

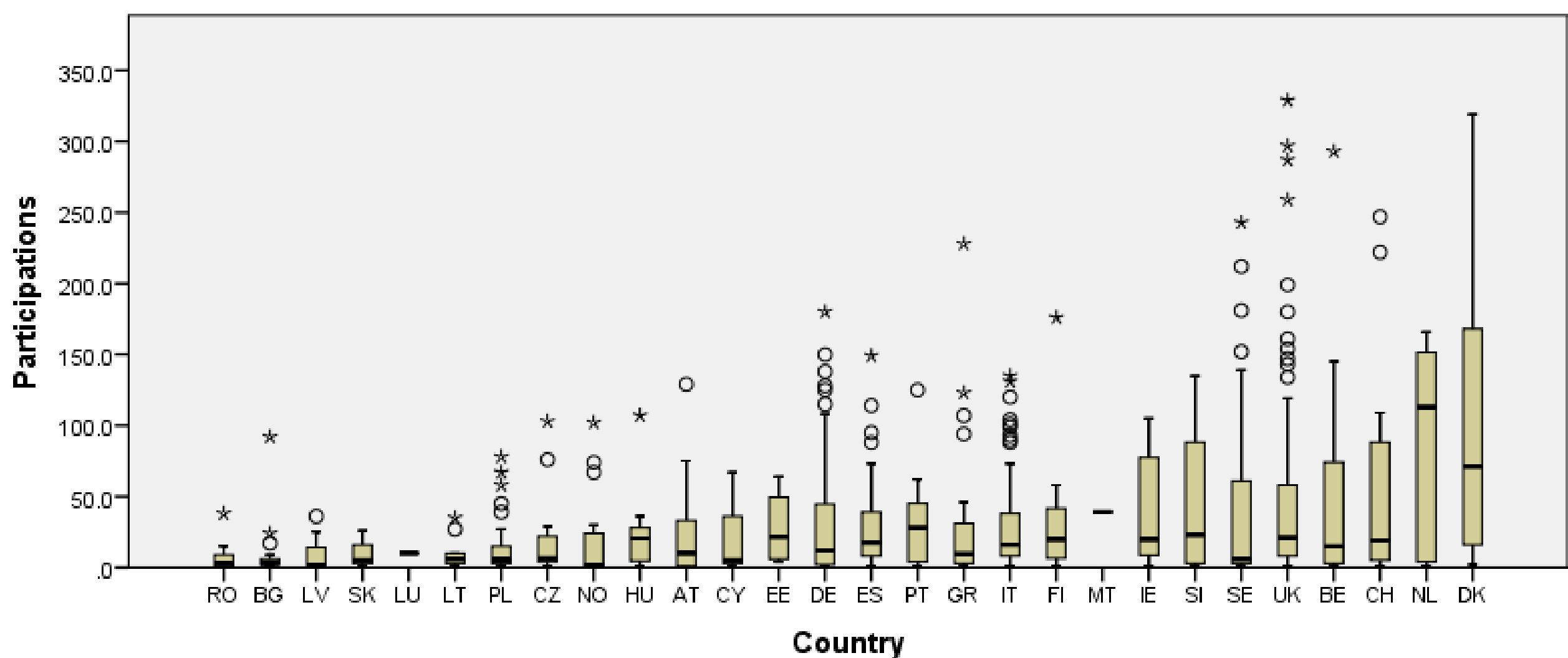
Understanding patterns of participation in European Framework Programmes of Higher Education Institutions

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Boxplot of HEI's participations to EU-FP by countries

Individual data points are the number of HEI's participations. The lower level of the boxes is set to 1Q, the higher to the 3Q, the line in-between represents the median of each country distribution; the bars correspond to 5%-95% of the distribution. Individual points represent outliers.

