



MICRODATA-BASED ANALYSIS OF SCIENCE AND INNOVATION: AN OECD PERSPECTIVE

Workshop on Evaluación de políticas de I+D e innovación
en España”, 7 March 2017

Fernando Galindo-Rueda*
OECD Directorate for Science, Technology and Innovation

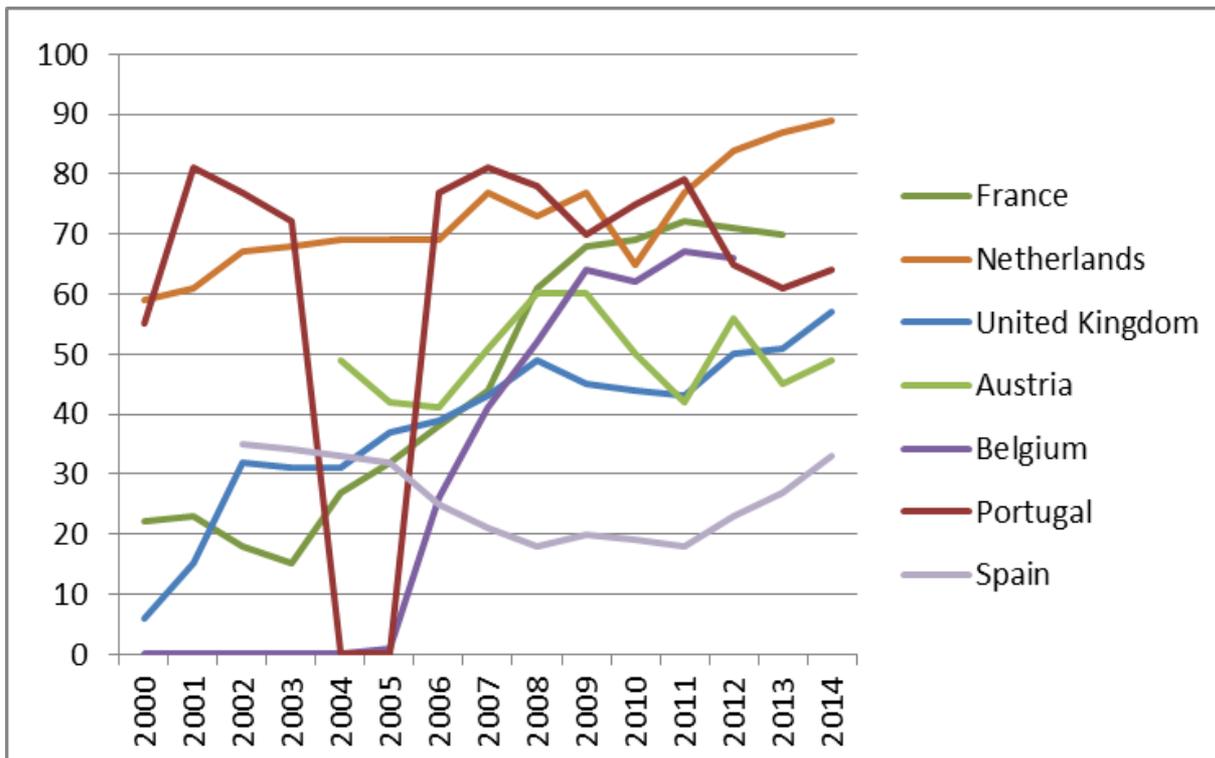
* All views are personal and do not necessarily represent the
OECD. Slides draw on joint work with Silvia Appelt, Matej
Bajgar and Chiara Criscuolo.



