

# STI POLICIES AND IMPACT'S EVALUATION

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1. Some thoughts

2. CDTI's approach

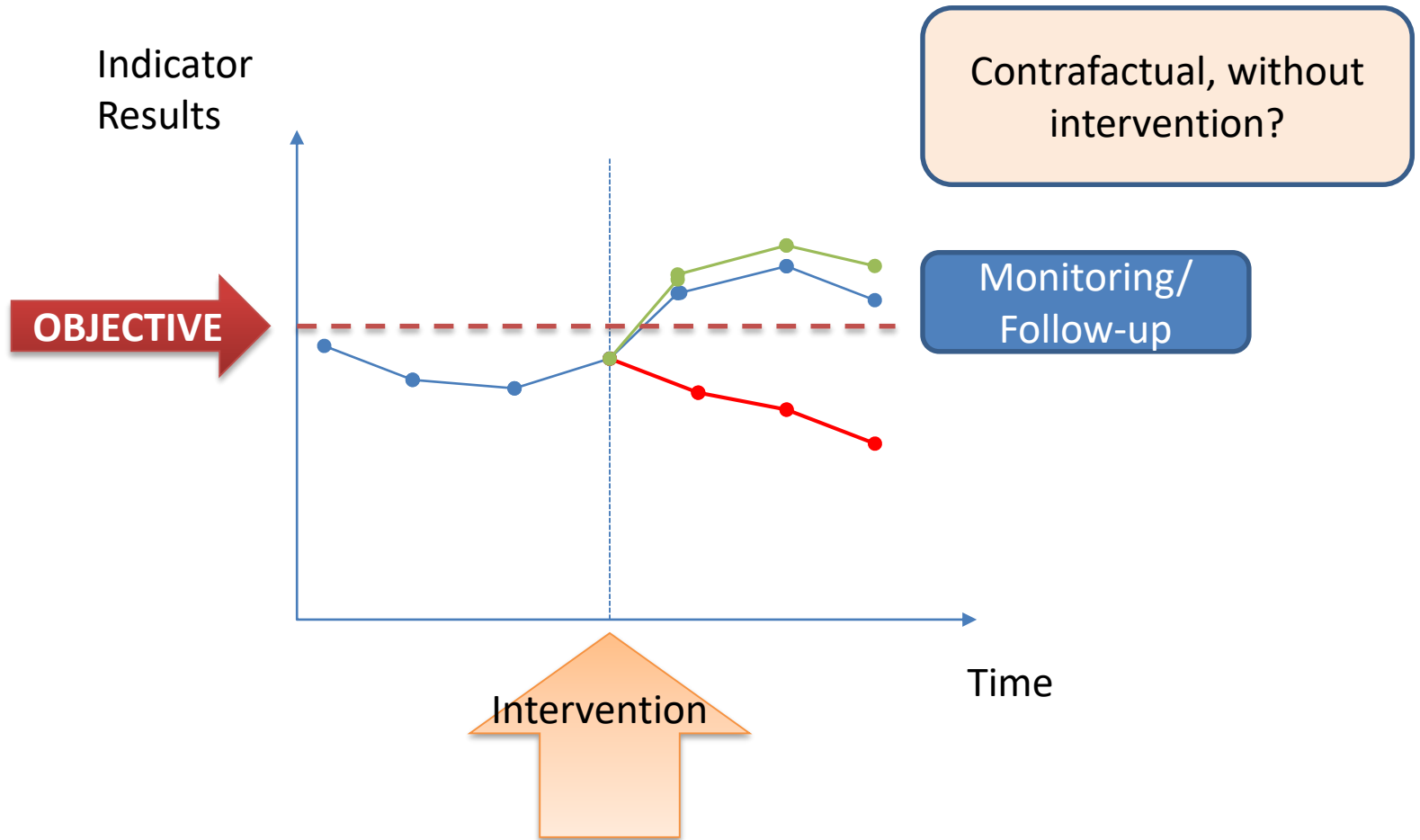
a. Monitoring

b. Evaluation

c. Collaboration with the Statistical Office



# Impact assessment vs Monitoring



### Conceptual Framework

- ❑ *Input additionality*: R&D effort
- ❑ *Output additionality*:
  - Technological output: innovations, patents...
  - Economic results: growth (employment, sales, productivity)
    - ✓ Internacionalization
- ❑ *Behavioural additionality*: Innovation culture

