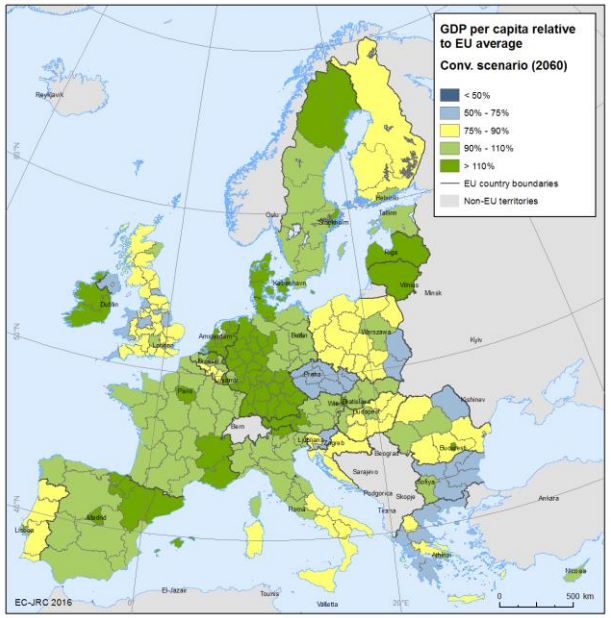
Base year 2010



Trend sc. 2060



Conv. sc. 2060



- GDP per capita and productivity tend to catch-up with time in both scenarios, but the effect is considerably more marked in the convergence scenario