For example: Public support for R&D

Trends in government tax incentive and direct support for business R&D, 2000-14

Tax support as a percentage of total (direct and tax) government support for business R&D, selected countries

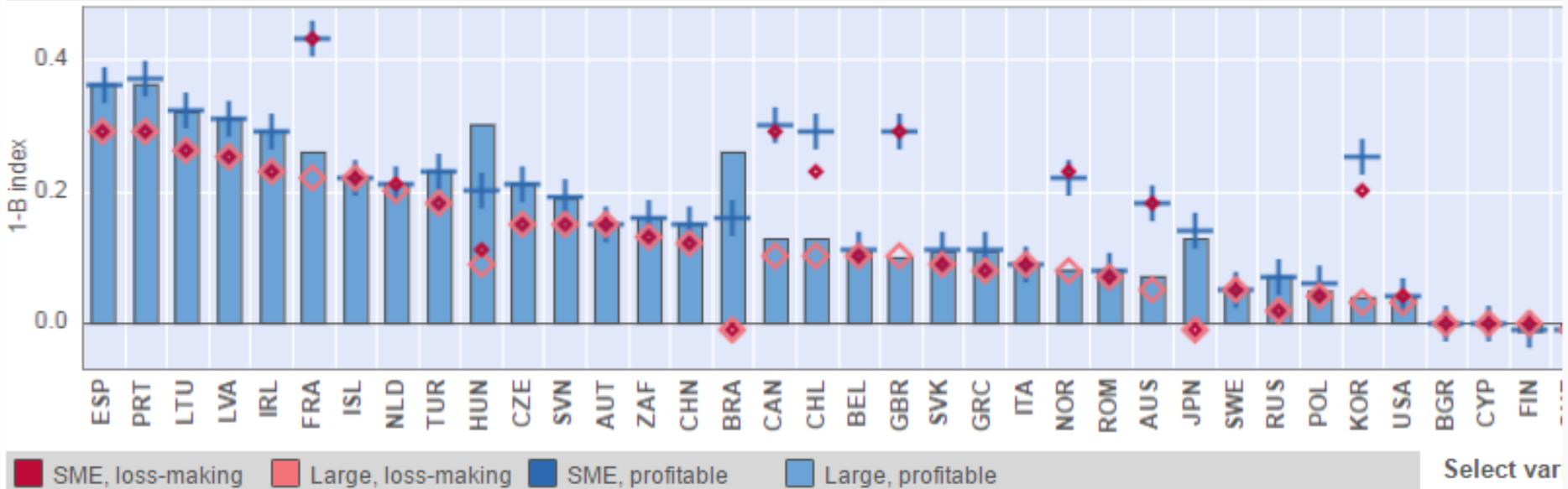




Tax support indicators according to the type of firm

Tax subsidy rates on R&D expenditures, 2016

1-B-Index, by firm size and profit scenario



Select var
(All)

Data and notes are available here: http://www.oecd.org/sti/Tax_subsidy.xls



Traditional approach to sci, tech, inno (and all other) official statistics at OECD