1. Some thoughts

2. CDTI's approach

a. Monitoring

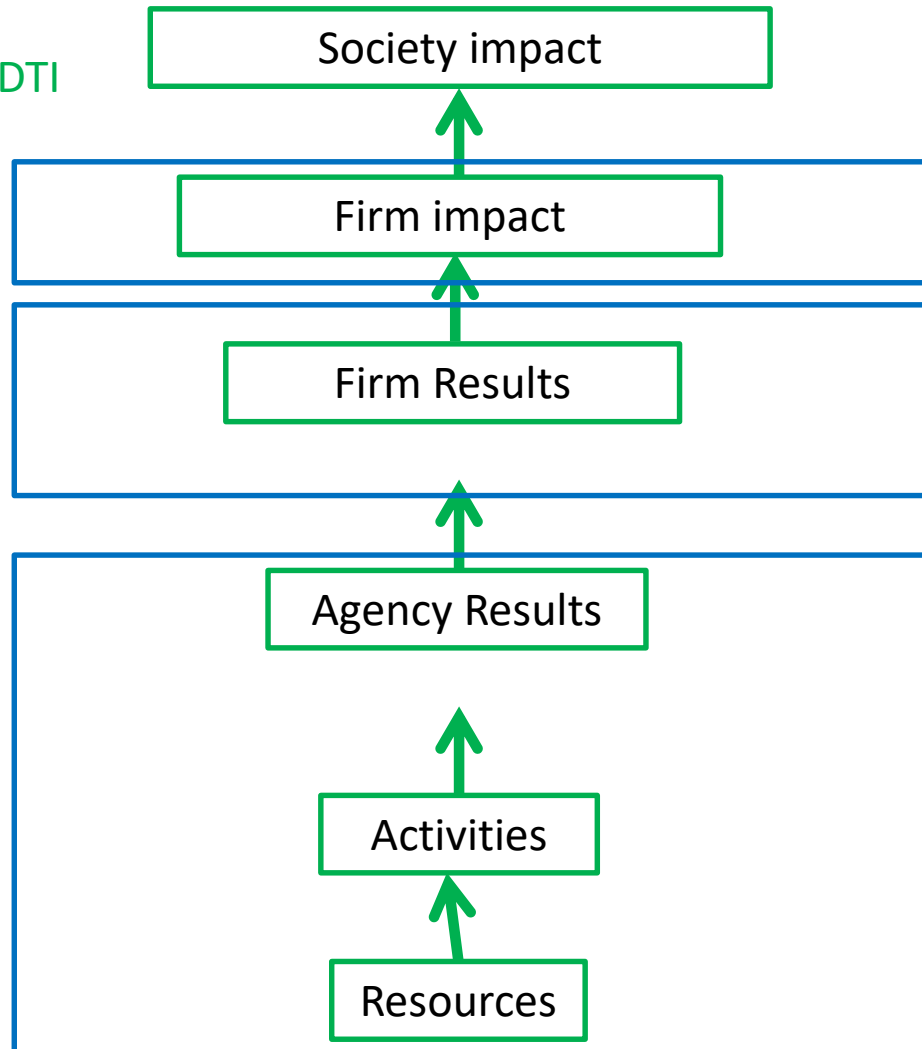
b. Evaluation

c. Collaboration with the Statistical Office

# Studies Strategy

Where to go?

Case Studies  
Perspectiva CDTI



.....

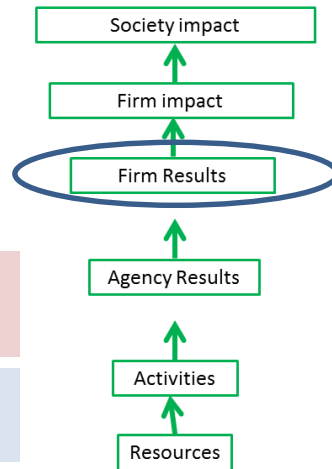
Impact asesment  
CDTI Working Papers

Monitoring  
Cuadernos CDTI

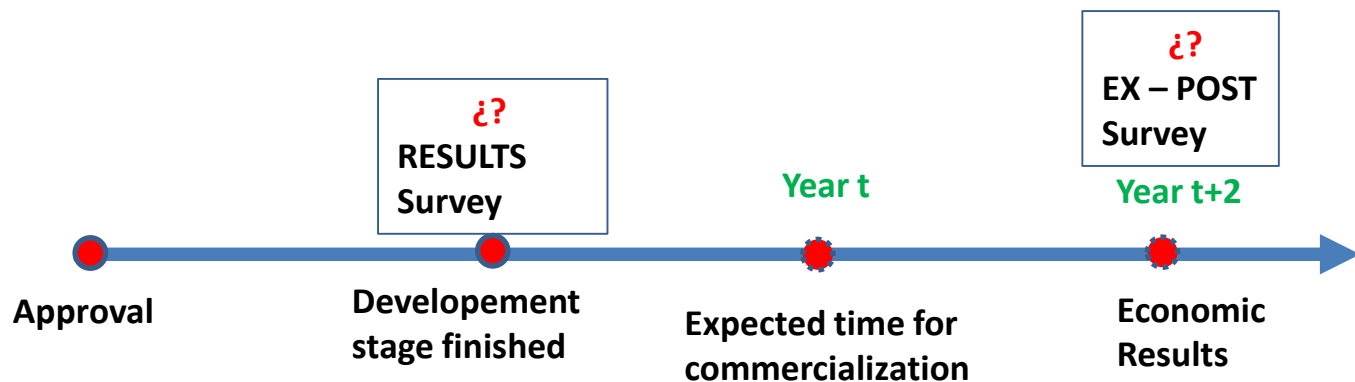
Descriptive  
reports  
Annual Plan,  
Memory

# R&D project monitoring

## CDTI Monitoring System



- **Goal:** Collect information on a continuous way
- **Resources:** Electronic surveys integrated at the project level with IT.
- **Methodology: Standard design (Innovation survey) customized.**
  - Dynamic system (different timeline for each project)
  - Two steps: Result and ExPost Survey

