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Country Analytics with Economic Complexity

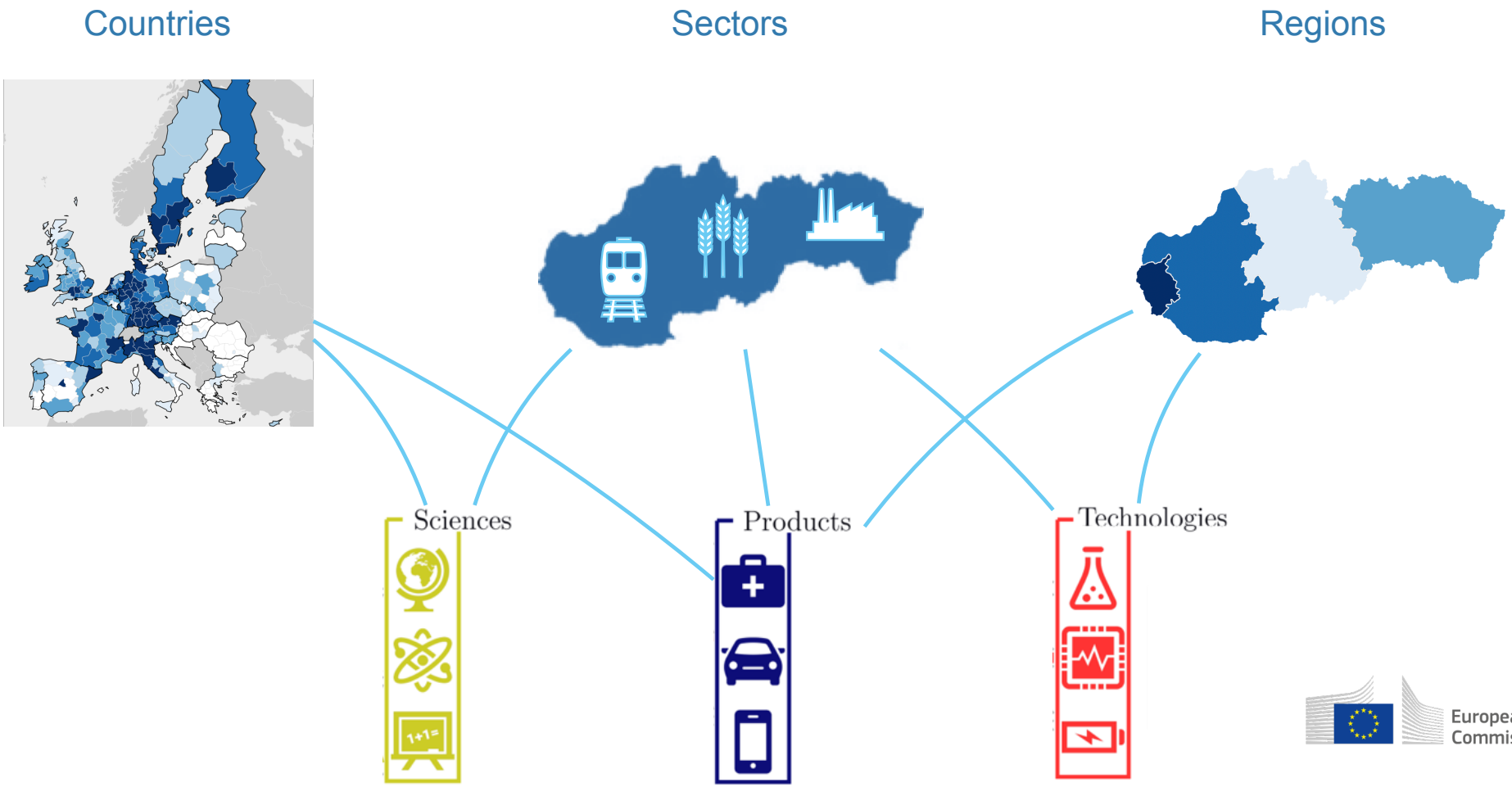
The case of Slovakia

Andrea Tacchella

1st Economic Complexity to Inform Policy Workshop

Joint Research Centre

Overview: a multi-scale, multi-layer approach



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Country Level Analysis

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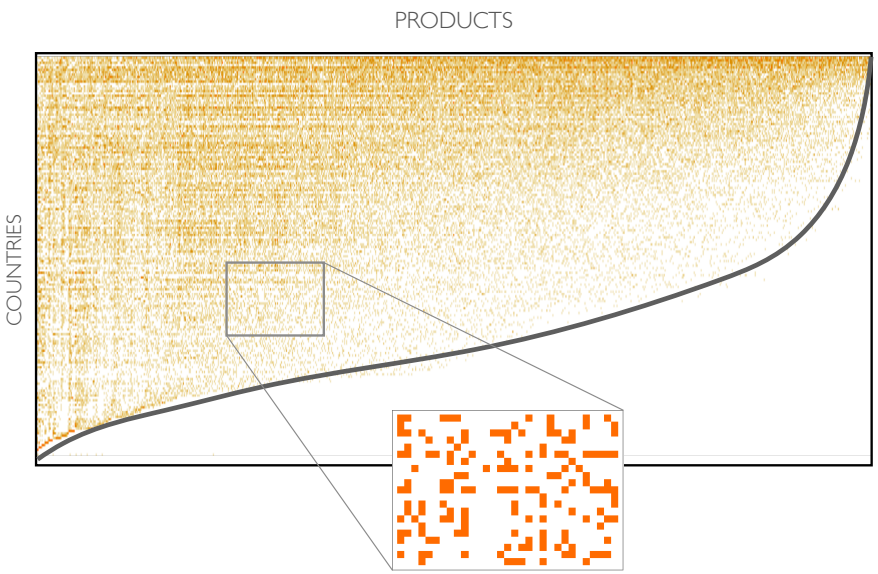
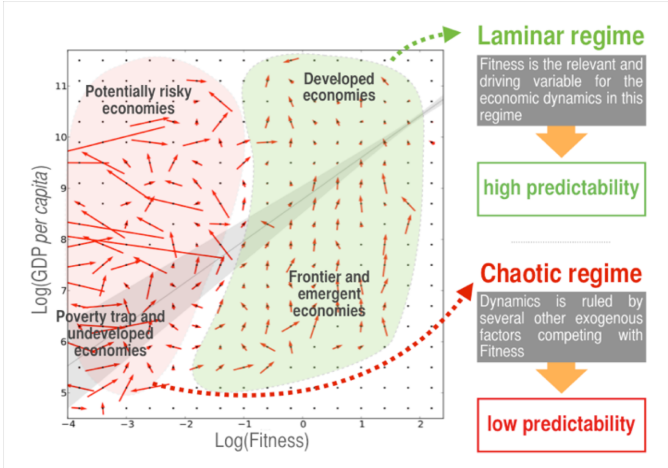
