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INNO-Appraisal Case Study on Behavioural Additionality

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Presentation Outline

- ▶ **Introduction**
- ▶ **Concept(s) of BA: Behavioural Additionality in the literature**
 - ▶ BA as a concept of Evaluation and RTDI Policy
 - ▶ Literature on BA
 - ▶ Different approaches to BA
- ▶ **Use of BA: Exploratory Statistical Analysis**
 - ▶ BA's Uptake
 - ▶ BA and other appraisal characteristics
 - ▶ BA and Quality, Usefulness and Consequences
- ▶ **Understanding of BA: Exploratory Text Analysis**
 - ▶ Different understandings of BA
- ▶ **The Way Forward**
- ▶ **Conclusions**

Introduction

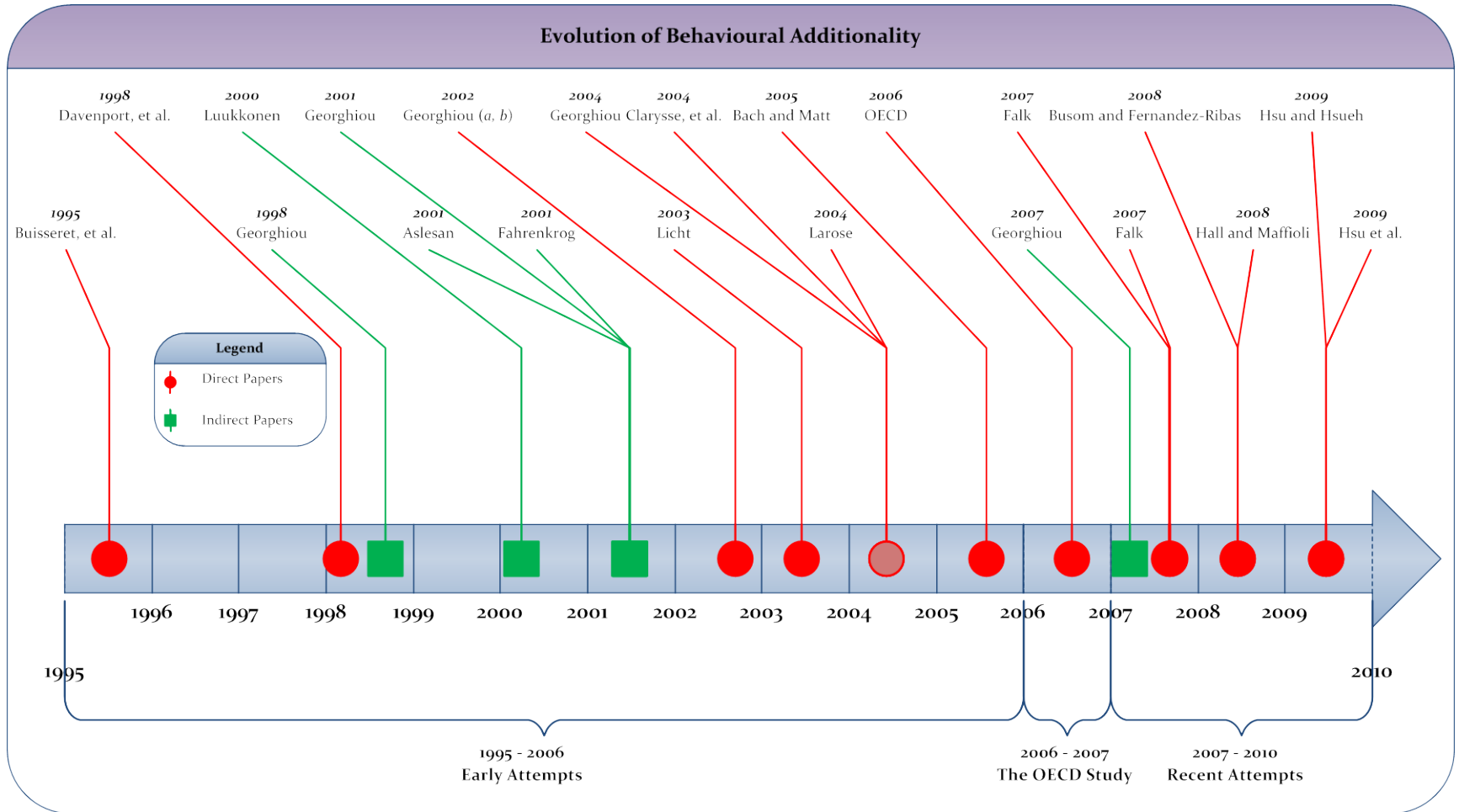
- ▶ **Motivation:**
 - ▶ BA appears to be used more and more
 - ▶ Some clash of cultures: hard vs soft?
 - ▶ Catch all concept, residual category, easy way out?
 - ▶ Can we contribute to improving the use of BA for evaluation and policy making?
- ▶ **Research Questions:**
 - ▶ What are the conceptual roots and characteristics of BA appraisals?
 - ▶ What exactly is BA?
 - ▶ Is BA as useful as it is perceived?