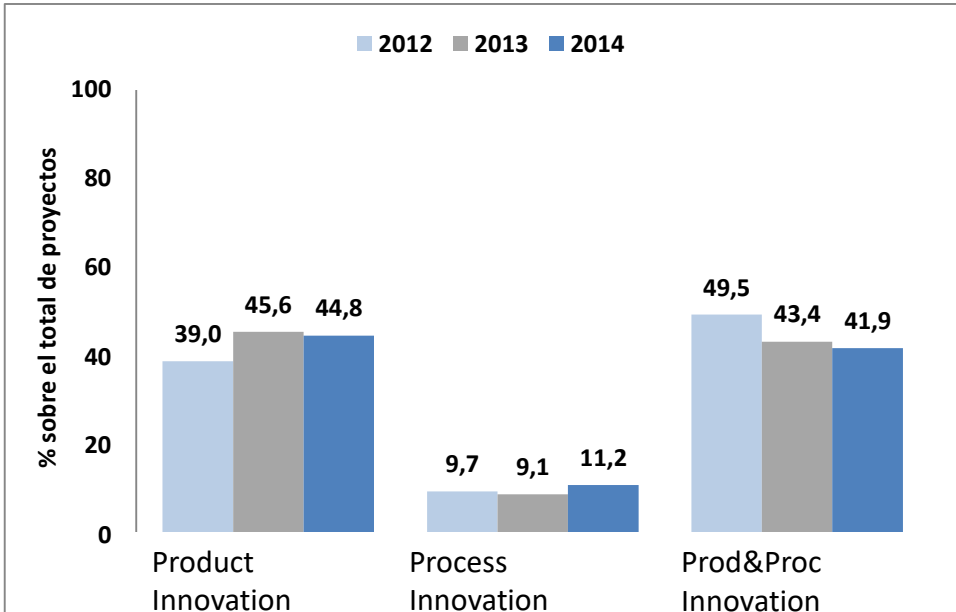




# R&D project monitoring

# Results survey

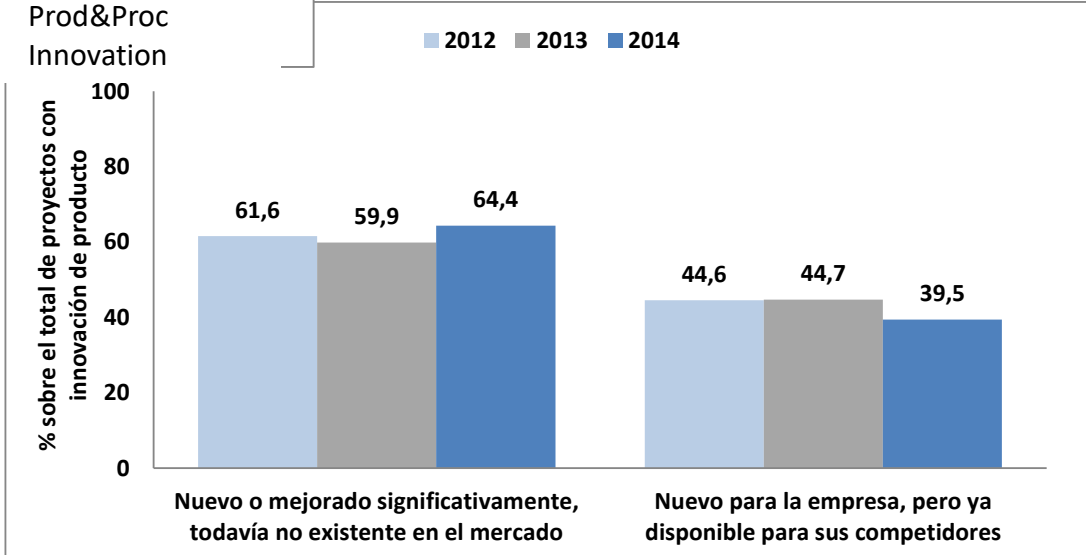
~3.400 **finished** projects from 2012 - 2014  
 Firms: 48% small, 29% medium and 23% big



