Mapping Innovation Systems
A Framework Based on Innovation Data and Indicators

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Structure of the presentation:

1. **Motivations**
2. **Framework**
3. **Method**
4. **Dimensions of analysis**
5. **Results**
6. **Possibilities**

1. Motivations

- **Is it possible to measure the development and maturity of NISs?**

- **What specific technique can be used for that?**

- **Can we apply that technique to both the advanced and the catching up economies?**

2. <u>Framework</u>

Different NIS Concepts

- **Freeman (1987) → organization of R&D in firms and role of government in Japan**

- **Nelson (1988) → high tech sectors and R&D system**

- **Lundvall (1988) → Inter-firm and user-producer interactions**

- **Amable, Boyer and Barré (1997) – Human Resources**

- **Aalborg school → late 1990s → "Learning economy"**

Policy demand for guidance

- **Comparability/benchmarking**

- **Summary measures**

Scoreboards have been produced

- **But criticized on grounds of "reductionism"**

3. Method

- **Decide what the relevant dimensions are**

- **Decide what variables shall/can be used (given countries and years to analyse)**

- **All varibales standardized**

- **Aggregate 3-6 variables into each relevant dimension**

- **Map those dimensions into bi-dimensional space**

4. Dimensions of analysis

Based on the literature → 8 major dimensions:

- **Resources' supply**
- **Actors' behaviours**
- **Interactivity and linkages**
- **Institutional diversity and development**
- **Economic structure**
- **External communication ("absorption")**
- **Diffusion**
- **Innovation**

38 variables (in the paper)

2 years (1996, 2000)