BA as a concept of Evaluation and Policy

- ▶ Introduced by Georghiou and other MIOIR/PREST scholars in 1995
- ▶ Definitions:
 - ▶ Input Additionality (IA): inputs (e.g. investment) which would not have been created without a policy
 - ▶ Output Additionality (OA): outputs (e.g. profit) which would not have been the case, had there been no policy
 - ▶ Behavioural Additionality (BA): change in the agents' behaviour that is exclusively attributable to the government intervention
- ▶ BA's popularity in evaluation has been increasing especially after the OECD project in 2005-2006
- ▶ IA and OA are in the core of the "market failure" based neoclassical rationale whereas BA is the hallmark of innovation policy from the angle of evolutionary/structuralist approach

The Concept(s): Literature on Behavioural Additionality

Literature on Behavioural Additionality



Different Approaches to BA

	Category A	Category B	Category C	Category D
Definition				
Coverage				
Persistence				
Sources				

Different Approaches to BA

	Category A
Definition	an extension of input additionality covering scale, scope and acceleration additionalities and like
Coverage	Only R&D and innovation
Persistence	One-off, no persistence
Sources	(Luukkonen, 2000) (Hsu et al., 2009; Hsu and Hsueh, 2009) (Malik et al., 2006) (Georghiou, 2002b)

Different Approaches to BA

	Category A	Category B
Definition	an extension of input additionality covering scale, scope and acceleration additionalities and like	the <u>change in the non-persistent behaviour related to R&D and innovation activities</u>
Coverage	Only R&D and innovation	Only R&D and innovation
Persistence	One-off, no persistence	One-off, no persistence OR Rather mid-term than long-term and rather less persistent
Sources	(Luukkonen, 2000) (Hsu et al., 2009; Hsu and Hsueh, 2009) (Malik et al., 2006) (Georghiou, 2002b)	Buisseret et al. (1995:590) Georghiou (2002b:59) Clarysse et al. (2006) Steurs et al. (2006:6) Hall and Maffioli (2008: 173) Georghiou (1998: 39) Davenport et al. (1998: 56)

Different Approaches to BA

	Category A	Category B	Category C
Definition	an extension of input additionality covering scale, scope and acceleration additionalities and like	the change in the non-persistent behaviour related to R&D and innovation activities	the change in the <u>persistent behaviour</u> related to R&D and innovation activities
Coverage	Only R&D and innovation	Only R&D and innovation	Only R&D and innovation
Persistence	One-off, no persistence	One-off, no persistence OR Rather mid-term than long-term and rather less persistent	Persistent OR Rather long-term than short-term and rather more persistent
Sources	(Luukkonen, 2000) (Hsu et al., 2009; Hsu and Hsueh, 2009) (Malik et al., 2006) (Georghiou, 2002b)	Buisseret et al. (1995:590) Georghiou (2002b:59) Clarysse et al. (2006) Steurs et al. (2006:6) Hall and Maffioli (2008: 173) Georghiou (1998: 39) Davenport et al. (1998: 56)	(Lenihan et al., 2007: 317-318) Aslesen et al. (2001:5-6) Licht (2003) OECD (2006a:187-189) (Fier et al., 2006: 127) (Busom and Fernandez-Ribas, 2008: 241)

Different Approaches to BA

	Category A	Category B	Category C	Category D
Definition	an extension of input additionality covering scale, scope and acceleration additionalities and like	the change in the non-persistent behaviour related to R&D and innovation activities	the change in the persistent behaviour related to R&D and innovation activities	the change in the <u>general conduct of the firm</u> , <u>substantial reference to the building blocks of behaviour</u>
Coverage	Only R&D and innovation	Only R&D and innovation	Only R&D and innovation	Beyond R&D and innovation
Persistence	One-off, no persistence	One-off, no persistence OR Rather mid-term than long-term and rather less persistent	Persistent OR Rather long-term than short-term and rather more persistent	Persistent
Sources	(Luukkonen, 2000) (Hsu et al., 2009; Hsu and Hsueh, 2009) (Malik et al., 2006) (Georghiou, 2002b)	Buisseret et al. (1995:590) Georghiou (2002b:59) Clarysse et al. (2006) Steurs et al. (2006:6) Hall and Maffioli (2008: 173), Georghiou (1998: 39) Davenport et al. (1998: 56)	(Lenihan et al., 2007: 317-318), Aslesen et al. (2001:5-6), Licht (2003) OECD (2006a:187-189) (Fier et al., 2006: 127) (Busom and Fernandez-Ribas, 2008: 241)	(Georghiou, 2007: 744) Bach and Matt (2005:37) Georghiou and Clarysse (2006:12-13), (Georghiou and Keenan, 2006: 770) (Hyvarinen and Rautiainen, 2007: 206)