About 90% generate product innovations

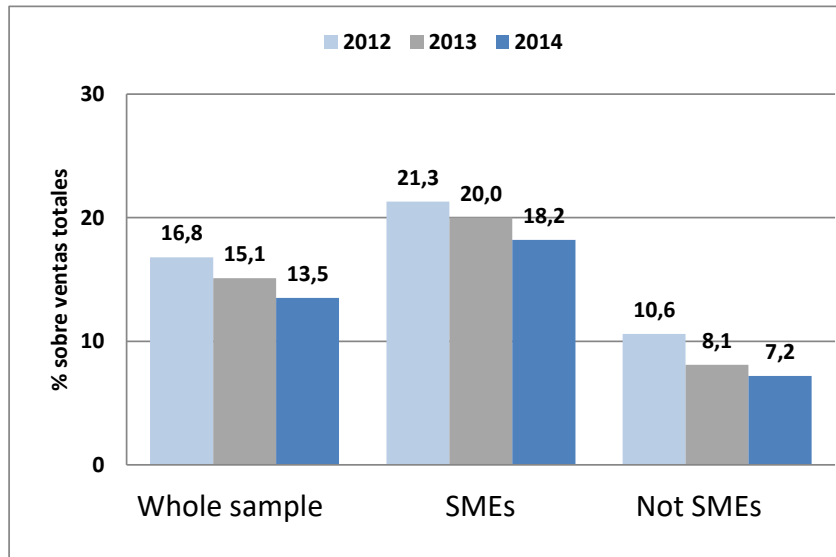


Product innovators:  
 About 60% feel a tech leader on its market segment



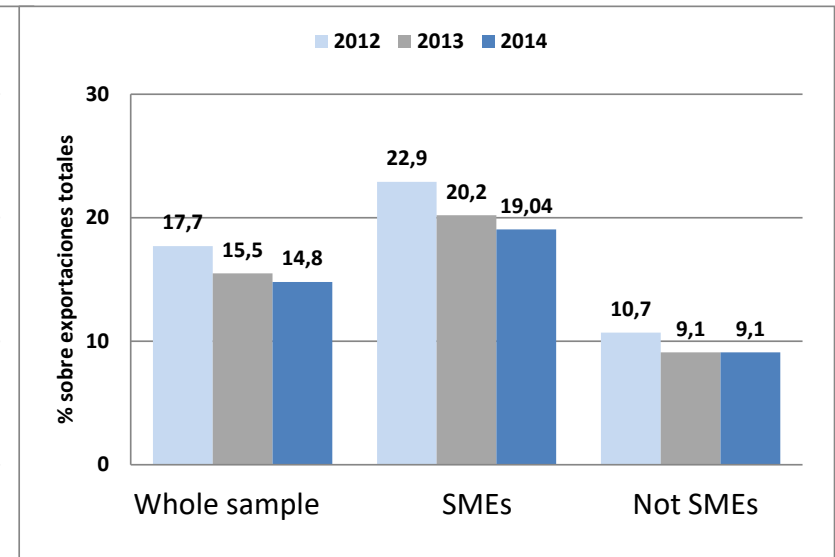
## R&D project monitoring

Expected: 14% of the sales depend on the project\*



## Results survey

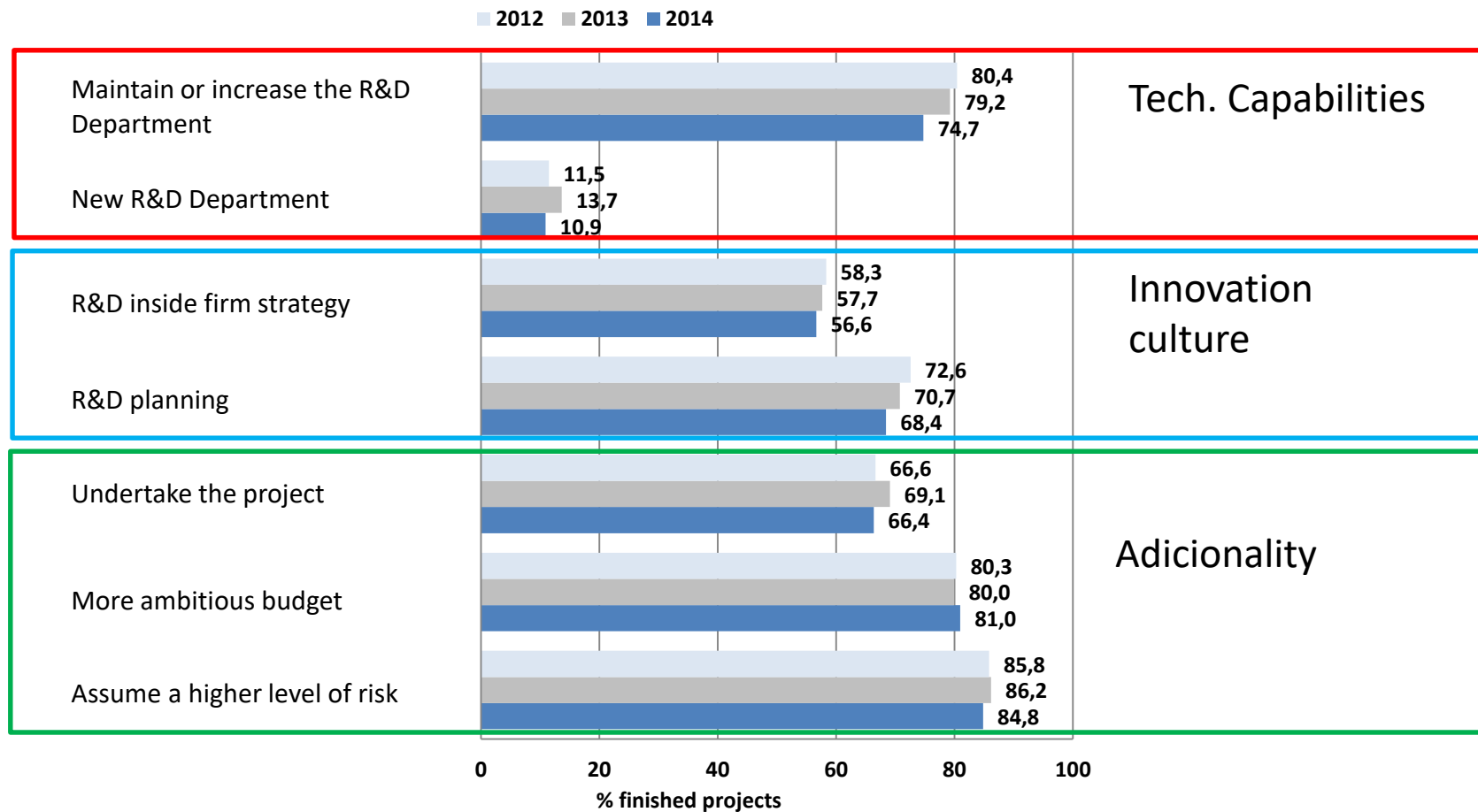
Expected: 15% of the exports depend on the project\*



