

Experimental Innovation Policy

Albert Bravo-Biosca (IGL-Nesta)

CONCORDi 2019 – Industrial innovation for transformation

26th September 2019

IGL – A global community for better policies through experimentation



IGL Partners



Other organisations we've worked with:



IGL Research Network

Over 85 researchers from around the world:



IGL Scientific Committee

Nick Bloom Stanford Graduate School of Business | **Dietmar Harhoff** Max Planck Institute for Innovation and Competition | **Karim Lakhani** Harvard Business School | **Josh Lerner** Harvard Business School | **Fiona Murray** MIT Sloan | **Mark Schankerman** LSE | **Scott Stern** MIT Sloan | **John Van Reenen** MIT Sloan

Some context

- Innovation policy is about supporting experimentation, yet innovation policies are not very experimental or innovative
- Large public investments to support firms to innovate and grow (150 billion euro per year across the EU), but little experimentation
- Still uncharted territory...difficult to navigate:
 - Innovation systems are complex
 - Innovation systems, opportunities and challenges are dynamic and continuously evolve
 - Limited evidence base

Impact evaluations are frequent, but....

All support schemes



Credible (2.4%)

+ Impact (0.6%)

Innovation schemes



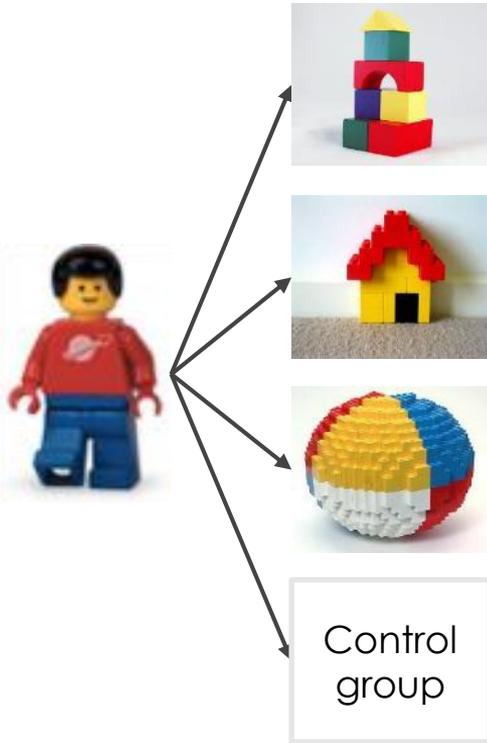
Credible (3.7%)

+ Impact (0.4%)

Source: Charts based on the systematic reviews conducted by the LSE-based What Works Centre for Local Economic Growth (Credible: Level 3 Maryland Scale – Positive impact on employment)

Experimentation can help navigate uncertainties

1. Experiment



2. Evaluate



3. Scale-up



Traditional approach

Launch a large programme without prior small-scale testing, with one design and the hope that it will work

Experimental policy

Start small, trial different designs systematically, learn what works to increase impact and scale it up

Three ingredients for delivering good policy



What is an experiment?

~~Trying something new~~

~~Common use~~

“a **test done in order to learn** something or to discover if something works or is true”

Cambridge English Dictionary

Characteristics of an experiment

1. Learning is the priority: generates new information, evidence or data
2. Intentionally tests or trials a defined idea or hypothesis
3. Has a structure: a systematic process that allows learning to happen
4. Timeframes set from the start to assess results and make decisions

This definition:

