

Firm-level ULC and TFP Results for Hungary

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Introduction

- ULC as a competitiveness measures:

pros

easy to interpret

easy to compute

easily available

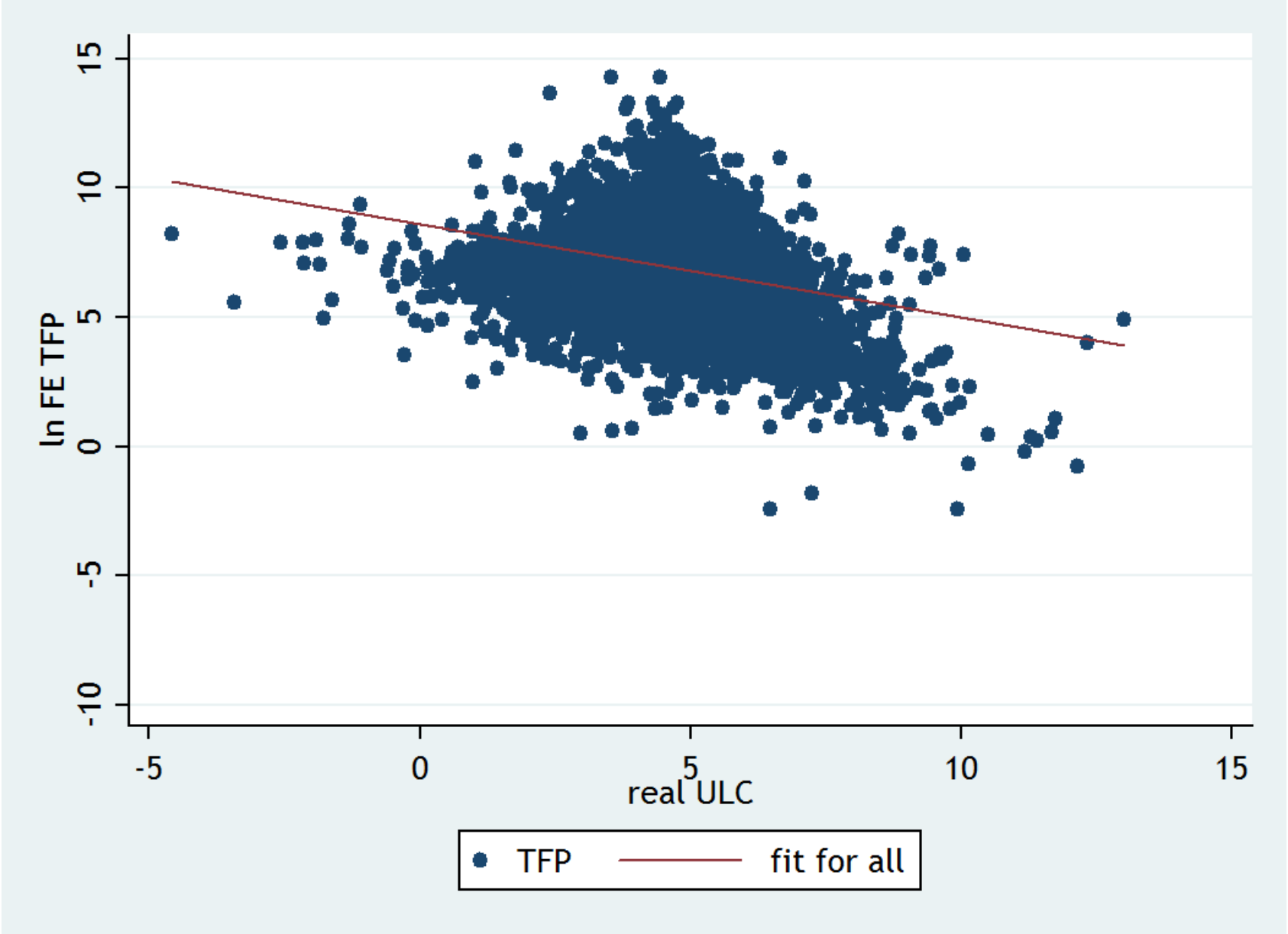
cons

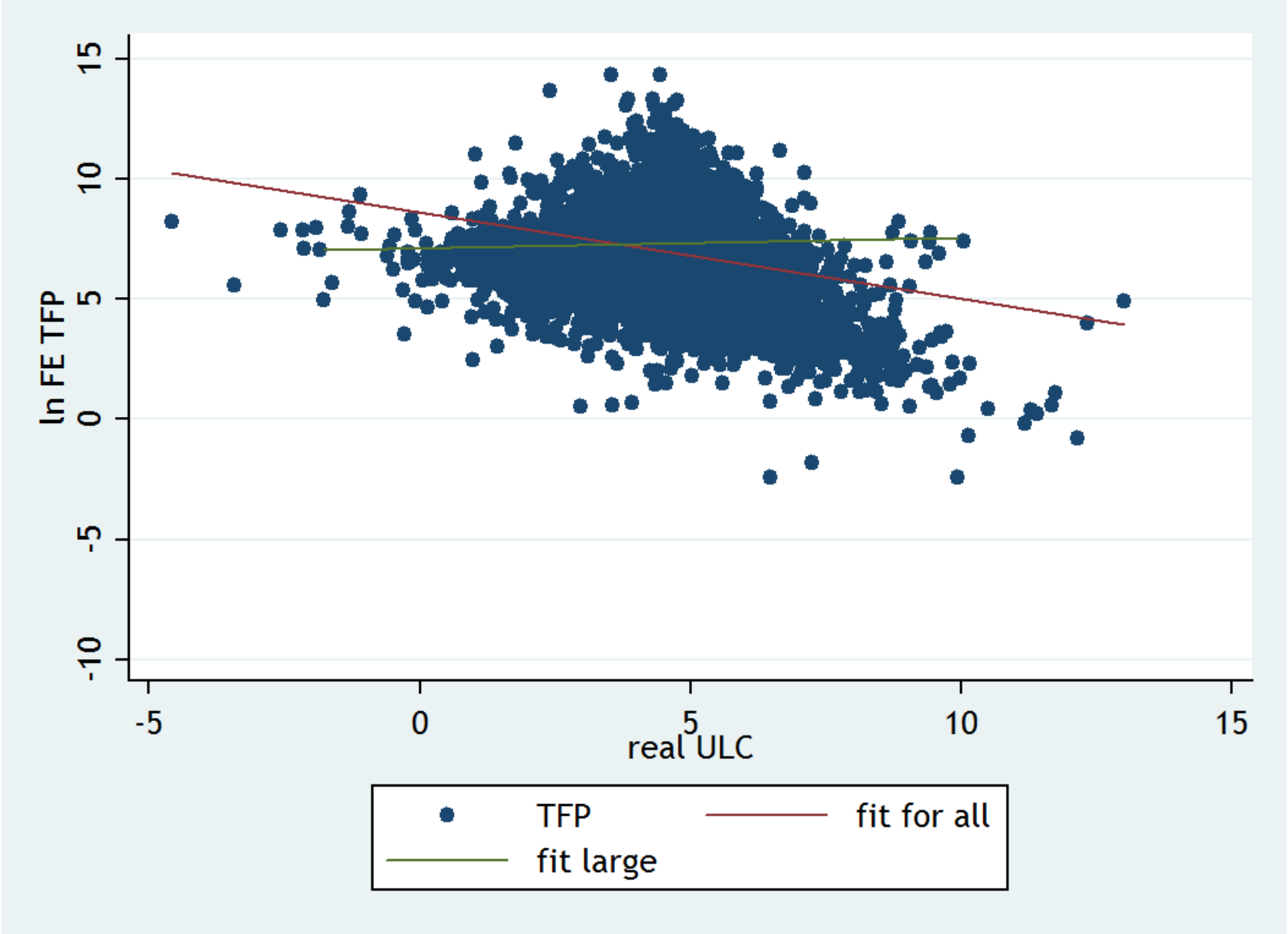
measurement

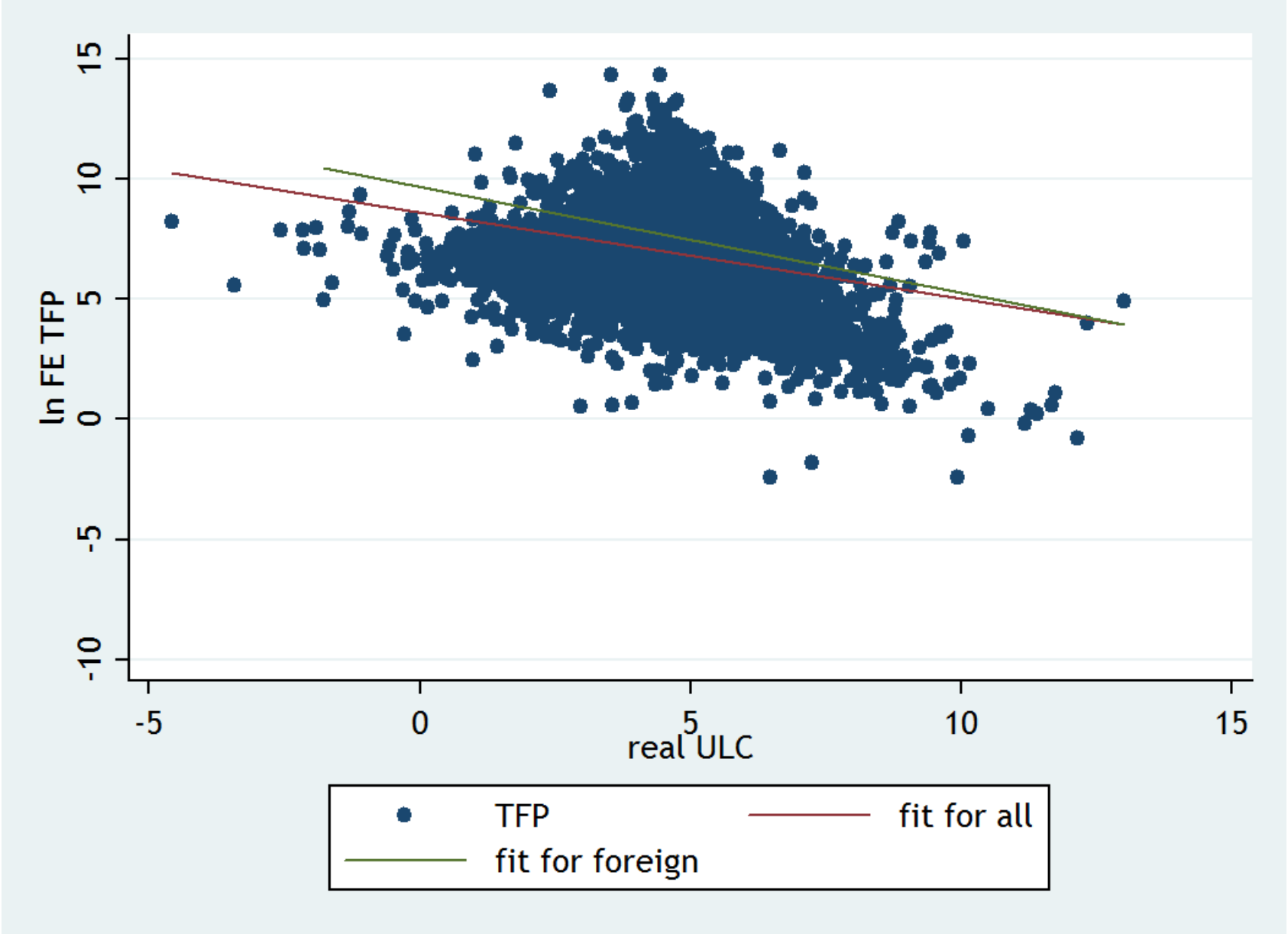
