UNIVERSITÀ DEGLI STUDI DI PALERMO

DSEAS (*Department of Economics, Management and Statistics*)

ECONOMIC IMPACT OF EFF ON COMPETITIVENESS of the Sicilian fish companies

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XXIII Conference EAFE – Dublin, 25th April 2017

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 635188

Research question (motivation and objectives):

What is the contribution of the measure 2.3 of EFF (Investments in fish processing and marketing) on competitiveness of the Sicilian fish processing industries?

What we did:

- Analysis of business performance during the EFF funding investment period
- Analysis and comparison of performance between funded and not funded firms

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EFF Measure 2.3 in Sicily

Investments in production capacity expansion and modernization of fish processing

- Initial total grant: 36 million euros
- 4 Calls: 2009-2010-2011-2015
- Expenses certified: 25.70 million euro

Selected firms	Funded firms	Funded firms (2009-2011)
154	111	94

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Data sources:

- **Exploratory survey (2015)** (investment: timing, satisfaction)
- **Data from the Regional Mediterranean Fisheries Department** (projects, certification of expenses, etc.)
- **Data set: 2006-2015** (AIDA-BvD database)

Reference period:

- **2006-2015: Financial data on firms**
- **For each single project: two years before the start of the investment - two years after**

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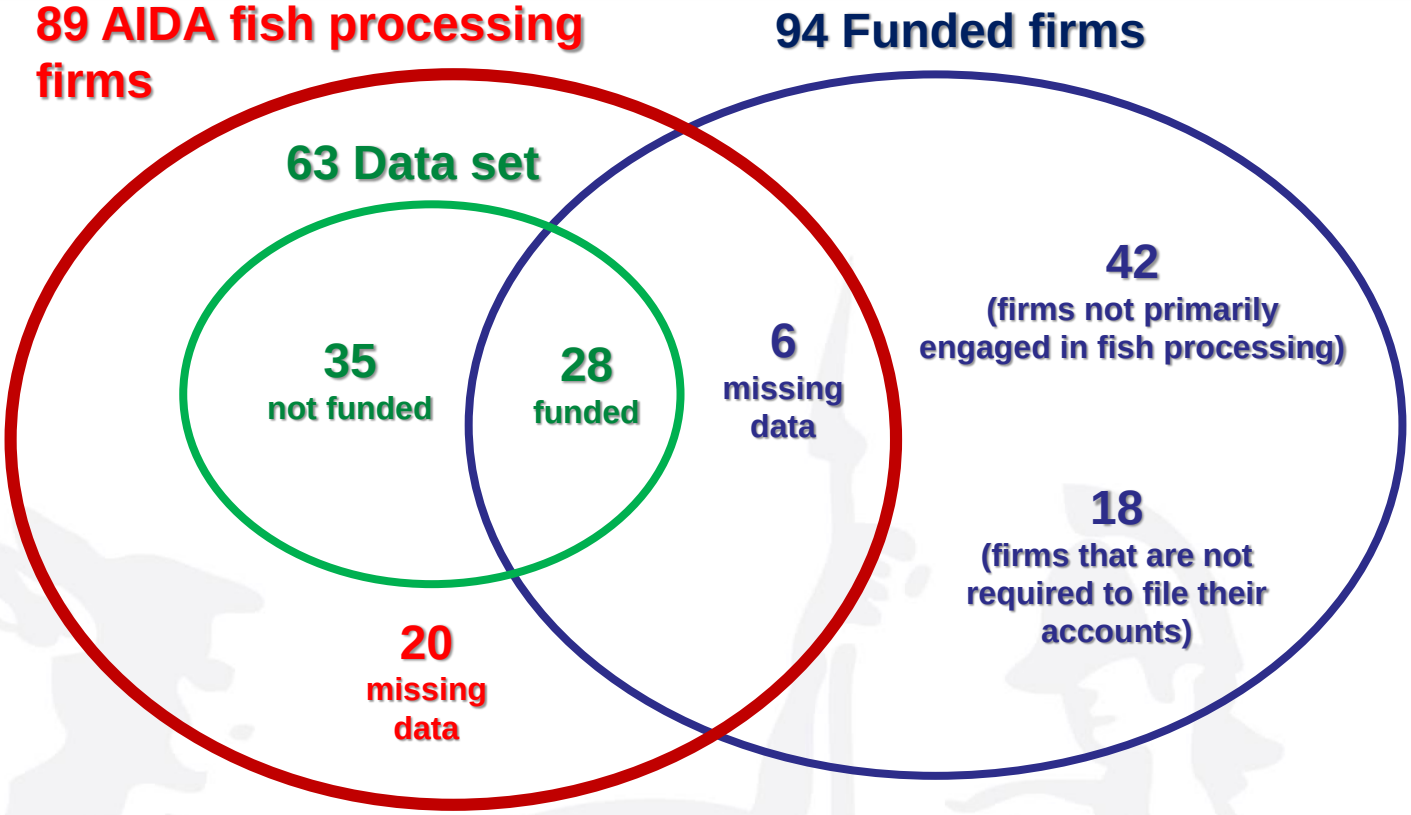

