Evaluation of an R&D program in Hungary

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The innovation in Hungary

- The share of R&D expenditure to GDP was 1% in 2002, still only half of the average of the EU-15 (1.9%). In 2009 it was 1.15%
- R&D is heavily concentrated in Budapest, having 65% of total R&D expenditure
- In the most developed EU countries more than 50% of R&D expenditure is provided by the corporate sector, whereas in Hungary, the state has a higher share compared to companies. Although the corporate spending increased in the past few years, the share of corporate R&D expenditure has not changed fundamentally
- The expenditure of SMSs on R+D was very low compare to big companies
- A considerable part of the equipment of publicly financed and business research facilities was obsolete and run down, the supply of instruments and the technical infrastructure was low before the program. The situation has improved since

ECOP Priority 3. Research & Development, Innovation

Specific objectives:

- Improvement of the efficiency of R&D and innovation
- Reinforcement of research based on the co-operation between the academic and corporate sector serving to enhance competitiveness and sustainable growth potential
- Expansion of business R&D activity

Measures:

- 3.1 Support of application-oriented co-operative research and technology development activities
- 3.2 Improvement of the conditions of research, technology transfer and co-operation at publicly financed and non-profit research facilities
- 3.3 Reinforcement of corporate R&D capacities and innovation skills

ECOP 3.3 Reinforcement of corporate R&D capacities and innovations skills

- ECOP 3.3.1 – Supporting R&D activities of new technology– and knowledge intensive micro-enterprises and spin-off companies
- ECOP 3.3.2 – Development of corporate research infrastructure related to the creation of new research places
- ECOP 3.3.3 – Promotion of corporate innovation (SMEs)

ECOP 3.3.3 Program characteristics

- Grants to SMEs for innovation
- 4 call for application in 3 years
- Purchase of equipments, intangible assets, wage cost, experimental development, R&D exploitation rights
- Maximum grant 75 Mn HUF (~300 000 €)
- Private contribution min. 50%
- ~700 applicants
- ~250 beneficiaries
- Grant approved 7,5 Bn HUF (~30 Mn €)
- 31 Mn HUF (~ 120 000 €) average grant
- the program continued in the 2007-2013 period with slightly modified characteristics

Evaluation in 2009

- typically supported - domestic SMEs
- support facilitated improving their market position
- at least half of the subsidised projects lead to successful marketable products or new procedures
- there was no significant shift in the SMEs' market position compared to that of the large companies
- it helped to increase higher than average growth of the R&D expenditures for the assisted companies
- the increase of the average net sales revenues of the assisted companies was higher than average
- over 90 percent of the companies assisted maintained its operation
- employment showed an increase among assisted companies

Evaluation questions (2011)