aggregation

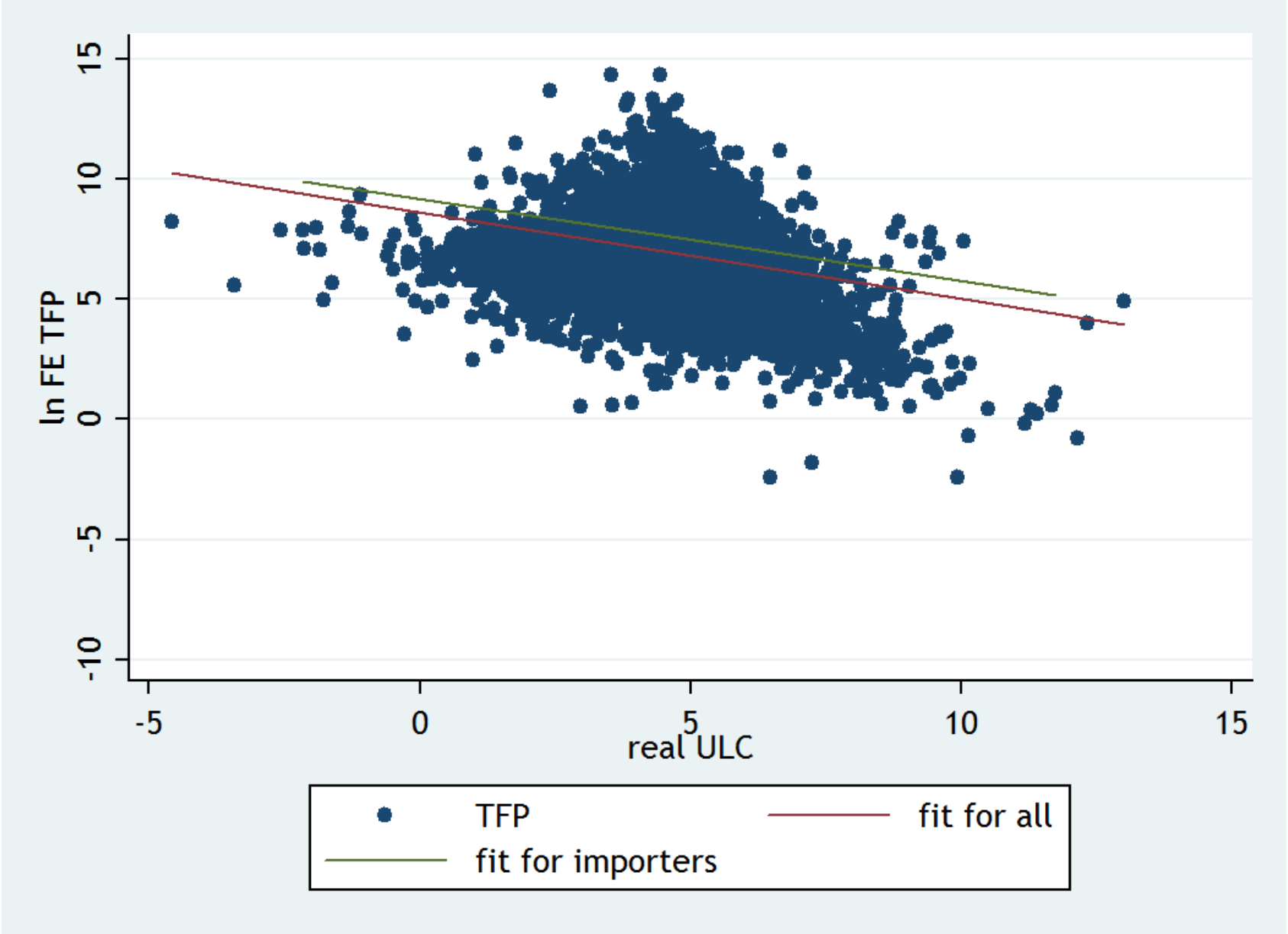
partial/substitution

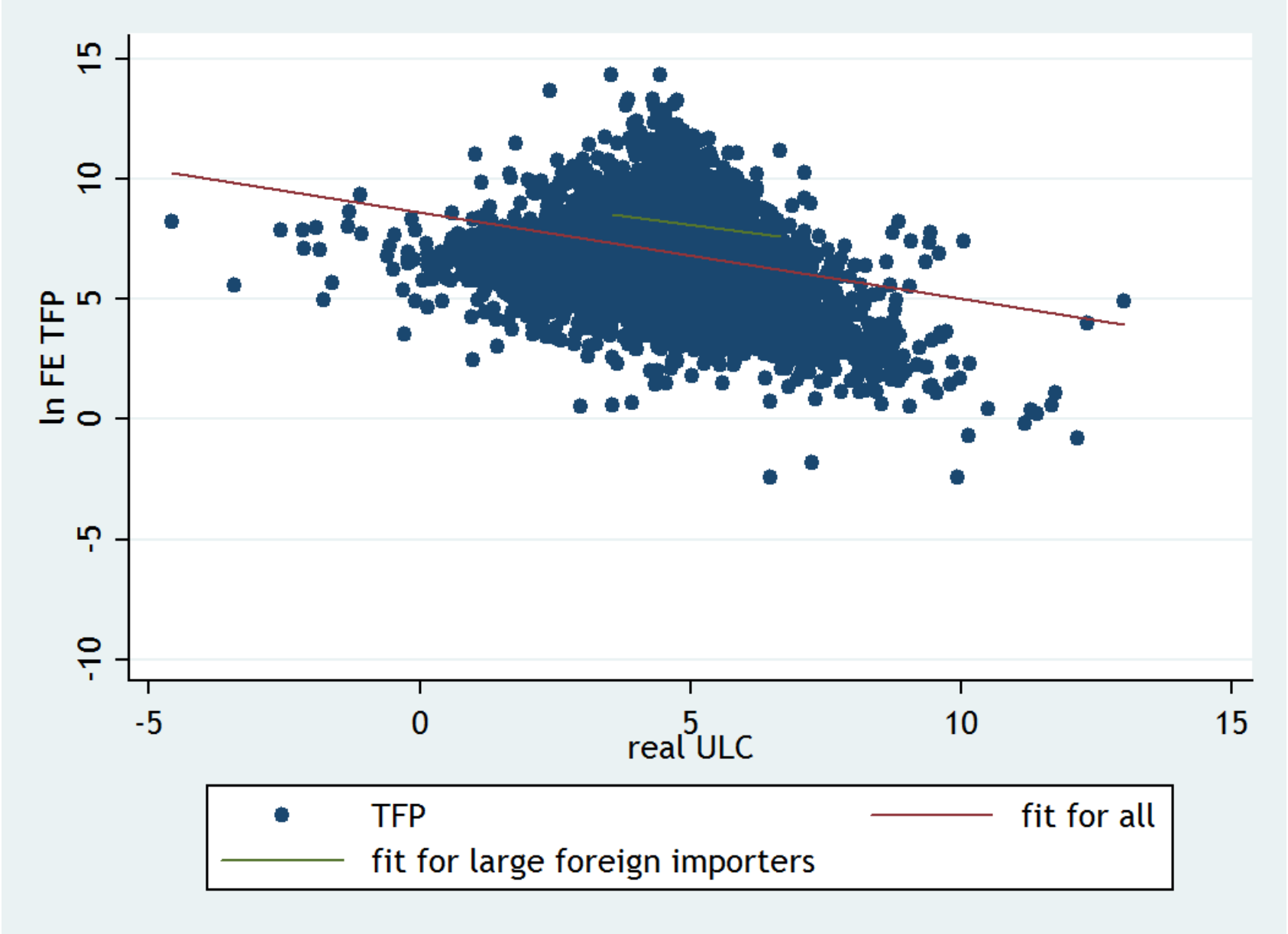
- PB1: increase in ULC for innovating firms does not hurt exports.











Motivation

- Bottom-up approach: look at the behaviour of ULC at the firm-level;
- Move close to the firm-level;
- Find out the width and scope of eventual heterogeneity;
- Dig deeper in understanding the macro-micro competitiveness link.

Empirical strategy

- $TFP = f(\text{ULC, size, export, import, foreign, leverage, non-tangible})$;
- Seven explanatory variables interacted with each other: 21 pairwise interactions;
- Seven explanatory variables are combined in interaction-triplets: 35 triplets;
- Industry and time dummies.

Variables, definitions

- ULC: nominal – total wage cost/real value added; real – total wage cost/value added, (2005=100);
- Import, export - dummy;
- Foreign: above 10% - dummy;
- Size: over 500 employees - dummy;
- Leverage: liabilities/total assets;
- Non-tangible: share of nontangibles in capital;
- Industries: total sample - 20, manufacturing – 2 digit (24);
- Time: 1999-2011;
- Sample size: over 5 employees, 70,000 firms.

Robustness checks

- Total sample vs manufacturing
- FE estimations;
- Time-varying main variables: ULC and industry dummies;
- Repeated cross sections.