63 Data set

28 funded

About 55% of the sicilian fish processing firms

About 61% of the certified expenses

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Data and method

We use a Benefit-of-Doubt approach (BoD) to compute a composite indicator to synthesize the Business Performance (BP) of the Sicilian firms by aggregating four basic ratios:

1. **ROA**: return on assets
2. **ROE**: return on equity
3. **ROI**: return on investment
4. **ROS**: return on sales

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The BP is obtained by applying a Data Envelopment Analysis (DEA) linear programming model with proportion restrictions on weights calculated in a BoD approach.

(1) $$BP_{c,score} = \sum_{i=1}^{m} w_{i,c} y_{i,c} \Big/ \sum_{i=1}^{m} w_{i,c} y_{i,best} \qquad 0 \le w_{i,j} \le 1 \qquad \sum_{i=1}^{m} w_{i,j} = 1$$

$j = 1,\ldots,c,\ldots n$ **refer to the 63 sicilian firms**

$i = 1,\ldots,4 \qquad y_i \in \{ROI, ROE, ROS, ROA\}$

$BP_{c,score}$ **is between 0 (the worst performance among the firms) and 1 (the best performance)**

The weight $w_{i,c}$ may be chosen optimaly by ensuring the best combination of $y_{i,c}$ to get BP as high as possible on the BoD logic:

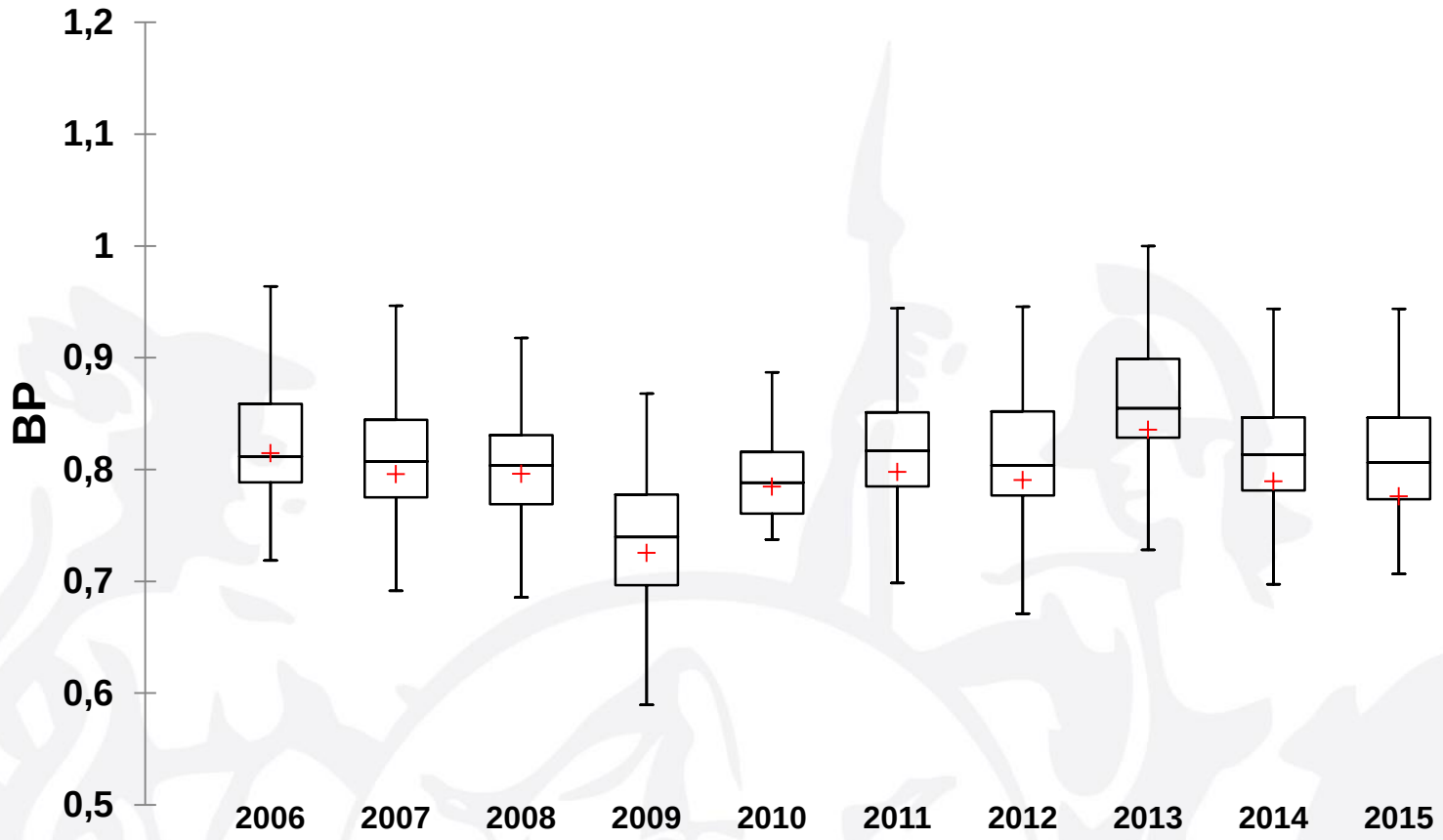
(2) $$BP^{*}_{c,score} = \max \left(\sum_{i=1}^{m} w_{i,c} y_{i,c} \Big/ \max_{y_{i,j}} \sum_{i=1}^{m} w_{i,c} y_{i,j} \right)$$

Finally, we prefer to add restrictions on weights to avoid zero weight on some indicators, that is:

(3) $$\inf_{i,j} \le \left(w_{i,j} y_{i,j} \Big/ \sum_{i=1}^{m} w_{i,j} y_{i,j} \right) \le \sup_{i,j}$$

Empirical evidence 1

BP trend (63 sicilian fish processing firms)