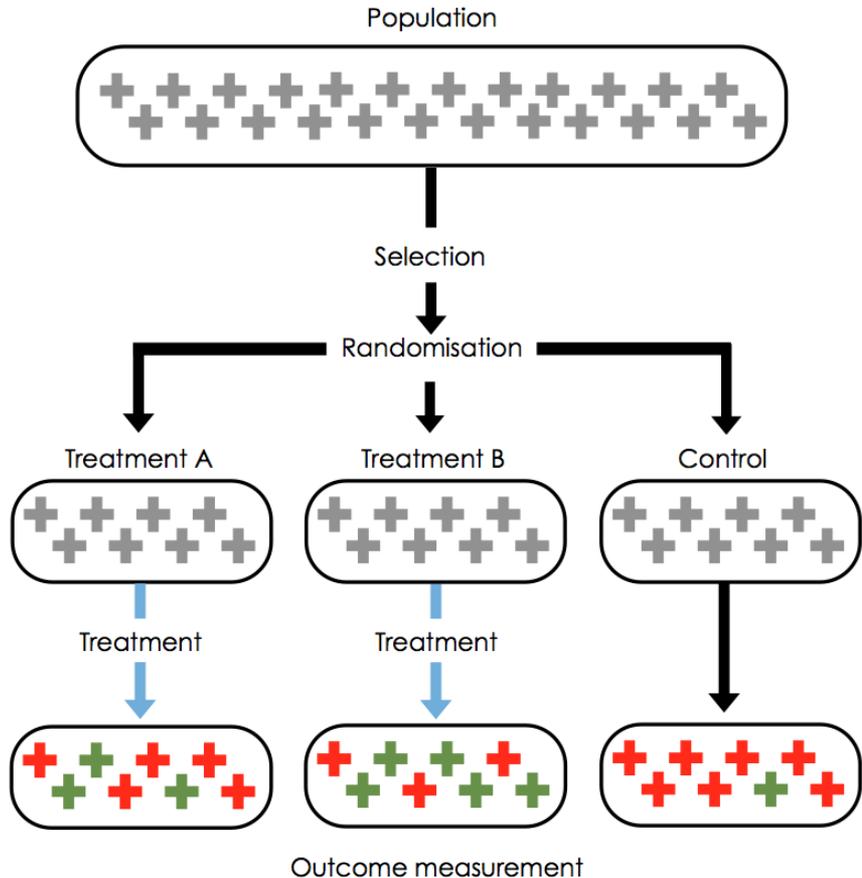
- Includes a wider range for experiments, from design-led to RCTs
- Excludes ex-post rationalization of past policies as experiments (e.g., natural experiments, parallel experimentation in federal systems)