State-of-the-art

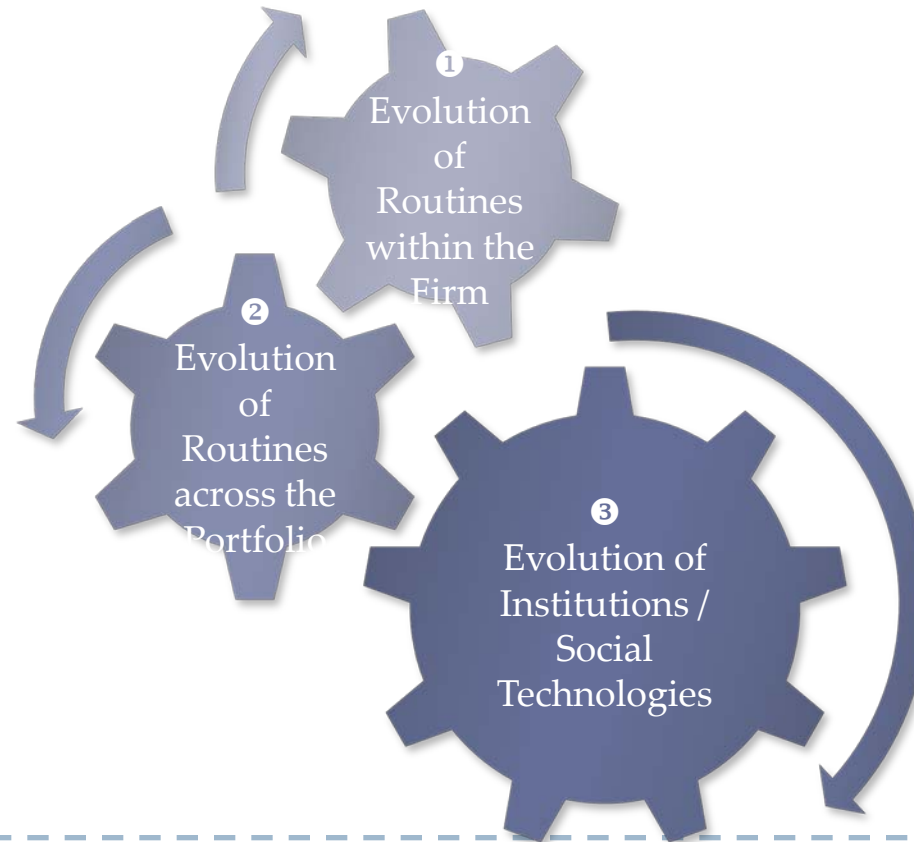
- ▶ There are two gaps in the literature for BA to be fully utilised (Gok, 2010):
- ▶ Gap 1: BA does not have a ***'unit analysis'***:
 - ▶ behaviour itself is not a unit of analysis
 - ▶ behaviour is not analytically analysable/comparable as it is
 - ▶ **Black-box analogy**
- ▶ Suggestion :
 - ▶ BA should be defined by using *'organisational routines'* as unit of analysis

State-of-the-art

- ▶ Gap 2: BA does **not** have an appropriate *'framework of analysis'*
 - ▶ *'Comparative statics analysis'* (analyzing the impact of change in the parameters by comparing the new equilibrium position with the original one) is not appropriate to analyse persistency
- ▶ Suggestion
 - ▶ *'Evolutionary analysis'* (as a *'dynamic analysis'* in which patterns and rate of change is the focus) need to be employed as *'framework of analysis'*

State-of-the-art

- ▶ *“BA is the evolutionary change of organisational routines exclusively attributable to policy”*