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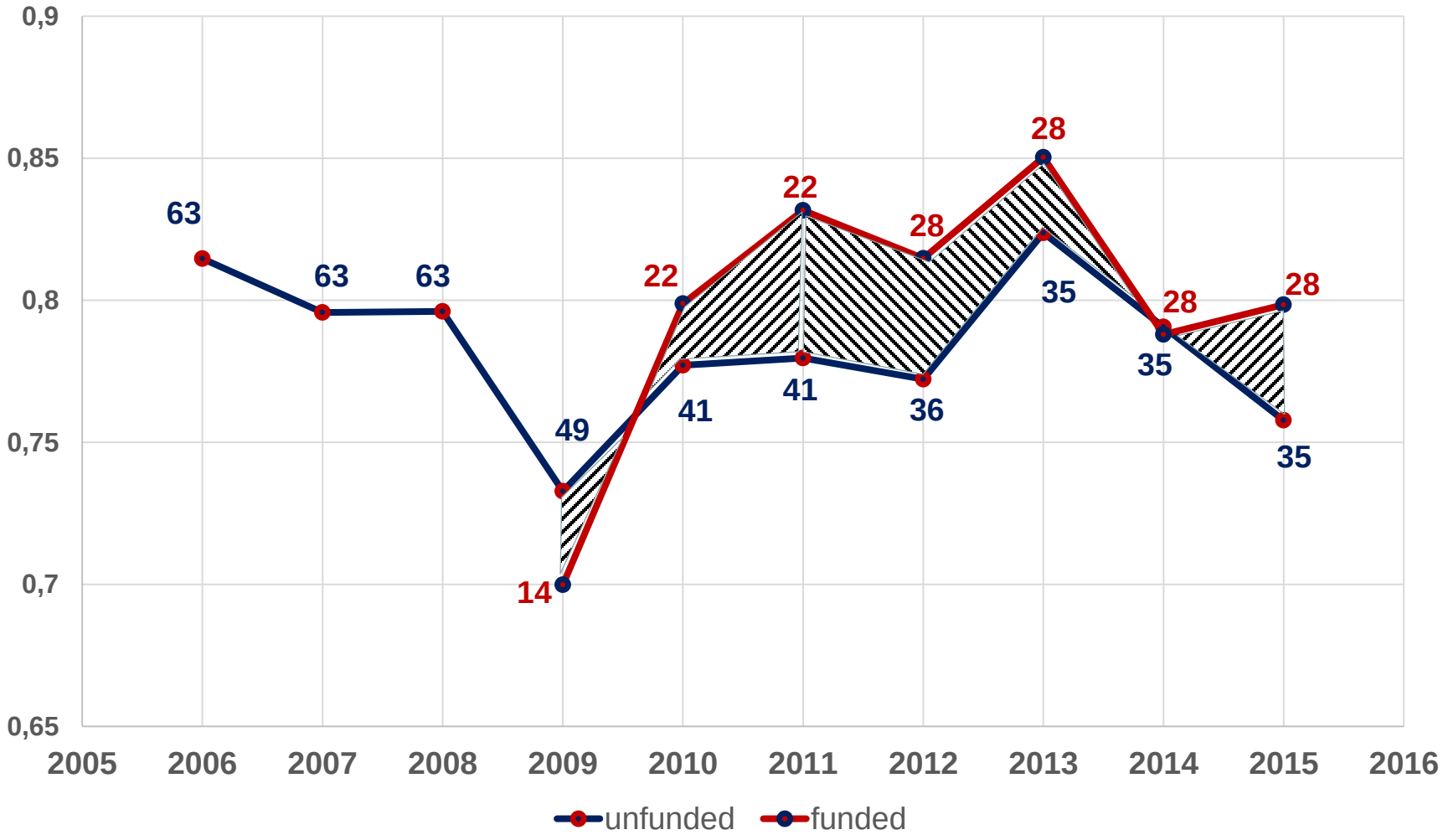
HORIZON 2020