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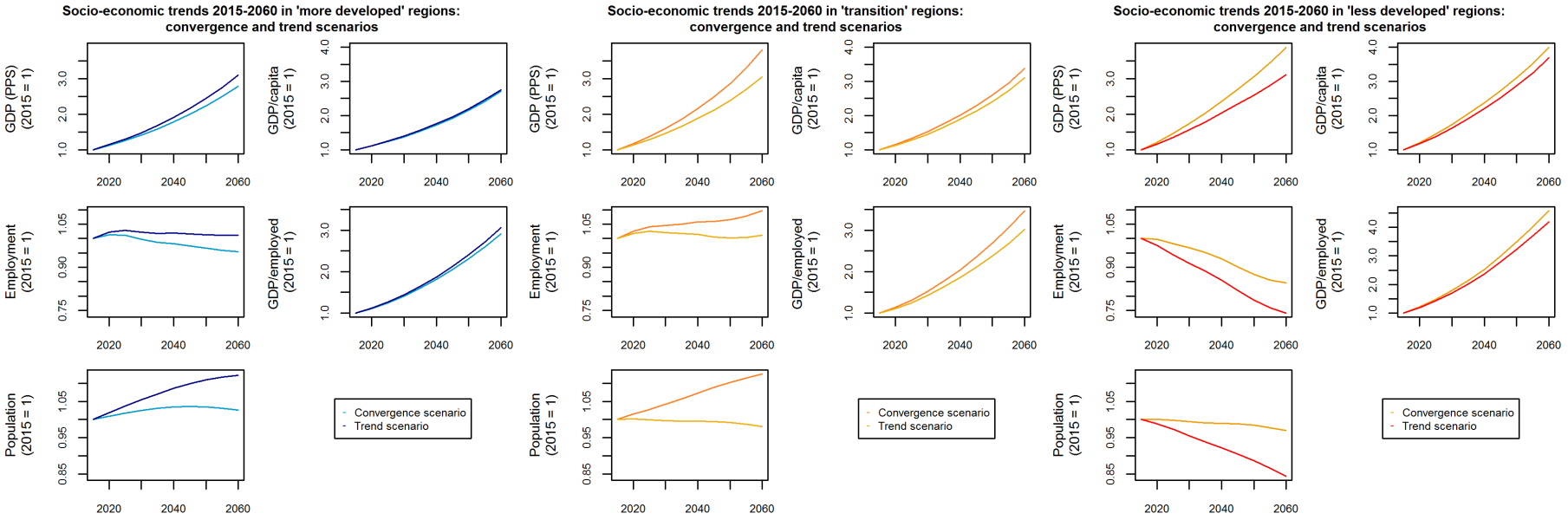
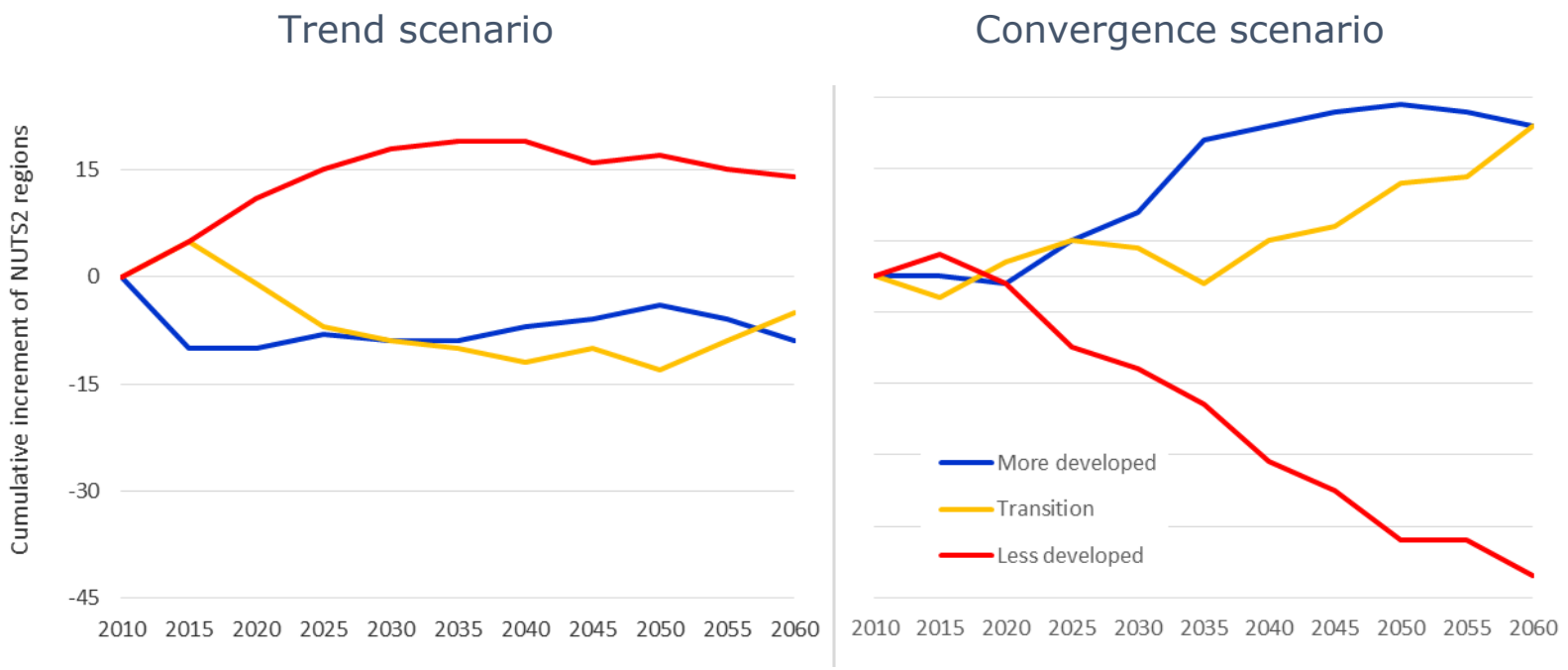
EU outlook: trends 2015-2060



- Under the convergence scenario transition and less developed regions account for a higher share of the total GDP, employment and population in 2060 than what the trend scenario would warrant.
- Employment and population growth is particularly different between scenarios and typology of regions and the behaviour is constrained by the imposed reference projections. Still a more pronounced catch-up effect is visible in the convergence scenario.