AIM OF THE PAPER AND RESEARCH QUESTIONS

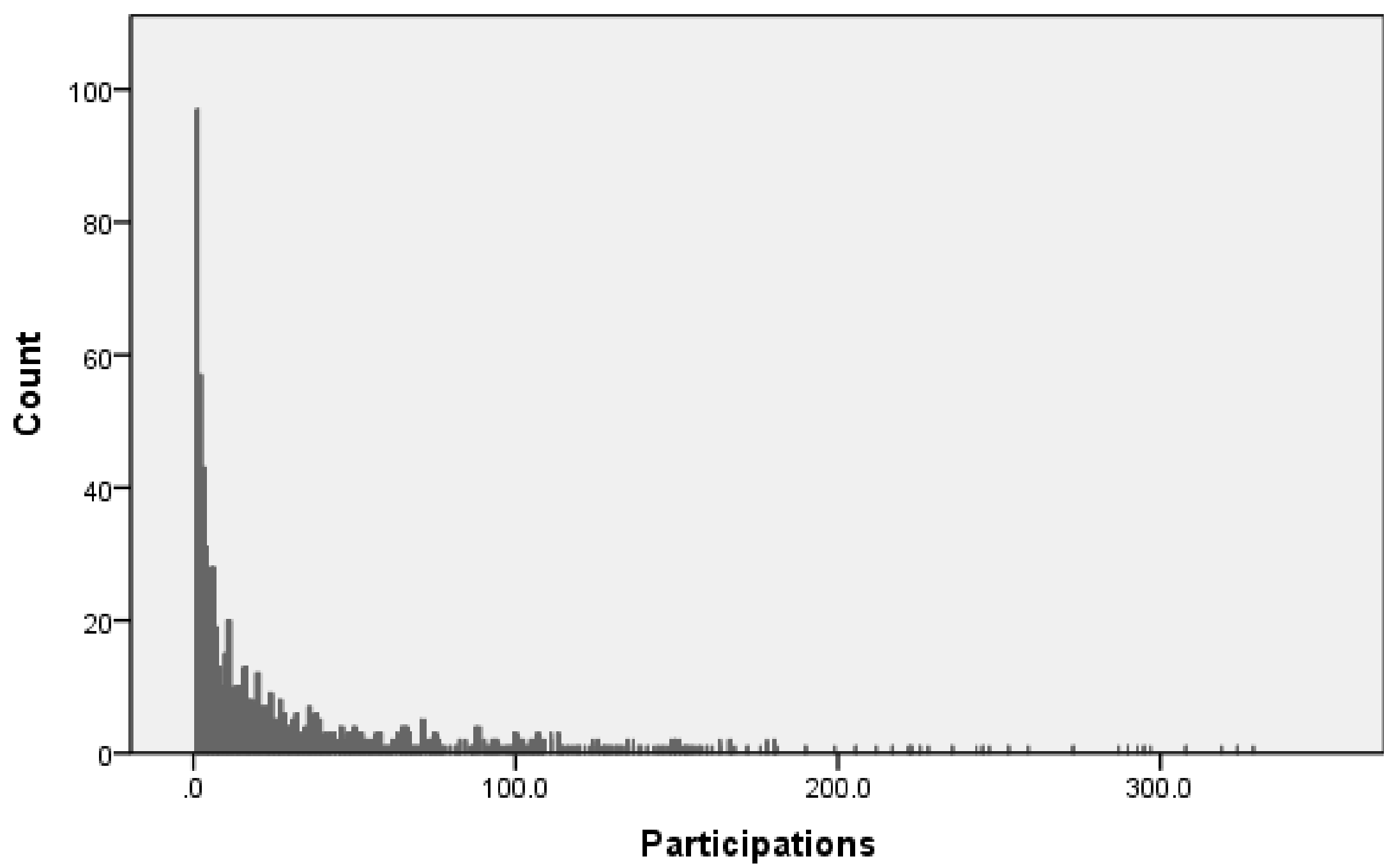
Investigating HEI's participation patterns and determinants in EU-FPs has become an important issue in a European Policy Context especially with respect to the goals of supporting excellence and integration in the European Research Area (ERA). This research addresses the following questions:

1. How are participations in EU-FPs distributed? Is there strong concentration in a small number of HEIs? To which extent has the expansion of the higher education system led to a broadening of the circle of HEI's participations?
2. To which extent are participations in the EU-FPs predicted by organisational factors like size, reputation, research intensity, and subject specialization? Are there scale effects on EU-FP participations?
3. Are there differences in level of participation by country?

SAMPLE AND DATA

The data analyzed are composed of 1,376 research-active HEIs, belonging to 28 countries, included in EUMIDA dataset. Research-active HEIs have been identified by EUMIDA as those HEIs that have an institutionalized research activity. The dependent variable refers to the count of participations to the EU-FPs in 2008 derived from the EUPRO database. Instead, the independent variables at the HEI level include the following information:

- Size: number of academic staff – full time equivalent.
- Reputation: (product between normalized impact factor and the total number of publications of the concerned HEIs normalized with the number of academic staff). This indicator is derived from the SCIMAGO institutional rankings for the year 2011, which is based on data from the period 2005-2009.
- PhD Awarding: legal right of HEIs to award a doctorate qualification.
- Research Intensity: the share of PhD students over undergraduate students.
- Disciplinary characteristics: HEIs with stronger orientation towards humanities or natural science and technology.



Participations in EU-FPs in 2008

RESEARCH METHOD

- Descriptive analysis of data on HEI's participation in EU-FP as well as on relationships with HEI's features.
- Binary Logistic Regression runs on a dichotomized dependent variable in order to test whether an HEI participates in the EU-FP.
- Truncated Linear Regression applied on the non-zero cases to compute the predicted number of participation. A log transformation of the dependent variable has been done in order to reduce the skewedness of the original dependent variable.