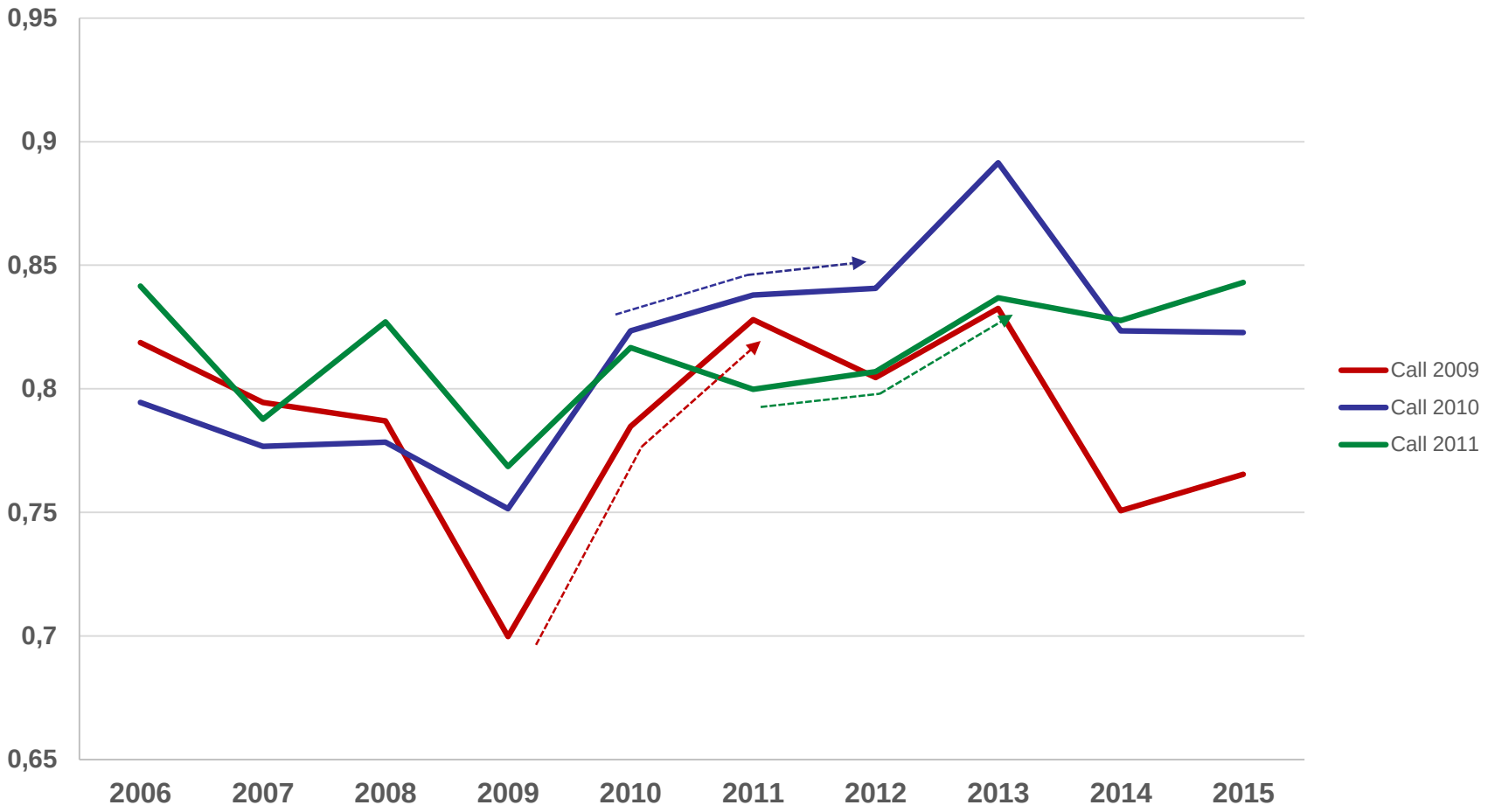
Empirical evidence 2

average BP values (funded *vs.* unfunded firms)