Useful but not required: small scale, control group, codified knowledge

Types of policy experiments

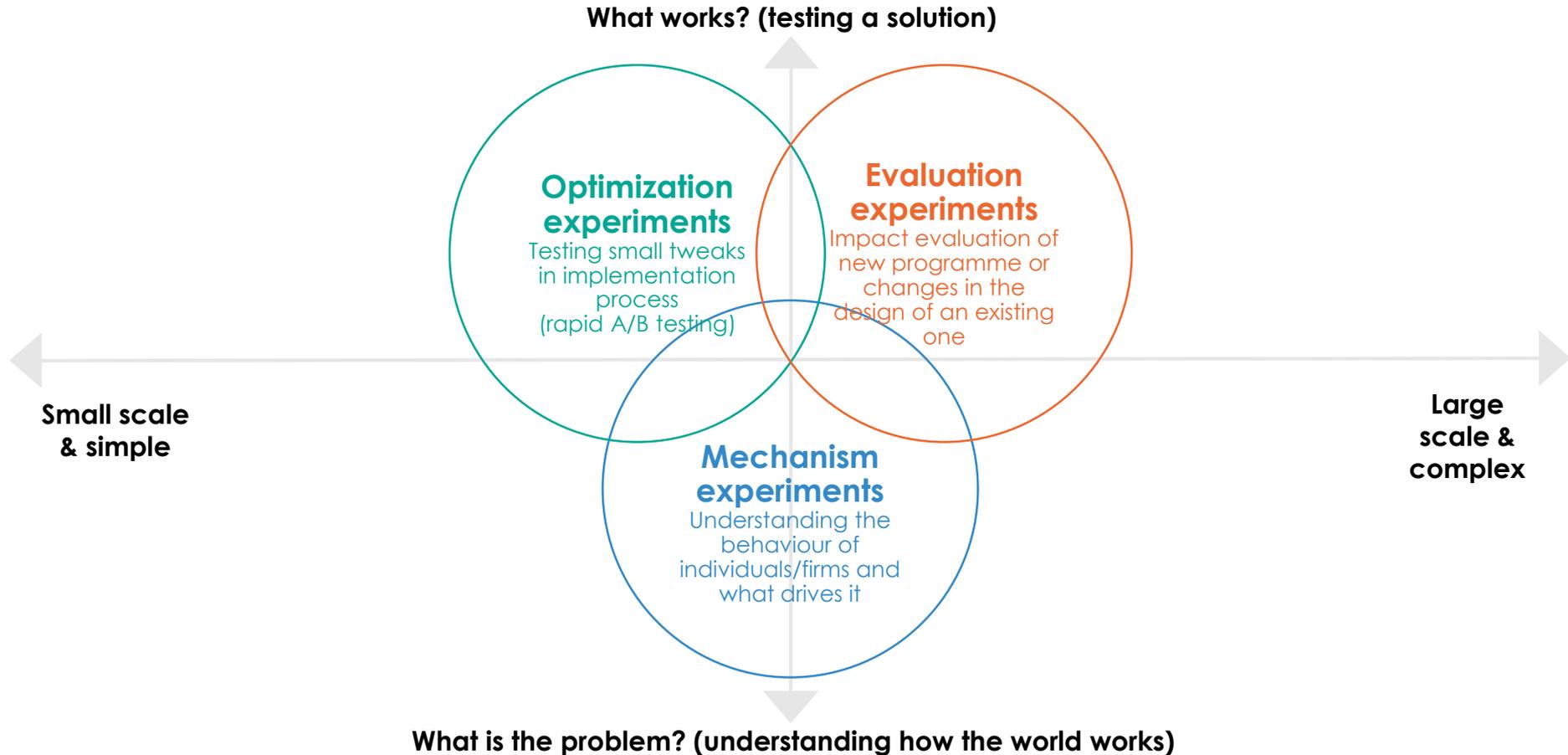
	Mechanism experiments	Exploratory experiments	Optimization experiments	Evaluation experiments
Main aim	Exploration and discovery		Evaluation: what works?	
What is tested	<p>Assumptions</p> <p>Testing assumptions about the problem to be fixed, the underlying drivers or mechanisms of observed behaviors, or the solution being considered</p>	<p>Potential</p> <p>Testing the feasibility and potential of new solutions, exploring expected and unexpected consequences rather than seeking conclusive answers</p>	<p>Process</p> <p>Testing process changes (small or large) in order to optimize the process used to deliver an intervention (not looking at the impact on outcomes but rather on inputs and outputs)</p>	<p>Impact</p> <p>Testing the impact of an intervention on outcomes, or comparing the effectiveness of different interventions (or versions) in order to find out what works, when, and for whom</p>
Learning method	Randomized controlled trials, rapid cycle testing, A/B testing, mixed methods, ethnographic research, human-centered design, prototyping, other qualitative & quantitative approaches			

Randomized controlled trials (RCTs)



- Randomized selection provides a credible counterfactual
- But as any other method has limitations (Deaton and Cartwright, 2018).
- Can be conducted in the field or the lab (or online platforms or shadow experiments)
- Many in development, health, education or social policy, very few on innovation and business policy & management research
- RCTs can cost from very little to millions (intervention, data collection and analysis)

There are multiple ways to use trials



Trials can have a powerful impact

More effective messages: the UK's Business Department used 'nudging' trials experimenting with different language to recruit business mentors



Additional 800
mentors recruited,
policy target met

Trials can have a powerful impact

More effective messages: the UK's Business Department used 'nudging' trials experimenting with different language to recruit business mentors



Additional 800 mentors recruited, policy target met

New research collaborations: Harvard Medical School researchers were randomised to meet as part of a grant programme information session



Researchers were 75% more likely to collaborate

More successful startups by making a small tweak: the Startup Chile accelerator trialled sharing application feedback with its participants



Startups raised +50% more funding

Helping businesses grow with a low-cost networking intervention: two academics trialled monthly meetings between business owners in China



Increased firm revenue by 8%

RCTs in innovation policy: Challenges

1. Innovation outcomes can be:
 - Difficult to measure
 - Long time to emerge
 - Very skewed
2. Innovation systems are complex environments
 - Internal vs external validity
3. Innovation policies are multidimensional, rather than binary
 - Prior prototyping useful

Potential uses of RCTs in innovation policy

- Compatible with different policy rationales (Market failure, system failure, mission driven) → The actual instrument is what matters
- Do not answer large-scale prioritisation exercises (picking missions, research fields, themes, regions, etc.)
- Can be used alongside other methods as part a wider evaluation strategy → mixed methods is best