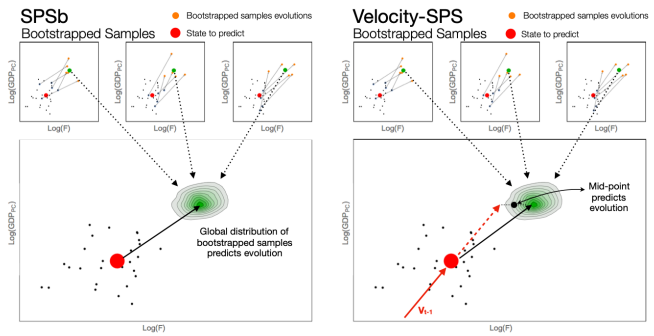
Country Level Analysis - COMTRADE data



Product Progression: prediction of fine-grained dynamics with Machine Learning techniques - **product-level competitiveness forecasting**

Network-based metric of countries' Fitness
Dynamical Systems approach to GDP-Growth Forecasting[1]





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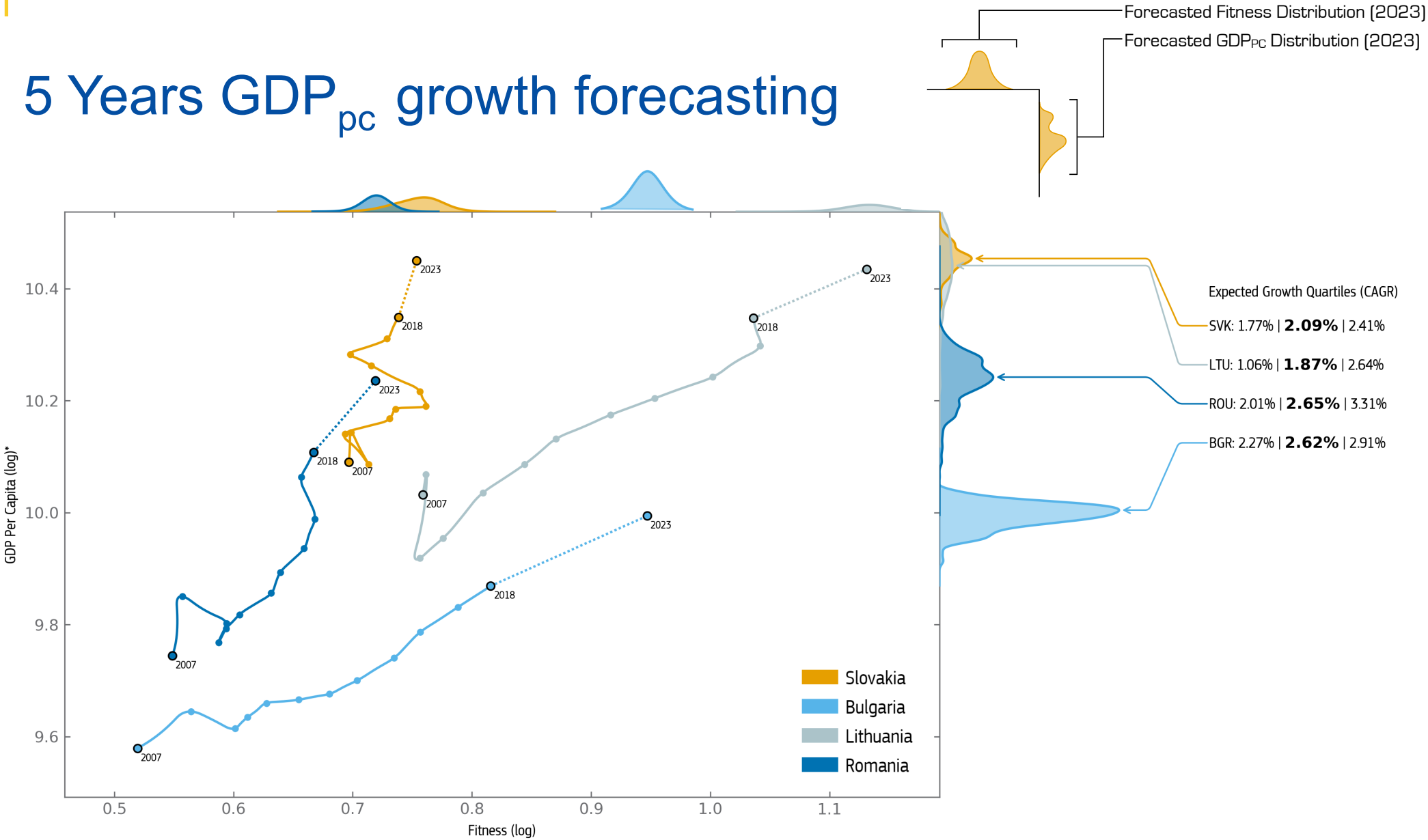
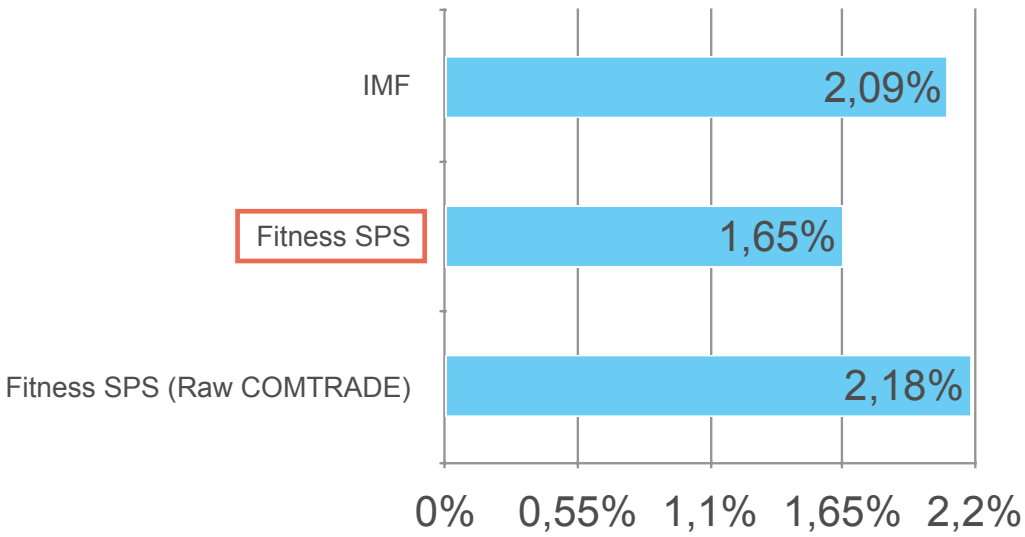
5 Years GDP_{pc} growth forecasting