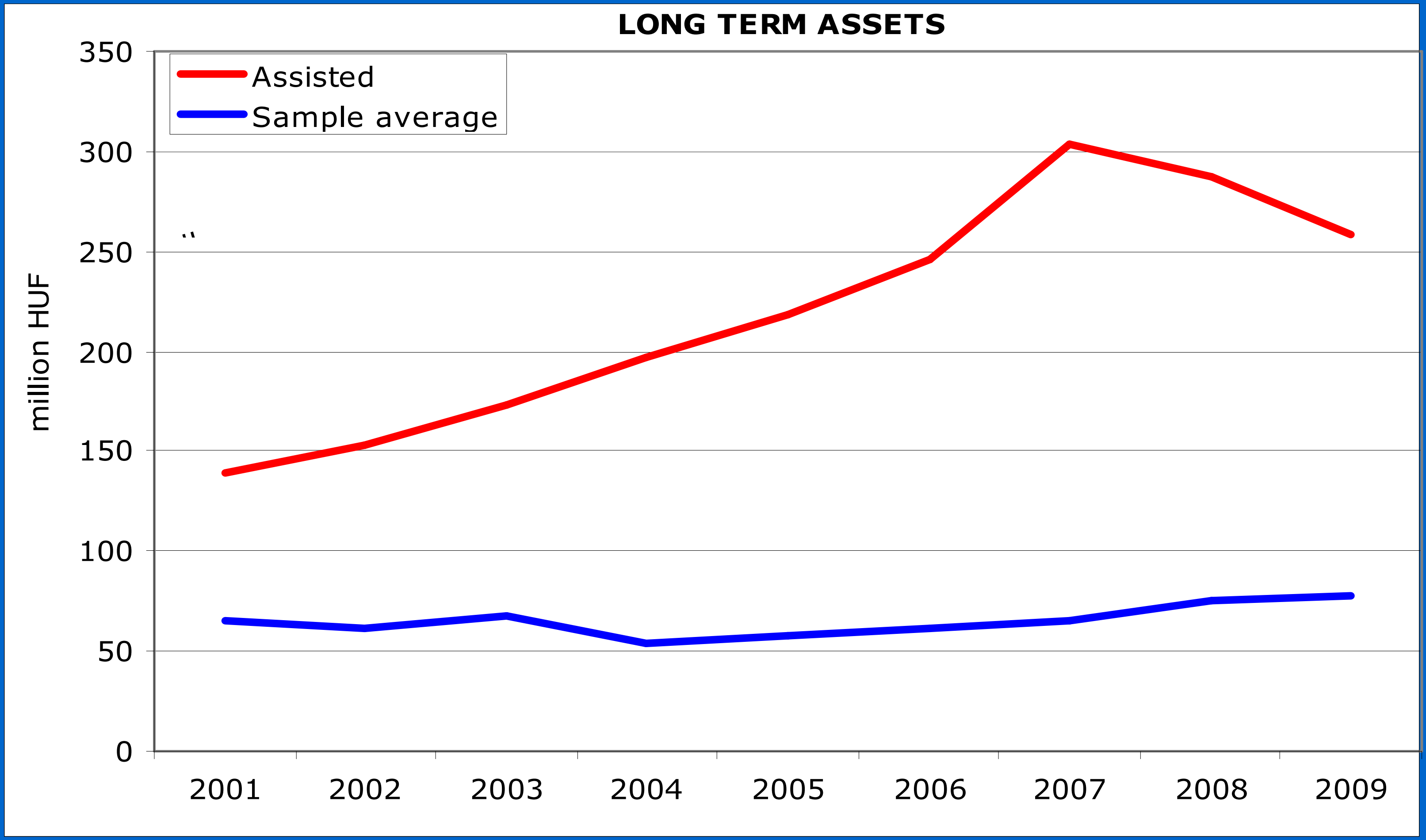
- Did the assisted enterprises invest more?
  - Differences in the growth of <u>long term assets</u> between the treated and the control groups
- Did the assisted enterprises grow faster?
  - Differences in the growth of <u>sales</u> between the treated and the control groups