14 countries
    Mx, US
    J, SK
    Fr, De, UK, It
    Fn, Dk
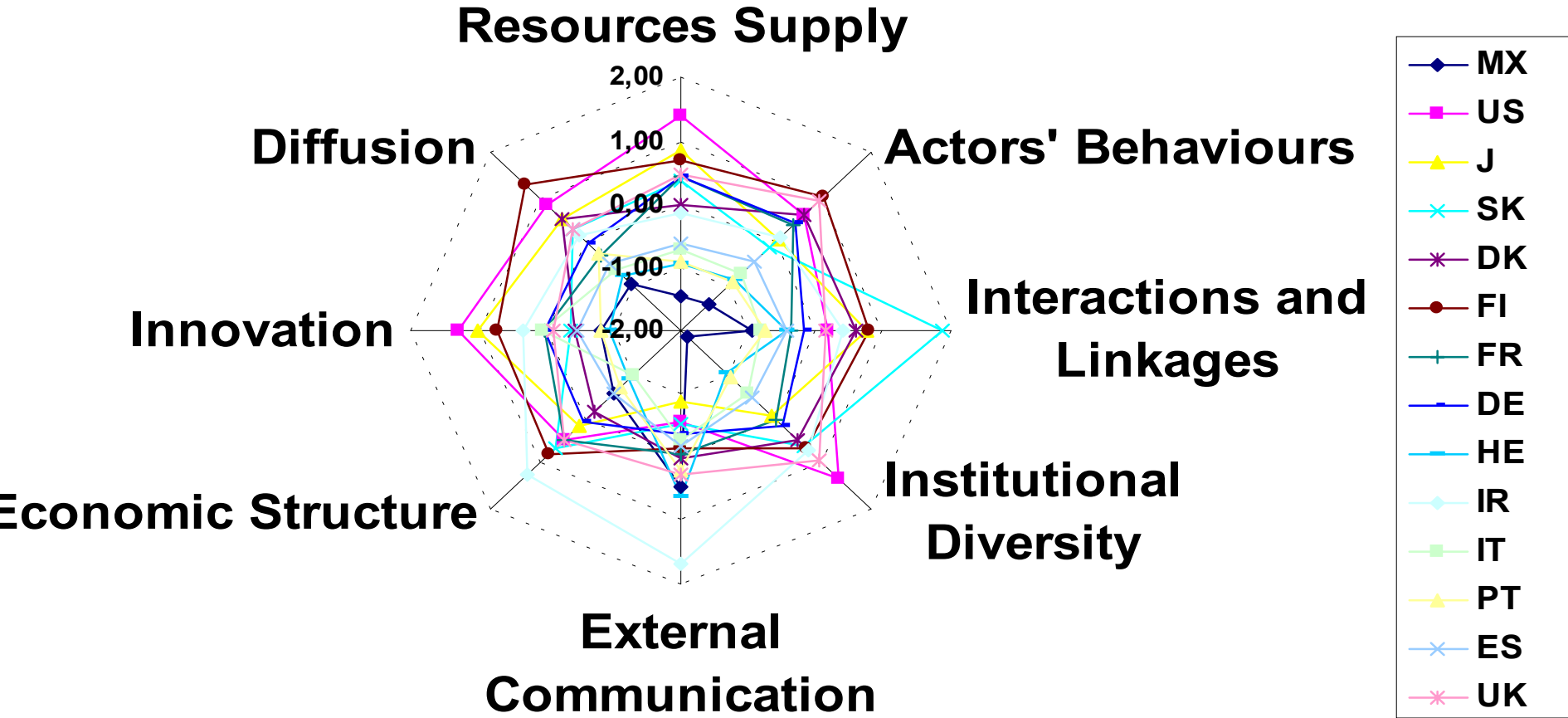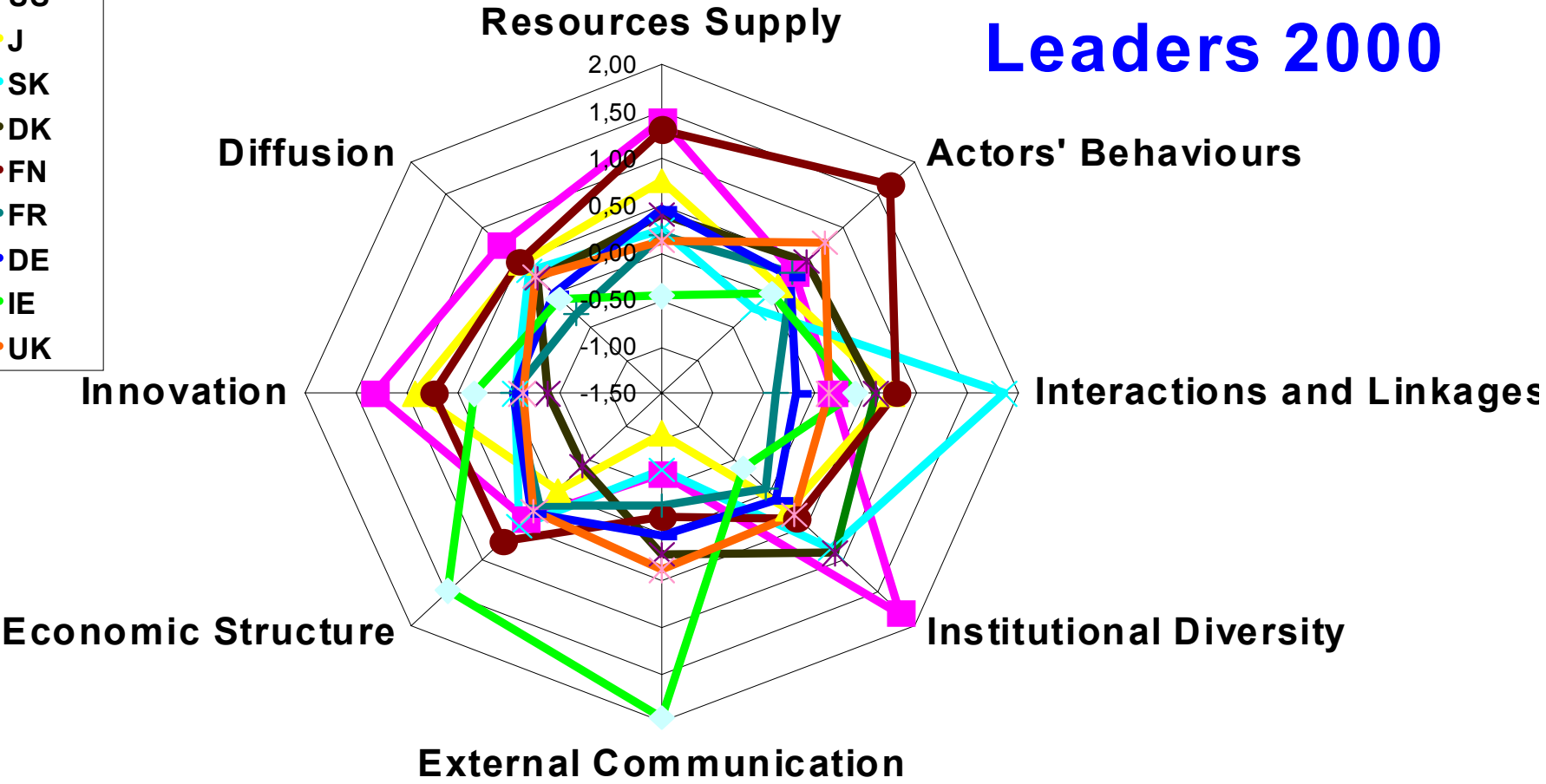   Ie, Pt, Sp, Gr

Sources: OECD, Eurostat, UNDP-UDR...