Results – Level 1

TFP	Nominal			Real		
	LP	TFP_FE	TFP_LeP	LP	TFP_FE	TFP_LeP
ULC	-0.430***	-0.433***	-0.443***	-0.405***	-0.402***	-0.406***
Non-tang	0.643***	0.570***	0.675***	0.659***	0.620***	0.742***
Leverage	-0.00297	-0.000557	0.00173	0.0309**	0.0269**	0.0282**
Size	-2.783***	-2.453***	-2.279***	-2.713***	-2.370***	-2.227***
Foreign	0.349***	0.299***	0.363***	0.409***	0.376***	0.417***
Export	0.400***	0.362***	0.499***	0.444***	0.347***	0.478***
Import	0.512***	0.279***	0.146*	0.504***	0.275***	0.166*
Obs.	485,358	485,134	485,134	485,358	485,134	485,134
R ²	0.297	0.403	0.469	0.288	0.395	0.462

ULC

	% sd	
Inrulc	-1.85	-112
Inrulc leverage	-0.03	-2
Inrulc size	1.65	100
Inrulc import	0.32	20
leverage Inrulc foreign	-0.12	-8
leverage Inrulc import	-0.13	-8
size Inrulc import	-1.46	-89
foreign Inrulc import	-0.24	-14

Non-tangible

		% sd
non-tangible	0.02	2
non-tangible size	-0.11	-6
leverage non-tangible size	0.12	7
size non-tangible foreign	-0.04	-3
size non-tangible import	0.19	12
foreign non-tangible import	-0.01	-1
export non-tangible import	0.01	1

Leverage

		% sd
leverage	0.10	6
Inrulc leverage	-0.03	-2
leverage Inrulc foreign	-0.12	-8
leverage Inrulc import	-0.13	-8
leverage non-tangible size	0.12	7
size leverage foreign	-0.50	-30
foreign leverage export	-0.03	-2
foreign leverage import	0.03	2
export leverage import	0.09	6

Size

		% sd
size	-2.37	-144
Inrulc size	1.65	100
non-tangible size	-0.11	-6
size import	2.64	160
size Inrulc import	-1.46	-89
leverage non-tangible size	0.12	7
size non-tangible foreign	-0.04	-3
size non-tangible import	0.19	12
size leverage foreign	-0.50	-30
foreign size export	0.36	22
foreign size import	-0.72	-44
export size import	-0.84	-51

Foreign

		% sd
foreign	0.38	23
foreign import	0.54	33
leverage Inrulc foreign	-0.12	-8
foreign Inrulc import	-0.24	-14
size non-tangible foreign	-0.04	-3
foreign non-tangible import	-0.01	-1
size leverage foreign	-0.50	-30
foreign leverage export	-0.03	-2
foreign leverage import	0.03	2
foreign size export	0.36	22
foreign size import	-0.72	-44
export foreign import	-0.18	-11

Export

		% sd
export	0.35	21
export non-tangible import	0.01	1
foreign leverage export	-0.03	-2
export leverage import	0.09	6
foreign size export	0.36	22
export size import	-0.84	-51
export foreign import	-0.18	-11

Import

		% sd
import	0.28	17
Inrulc import	0.32	20
size import	2.64	160
foreign import	0.54	33
leverage Inrulc import	-0.13	-8
size Inrulc import	-1.46	-89
foreign Inrulc import	-0.24	-14
size non-tangible import	0.19	12
foreign non-tangible import	-0.01	-1
export non-tangible import	0.01	1
foreign leverage import	0.03	2
export leverage import	0.09	6
foreign size import	-0.72	-44
export size import	-0.84	-51
export foreign import	-0.18	-11

Conclusions

- Robust negative link between ULC and TFP can be found with firm level data;
- Overall effect of different variables can be sizable and may turn the sign of ULC-TFP link;
- Different subsamples/interactions reveal large differences and the sign often changes;
- This simple exercise reveals that huge firm-level heterogeneity characterizes the ULC-TFP link;
- Worsening/high ULC is not necessarily accompanied by worsening/low TFP for important firm level segments.

Todo list

- Estimate for subsamples as a robustness check;
- More refined categories: export share, import share, more categories for size, ownership;
- More variables: export/import dynamics, innovators, new export/import products/markets;
- More countries;
- Weighed estimation: micro vs. macro;
- Other firm-level performance measures?
- Empirical/theoretical explanations for coefficient/sign heterogeneity;
- Policy conclusions.