Groups of interest

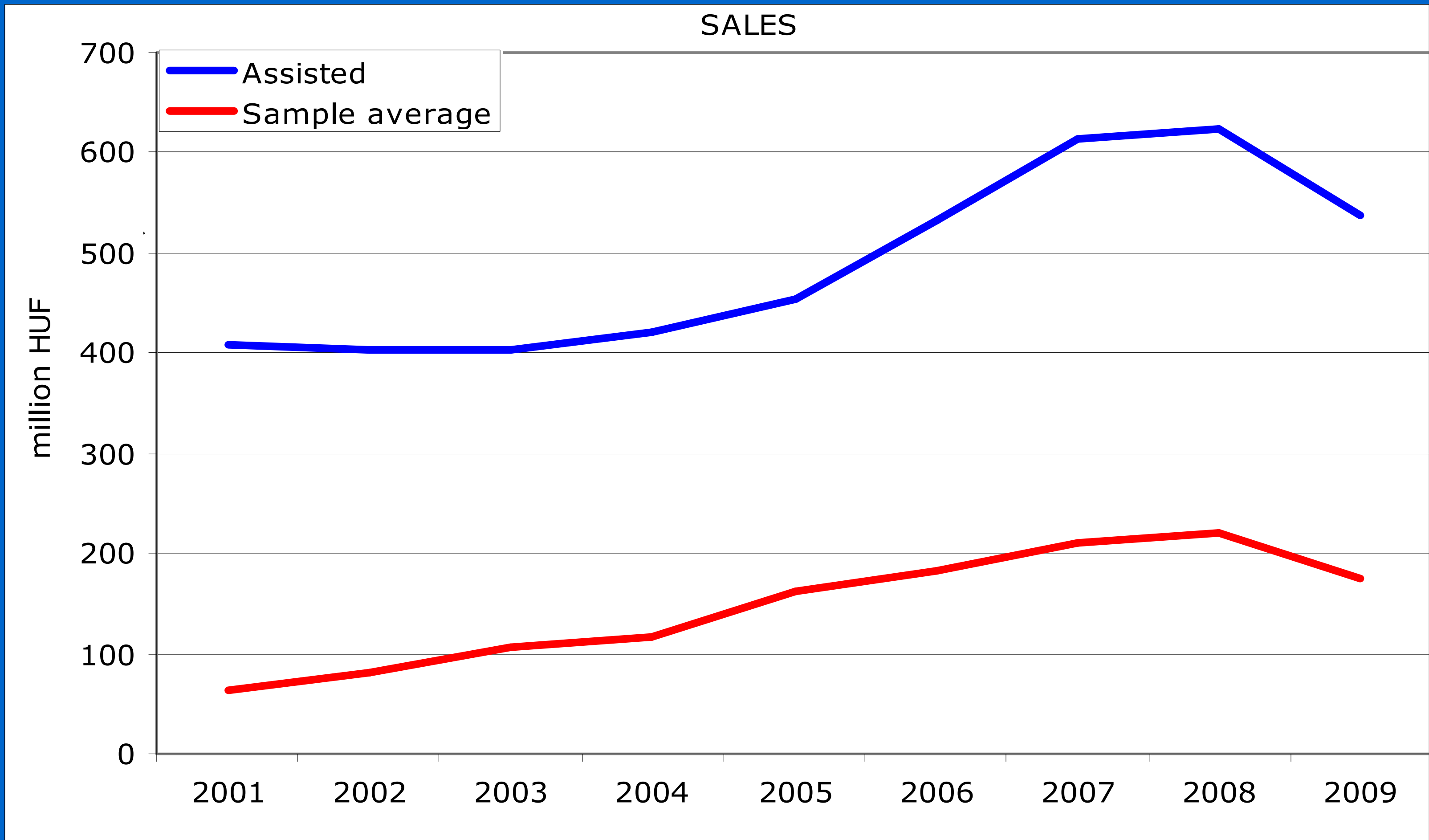
- Total number of enterprises in the sample
  - 320 th
- Matched sample
  - 113 treated enterprises