5. <u>Results</u>
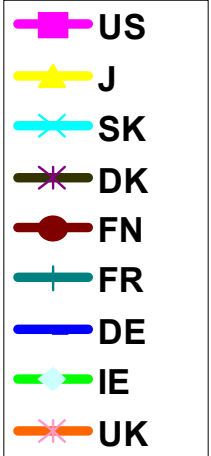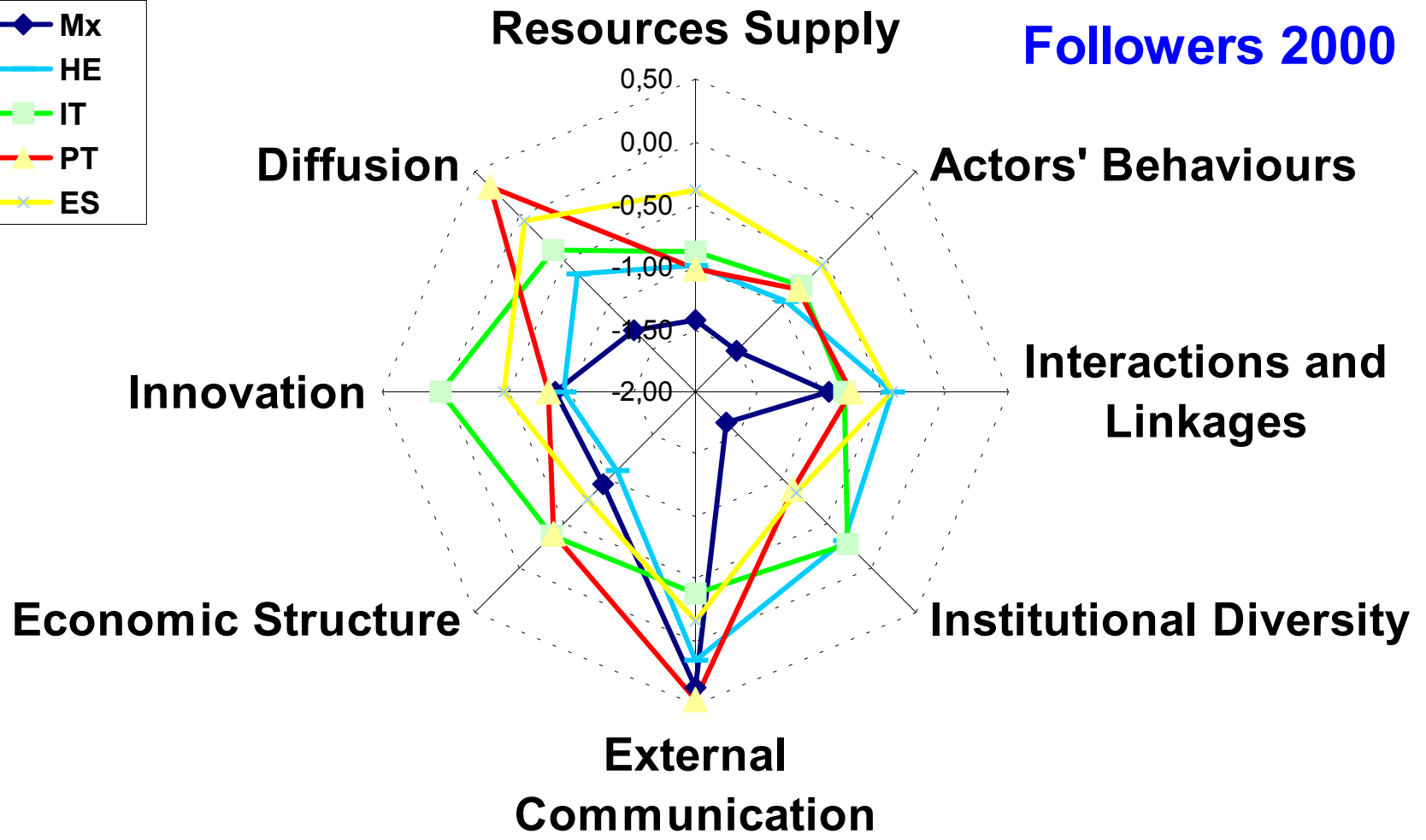
5.1. NISs mapping

5.2. Quantitative indicators

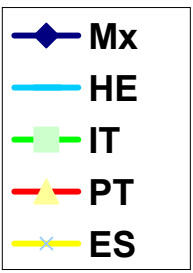# Mapping NISs' Dimensions, 1996

Leaders 2000

Legend: US, J, SK, DK, FN, FR, DE, IE, UK

Axes: Resources Supply, Actors' Behaviours, Interactions and Linkages, Institutional Diversity, External Communication, Economic Structure, Innovation, Diffusion

Scale: 2,00 / 1,50 / 1,00 / 0,50 / 0,00 / -0,50 / -1,00 / -1,50

Followers 2000

Legend: Mx, HE, IT, PT, ES

Axes: Resources Supply, Actors' Behaviours, Interactions and Linkages, Institutional Diversity, External Communication, Economic Structure, Innovation, Diffusion