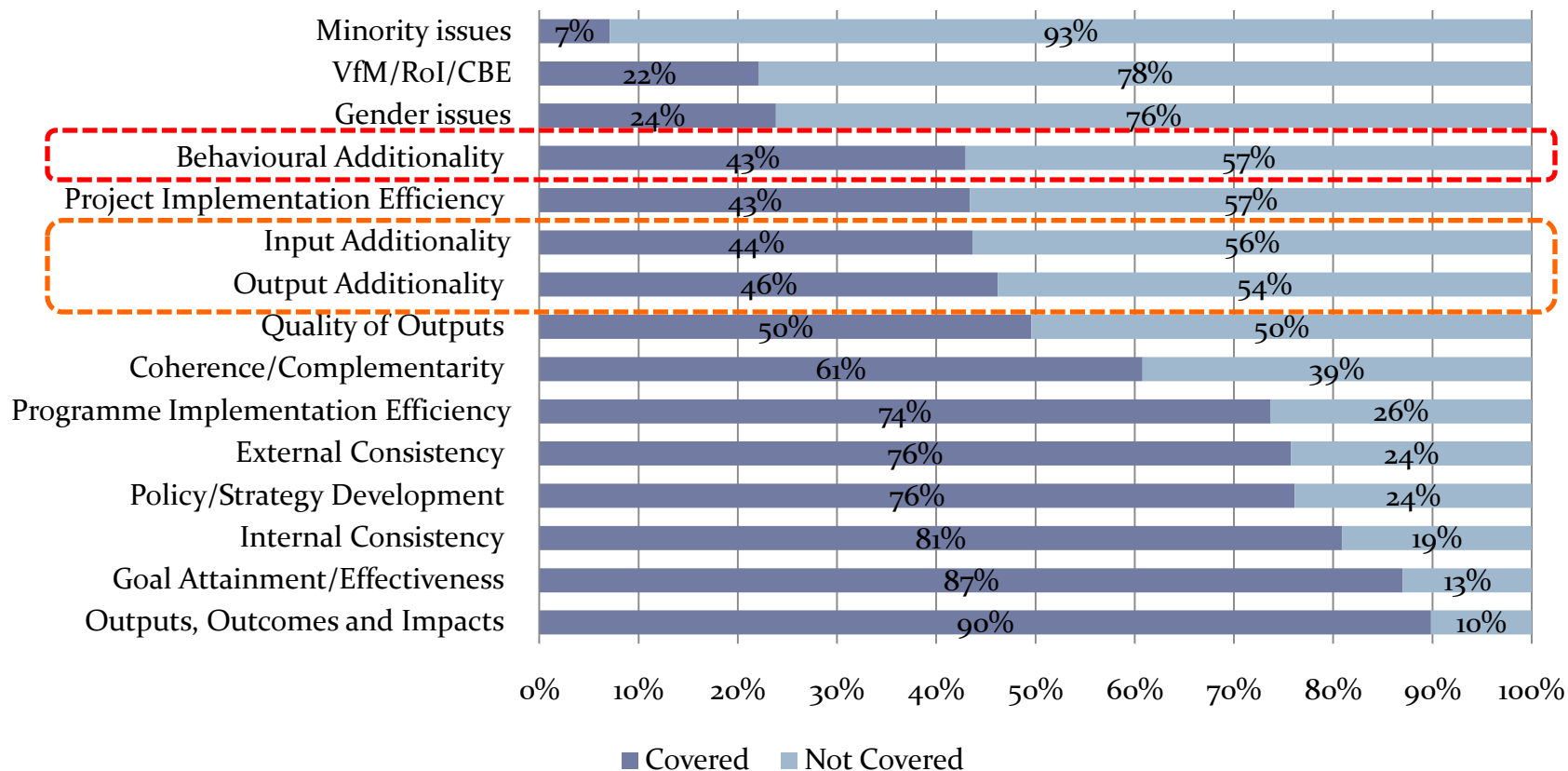


Use of BA: Exploratory Statistical Analysis

General Methodological Note:

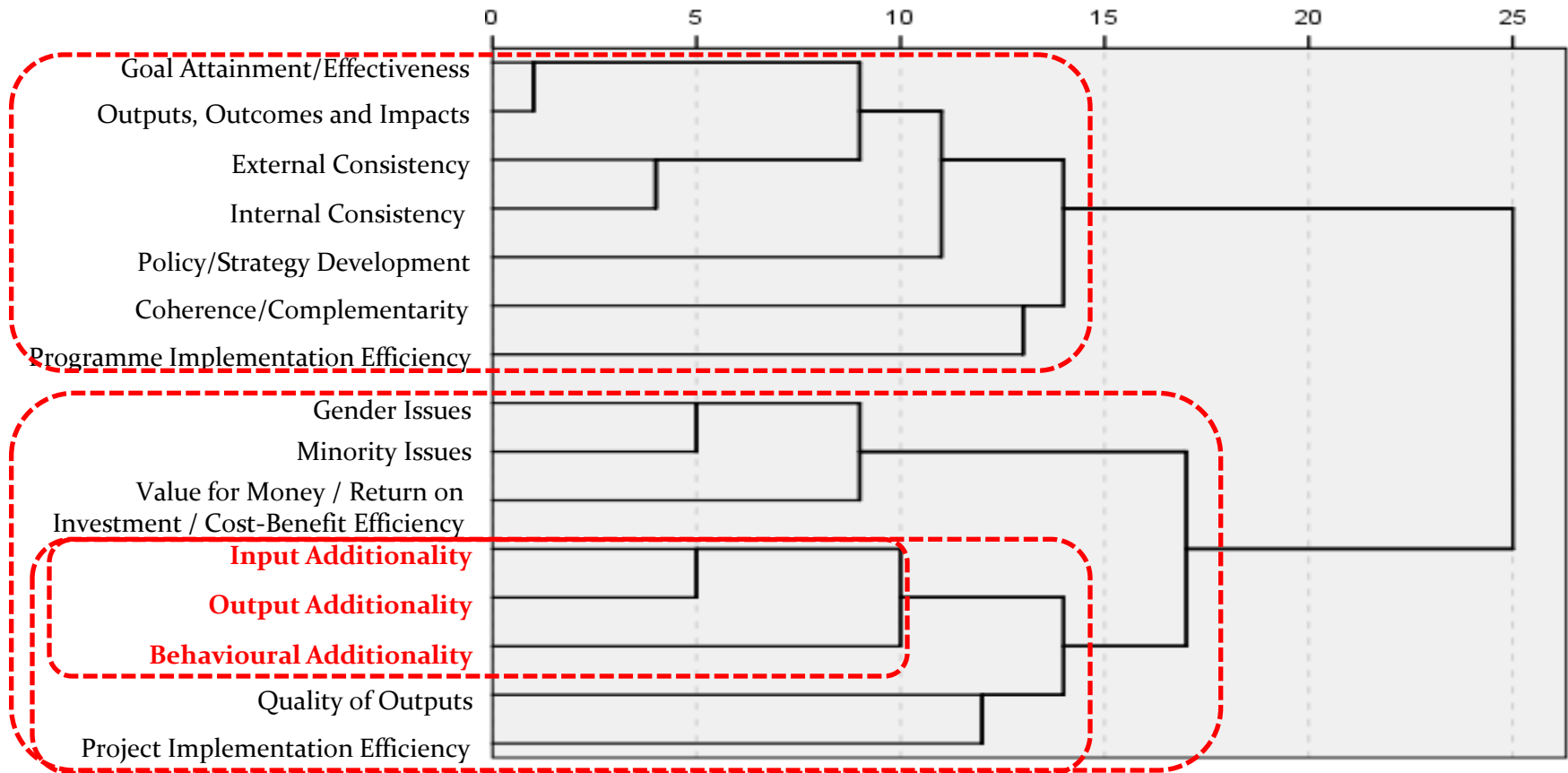
For Chi-Square and Mann-Whitney U tests 90% confidence interval were used (in datasets A and C) where appropriate to decide the significance of association and correlation