    vs.
  - 113 control enterprises

Group characteristics



Group characteristics



Methodology

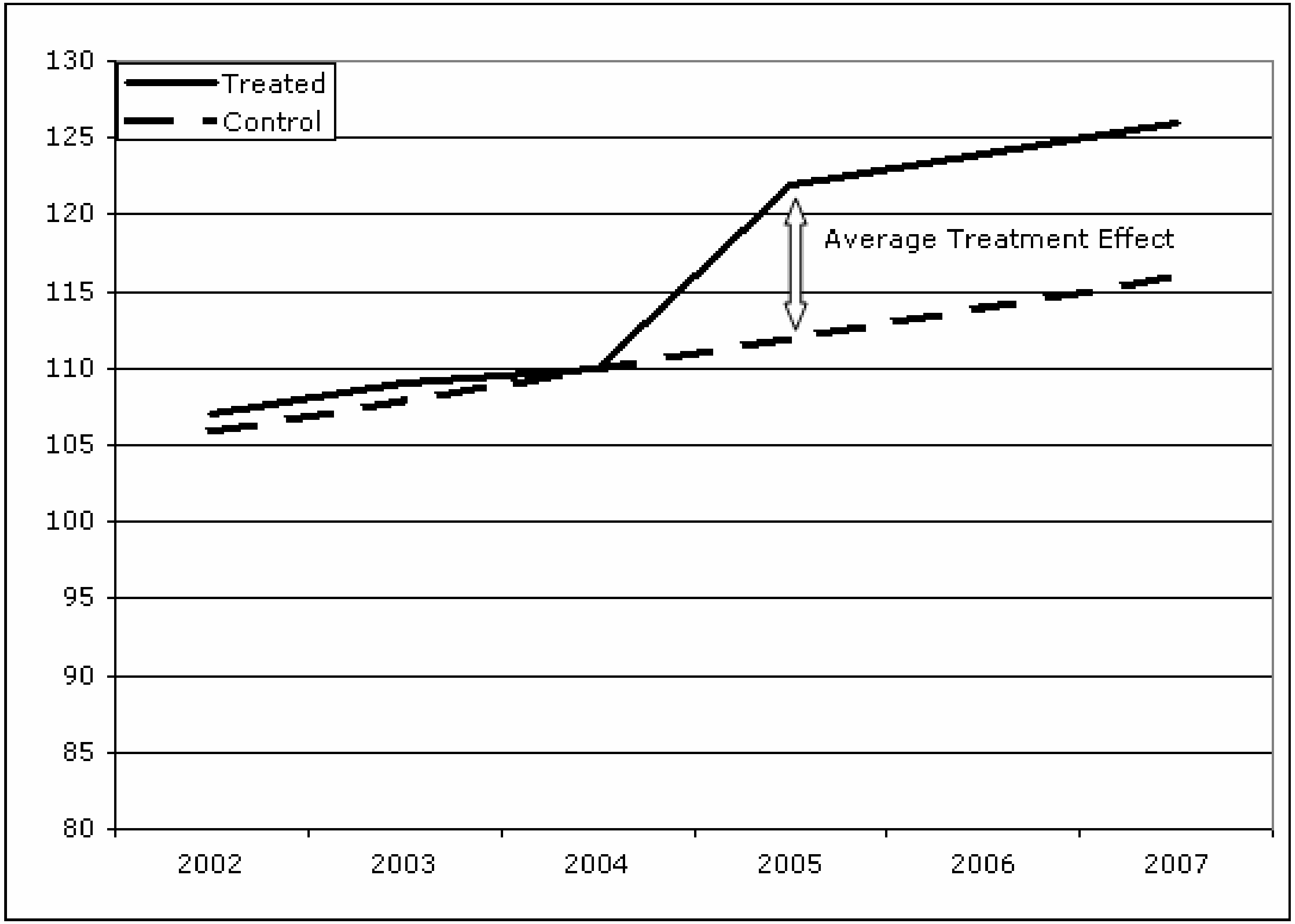
Propensity Score Matching (PSM)

and

difference-in-differences (DiD) regression

on the matched sample

Intuition behind PSM



PSM variables

Probit regression

Dependent variable:

TREATMENT DUMMY (1 if assisted, 0 if not assisted)

RHS variables:

CONSTANT

SALES (2004)

TANGIBLE ASSETS (2004)

CAPITAL STOCK (2004)

LONG TERM ASSETS (2004)