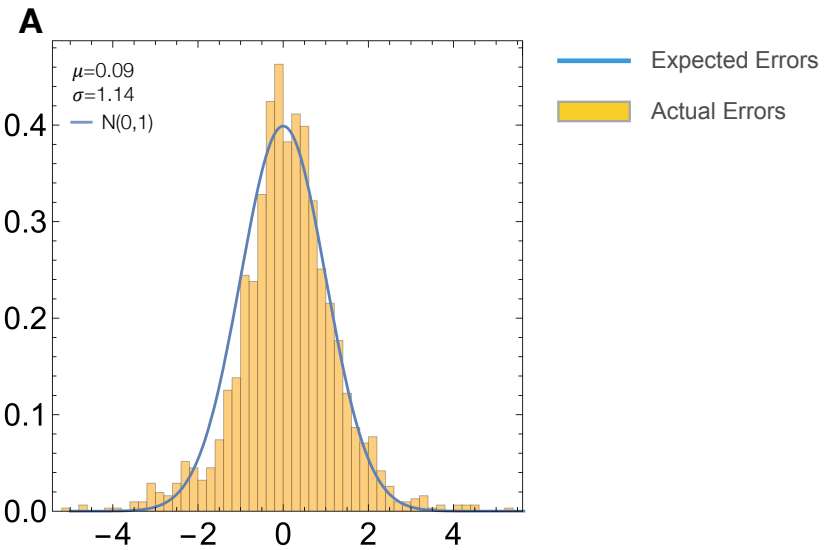


State of the art GDP growth forecasting

Mean Absolute Error
5-years CAGR forecast:
21% Improvement over IMF



Forecasting errors are consistent with samples from estimated distributions



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Sector Level Analysis

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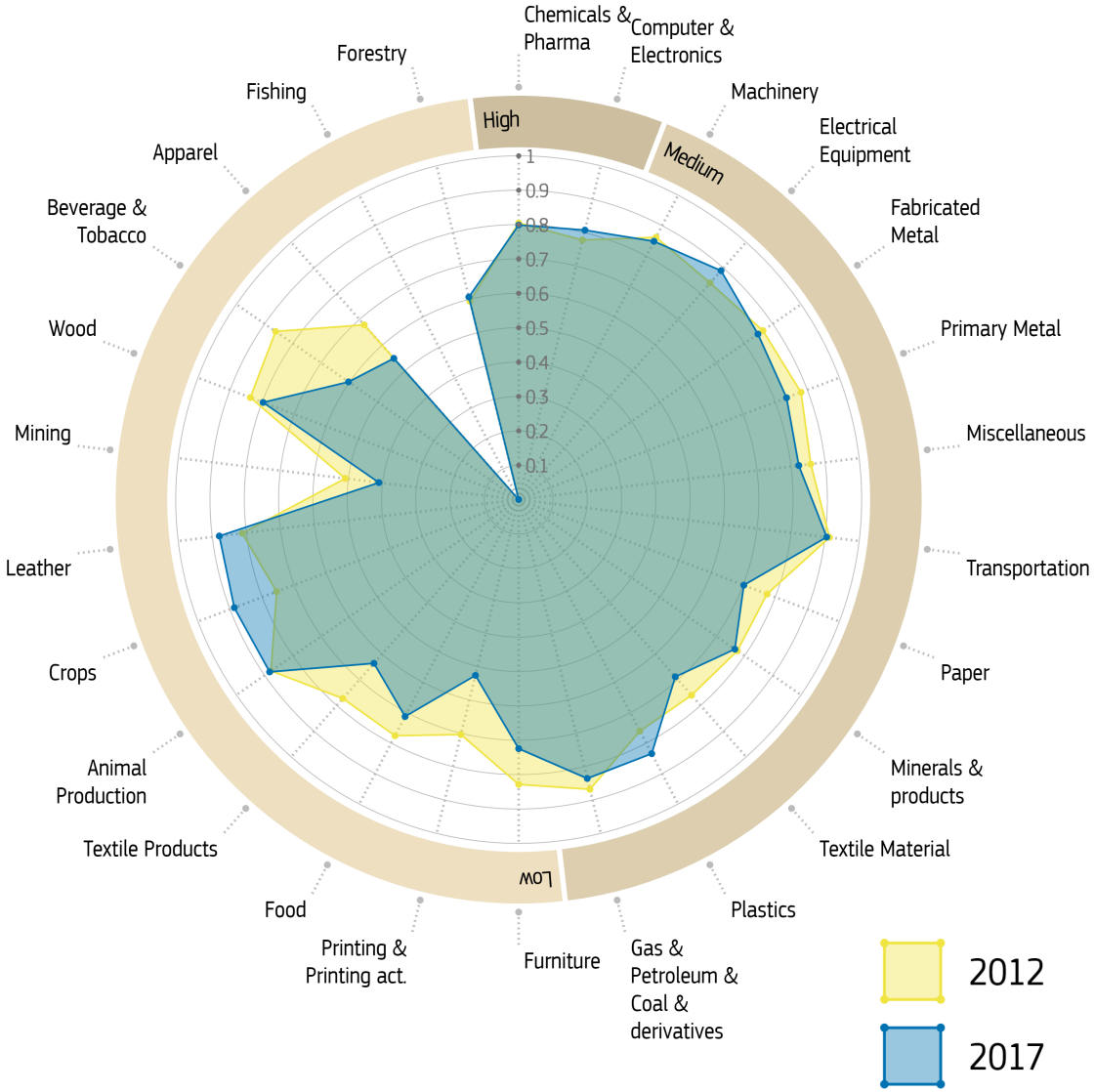
