THE POLICY MIX FOR SCIENCE-INDUSTRY KNOWLEDGE TRANSFER

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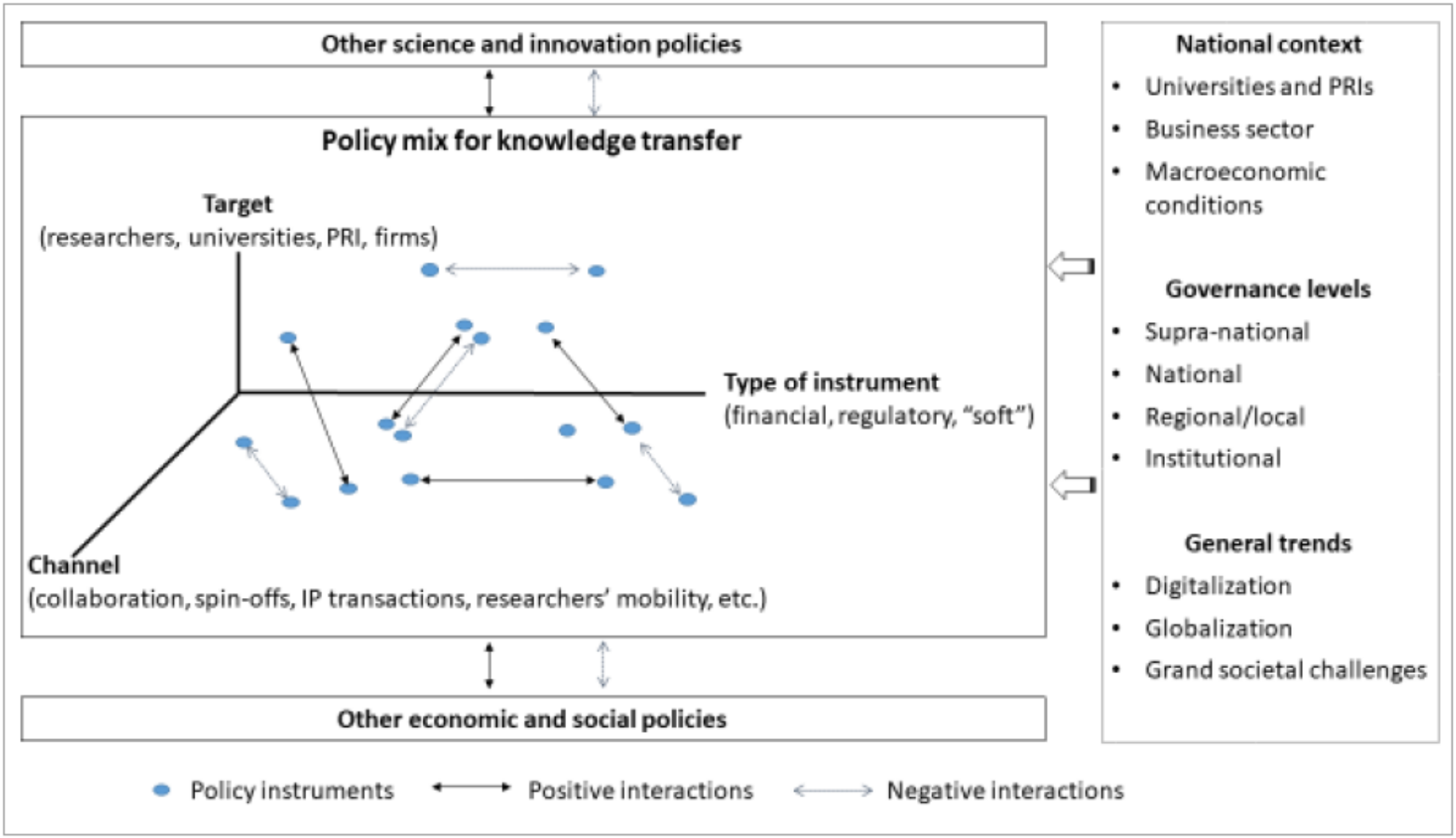
Background