Impact of HEI's characteristics on EU-FP participations

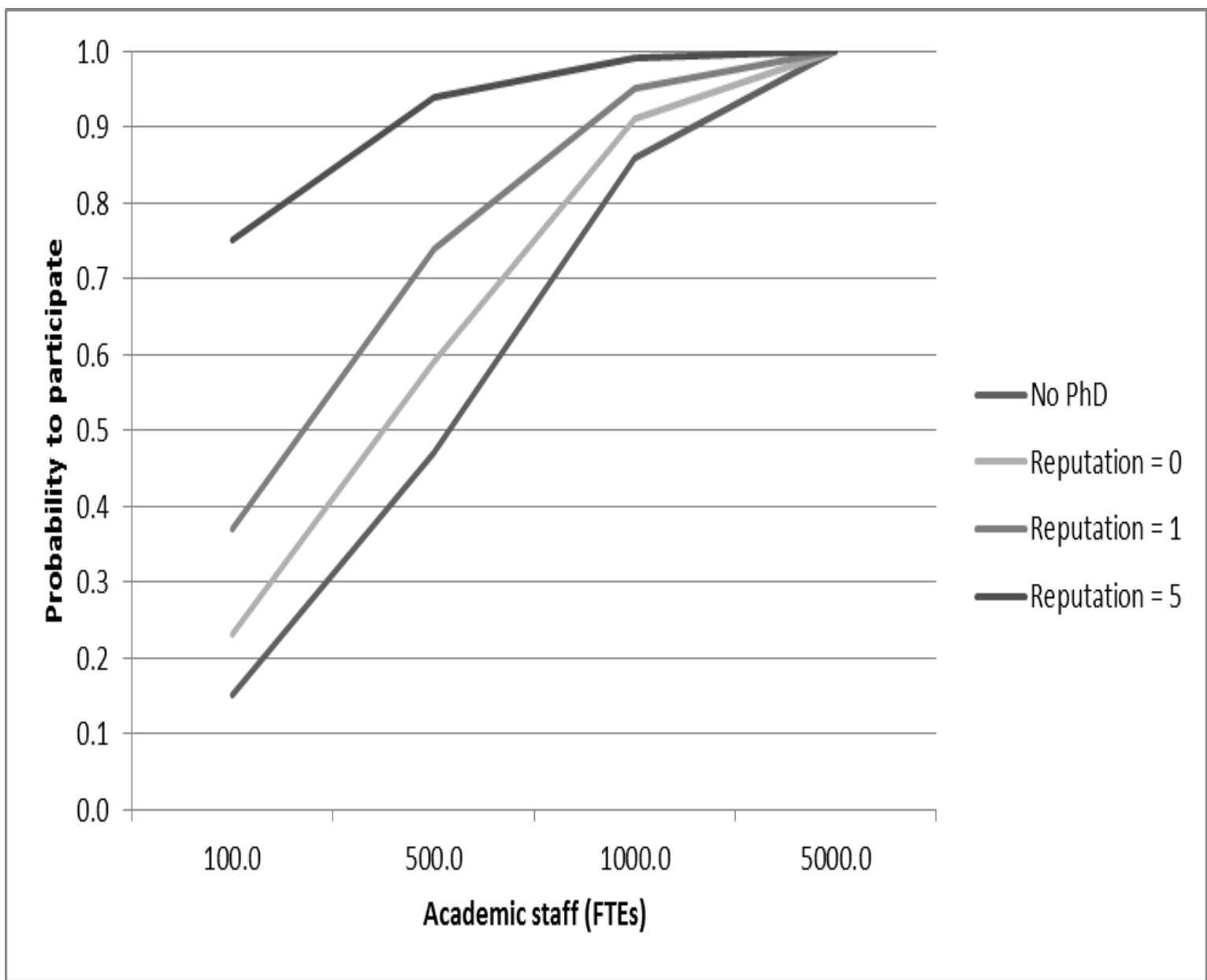
- Size and Reputation are by far the most important factors and display a similar strength.
- PhD Awarding, Research Intensity and Disciplinary Characteristics (Natural Engineering) also influences the number of participations, but to a lesser extent.
- The number of HEI's participations is proportional to academic staff without direct scale effects.