Behavioural Additionality's Uptake



- ▶ Additionality is mid-table in the league table of topics covered
- ▶ BA's uptake is not so different than OA and IA although it is a newer concept

Dendrogram of Topics



- ▶ Additionalities not linked to goal attainment – not conceptual element of programmes?

Usage patterns of BA

Characteristics	Value	Any Topic	IA	OA	BA
Structural Funds	Yes	19.0%	<i>nsd</i> *	<i>nsd</i>	<i>nsd</i>
Appraisal as a condition of external/international (co)sponsorship	Yes	25.6%	<i>nsd</i>	<i>nsd</i>	↓16.7%
Dedicated Budget for Appraisal	Yes	47.0%	<i>nsd</i>	<i>nsd</i>	↓23.6%
Appraisal foreseen and planned for	Yes	66.9%	<i>nsd</i>	<i>nsd</i>	↑76.4%

* *nsd*: no statistically significant difference at 90% confidence level

- ▶ No difference in terms of Structural Fund (however, BA is less often enforced by external sponsors (EU))
- ▶ BA is more common in foreseen and planned appraisals
- ▶ BA not linked to dedicated budgets (?)

Usage patterns of BA (2)

Characteristics	Value	Any Topic	IA	OA	BA
Who conducted the appraisal	Internal	14.3%	↑21.8%	↑18.3%	<i>nsd</i>
	External	76.4%	↓65.5%	↓68.3%	<i>nsd</i>
	Mixed	9.3%	↑12.7%	↑13.3%	<i>nsd</i>
Tender Procedure	internal	15.3%	↑30.0%	↑28.6%	<i>nsd</i>
	no tender	30.0%	↓7.5%	↓10.2%	<i>nsd</i>
	closed	18.4%	↓12.5%	↓10.2%	<i>nsd</i>
	open	7.5%	↑50.0%	<i>nsd</i>	<i>nsd</i>
	other	17.3%	↓0.0%	↓0.0%	<i>nsd</i>
Language of the Appraisal Report	Native language	74.5%	<i>nsd</i>	<i>nsd</i>	↑83.3%
	English	22.7%	<i>nsd</i>	<i>nsd</i>	↓11.1%
	Both	2.8%	<i>nsd</i>	<i>nsd</i>	↑5.6%

- ▶ No difference in terms of who evaluates or the type of tender procedure
- ▶ BA is more often in native language appraisals and less often in English ones
 - ⇒ in our sample: **German speaking countries** (AT=25%, DE=10%) have embraced the concept more than, e.g. UK (where BA originated, UK=13%)

Usage patterns of BA (3)

Characteristics	Value	Any Topic	IA	OA	BA
Timing of Appraisal	Ex-Ante	15.6%	↓10.7%	↓9.8%	↓7.3%
	Interim	15.6%	↑17.9%	↑23.0%	↑23.6%
	Accompanying	45.4%	↓37.5%	↓36.1%	↓41.8%
	Ex-Post	21.3%	↑30.4%	↑27.9%	↑25.5%
	Other	2.1%	↑3.6%	↑3.3%	↓1.8%
Purpose of Appraisal	Summative	23.2%	↑30.2%	↑25.4%	<i>nsd</i>
	Formative	50.0%	↓35.8%	↓35.6%	<i>nsd</i>
	Both	21.7%	↑24.5%	↑30.5%	<i>nsd</i>
	Other	5.1%	↑9.4%	↑8.5%	<i>nsd</i>

- ▶ Additionality is less often in ex-ante and accompanying and more often in interim and ex-post appraisals (BA is even more extreme: formative evaluation?)
- ▶ Expectedly IA and OA are more often in summative and mixed type less often in formative appraisals. No difference for BA
⇒ BA not as much associated with policy learning as assumed?