- Part of **TIP project** "Assessing Impacts of Knowledge Transfer and Policy" (2017-2018)
  - (TIP = OECD Working Party on Innovation and Technology Policy)
- **Conceptual framework** has been developed and discussed with member countries
  - Specific Item on TIP meetings
  - Workshop 1: "Stimulating knowledge transfer: challenges and policy responses" (Lisbon, November 2017)
  - Workshop 2: "workshop: "Boosting knowledge transfer between science and industry: New models and business practices" (Paris, March 2018)
- 16 countries are developing **case studies**

Introduction

- Science-industry knowledge transfer
  - Different formal and informal **channels** for knowledge transfer
  - Includes **commercialization** (IP, spin-offs) and **engagement** (collaboration, contract research, mobility…)
  - From transfer to **co-creation**
- Towards a **policy mix approach** (Cunningham et al. 2016; Flanagan et al. 2011; Guerzoni & Raiteri 2015; Martin 2016)
  - Avoid bias of traditional evaluations that focus on individual policy instruments alone
  - Reflect on complementarities, synergies and also negative interactions between policy instruments
- **Country-specific** policy mixes
  - Factors leading to **convergence**: international policy diffusion, benchmarking and policy learning, supranational regulations (e.g. TRIPS)
  - Factors leading to **divergence**: structural and institutional differences

Conceptual framework



Building blocks of the conceptual framework

1. **Mapping** policy instruments used to support knowledge transfer
2. Assessing **interactions** between policy instruments and with other policy domains
3. Aligning policy mix with the **national context**
4. Adapting policy mix to **international trends**

1. Mapping policy instruments

- Need for clear map of all policy instruments used in the country, classified across different **dimensions**:
  - Financial/regulatory/soft instruments
  - Actors being targeted (industry/academia)
  - Channels being addressed (collaborative research/IP transactions/spin-offs/publications/human mobility…)
  - Supply/demand –side policies
  - Time horizon (short/long term)
- Is there a **balanced** mix of policy instruments through the different dimensions? Is there a need to introduce new policy instruments?
  - Comprehensiveness vs. complexity trade-off
  - Stability/reliability vs. flexibility trade-off

Financial instruments

Type of policy instrument	Target groups	Main channels addressed	Supply- vs. demand-side
R&D and innovation subsidies or grants for collaborative projects (1)	Researchers and Firms	Collaboration	Supply
Tax incentives for research collaboration or contracting (2)	Firms	Collaboration, contracts, consulting	Supply
Financial support to academic spin-offs (3)	Researchers and Entrepreneurs	Spin-offs	Supply
Grants for IP applications (4)	Researchers	IP transactions	Supply
Financial support to recruit PhDs or post-docs (5)	Firms	Researchers' mobility	Supply
Financial support to host industry researchers temporarily (6)	Universities/PRIs	Researchers' mobility	Supply
Public procurement of technology (7)	Firms	Collaboration, contracts	Demand
Innovation vouchers (8)	Firms	Contracts, consulting	Demand
Public-private partnerships creating joint research laboratories (9)	Universities/PRIs and Firms	Collaboration	Demand/Supply
Performance-based funding systems that reward links with industry (10)	Universities/PRIs	Publications, spin-offs, IP transactions	Supply
Funding of infrastructures for knowledge transfer (11)	Universities/PRIs	IP transactions, spin-offs, networking	Demand/Supply

Regulatory instruments

Type of policy instrument	Target groups	Main channels addressed	Supply- vs. demand-side
IP rights framework (12)	Researchers, Firms and Universities/PRIs	IP transactions, spin-offs	Demand/Supply
Regulation of spin-off companies by researchers and students (13)	Researchers and Universities/PRIs	Spin-offs	Supply
Career track of professors and researchers (14)	Researchers	All channels	Supply
Sabbaticals and mobility schemes for academic researchers and temporary recruitment of industry researchers (15)	Researchers and Universities/PRIs	Researchers' mobility, spin-offs	Supply
Open access provisions for the results of publicly funded research (16)	Researchers and Universities/PRIs	Publications	Supply
Statutory autonomy of universities and PRIs (17)	Universities/PRIs	All channels	Supply

