Monitoring the impact of R&D funding:
A look into the crystal ball …

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in Collaboration with the Marshal's Office of Wielkopolska

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- Additionality concepts
- Main research question
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Introduction

- Public support for R&D&I
  - Increasing need for evaluation and justification

  ➔What difference does public support for R&D&I make?

- What policy makers want as a result:
  - Increase of employment
  - Increase of investements
  - Attract new businesses
  - ….

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Introduction

But …

- It is impossible to predict this on individual project basis
  - *Lack of causality*
- It is even not recommended to focus on policy makers' short term wishes
  - *Leads to short 'economic' thinking <> longer term R&D thinking*
- It might even be useless to try do this
  - *Time lag*

So then what can we do to please policy makers?

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Introduction

- Try to prove that funding R&D has some positive influence on firms innovation processes
- "Traditional" evaluation focus on
  - Input additionality
  - Output additionality
  - ➔ But … This treats a firm as a black box
  - ➔ We want to see if something happens within the firms

⇒ Focus on Behavioral Additionality (BA): the difference in firm innovation behavior resulting from R&D funding

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BA-concepts

Multidimensional influence of funding on R&D&I projects and processes:

- Scale
- Scope
- Intelligence
- Speed
- Output & Impact
- Cooperation
- Strategy
- …

to improve the firms innovation performance.

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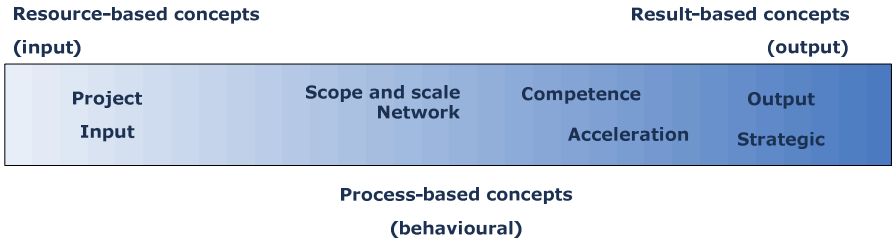
BA concepts



➔Main research question:

Does funding R&D-projects lead to BA ?

CASE Study IWT

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IWT : Flemisch Innovation Agency

- **Founded in 1991**
  - 1991 : Region became managing authority for innovation
  - Single R&D funding agency in Flanders
  - 135 FTE – including 60 FTE Scientific Advisors

- **Major Programmes (current)**
  - Direct funding of R&D at **companies** (SME, large companies)
  - Funding of R&D at **knowledge/technology centres** (university, R&D centres, Higher Education Institutes)
  - Funding of **innovation support system** through funding of projects to develop innovation support services at intermediaries

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IWT : Flemisch Innovation Agency

- **Annual budget (2009): + 300 M€**
  - 116 M€ R&D-projects in industry
  - 105 M€ R&D-projects at technology centres
  - 43 M€ Innovation support System
  - 15 M€ Measures of Flemish Government (specific actions)
  - 30 M€ Grants (PhD, Post-doc)
- **Clients**
  - 80 projects from innovative Large enterprises/year
  - 500 SME projects/year
  - 250 research groups with projects at technology centres
- **Innovation support system (network of intermediaries)**
  - 250 advisors in the field, from 85 organisations

IWT

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Case Study IWT BA-Methodology

- Telephone survey with project leaders (50) and
- E-Survey (300) to verify conclusions
- Duration (without pilot) 6 months, cost approx.100k€
- All questionnaires and detailed results are available
- Remark: The importance of CONTROL groups to **identify delta's**:
  - 3 groups used in study:
    - E = Experimental group: funded IWT-clients (194)
    - A = Control group A: non-funded IWT-"clients"
      - 88 (46 with R&D&I-project)
    - B = Control group B: no IWT-clients
      - 100 (30 with R&D&I-project)

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Samples

Table 2: Representativity of the samples

Number of companies by size	Population	%	Sample	%	Representativity
Experimental group					
Large companies	130	18%	36	19%	28%
SMEs	403	57%	111	57%	28%
Starters	179	25%	47	24%	26%
Total	712	100%	194	100%	27%
Control group A					
Large companies	35	12%	9	10%	26%
SMEs	162	55%	53	60%	33%
Starters	96	33%	26	30%	27%
Total	293	100%	88	100%	30%
Control group B					
Large companies	76	14%	13	13%	17%
SMEs	400	76%	81	81%	20%
Starters	51	10%	6	6%	12%
Total	527	100%	100	100%	19%

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Results Additionality Study

- Project Add. (= High if project is cancelled without support)
  - 40% of projects would not have taken place without support
  - 50% with a smaller budget
- Input Add. (=High if companies spend more on R&D due to support)
  - No crowding out
  - 1€ funding ➔ 0.85 – 1.34€ add. R&D spending by firm
  - Follow up projects financed internally
  - No confirmation for labeling effect (= leverage effect of IWT funding to attract additional financial means)

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Impact on innovation behaviour