\* 2 years after commercialization

## II. R&D project monitoring

## Results survey



### RESULTS DECLARED BY BENEFICIARY FIRMS\*

#### *Projects finished during 2013*

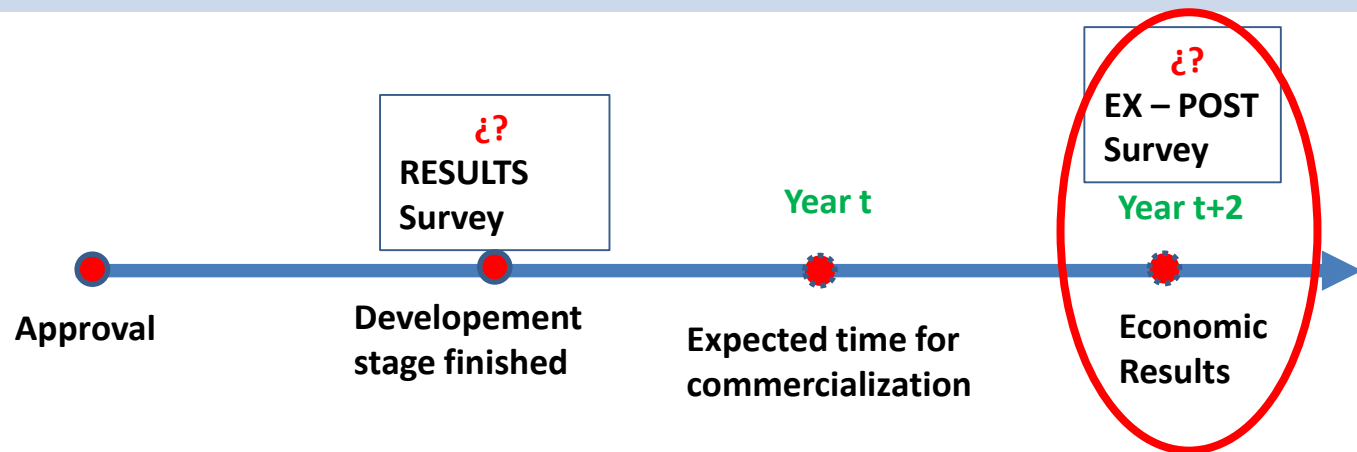
- ✓ Expected impact on sales (93% of the firms) and exports (74% of the firms).
- ✓ 60% with product innovation identify it as a market novelty.
- ✓ 62% participates, or plan to, in international cooperation programmes. 73% out of the SMEs doing it couldn't afford to do it without CDTI.
- ✓ 12% of the projects will result in patents.
- ✓ 84% of the firms plan to invest in R&D. Around 60% will make new productive investments and reinforce their commercial capacity.

\* Projects finished during 2013 (2011-2013). Cuadernos CDTI, nº 11. 2014.

# R&D project monitoring

# Ex-post survey

- Electronic survey, ad-hoc
- Not mandatory. Response rate: > 65%



**Economics:** sales and exports due to the project; investments

**Commercial:** Success (Yes/No); failure reasons; new markets; national and international market share due to the project

**Innovation capacity:** new R&D lines; new tech. capabilities; new collaboration agreements

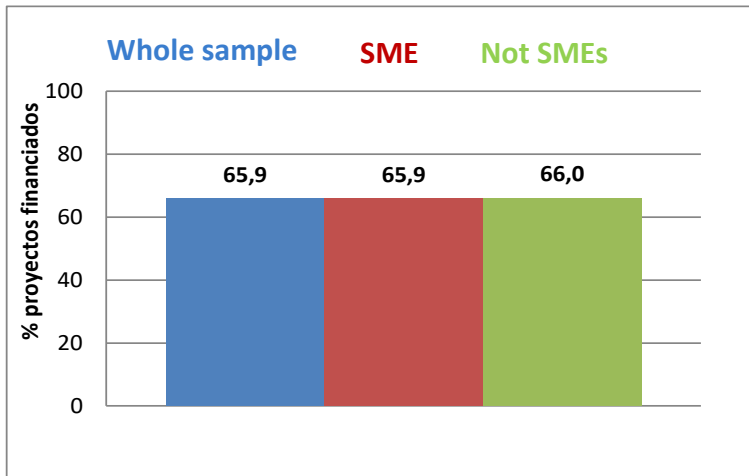
## CDTI managed programs participation:

- New proposals submitted to CDTI
- International programmes (Horizonte 2020; Eureka; Iberoeka, bilateral)

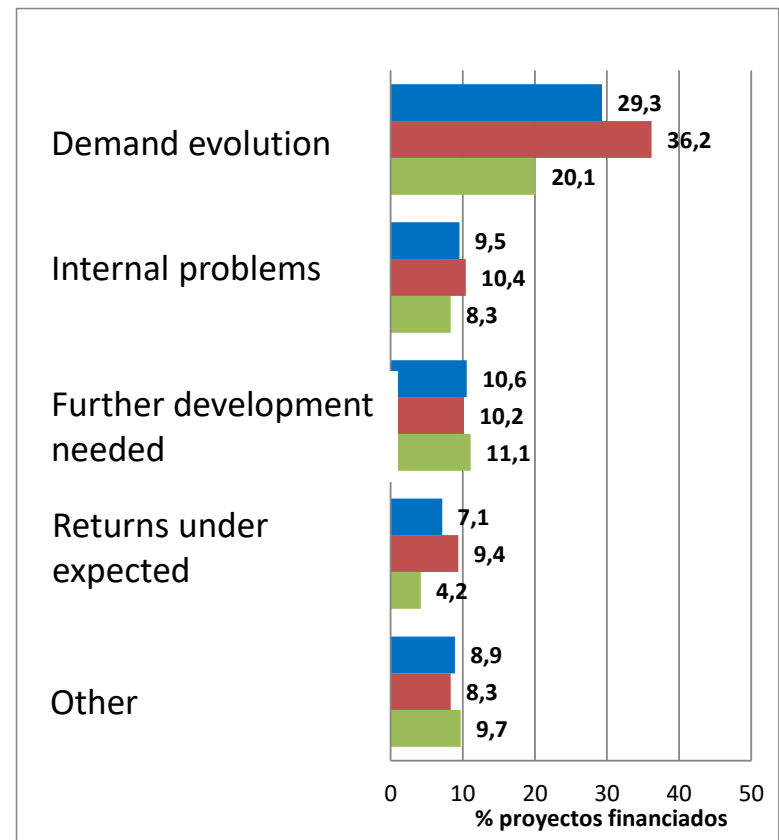
**4 ex – post survey**  
Results showed for the first two:  
Firms: 42% small, 35% medium and 23% big