Type of Impact and BA

Characteristics		Value	Any Topic	IA	OA	BA
Type of Impact	Economic	participants and beyond	47.8%	↑58.2%	↑60.0%	<i>nsd</i>
		only participant	25.4%	↑34.5%	↑28.3%	<i>nsd</i>
	Social	participants and beyond	37.9%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
		only participant	6.1%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	Environmental	participants and beyond	22.5%	↑30.2%	↑31.6%	<i>nsd</i>
		only participant	5.4%	↑7.5%	↑10.5%	<i>nsd</i>
	Technological	participants and beyond	32.1%	↑42.6%	↑48.3%	↑40.0%
		only participant	23.9%	↑40.7%	↑39.7%	↑32.0%
	Scientific	participants and beyond	22.1%	↑31.5%	↑33.3%	↑24.5%
		only participant	15.3%	↑27.8%	↑29.8%	↑22.4%

- ▶ BA is associated more with technological and scientific impact
 ⇒ BA is not directly linked with value creation but it is linked with knowledge creation (often linked to networking with research actors...)

Designs/Approaches/Methods and BA

Characteristics		Value	Any Topic	IA	OA	BA
Evaluation Designs / Approaches	Before/After Group Comparison Approach	Yes	9.8%	↑15.4%	↑17.2%	<i>nsd</i>
	Control Group Approach	Yes	18.9%	↑31.9%	↑24.0%	<i>nsd</i>
	Counter-Factual Approach	Yes	19.5%	↑41.3%	↑30.6%	↑33.3%
	Cost / Benefit Approach	Yes	23.1%	↑37.7%	↑37.3%	<i>nsd</i>
Data Analysis Methods	Case Study Analysis	Yes	37.5%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	Network Analysis	Yes	10.4%	<i>nsd</i>	↑17.0%	↑18.4%
	Econometric Analysis	Yes	22.1%	↑41.8%	↑37.3%	↑29.6%
	Descriptive Statistics	Yes	77.4%	<i>nsd</i>	<i>nsd</i>	↑96.2%
	Input/Output Analysis	Yes	26.5%	↑48.1%	↑48.3%	<i>nsd</i>
	Document Analysis	Yes	48.1%	↑75.9%	<i>nsd</i>	<i>nsd</i>
	Context Analysis	Yes	67.4%	<i>nsd</i>	↑78.0%	<i>nsd</i>

- ▶ IA and OA are associated with all evaluation designs whereas BA is only linked with counter-factual
 - ⇒ Behaviour is seen to be **hard to compare temporally and between actors**
- ▶ BA is associated with network analysis (next to econometrics and descriptive statistics) while no difference in context and case study analysis
 - ⇒ BA is not evaluated as qualitatively as it is expected to be (Georghiou (2007) argues BA cannot be properly evaluated with survey based techniques)

Data Sources and BA

Characteristics		Value	Any Topic	IA	OA	BA
Data Sources and Data Collection Methods	Existing Surveys / Databases	Yes	71.4%	↑87.5%	↑82.0%	<i>nsd</i>
	Participant Surveys	Yes	59.9%	<i>nsd</i>	<i>nsd</i>	↑79.2%
	Non-Participant Surveys	Yes	21.8%	↑30.4%	↑29.2%	↑31.2%
	Interviews	Yes	71.9%	↓60.0%		↑85.2%
	Focus Groups / Workshops / Meetings	Yes	47.3%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	Peer Review	Yes	13.9%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	Technometrics / Bibliometrics Search	Yes	1.6%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	Document Search	Yes	61.7%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	Monitoring Data	Yes	82.6%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>

- ▶ No difference for monitoring data and existing surveys and more for surveys and interviews
 - ⇒ Current monitoring and other data collection techniques are not enough / not used to capture BA
 - ⇒ Less use of interaction methods than to be expected

Terms of Reference and BA

Characteristics		Value	Any Topic	IA	OA	BA
Terms of Reference	ToR available in the appraisal report	Yes	33.1%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	ToR available elsewhere	Yes	46.3%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	If ToR available, is the objective of the appraisal clearly sated	Yes	94.4%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	Methodologies and Approaches Specified in the ToR	Yes	22.5%	<i>nsd</i>	<i>nsd</i>	↑34.5%

- ▶ “Methodologies and Approaches Specified in the ToR” is associated with BA, no difference for the rest of the ToR issues
 - ⇒ some movement to specify BA in ToR

Quality and BA

	Any Topic	IA	OA	BA
Evaluation addressed to the ToR	4.18			
Design of the evaluation appropriate given the objectives of the evaluation and the nature of the policy measure	3.83			
Methods chosen satisfy the ToR / purpose of the appraisal	4.02			
Application of the qualitative methods satisfactory	3.71			↑3.76
Application of the quantitative methods satisfactory	3.64	↑3.66		3.66
Information sources well documented and referenced	3.77		↑3.95	↑3.95
Analysis clearly based on the data given	4.08	↑4.12		
Analysis cover the broader context sufficiently	3.35			
Conclusions based on the analysis	4.23	↓4.17	↓4.17	↓4.17