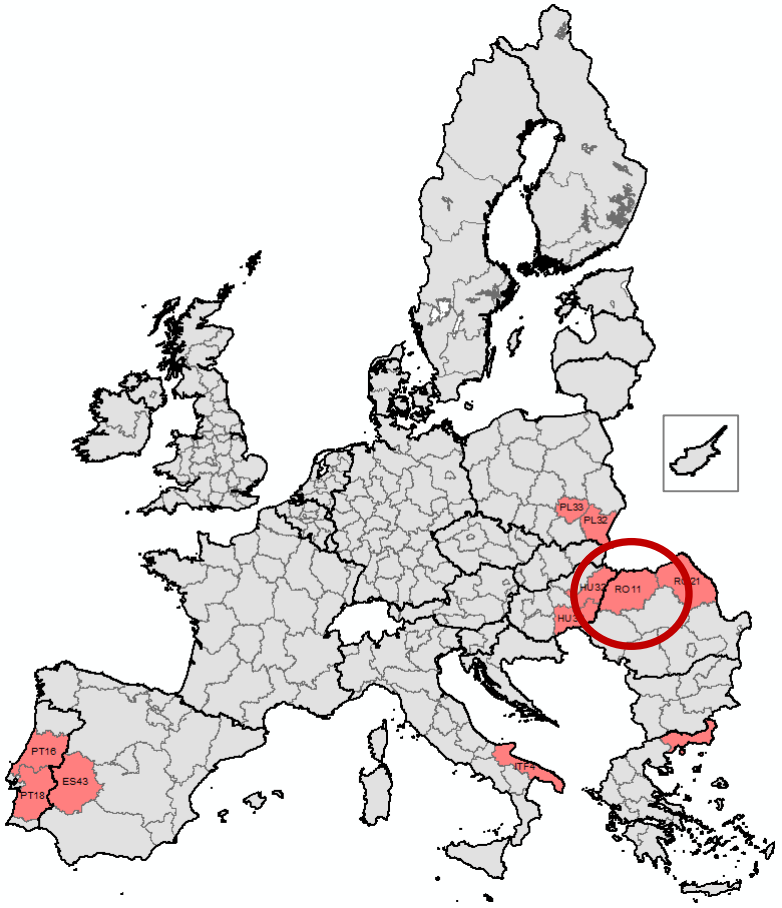
EU outlook: eligibility

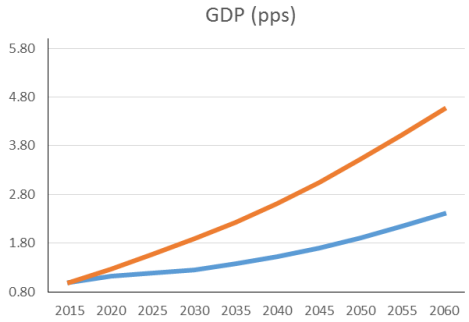
- Cumulative increase of NUTS2 regions per type of region

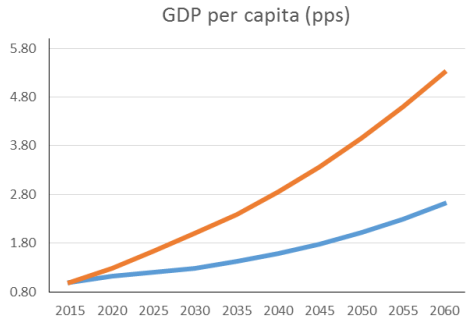


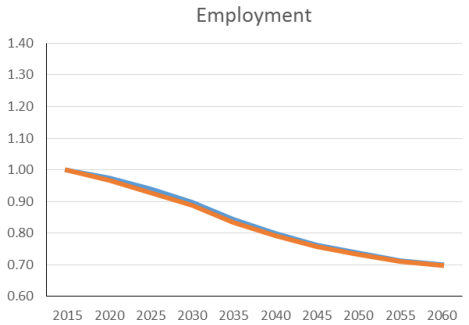
- Increase of less developed regions in the trend scenario, and additional pressure on cohesion policies.
- Significant reduction of less developed regions in the convergence scenario.