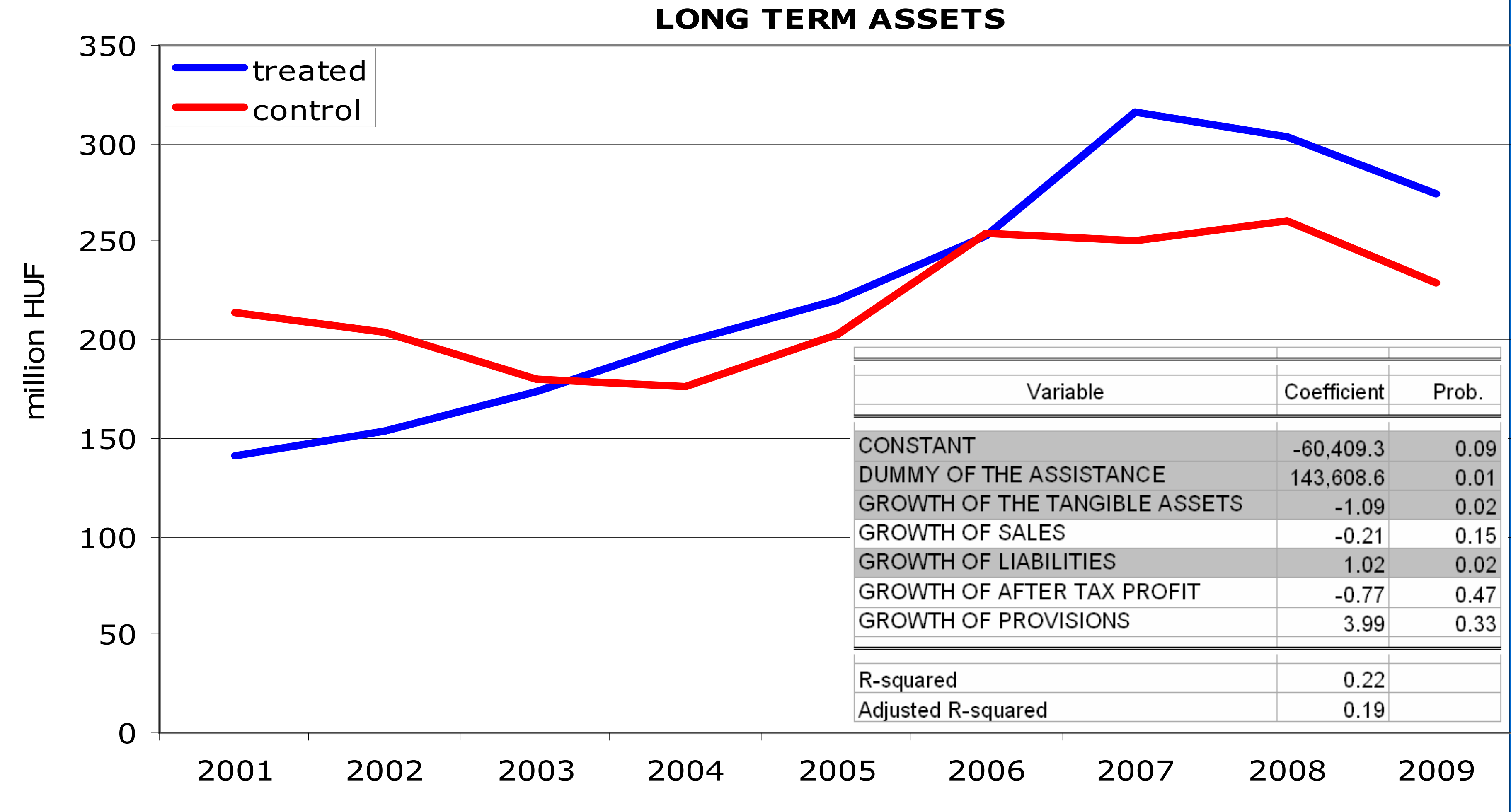
LIABILITIES (2004)