Sector Fitness

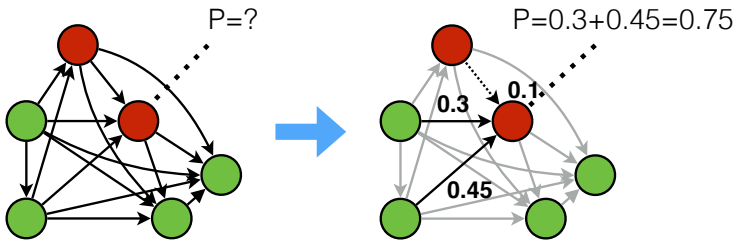
Slovakia is loosing Fitness across many low and medium complexity sectors but holding on the high complexity ones - E.G. Computer & Electronics.

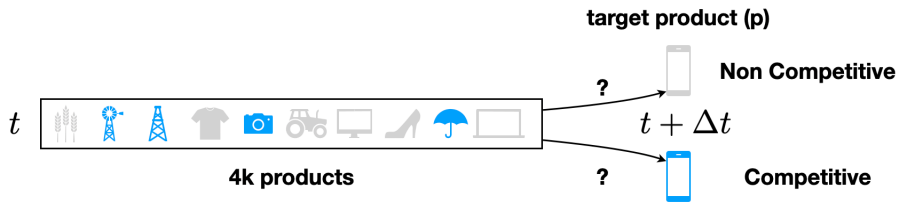
This trend further emerges from sector-by-sector forecasts



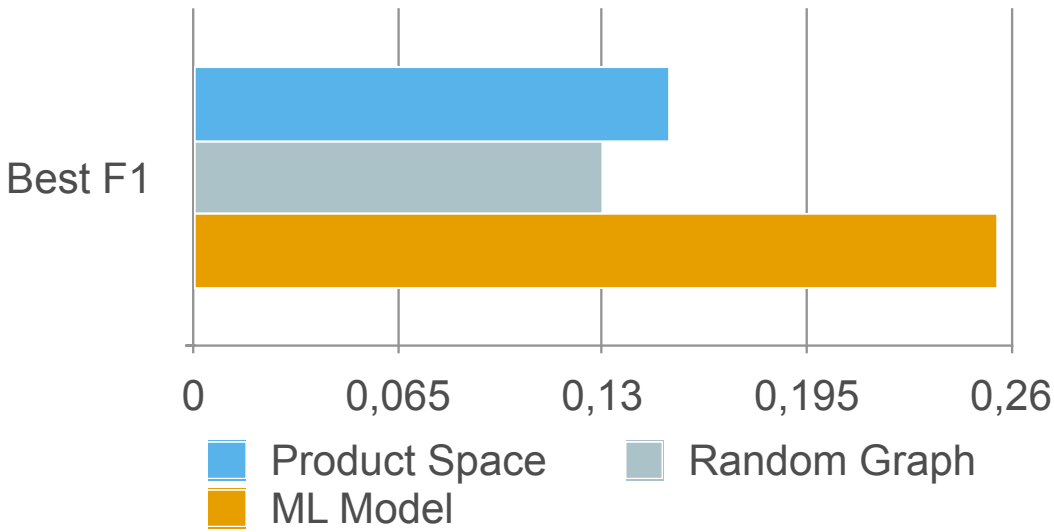
Product Progression - Moving into related products