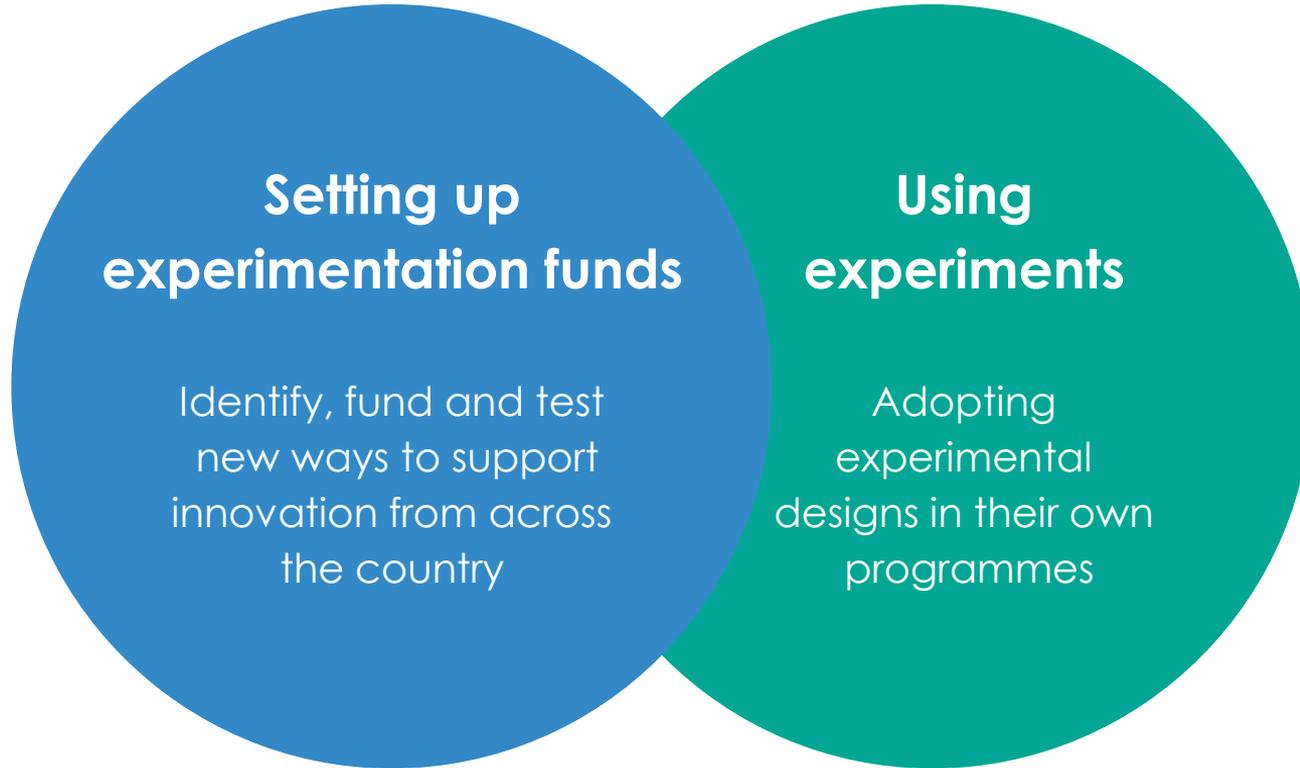
	Mechanism experiments	Optimization experiments	Evaluation experiments
Framework conditions (e.g., tax, regulation)			
Ecosystem (e.g., clusters, infrastructure)			
Targeted programs (e.g., grants, advice)			

Potential uses of RCTs in innovation policy

- Compatible with different policy rationales (Market failure, system failure, mission driven) → The actual instrument is what matters
- Do not answer large-scale prioritisation exercises (picking missions, research fields, themes, regions, etc.)
- Can be used alongside other methods as part a wider evaluation strategy → mixed methods is best

	Mechanism experiments	Optimization experiments	Evaluation experiments
Framework conditions (e.g., tax, regulation)	Medium	Medium	Low
Ecosystem (e.g., clusters, infrastructure)	Medium	Medium	Low (overall)/ Medium (toolkit)
Targeted programs (e.g., grants, advice)	High	High	High