	Expected commercialization	Survey run on	Answers
First	2011	2013	292
Second	2012	2014	380
Third	2013	2015	517
Fourth	2014	2017	Ongoing (600)
<b>Total</b>			<b>1.189 + (~600)</b>

## Percentage of success / Reason of failure



**~66% report success**  
**~30% fail because of the demand**



## R&D project monitoring

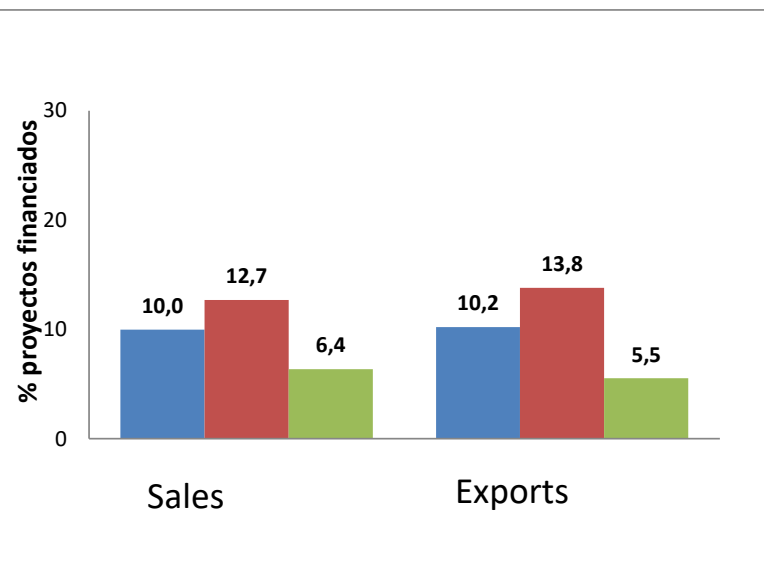


## Ex-post survey

One half of the projects allow the firm to have a tech leadership position inside its market segment.