- ▶ BA more often covered in evaluations that have
 - ▶ high perceived quality for
 - ▶ Application of the qualitative methods satisfactory
 - ▶ Information sources well documented and referenced
 - ▶ (less perceived quality: Conclusions based on the analysis)

Usefulness, Consequences and BA

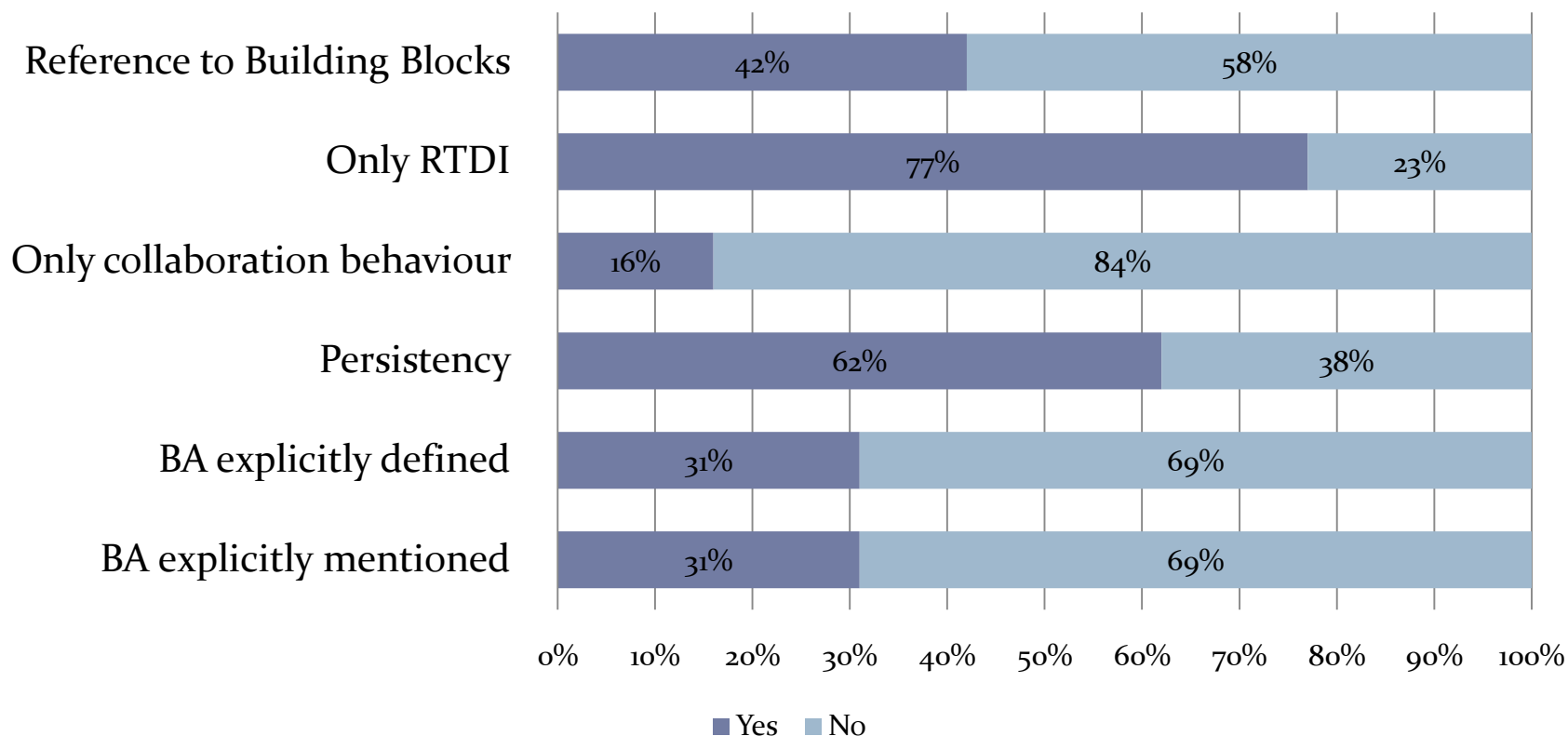
- ▶ **Usefulness:** IA, OA and BA appraisals are not perceived more useful than other evaluations
- ▶ **Consequences:** BA appraisals do not lead to more re-design of the measure but they have more consequences for the policy mix ⇒ BA is about systemic analysis

Characteristics		Value	Any Topic	IA	OA	BA
Consequence(s)	Termination of the measure	Yes	2.8%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	Major re-design of the measure	Yes	8.5%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	Minor re-design of the measure	Yes	34.5%	↓ 23.2%	<i>nsd</i>	<i>nsd</i>
	Expansion / Prolongation of the measure	Yes	22.5%	<i>nsd</i>	<i>nsd</i>	<i>nsd</i>
	Re-design of another measure	Yes	12.0%	<i>nsd</i>	↑ 19.7%	↑ 16.4%
	Merger of measures	Yes	8.5%	<i>nsd</i>	<i>nsd</i>	↑ 14.5%