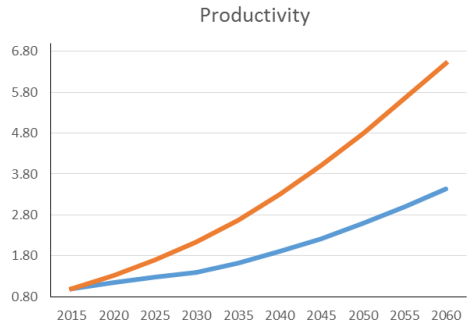
Lagging regions

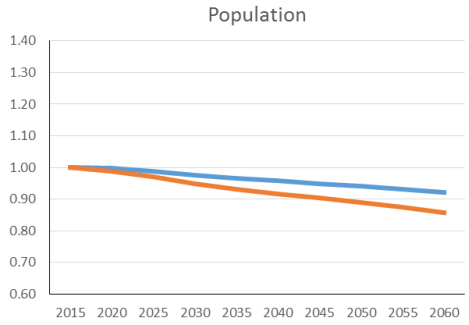












Trend scenario

Convergence scenario

2015 = 1

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LUISA Modelling Platform structure

KNOWLEDGE BASE

- POLICY AND REGULATORY CONSTRAINTS
- THEMATIC DBs (SOCIAL, TRANSPORT & ENERGY INFRASTR.)
- CURRENT & PAST LAND USES (SATELLITE IMAGERY & INTERPRETED MAPS)
- THEMATIC MODELS (LISFLOOD, ESTIMAP, RIAT, CBM, BIOMA)

MACRO PROJECTIONS

- ECONOMY (GEM-E3, RHOMOLO)
- DEMOGRAPHY (EUROPOP)
- AGRICULTURE (CAPRI)
- ENERGY (JRC-EU-TIMES)

REGIONAL MODULE

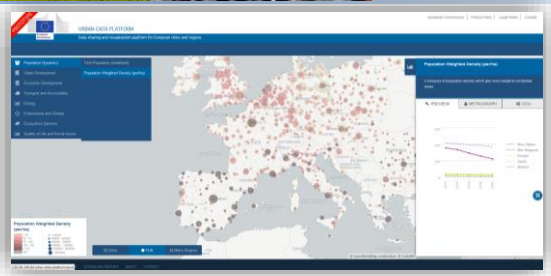
- Growth scenarios
- Migration
- Spatial spillovers

