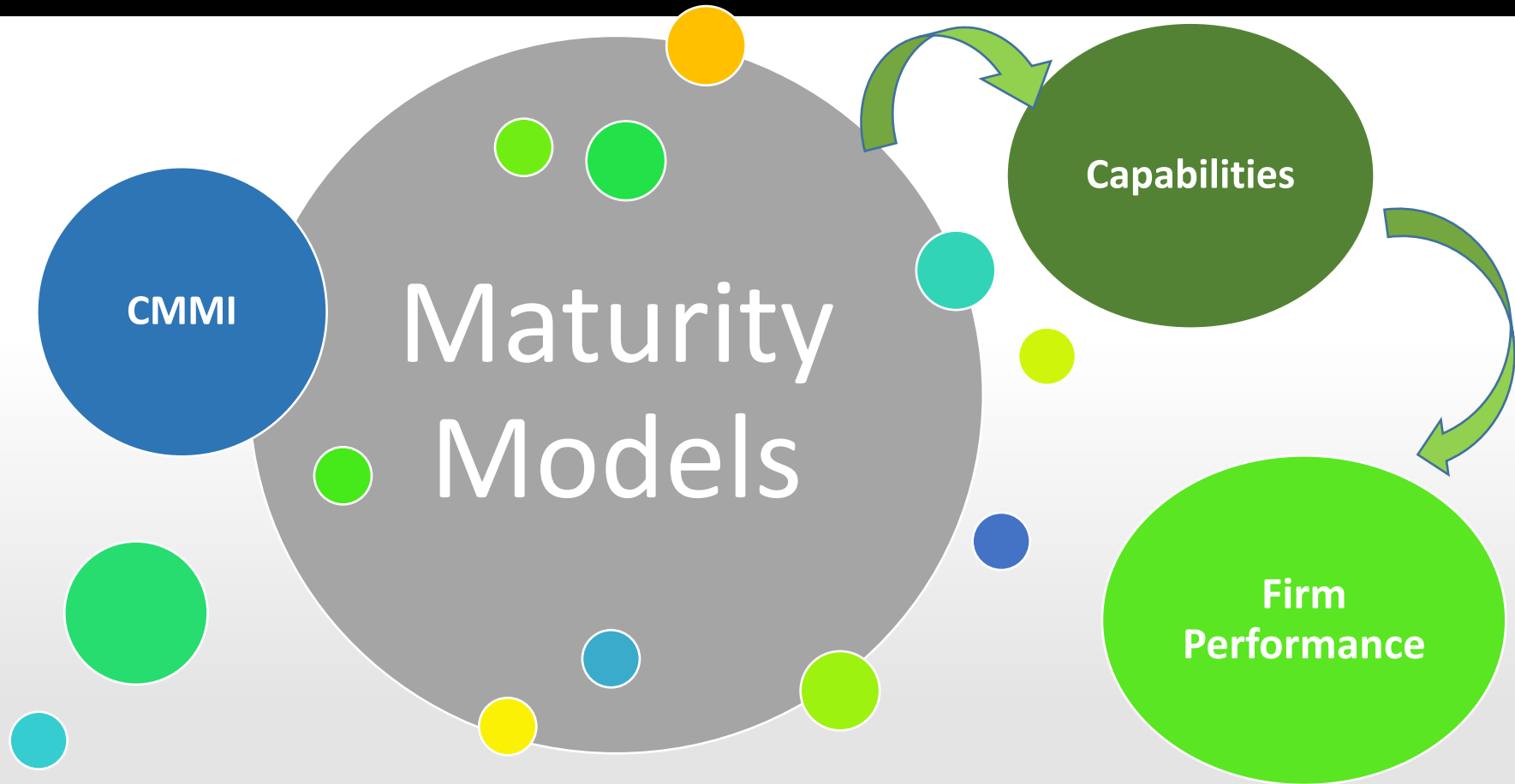


# The Impact of CMMI Implementation on the Firm Performance

## An Evaluation from a Dynamic Capabilities Approach

Eduardo Agenjo, Natalia Martín Cruz, Cristina Ruiz Martín, Adolfo López Paredes

# INTRODUCTION

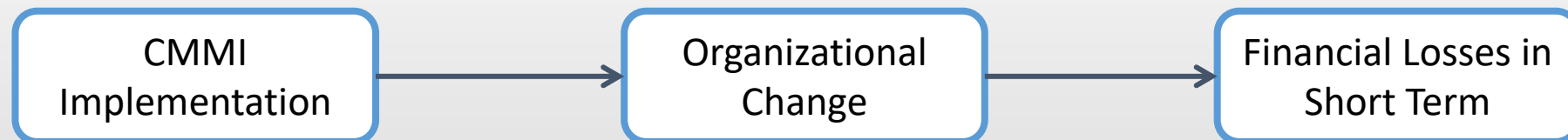


## RESEARCH HYPOTHESIS

H1: The performance of a firm is likely to increase after the process of CMMI implementation