Product Space





Machine Learning



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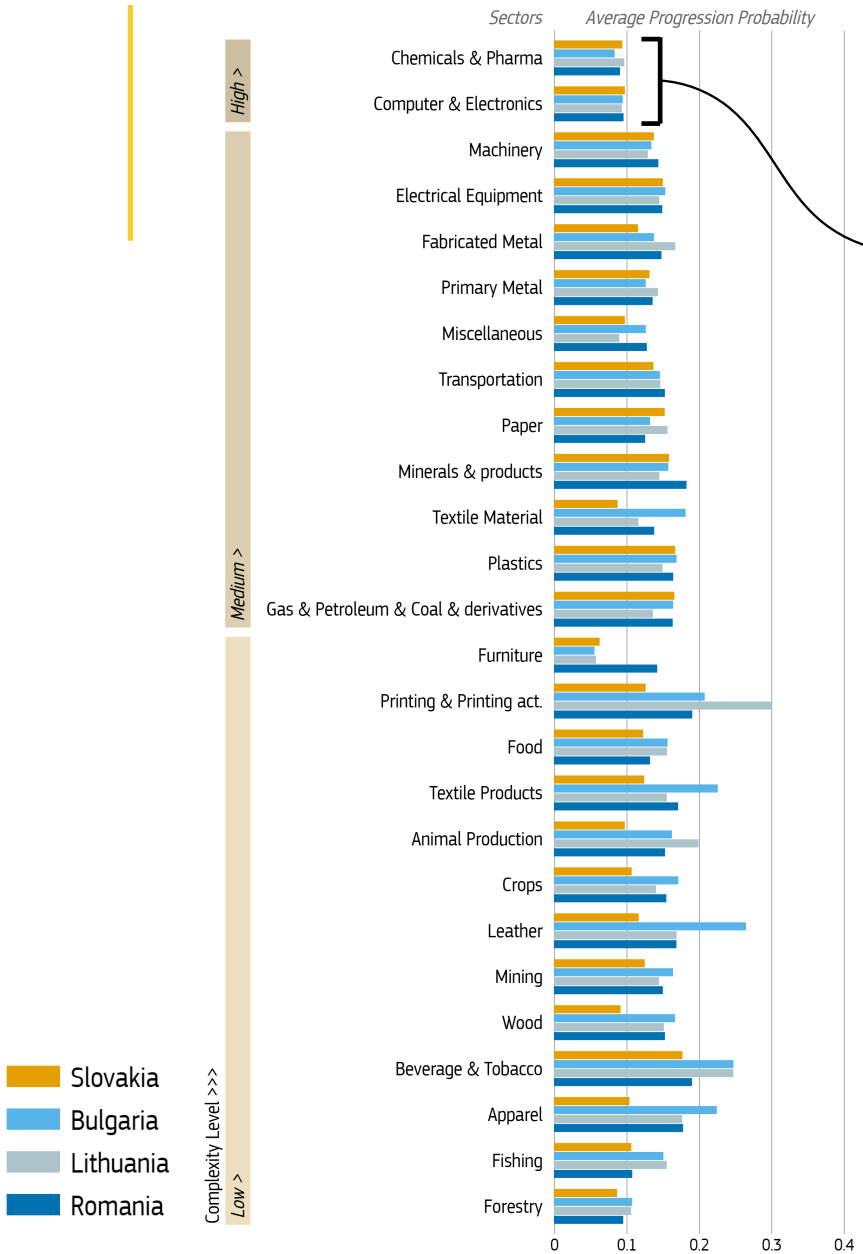

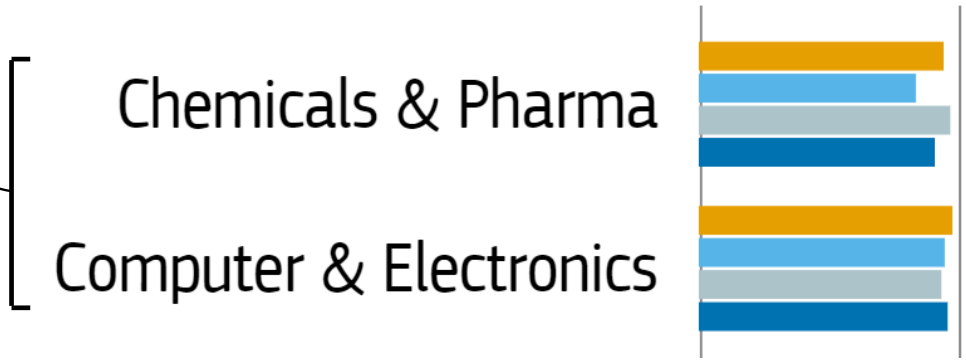

Progression analysis confirms that Slovakia has slow progression prospects in low and medium complexity sectors.