- Statistical guidelines
- International comparisons



OECD.Stat

Popular queries

Country: Australia

Measure: PPP Dollars - Current prices

Sector of Performance: Total Intrafirm

Unit: US Dollar, Millions

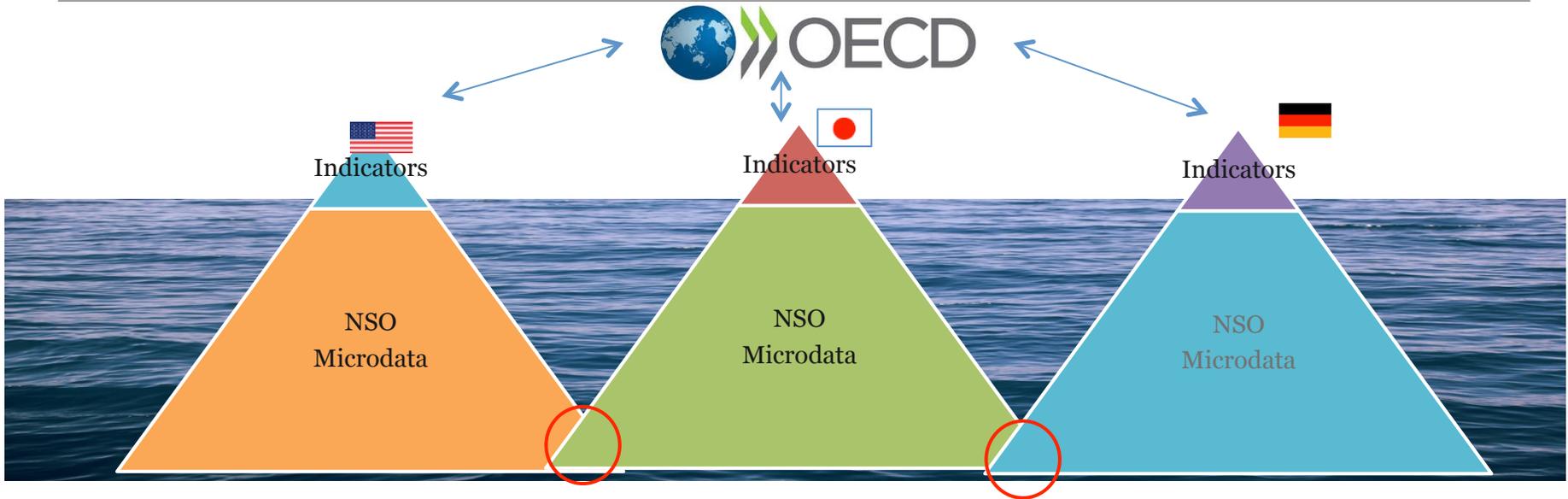
Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Total Intrafirm	1 608 942	2 184 322	2 833 371	2 972 116	3 287 827	3 828 961	4 883 877	5 739 365	6 716 896	6 864 535									

Source: OECD

Click in series with previous year for which data is available



Traditional approach to statistics at OECD



- Problem: What OECD collects and reports is only the tip of the iceberg, what lies beneath would be useful but is beyond reach
 - Access constraints drive interest towards other non official sources, esp. those across jurisdictions
 - Challenge to the sustainability of official statistics → loss of research interest, potential policy relevance...



Four approaches

- Complementary microdata sources
 1. Leverage administrative data, whenever possible and relevant
 - Global standards?
 2. Experiment collecting some data directly, in areas where there is no clash with NSOs
- ➔ • Addressing the NSO microdata access issue
 3. Promote the development and use of safe international data havens
 4. Distributed approach for existing NSO data*



The international dimension

- Generic issues examined by OECD Expert Group for International Collaboration on Microdata Access www.oecd.org/std/microdata.htm
- Recommendation of the OECD Council on Good Statistical Practice. Selected recommendations on microdata:
 - 4.5. Provisions are in place and internal guidelines are available **to allow external user access to micro-data for statistical research** purposes under strict protocols and only after anonymisation of the data.
 - 9.11. Access to micro-data is **allowed for research purposes and is subject to specific rules or protocols** (ECoP).
 - 11.5. **Access to micro-data by international organisations** is explored as a means to reduce the burden of countries responding to questionnaires.



The access issue

- The “safe”* principles of microdata access towards building trust:
 - Safe projects: appropriate use of data.
 - Safe people: skills, incentives, willingness to contribute to core NSO operation
 - Safe places/settings : safe havens/data enclaves, supervision,
 - Safe data: conf, ID-based data linking
 - Safe outputs : disclosure control, depositing outputs
- Sustainability:
 - Account for costs to NSO in research projects and policy endorsed studies
 - Account for benefits to NSO – i.e. not just a nuisance
 - Think of as infrastructure
 - Make microdata part of the business case for stat. enquiries.