H2: The performance of a firm is likely to decline during the process of CMMI implementation



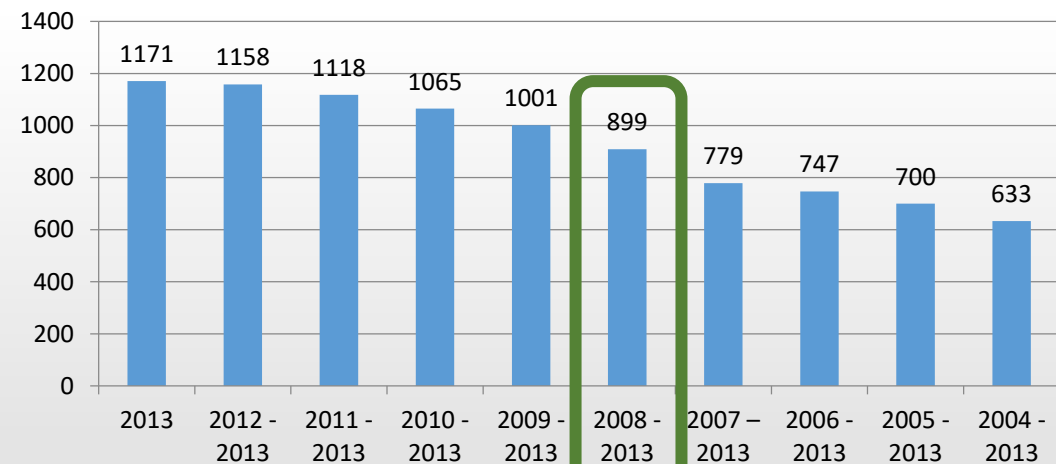
## METHODOLOGY

### Statistical Analysis: Firms with CMMI vs Firms without CMMI

#### SPANISH FIRMS FROM IT SECTOR

- Amadeus Database
- NACE CODE 62 – IT sector
- Years 2008 – 2013
- Financial indicators
  - Return on Equity (ROE)
  - Return on Assets (ROA)
  - Return on Capital (ROC)
- CMMI appraisal information
  - 40 firms

#Firms with available data



## RESULTS

### Descriptive Analysis

- Employees
- Foundation Year
- Sales Revenues
- Return on Equity (ROE)
- Return on Assets (ROA)
- Return on Capital (ROC)

### Panel Analysis

- **Dependent variables**
  - ROA & Interannual ROA difference
  - ROC & Interannual ROC difference
  - ROE & Interannual ROE difference
- **Control variables**
  - #Employees
  - Foundation year
- **Independent variables**
  - CMMI
  - CMMI Level
  - LAG CMMI
  - LAG2 CMMI

## RESULTS

### Descriptive Analysis – Employees – Foundation Year & Sales Revenues

#### Employees

	2008	2009	2010	2011	2012	2013
Mean # employees all firms	121,88	120,02	124,84	134,13	143	145,13
Mean # employees firms with CMMI	2706,8	2058,1	2047,2	1911,4	1838,1	1767,8
Mean # employees firms without CMMI	68,08	66,57	67,76	72,62	71,6	72,71