Only in the two high complexity sectors it manages to be on par, or have better prospects than the comparators.

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Technological Layer

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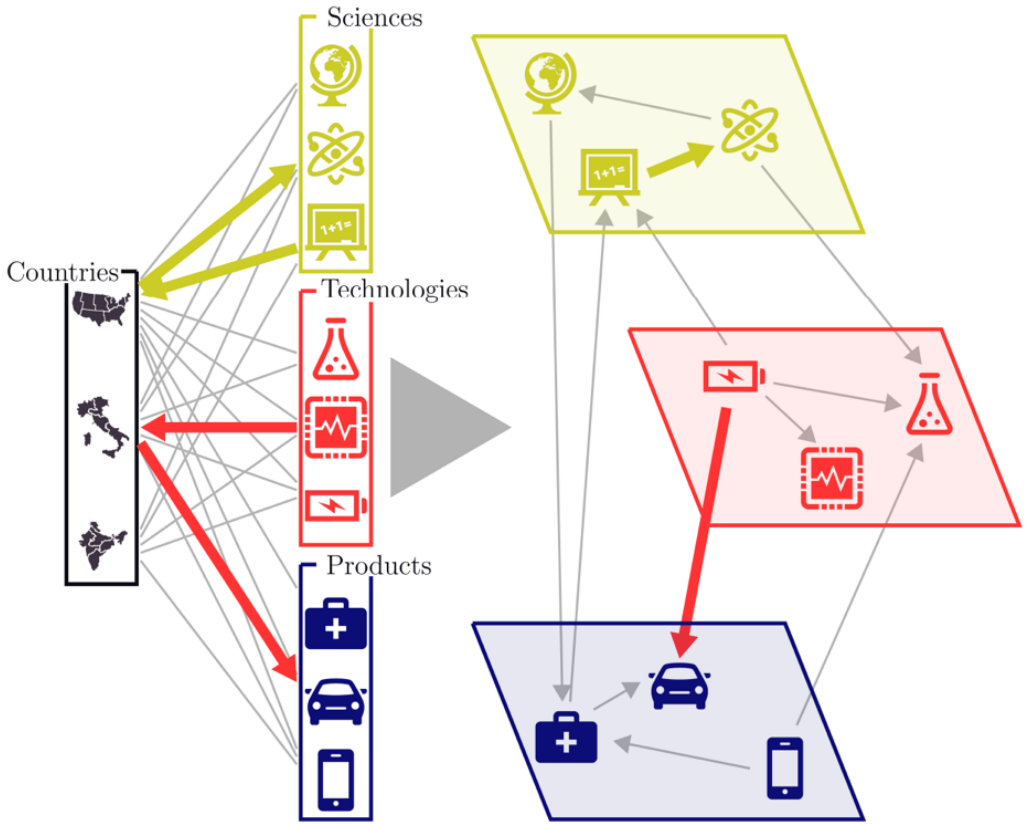
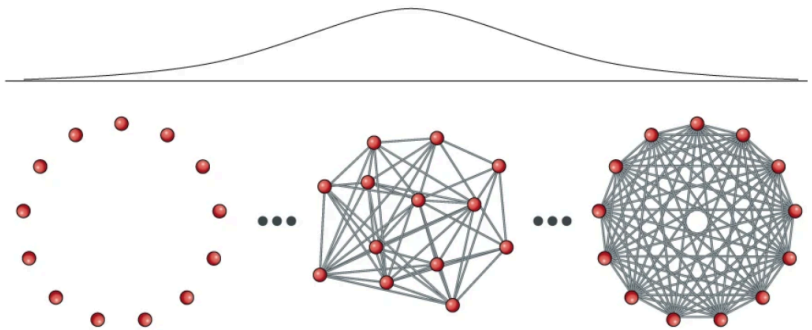
Multilayer analysis of innovation systems



Bipartite Canonical Ensemble (BiCM)



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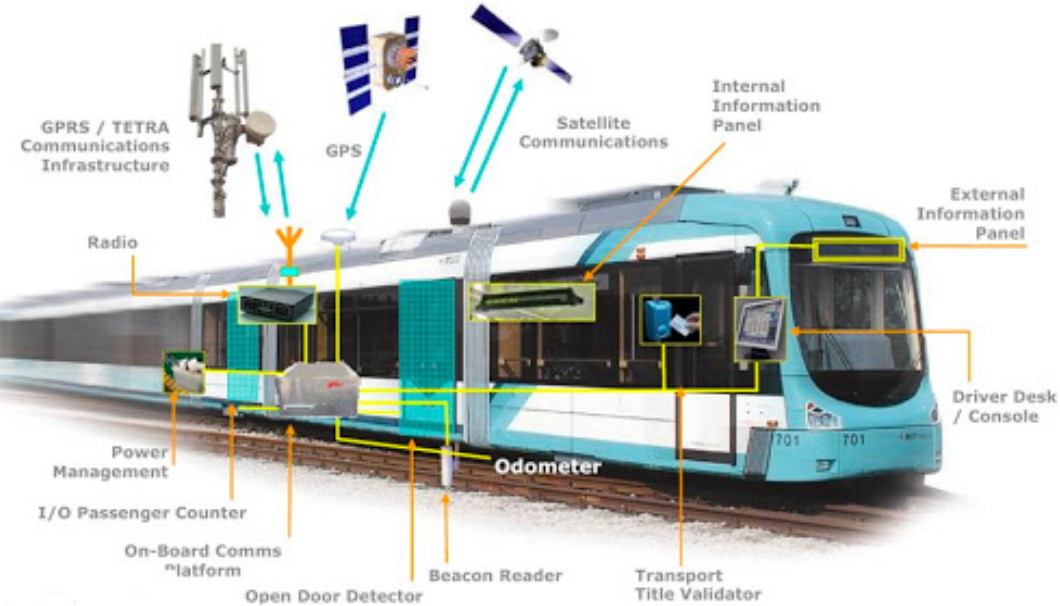
Technological Fingerprint - Railways control systems