* http://rssh.anu.edu.au/sites/default/files/Ritchie_5safes.pdf



New evidence

Approaches to evaluating impact



Firm-level single-country studies

- structure, concentration, characteristics of beneficiaries
- identifying causal effects
- heterogeneity, spillovers

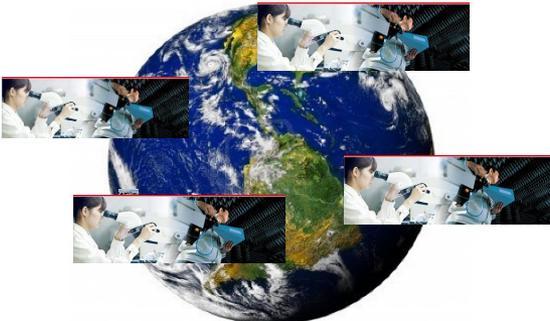


Aggregate cross-country studies

- generalisability
- comparing policy design

Firm-level cross-country studies

- combined benefits...
- ...but challenging
 - data availability
 - comparability
 - confidentiality





New evidence - microBeRD: distributed microdata analysis



Co-funded by the Horizon 2020
Framework Programme of the European Union



Statistical code
prepared by
OECD;
implemented
within
countries



- R&D survey**
- + **Corporate tax data**
 - + R&D grant/loan data
 - + Business register data
 - + Patent data
 - + Innovation data

Statistical
moments
 $\text{pdf}(X)_c$



New evidence microBeRD: project aims



Co-funded by the Horizon 2020
Framework Programme of the European Union

Harmonised cross-country descriptive evidence on incidence of public support for R&D

- structure
- concentration
- characteristics of beneficiaries

Evidence on causal effect of indirect and direct support

- comparing effectiveness
- effect on different types of firms
- interaction
- spillovers

Supporting evaluation capacity in participating countries



OECD-NESTI R&D micro-data project: Micro-data availability by type of data source

Preliminary analysis of micro-data situation in participating countries

	Business expenditures on R&D	Business entitlement to tax support	R&D grants, loans and other-non tax relief related financial support for R&D	Business innovation survey data / Patent or other IP data	Business performance data	Firm ownership and demographic information
Country	AUT, BEL, CAN, CHL, CZE, DNK, FIN, FRA, DEU, IRL, ISR, JPN, NLD, NOR, NZL, POL, PRT, SVK, SVN, TUR, USA	AUT, BEL, CAN, CHL, CZE, DNK, FIN, FRA, IRL, NLD, NOR, NZL, PRT, SVK, SVN, TUR	AUT, BEL, CAN, CHL, CZE, FIN, FRA, IRL, ISR, NLD, NOR, NZL, NOR, POL, PRT, SVK, SVN, TUR, USA	AUT, BEL, CAN, CHL, CZE, DNK, FIN, FRA, DEU, IRL, ISR, JPN, NLD, NOR, NZL, POL, PRT, SVK, SVN, TUR, USA	AUT, BEL, CAN, CHL, CZE, DNK, FIN, FRA, DEU, IRL, ISR, JPN, NLD, NOR, NZL, POL, PRT, SVK, SVN, TUR	AUT, BEL, CAN, CHL, CZE, DNK, FIN, FRA, DEU, IRL, ISR, JPN, NLD, NOR, NZL, POL, PRT, SVK, SVN, TUR, USA
Total	21	16	18	21	20	21

Questionnaire on micro-data availability and expert participation – country responses received by 26 March 2015.

→ Update on micro-data access and linking arrangements (Q responses, data exploration)



Thank you / muchas gracias



We look forward to having Spain join soon
microBERD

Fernando.galindo-rueda@oecd.org
microberd@oecd.org



Recent examples of use of distributed microdata approaches

- OECD/SIT work on Business dynamics and productivity: [DYNEMP](#) and [MULTIPROD](#)
- One country case studies
 - Denmark: impact of [design](#) capabilities on innovation
 - Canada (new): extent and impact of technology use
- Innovation
 - [Innovation in firms](#)
 - Innovation in services
- Careers of doctorate holders