Empirical evidence 3

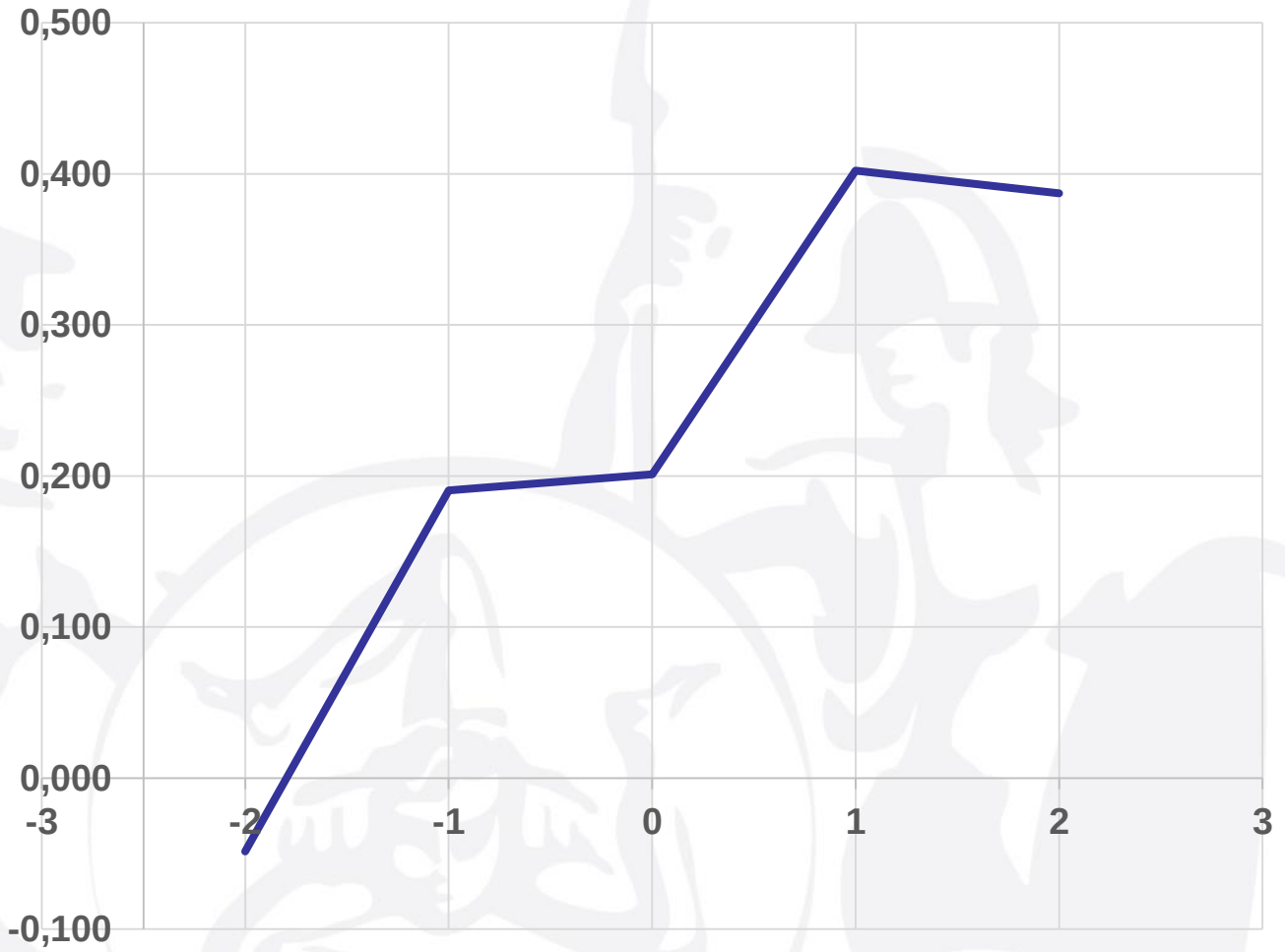
average BP indicator (funded firms – grouped by call year)



Empirical evidence 4

average standardized BP (before and after investment)

$$sBP_i(x) = BP_i(x + x_i^*) - \overline{BP_{unfunded,}\left(x + x_i^*\right)} \qquad x_i^* = year\ when\ the\ investment\ of\ i^{th}\ firm\ generates\ sales$$



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Concluding Remarks

- The performance of the funded firms is higher than the performance of the unfunded firms
- Innovative investments have resulted in improved performance by exploiting the positive economic phases better among the funded firms than the not funded firms
- Improving performance as a result of innovative investment also goes against national trends

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Thank you for your attention

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