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Regional Level Analysis

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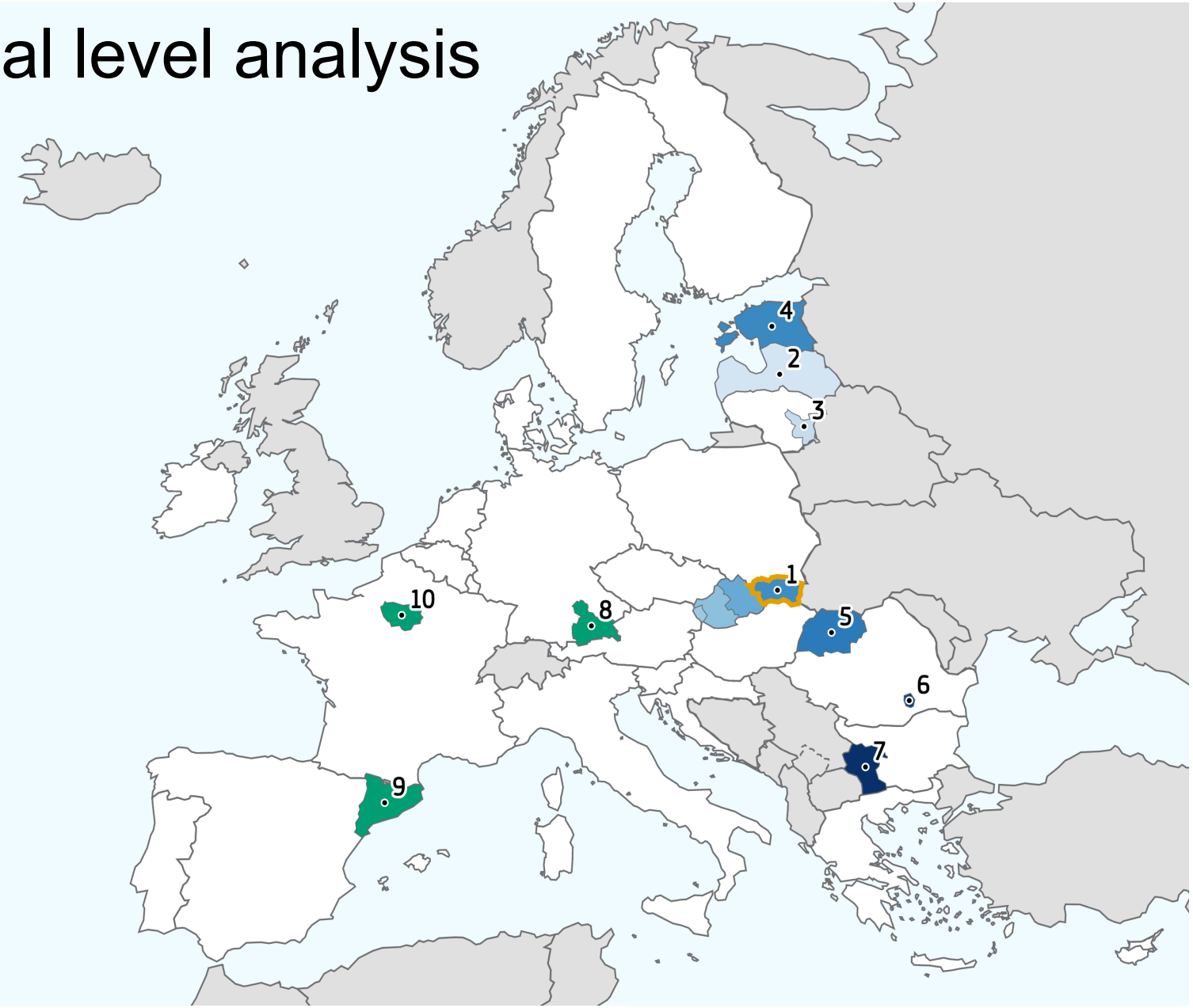
Regional level analysis

- Reference Region
- Comparable regions
- Leading regions



1. [SK04] Východné Slovensko
2. [LV00] Latvija
3. [LT01] Sostinės regionas
4. [EE00] Eesti
5. [RO11] Nord-Vest
6. [RO32] Bucureşti - Ilfov
7. [BG41] Югозападен
8. [DE21] Oberbayern
9. [ES51] Cataluña
10. [FR10] Ile-de-France

Signals from Tech Fingerprints and Product Progression are coherent and complementary