Current Understandings of BA: Exploratory Text Analysis

Exploratory Text Analysis

- ▶ 33 evaluation reports analysed in depth
(out of 55 BA reports, selection based on language)



Understanding of BA in report

- ▶ Sometimes long elaboration about concepts, but
 - ▶ no real follow up in analysis
 - ▶ simplistic analysis
- ▶ Different understandings,
 - ▶ different categories represented
 - ▶ Few open the black box

Remember: Different Approaches to BA

	Category A	Category B	Category C	Category D
Definition	an extension of input additionality covering scale, scope and acceleration additionalities and like	the change in the non-persistent behaviour related to R&D and innovation activities	the change in the persistent behaviour related to R&D and innovation activities	the change in of the general conduct of the firm substantial reference to the building blocks of behaviour
Coverage	Only R&D and innovation	Only R&D and innovation	Only R&D and innovation	Beyond R&D and innovation
Persistence	One-off, no persistence	One-off, no persistence OR Rather mid-term than long-term and rather less persistent	Persistent OR Rather long-term than short-term and rather more persistent	Persistent
Sources	(Luukkonen, 2000) (Hsu et al., 2009; Hsu and Hsueh, 2009) (Malik et al., 2006) (Georghiou, 2002b)	Buisseret et al. (1995:590) Georghiou (2002b:59) Clarysse et al. (2006) Steurs et al. (2006:6) Hall and Maffioli (2008: 173) Georghiou (1998: 39) Davenport et al. (1998: 56)	(Lenihan et al., 2007: 317-318) Aslesen et al. (2001:5-6) Licht (2003) OECD (2006a:187-189) (Fier et al., 2006: 127) (Busom and Fernandez-Ribas, 2008: 241)	(Georghiou, 2007: 744) Bach and Matt (2005:37) Georghiou and Clarysse (2006:12-13) (Georghiou and Keenan, 2006: 770) (Hyvarinen and Rautiainen, 2007: 206)

What BA categories do we find? (N=33)

	Category A + B	Category C1	Category C2	Category D	Other
Definition	The non-persistent <u>extension of input additionality</u> OR the <u>change in the non-persistent behaviour</u>	the <u>change in the persistent behaviour</u>	the change in the <u>persistent behaviour</u> with <u>minor references to building blocks</u>	the change in the <u>general conduct of the firm</u> , reference to <u>building blocks of behaviour</u>	Inconsistent OR not possible to analyse
Coverage	Only R&D and innovation	Only R&D and innovation	Only R&D and innovation	(Some of Them) Beyond R&D and innovation	
Persistence	One-off, no persistence OR Rather mid-term than long-term and rather less persistent	Persistent OR Rather long-term than short-term and rather more persistent	Persistent	Persistent	
Observations	<ul style="list-style-type: none"> • <u>30% of appraisals</u> • 30% only collaboration • BA mostly implicit 	<ul style="list-style-type: none"> • <u>15% of the appraisals</u> • 50% only collaboration • BA mostly implicit 	<ul style="list-style-type: none"> • <u>20% of the appraisals</u> • Mostly collaboration and beyond • BA mostly implicit 	<ul style="list-style-type: none"> • <u>15% of the appraisals</u> • Mostly collaboration and beyond • BA is more explicit than other 	<ul style="list-style-type: none"> • 20% of the appraisals

Conclusions

- ▶ The interest in BA is increasing, but still somewhat lagging
 - ▶ If BA is used, most often in combination with other additionalities
 - ▶ BA is (comparatively more often) evaluated with quantitative methods.
 - ▶ Use of qualitative methods were perceived to be more successful when they are used
 - ▶ The formative power of BA not fully exploited
 - ▶ Lack of detailed, explicit definitions
 - ▶ Confusion or tailored approaches? Variety of concept definitions in the literature matches the varied use in practice
-

Conclusions – Needs

- ▶ Theoretical and methodological challenges need to be overcome to fully utilise the potential (Confusion about the depth of the concept (black box))
 - ▶ Conceptual thinking about when to use which BA approaches
 - ▶ Purpose of BA analysis
 - ▶ Type of programme and goals
 - ▶ Cost – benefit of applying it (no over-designs!!)
 - ▶ Integration into programme designs (what do we want to influence, explicit building blocks of behaviour)
 - ▶ Methodological: how to operationalise building blocks of behaviour, and spill -overs - realistically?
 - ▶ Development of appropriate monitoring systems - but highly contextualised
-

Our Way Forward (in Inno-Appraisal)

- ▶ Help to further improve understanding
- ▶ Exploratory Case Studies for each BA definition category:
 - ▶ To better understand the perception of BA (What exactly is BA?)
 - ▶ To link characteristics (of appraisals and measures) and definitions of BA to governance, usefulness and policy learning
 - ▶ To give feedback to the scholarly literature about the gaps in the concept
- ▶ Strategy:
 - ▶ Selection of Cases on the basis of basic measure types and BA understandings: around 10 cases
 - ▶ Semi-structured interviews with respective evaluators and policy-makers

Thank You!

*“Those are [our] principles.
If you don’t like them, [We] have others.”
Groucho Marx*