	Coef.	Std. Err.	P> z
Constant	-4.955	0.358	0.000
ln_academic_staff	0.858	0.053	0.000
PhD	0.508	0.173	0.003
ln_reputation	0.929	0.053	0.000
research_intensity	2.239	0.5	0.000
natural_engineering	0.262	0.103	0.011

Truncated Regression for predicting counts

HEI's Probability to participate in EU-FPs

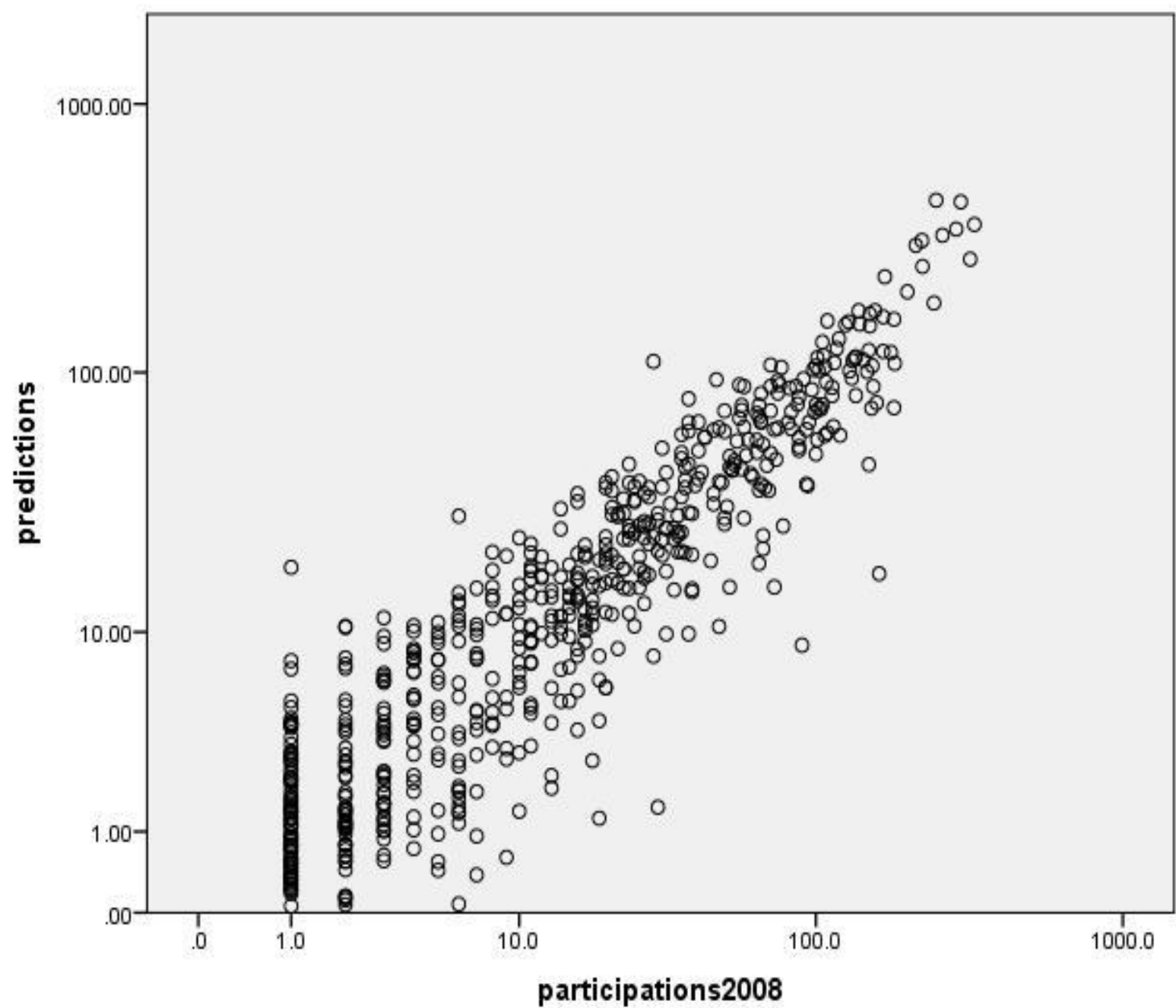
Second-tier HEIs which do not award the doctorate and do not have international reputation have a chance to participate in EU-FPs only beyond 500FTE of academic staff.



Probability to participate to EU-FPs

Predicted and Observed counts of EU-FPs participation

The quality of prediction is good on the whole range of counts observed and thus predicts very accurately both cases with a small number of participations and high values.



Predicted and observed counts of EU-FPs participation

CONCLUSIONS

- The EU-FPs participation is strongly concentrated in a small group of relatively large and highly reputed international HEIs.
- HEI's characteristics have a strong impact both on whether an HEI participates in the EU-FPs and to the observed number of participations.
- The number of participations tends to grow proportionally to organizational size, but it is strongly influenced by international reputation, and to a lesser extent, by research intensity and specialization in sciences and engineering.
- Country effects are much less important on the aggregate than HEI effect in determining participations with the possible exception of a few individual countries such as Poland and Romania.