Rank	Top 12 electronics products by Technological Availability - Eastern Slovakia	Top 12 electronics products by Product Progression Probability - Slovakia
1	Clocks, with hands and battery	**Signals for rail, waterway, port, airfield**
2	Radar apparatus	**Electric transformers, 1-16 KVA**
3	Hydraulic/pneumatic automatic controls	**Electric signal & traffic controls**
4	**Electricity supply, calibration meters**	Voltmeters, non-recording
5	Parts/accessories of material testing equipment	**Automatic controlling equipment, other than hydraulic/ pneumatic**
6	Parts of clock cases	Parts/accessories for optical/electric instrument
7	Alarm clocks, battery	Electric audio-visual signalling apparatus, nes
8	**Automatic controlling equipment, other than hydraulic/ pneumatic**	**Electricity supply, calibration meters**
9	**Electric signal & traffic controls**	Parts/accessories for automatic controls
10	Parts of electronic valve & tubes	Burglar or fire alarms
11	**Signals for rail, waterway, port, airfield**	Rangefinders
12	**Electric transformers, 1-16 KVA**	Electrical resistors, fixed, >20W

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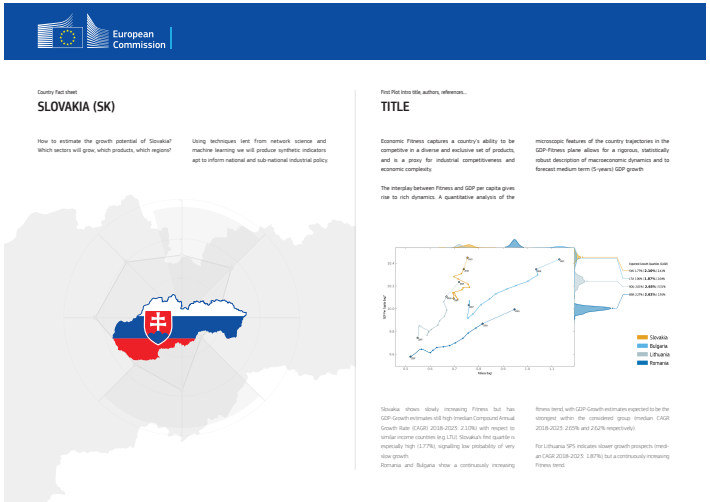
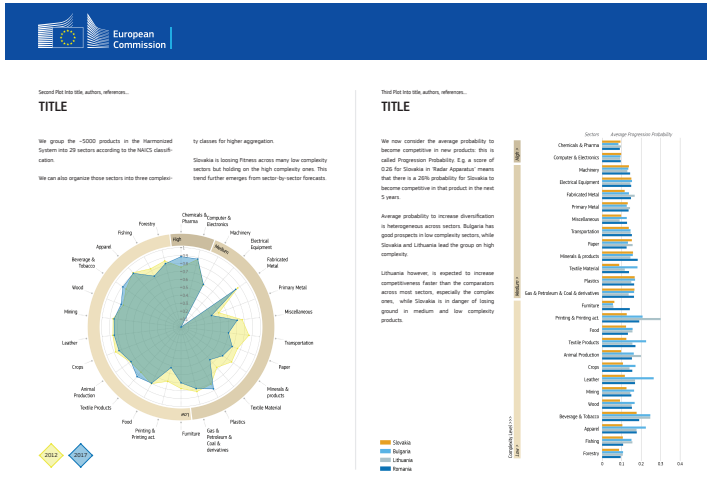
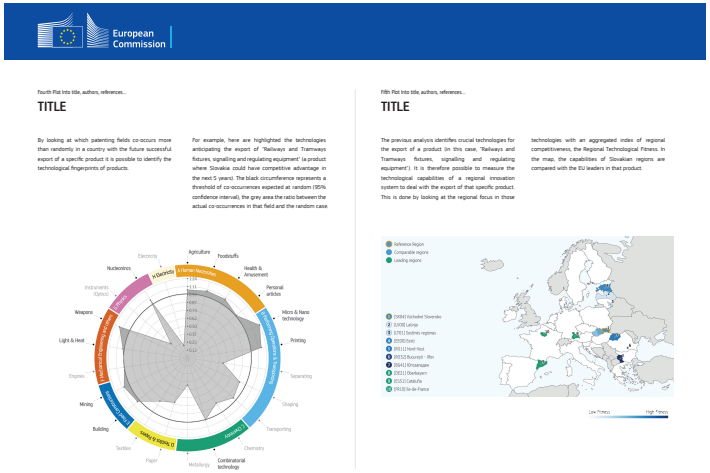
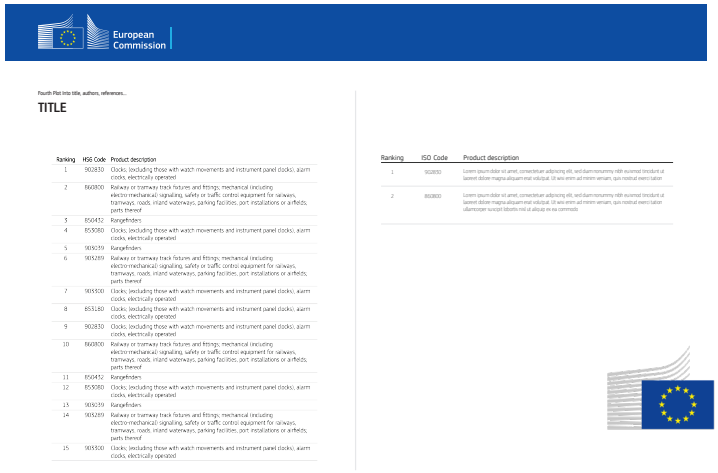
Country Factsheets - In preparation









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Thank you

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