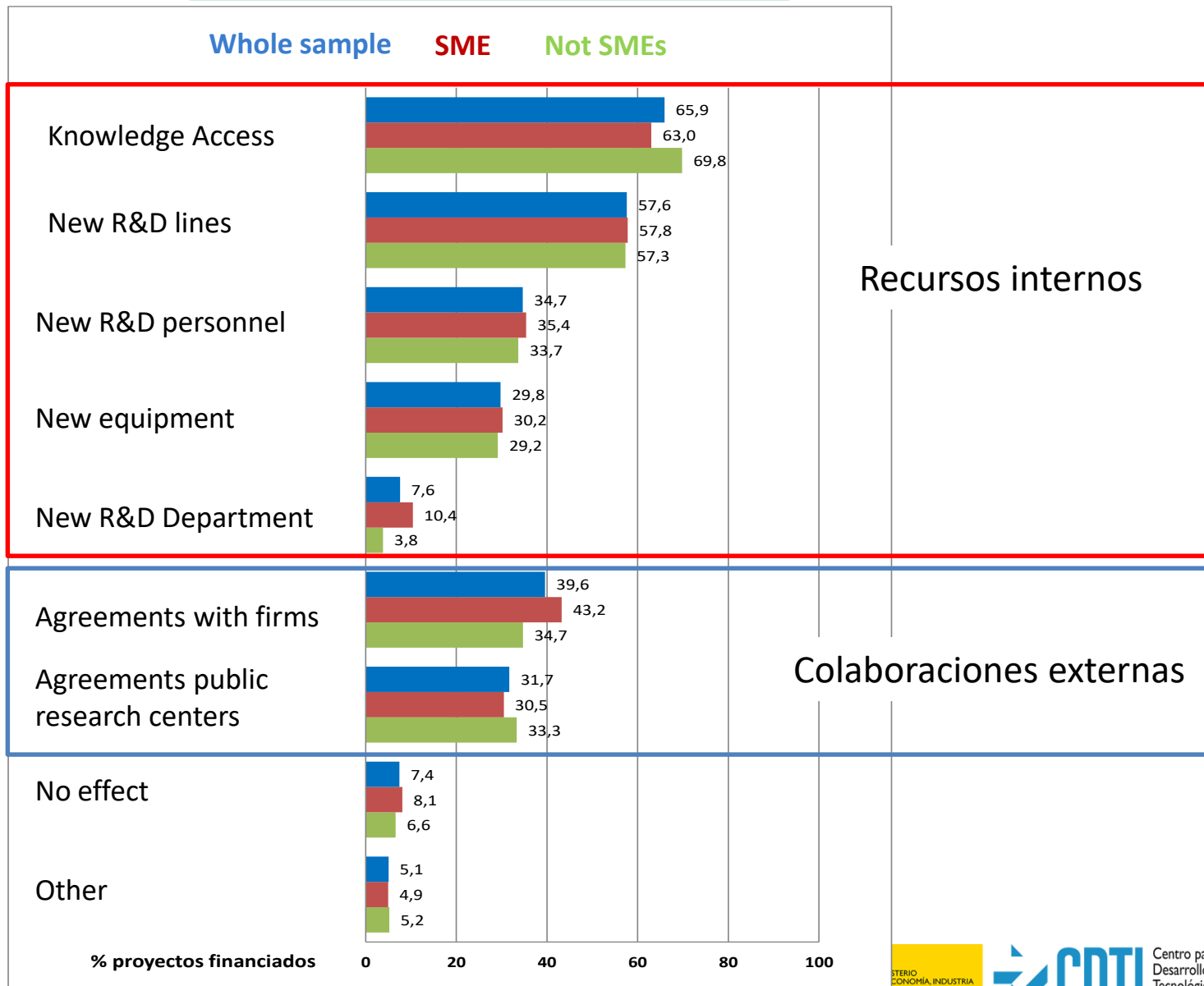


Around 13% of the sales are generated by the project



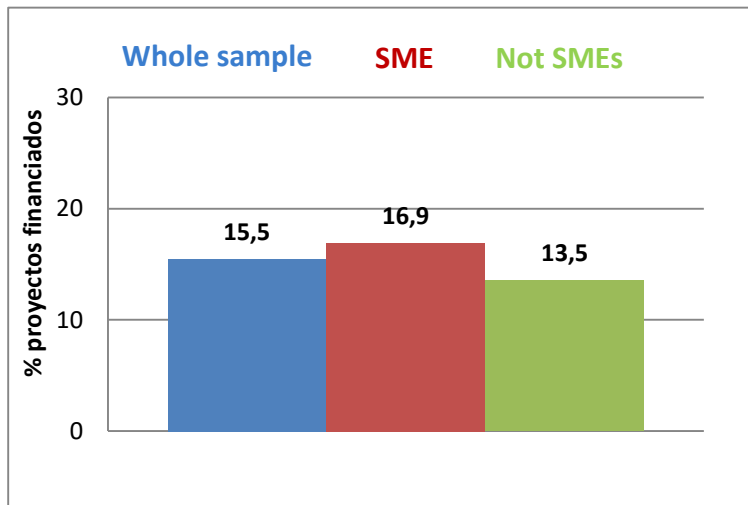


## Tech capabilities effect



# R&D project monitoring

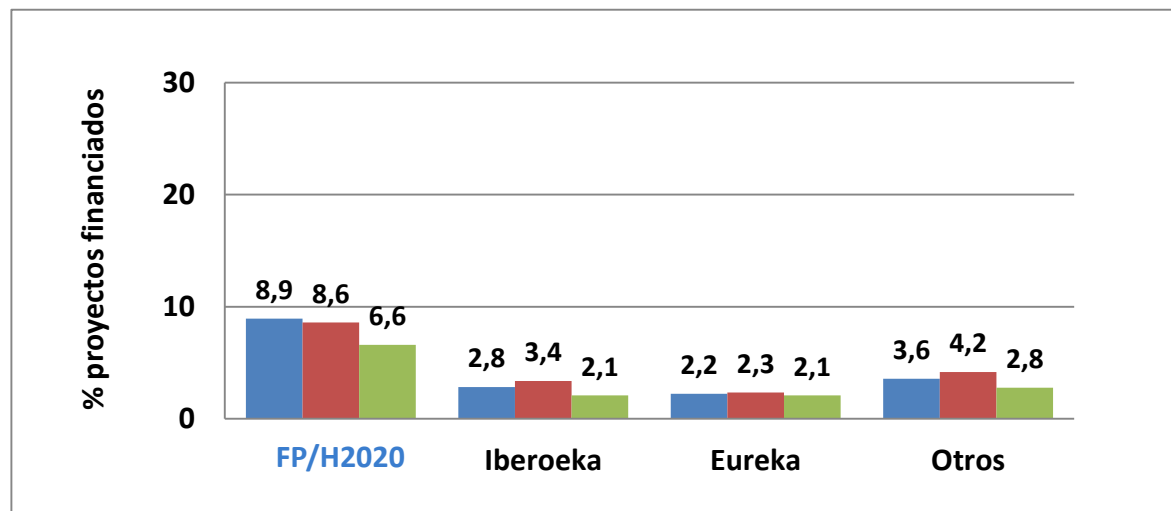
# Ex-post survey



15%: Projects facilitate participation in international cooperation programs

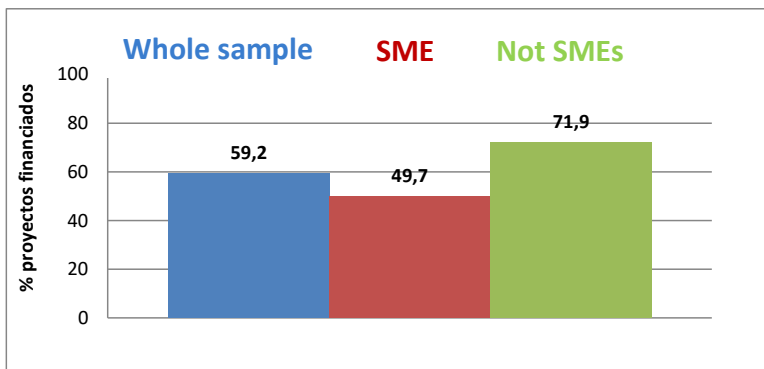


Preferred scheme: FP/H2020



# R&D project monitoring

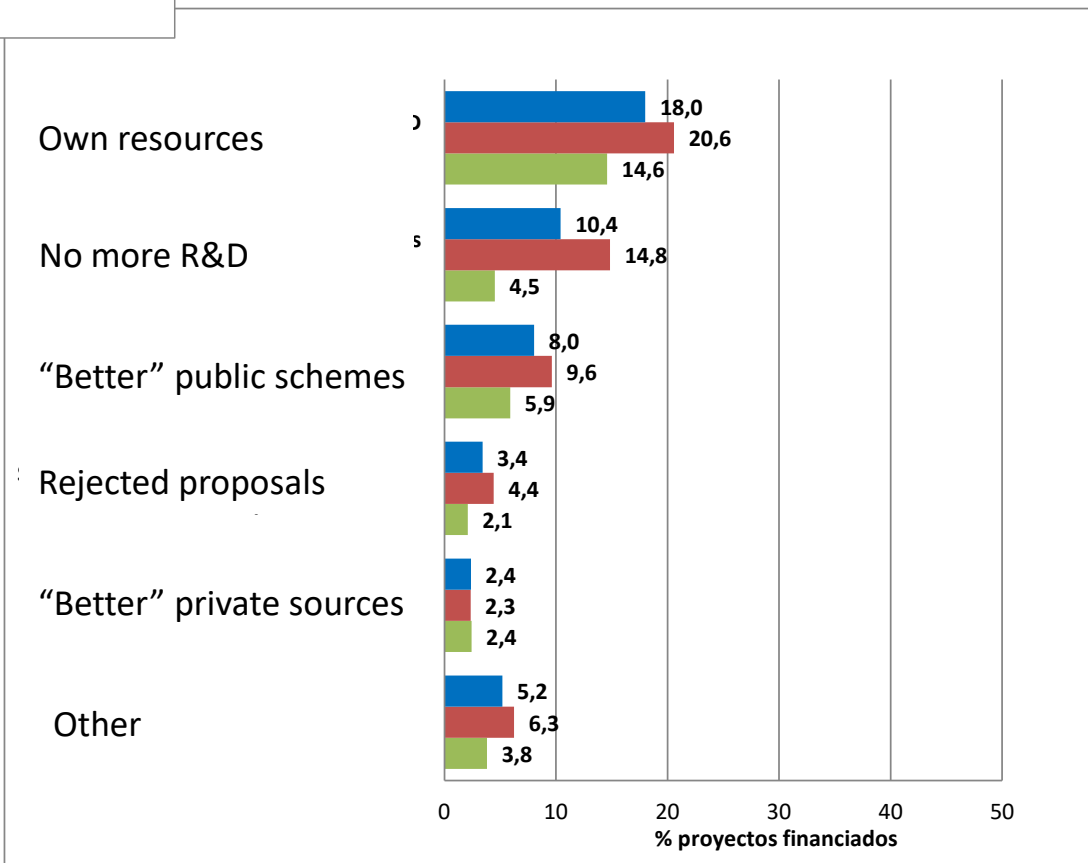
# Ex-post survey



60% are awarded with new CDTI projects.



- Non repeaters:
1. 20% finance R&D with own resources
  2. 8% find a better public scheme
  3. 10% give up R&D



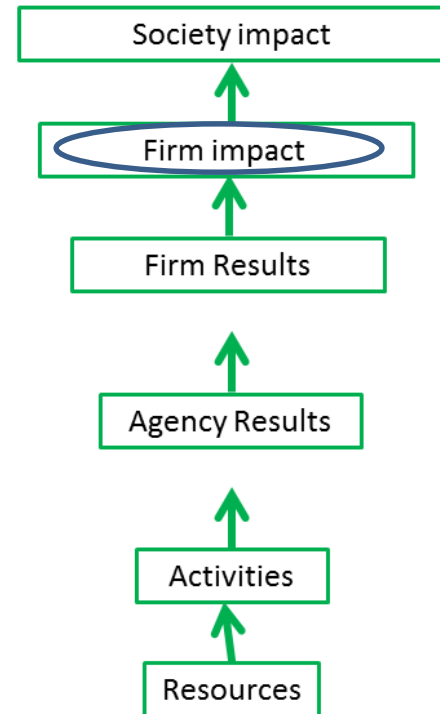
## RESULTS DECLARED BY BENEFICIARY FIRMS

### *Projects finished during 2011*

- ✓ 70% is a commercial success.
- ✓ 30% of the firms enter into new european markets; 19% into Latin America; 10% into Japan and 9% into USA.
- ✓ 60% of the projects allow to open new R&D lines.
- ✓ 36% of the SMEs hire new R&D and 8% create an specific R&D department as a consequence of the project.
- ✓ 60% are awarded again by CDTI with new projects.

## Thoughts

- Impact assessment should be a part of the design and planning when dealing with R&D Programs
- The objective is to track cause-effect dynamics between the program and the indicators
- Results should address programmer's objectives
- Program interaction
- Based on quantitative techniques...
- ...complemented with qualitative knowledge.



# Collaboration with INE

Databases mix process

## From CDTI to INE

❖ CDTI Database: some variables for our “sample”

❖ Extra variables we want for them and “comparable firms”

## INE

❖ Search for a sample

❖ Anonymization process: both for INE and CDTI variables

## Final Database

CDTI sample