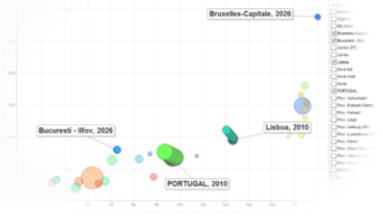
ALLOCATION MODULE

- LOCAL SUITABILITY
- Dynamic Population ⟷ Dynamic Spatial Allocation

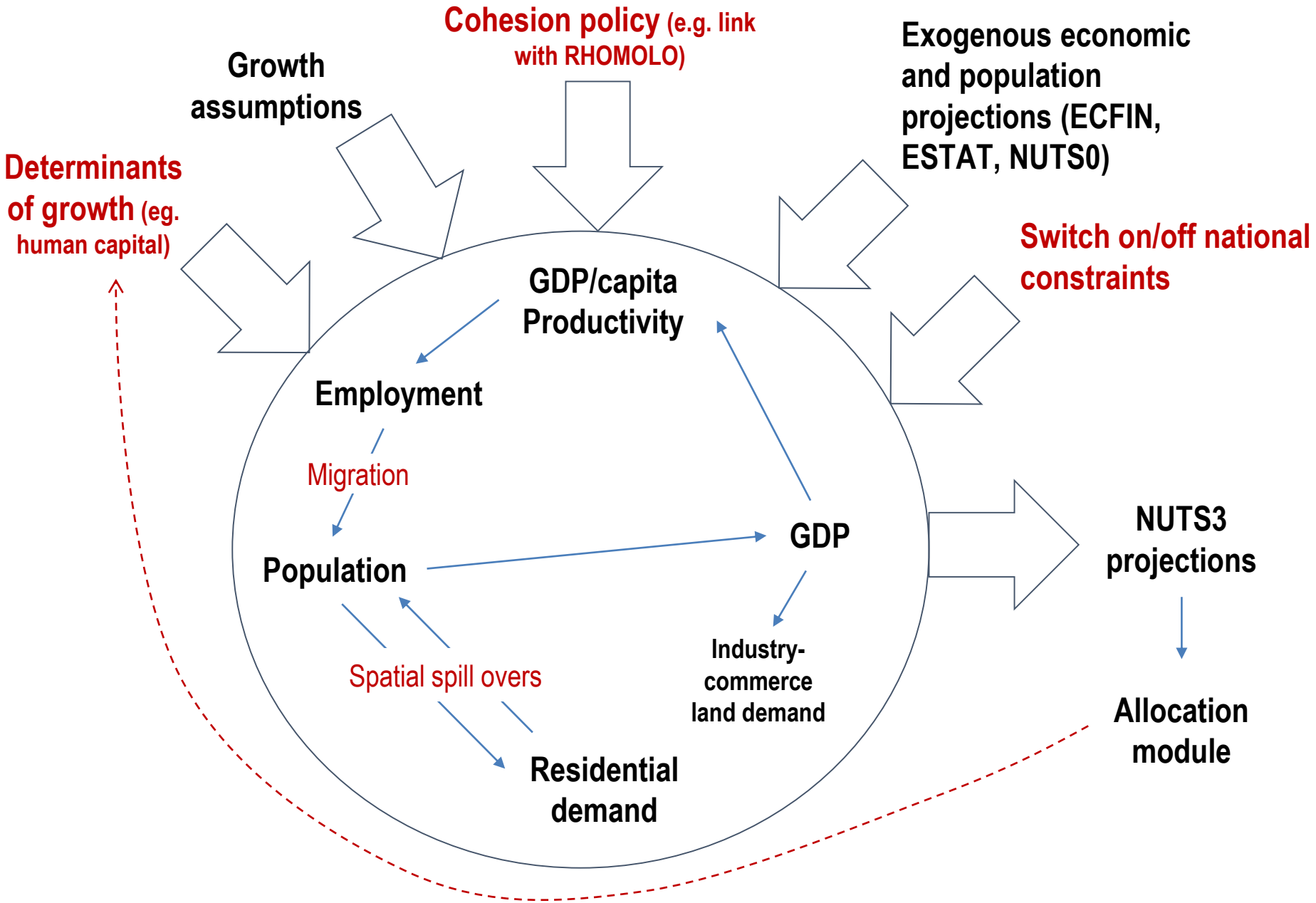
IMPACT ANALYSIS

WEB PLATFORMS





Planned developments for Regional Module



Determinants of growth

- Human capital;
- Quality of Government [Index];
- Spatial spill-overs;
- Urban agglomerations (e.g. size of population, urban density);
- Other fixed effects (e.g. countries, capital regions);
- Regional Specialisation and Innovation Strategies;
- Cohesion Policy (i.e. RHOMOLO).

Conclusions:

- The regionalization method can be used to envisage and quantify impacts of rather diverse regional development pathways.
- Further refinements will include new alternative reference projections, more explicit determinants of regional growth and will take into account expected effects of regional strategies.
- As such, can contribute to support territorial impact assessments allocating spatially impacts of scenarios and policy options.

Thank you!

https://ec.europa.eu/jrc/en/luisa