Soft instruments

Type of policy instrument	Target groups	Main channels addressed	Supply- vs. demand-side
Awareness-building (18)	Universities/PRIs and Firms	All channels	Demand/Supply
Training programmes (19)	Researchers, TTO	All channels	Supply
Networking events (20)	Universities/PRIs and Firms	Networking	Demand/Supply
Collective road-mapping and networked foresight (21)	Universities/PRIs and Firms	Networking	Demand/Supply
Voluntary guidelines and codes of conduct (22)	Universities/PRIs and Firms	Collaboration, IP transactions	Demand/Supply

2. Interactions between policy instruments

- Enhancing positive interactions
  - New regulations for collaborative research work better if combined with soft instruments such as guidelines and toolkits for dealing with IP issues
  - Grants for collaborative R&D work better if combined with policies that promote exchange of post-graduate students
  - Combination of supply and demand side instruments creates synergies
- Avoiding negative interactions
  - Co-existence of too many instruments can weaken impact of single instruments
  - Excessive emphasis on knowledge transfer can be detrimental to teaching and research
- Interactions with other policy domains

3. Aligning policy mix with national context

- Socio-economic development level
- Characteristics of business sector
  - Industrial specialization (high-tech vs low-tech sectors)
  - Firm size (specific challenges of SMEs)
  - Ownership (private/public/foreign)
  - Technological capabilities (laggard firms need different policy support)
- Characteristics of universities and PRIs
  - Heterogeneity of universities and PRIs
  - Research universities vs Polytechnics, etc.
- Macroeconomic conditions
  - e.g. Financial austerity measures & brain drain in Greece
- Institutions and culture
  - Formal and informal institutions

4. Adapting policy mix to international trends

- Digitalization and open innovation
  - e.g. digital platforms
- Global innovation networks
  - Attracting foreign MNEs that collaborate in R&D with local universities/ PRI
  - Attracting foreign universities/PRI that collaborate in R&D with domestic industries
- Global societal challenges
  - e.g. environmental sustainability

Towards a “policy mix” approach: implications for policymakers

- **Map** existing policy instruments along different dimensions to assess whether the policy mix is balanced and to identify possible gaps
- Identify **positive interactions** between policy instruments that need to be further exploited and **negative interactions** that need to be corrected
- Ensure that the policy mix is appropriate considering the **national context** and the uniqueness of each country
- Consider how the policy mix could be improved in light of broader **international trends** such as digitalization
- Improve policy **evaluation** studies by considering not only individual instruments, but also the broader policy mix

Empirics to illustrate conceptual framework

- Analysis of EC/OECD International Survey on Science, Technology and Innovation Policies (**STIP survey**)
  - Improved 2017 survey available in April 2018
  - 50 countries
  - Around 1800 policy initiatives related to knowledge transfer
- 16 countries have volunteered to develop **case studies**
  - 2 **templates** have been produced to guide countries:
    1. Comprehensive overview of the policy mix.
    2. Policy instrument recently introduced to promote knowledge transfer, contextualizing it within the existing policy mix.