CDTI + INE variables : “~real info”

INE sample

INE: “~real info”

# Collaboration with INE – An example

**Impact of CDTI low-interest credits on firms' performance** (Barajas, Huergo and Moreno, ongoing work)

- **Database CDTI-PITEC 2010-2012**  
(agreement with the National Statistics Institute under high confidentiality restrictions).

	Total sample	Treated sample
Before matching	29,969	920
After matching	1,778	920

- **Methodology:** PSM
- **Preliminary results:** CDTI aids have a positive and significant impact on:
  - Firm's R&D expenditures
  - Recruitment of R&D personnel
  - Product innovations
  - Patents
  - Investment in physical capital
  - Sales and employment (indirect effect through internal R&D expenditure)

# Collaboration with INE

## Good news

- Data from PITEC (panel data) allow to implement quantitative methodologies (PSM) with a high degree of reliability
- Probability of being supported by CDTI explained by observables variables (esp. on R&D activity, exports)
- Comprehensive set of variables related to additionality, available at the PITEC database: input; output (technological) and behavioral



# Collaboration with INE

## Room to improve

- Strict anonymization procedures hinder temporal series long enough to capture long-term effects
- Restrictions to include in the database information which, theoretically, could be used to identify firms: employment + region + economic sector: limits analysis by sectors and regions
- Including rejected proposals would be nice, but.... suppose additional restriction for anonymization procedures
- Merging process by INE takes more time than expected: risk of delays for the Evaluation Plan

# Thank for your attention!

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