How governments are becoming more experimental



Experimentation funds

The challenge:

- New ideas for support programmes are everywhere in the ecosystem, not just in government buildings
- There is no mechanism to distinguish between programmes that should be scaled vs well-intentioned but ineffective efforts

The solution:

- Funding to test innovative support schemes in exchange for rigorous evaluation, often targeted to a particular policy challenge
- Typically two strands: Small proof of concept trials + Larger scale pilots to test ideas at scale

Examples from other fields:



Recent examples in innovation policy:



Illustrative customer journey

What programme features do recipients value? (marketing trials focused on different features)

How can we get more/better applications, increasing diversity in ideas and backgrounds, and engaging with communities beyond the field (eg nudging trials)

How to support applicants to develop new collaborations and prepare better applications?

How to improve the selection processes? (eg behavioural biases)



Insufficient applications

Wrong projects selected

Projects/firms delayed or fail

Does providing written feedback add value? (eg startup chile)

How to meet programme KPIs, such as time-to-grant?

What will be done with applicants turned down?

Is there a need for additional support for funding recipients?

How to increase the commercialisation and/or application of the knowledge produced?

An overview of the questions being addressed by our portfolio of 55 projects



Basic science & university-business collaboration

- Does locating scientists from different disciplines together increase collaboration?
- Does nudging graduate students to engage with TLOs through visits increase graduate entrepreneurship and tech transfer?
- Do workshops with SMEs and universities spur new collaborations?
- Do innovation vouchers create long-lasting collaborations?
- Are there other effective interventions to increase collaboration?

Entrepreneurship and innovation education

- Can creativity be taught through habit formation?
- Do online courses increase entrepreneurship and STEM careers?
- Does training entrepreneurship teachers improve students' entrepreneurship outcomes?
- Can teaching a growth mindset (e.g., entrepreneurs are made, not born) increase entrepreneurship, particularly among women?
- What's the impact of different entrepreneurship training curricula on business success (eg soft skills/persistence vs business practices)?
- Do networking events help disadvantaged potential entrepreneurs?
- Do peer-networks impact potential entrepreneurs' risk-aversion?

Startup support

- What is the impact of incubators on startup growth?
- Does coaching increase startups' survival and performance?
- Do innovation grants increase startup growth?
- Does using the scientific method improve startup performance?
- Does teaching lean startup methods accelerate growth?
- How much accountability should accelerators impose?
- How important are mentors' networks diversity for startup success?
- How to create effective online mentoring relationships?
- Should entrepreneurship support programmes be free or charge?

SME support

- Does offering capacity-building or coaching alongside R&D and innovation grants/loans improve the recipients' outcomes?
- Are training and coaching programmes an effective form of support for high-growth potential businesses?
- How can we improve the assessment processes to select which R&D and innovation proposals to fund?
- What interventions can help SMEs to successfully adopt digital technologies?
- How useful is feedback for SMEs applying for funding?
- Does the existence of a "business library" providing training, tools and market linkages improves small businesses performance?
- Can a government endorsement (seal) encourage crowdfunders to invest?
- How simple messaging trials can help government agencies achieve their goals?

Innovation management

- How many patents do you really need to protect your commercial revenues?
- Can we nudge more people to participate in innovation contests, and does doing so impact the quality of the ideas we receive?
- How can we best build teams to address novel, multidisciplinary problems?
- What are the behavioural and performance distinctions between face-to-face and virtual geographically distributed innovation teams?
- What makes teams more effective in early-stage entrepreneurship, the ability to choose who they work with or what idea to work on?
- Is the crowd wise or do biases exist in equity crowdfunding?

Conclusions

1. Experimentation could contribute to more impactful innovation policies
2. Randomized experiments are a particularly underutilized method in this field
3. Some interesting examples from the field
4. Many opportunities for impactful trials....and to be surprised
5. Setting up trials requires pro-actively identifying opportunities and careful thinking ex-ante

Thank you

Get in touch if interested to find out more:
abravobiosca@nesta.org.uk

Or join us at the **IGL2020 Conference on
June 2-4th in London**

www.innovationgrowthlab.org