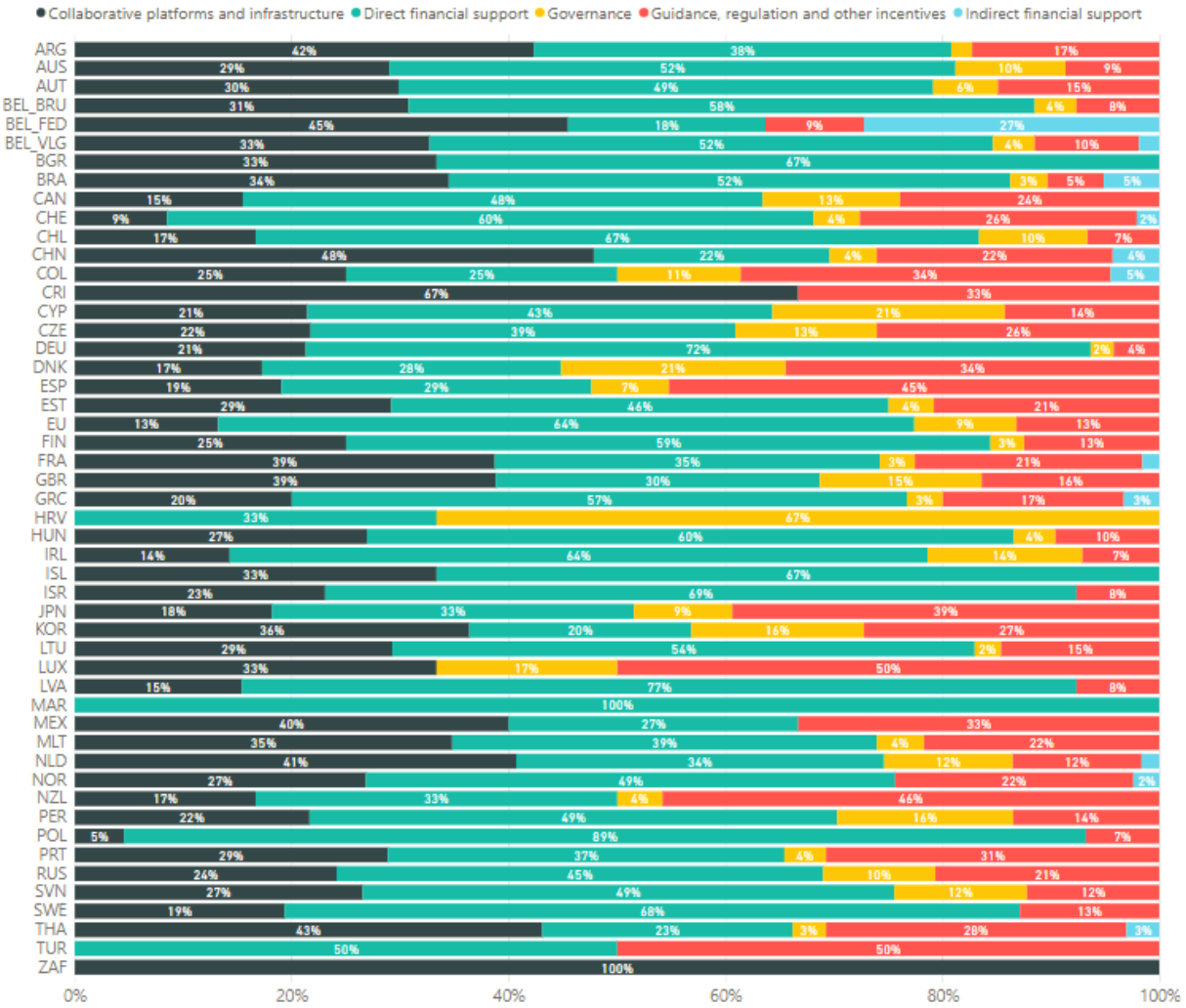
Challenges

- How can we move beyond the rhetoric of “one-size does not fit all”?
- All countries tend to use the full set of policy instruments, the same policy mix.
- But there is also “divergence within convergence”
  - Differences across countries in the relative importance given to each policy (e.g. in terms of relative budgets or number of initiatives)
  - And in the design/implementation of each type of policy instrument
- Challenges of making sense of the empirics
  - Case studies: Difficulties of cross-case analysis
  - Limitations of STIP database