Scale: 0,50 / 0,00 / -0,50 / -1,00 / -1,50 / -2,00
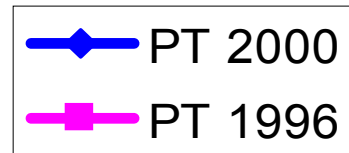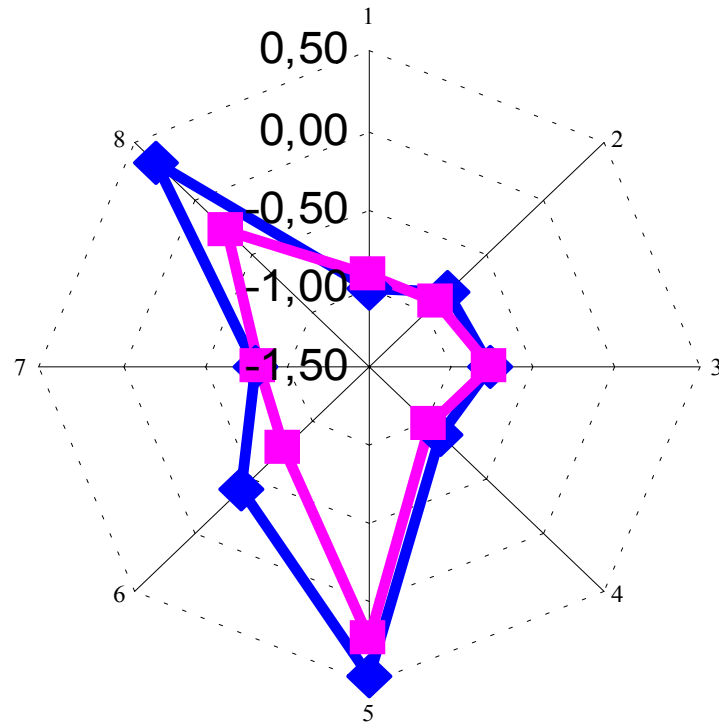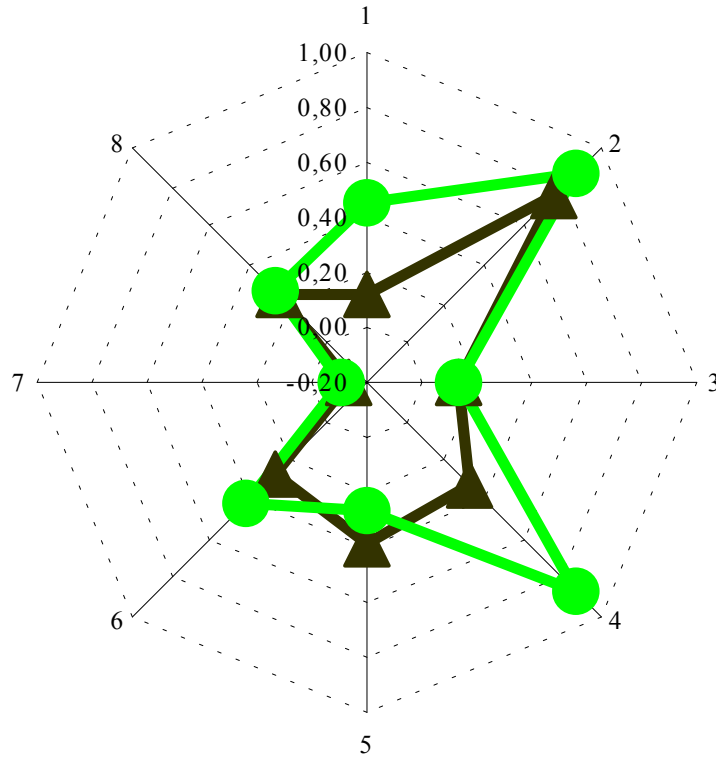
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Relativelly expanding NIS

Relativelly Contracting NIS

Quantitative measures:

NIS "Size"

area of the geometric figure

Relative evolution

compare "size" in year 1 with year 2

"Eveness" of NIS

observe differences between 8 dimensions

6. <u>Possibilities</u>

This method has potential for both

- **Analytical purposes**
- **Policy-making purposes**

6.1. <u>Analytical potential</u>

- **Possibility of disagreement on "dimensions" and "variables"**

- **But discussion on those aspects demands more specificity on what exactly is meant by "NIS"**

6.2. Potential for policy-making purposes

compare different NISs

- **visualize graphically each NIS relevant dimensions**

NIS auto-diagnosis

- **observe weaker and stronger dimensions**

- **determine whether NIS is balanced/uneven**

- **assess evolution over time**

6.1 + 6.2

**These possibilities apply
to both the advanced
and the catching up economies**

... but

Results presented: merely indicative