#### Foundation year

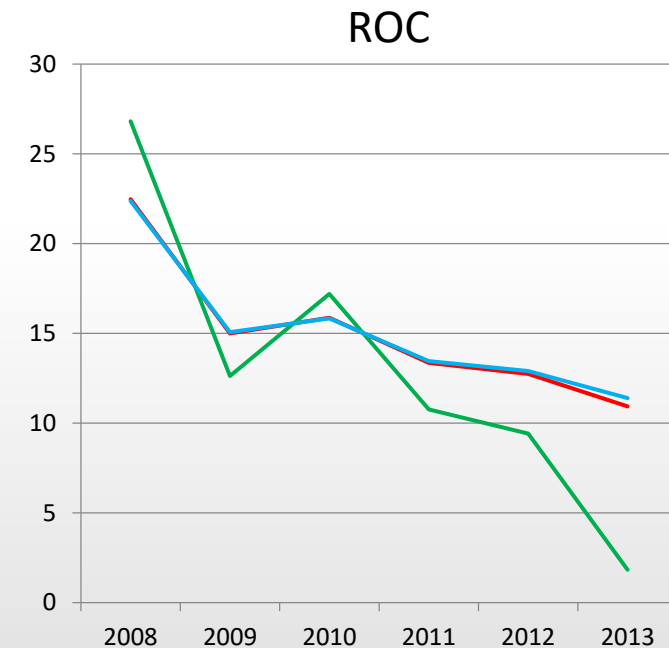
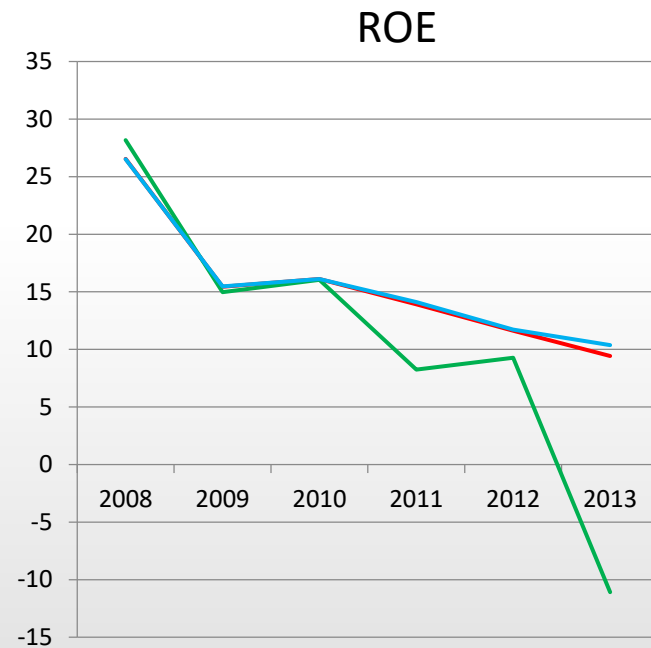
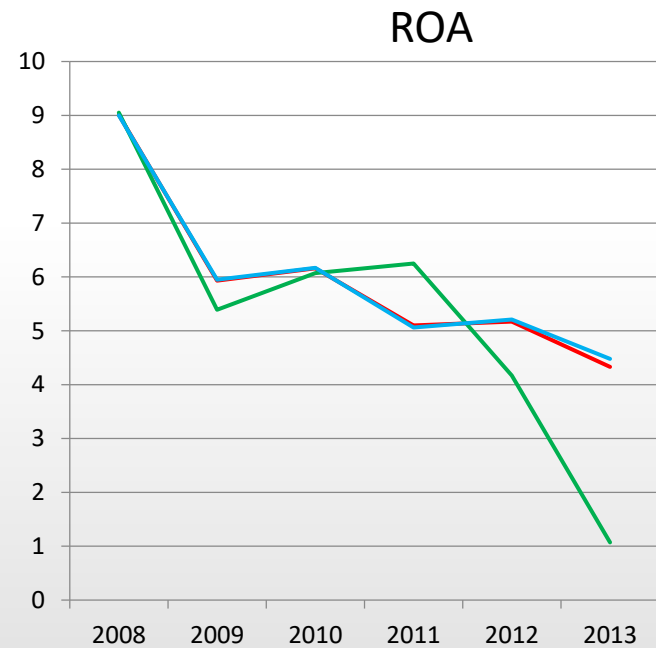
Firms with CMMI are on average a bit older (1993) than firms without CMMI (1997)

#### Sales Revenues

Firms with CMMI have a greater average (151,70 million €) than the ones without CMMI (8,97 million €)

## RESULTS

### Descriptive Analysis – ROA – ROE – ROC



— All firms

— Firms with CMMI

— Firms without CMMI

## RESULTS

### Panel Analysis

Has CMMI influence in the interannual variation and absolute economic and financial performance?

**The regressions are not significant**

Study the trend dividing the sample in two period:

- Firms with and without CMMI had a similar performance during the first 3 years
- The performance of the firms with CMMI was quite worse than the ones without it in the next period



## RESULTS

### Panel Analysis

Study the trend dividing the sample in two period

	CMMI		Nivel CMMI		LAG CMMI		LAG2 CMMI	
	Coef.	P> t	Coef.	P> t	Coef.	P> t	Coef.	P> t
<b>2008 - 2010</b>								
ROA	1,330	0,798	0,508	0,804	1,16	0,865	*	*
ROC	-5,000	0,815	-2,260	0,788	1,20	0,969	*	*
ROE	-2,625	0,930	-1,390	0,907	2,50	0,949	*	*
<b>2011 - 2013</b>								
ROA	-7,40	0,065	-2,41	0,112	-6,40	0,129	-3,56	0,450
ROC	<b><u>-53,94</u></b>	<b><u>0,001</u></b>	<b><u>-25,70</u></b>	<b><u>0,0001</u></b>	-17,37	0,316	-13,78	0,456
ROE	<b><u>-48,72</u></b>	<b><u>0,017</u></b>	<b><u>-20,02</u></b>	<b><u>0,011</u></b>	-11,55	0,589	-11,78	0,645

Firm performance vs the implementation of CMMI. Period 2008-2010 and 2011-2013

## CONCLUSIONS

2 variables explain the performance of the firm: Adoption of CMMI & CMMI Level. **NEGATIVE CORRELATION**

**H1: The performance of a firm is likely to increase after the process of CMMI implementation**

**H2: The performance of a firm is likely to decline during the process of CMMI implementation**

### CONCLUSIONS

- Preliminary study
- Time period: economic crisis. It had a special impact in Spain
- #firms that use CMMI is relatively small compared to the total sample
- We know results of CMMI appraisal; We do not know the commitment of the company with CMMI
- Firms with CMMI grew significantly during the time period understudy

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