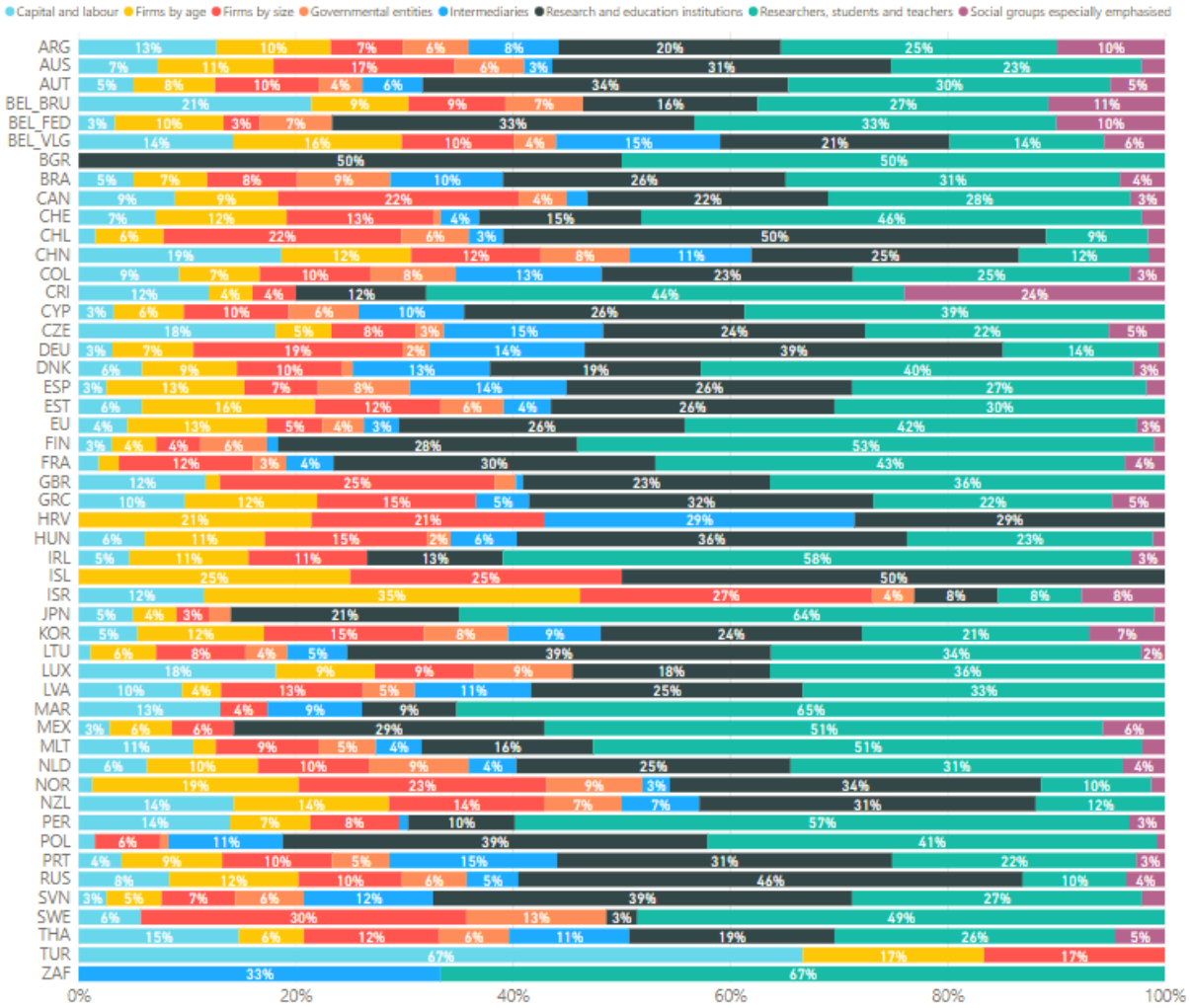
Limitations of STIP database

- Level of analysis: Policy instruments vs. Policy initiatives
- Limited coverage of sub-national initiatives
- Incomplete responses (e.g. budgets)
- How do countries respond to the survey?
- Mere counting of frequencies can be misleading

Percentage of Type of Instruments mentioned in Initiatives by Country



Percentage of Direct Beneficiaries mentioned in Initiatives by Country



Next steps

- Final report to be published by OECD in early 2019
  - Including conceptual framework and country case studies
- Moving forward
  - How can we translate this general framework into specific (non-obvious) policy recommendations?
  - Can we think of innovative ways to address the complexity (policy diagnostic/decision tools)?

THANK YOU!

Assessing Impacts of Knowledge Transfer and Policy project website:
https://www.innovationpolicyplatform.org/assessing-impacts-knowledge-transfer-and-policy-oecd-project

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