Figure 4: Impact of project on innovative behaviour

Legend: mean score with 1=completely disagree; 2=disagree; 3= agree; 4= completely agree, question not addressed to control group B
Significant difference with experimental group at * 10% level, ** 5% level, *** 1% level

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Ambitions (scale and scope)

Table 12: Criteria used for IWT application

I applied for IWT support …	Large	SMEs	Starters	Total
for the most innovative project				
Experimental group	3,71	3,58	3,45	3,57
Control group A	3,67	2,88**	3,60	3,24*
for the project which was closest to the core of my activities				
Experimental group	2,86	3,22	3,36	3,20
Control group A	3,66	3,00	3,20	3,00
for the project that had the most fundamental research character				
Experimental group	3,57	3,14	3,09	3,19
Control group A	3,33	2,11***	3,00	2,58***
for projects which were larger than a certain critical size				
Experimental group	2,57	3,17	2,91	2,92
Control group A	3,33	2,11**	2,40	2,41*
for the most risky project				
Experimental group	3,29	2,53	3,00	2,68
Control group A	2,67	1,88*	2,40	2,18*

Question: To what extent do you agree with the following statements.
Mean scores with 1=completely disagree ; 2=disagree ; 3= agree ; 4= completely agree.
Significant difference with experimental group at * 10% level, ** 5% level, *** 1% level

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Results of Additionality study

- Cooperation(= high when government support helps to create cooperation)
  - Funded clients more involved in non-subsidised R&D cooperation
  - Funding has no or limited positive impact on *number* of external partners
  - No difference in *continuation* partnerships between funded and non-funded IWT clients
  - Positive effects for SMEs (funding leads to the inclusion of SME in projects)
- Intelligence(=positive impact on competencies and expertise)
  - Limited impact on IP strategy (except first contact with IP (SMEs)) ,
  - Positive impact: only after the first IWT project or with more partners
  - No impact: if already professional R&D-organisation

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Results of Additionality study

- Speed (= public funding speeds up project)
  - Funding speeds up projects, especially for starters
  - Projects are not submitted if time to market is important …
- Output and impacts (= additional output thanks to public support, introduction of products/processes, impact on turnover, export, competitiveness, …)
  - introduction of new product in 69% of projects
    - of which 30% would not have been realized without funding
  - introduction of new process in 58% of the projects
    - of which 38% would not have been realized without funding

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Some hypotheses tested

Hypotheses	Results	Not rejected/rejected
Hypothesis 1: The larger the share of IWT subsidy in R&D, the higher the additionality.	IWT support is of crucial importance especially for SMEs. For project and outcome additionality we indeed can observe a higher additionality (positive and significant effects). No effect can be observed concerning competence additionality.	Not rejected for outcome and project additionality Rejected for competence additionality
Hypothesis 2: Subsidies for start-ups have more additionality, in particular outcome additionality.	Large firms and SMEs have less outcome additionality (negative significant effect). As the start-ups are the baseline, the start-ups show higher levels of outcome additionality.	Not rejected for outcome additionality

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Some hypotheses tested

Hypotheses	Results	Not rejected/rejected
Hypothesis 3: Multi-partner projects have a higher additionality.	Multi-partner projects have higher competence additionality (positive and significant effects) than projects with only one partner. This does not hold for outcome additionality (negative and significant effects). In the case of project additionality, there is no significant relationship.	Not rejected for competence additionality Rejected for outcome and project additionality
Hypothesis 4: Companies that have a high turnover abroad will be able to achieve higher levels of additionality than those companies that are not yet international.	For strongly internationalizing companies, lower project additionality can be observed (meaning: these companies would self-finance the project). For both outcome and competence additionality there is no significant relationship.	Rejected (for all types of additionality)

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Some hypotheses tested

Hypotheses	Results	Not rejected/rejected
Hypothesis 5: Companies with a more professionalized R&D organisation will have less competence additionality.	A more professionalized R&D company achieves lower levels of competence additionality. They 'learn' less from participation in IWT projects.	Not rejected
Hypothesis 6: First projects lead to higher additionality than subsequent projects.	For companies with more than one project, the project additionality is lower. Outcome additionality, as well as competence additionality are however positively affected (more opportunities to learn).	Not rejected for project additionality Rejected for outcome and competence additionality

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Some hypotheses tested

Hypotheses	Results	Not rejected/rejected
Hypothesis 7: If companies have more cash-flow (investment slack) they would have a higher additionality.	We do not find any significant influence of cash flow on any type of additionality.	Rejected (for all types of additionality)
Hypothesis 8: Additionality, in particular outcome additionality, is more likely to show up the longer ago the project has been finished.	There is a positive and significant relationship between the project age and outcome additionality.	Not rejected for outcome additionality

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Conclusions

- Direct R&D funding still makes sense
- Impact *on firms* can be assessed and
- Is positive for the firms *innovation behaviour*
- This ‘could’ lead to a positive impact on the region …and give an answer to the wishes of policy makers …
- BUT …

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Questions ?

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