1 DIGIT NACE CODE (2)

1 DIGIT NACE CODE (3)

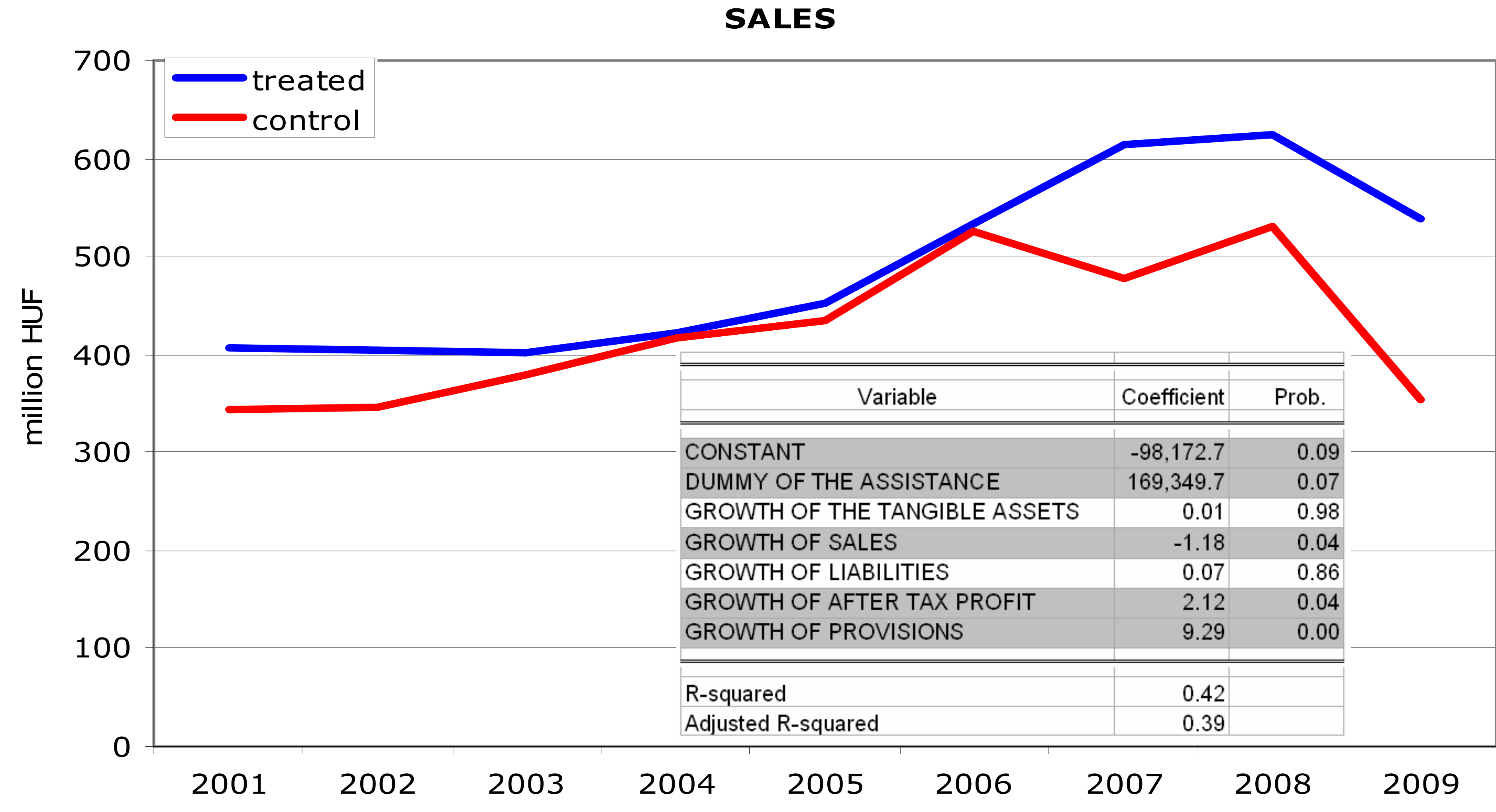
BUDAPEST DUMMY (CAPITAL)

Results - LTA



Variable	Coefficient	Prob.
CONSTANT	-60,409.3	0.09
DUMMY OF THE ASSISTANCE	143,608.6	0.01
GROWTH OF THE TANGIBLE ASSETS	-1.09	0.02
GROWTH OF SALES	-0.21	0.15
GROWTH OF LIABILITIES	1.02	0.02
GROWTH OF AFTER TAX PROFIT	-0.77	0.47
GROWTH OF PROVISIONS	3.99	0.33
R-squared	0.22	
Adjusted R-squared	0.19	

Results - sales



Variable	Coefficient	Prob.
CONSTANT	-98,172.7	0.09
DUMMY OF THE ASSISTANCE	169,349.7	0.07
GROWTH OF THE TANGIBLE ASSETS	0.01	0.98
GROWTH OF SALES	-1.18	0.04
GROWTH OF LIABILITIES	0.07	0.86
GROWTH OF AFTER TAX PROFIT	2.12	0.04
GROWTH OF PROVISIONS	9.29	0.00
R-squared	0.42	
Adjusted R-squared	0.39	

Summary

- Assisted enterprises were bigger and their LTA grew faster even before the program
- Significant effects on growth even in the short run
- Significant effects on LTA even in the short run

Limitations

- This method is applicable only for measuring the effects on the assisted SMEs
- Can not catch multiplier effects or nation-wide impacts
- To catch those impacts one need macroeconomic models

Thank you for your attention!

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