Discipline-Specific Teaching efficiency: Evidence from Germany

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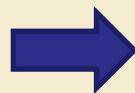**EAIR 35th Annual Forum in Rotterdam, Netherlands, 30 August 2013**

1. Introduction

2. DEA Method

3. Teaching Efficiency Analysis

4. Discussion

Background

- International efforts to increase the performance of universities

  ✓ Increasing growth rates of students

  ✓ Increasing societal expectations towards universities

  ✓ Lack of sufficient government financial resources

- Different aspect toward Graduates

  ✓ the present study has focused on role of graduates and their influence on the universities' performance together with differences in various graduates' evaluation criteria.
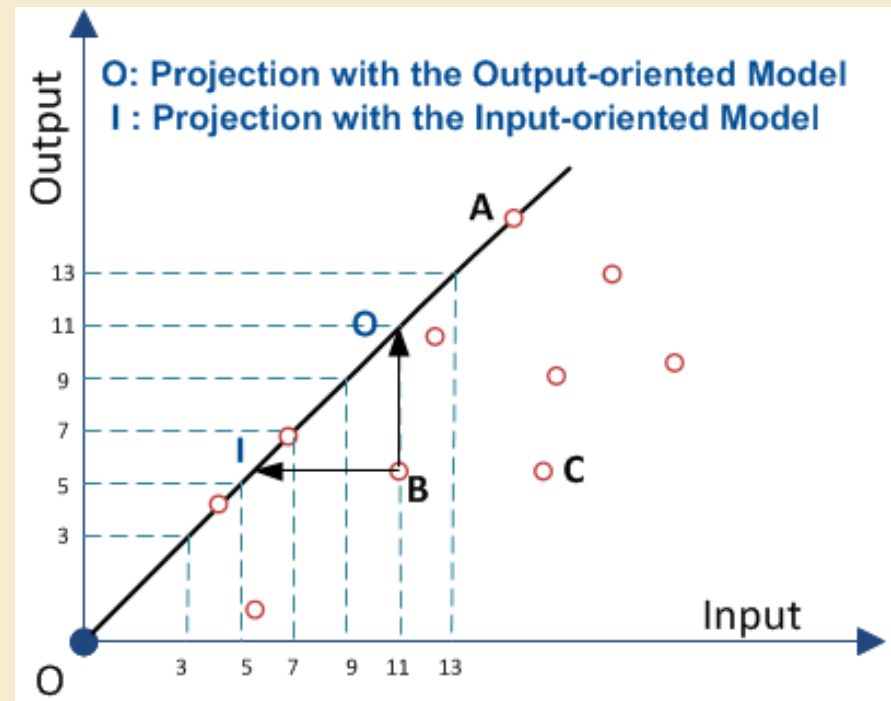
Factors affecting differentiation in graduates ➡

- **Regional factors**
- **Institutional factors**
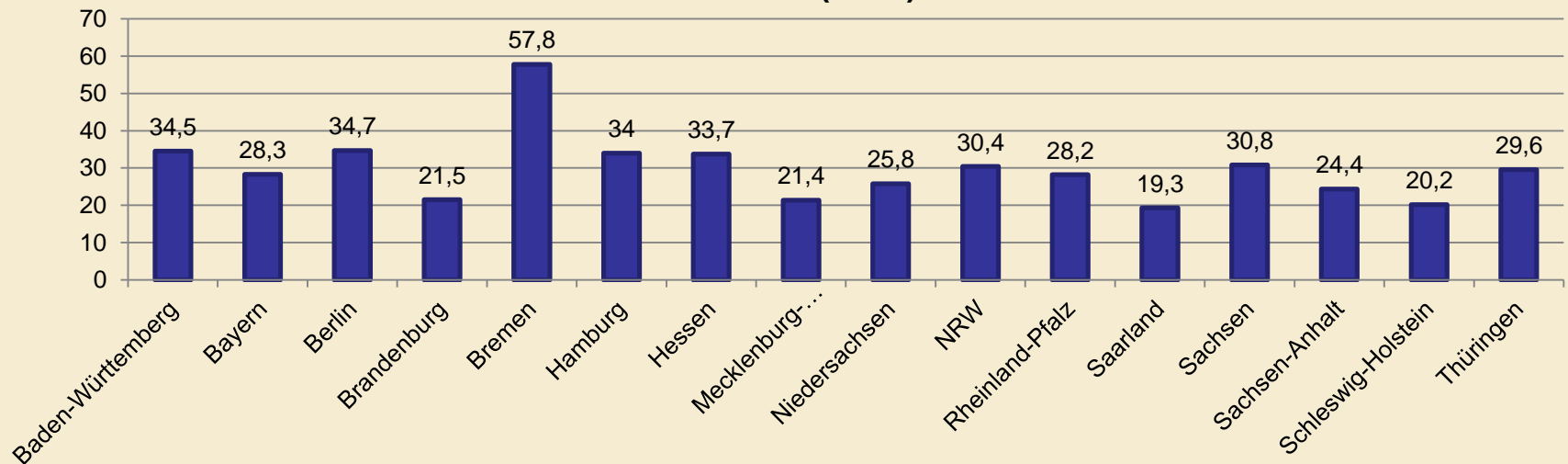- **Departmental factors**
- **…**

- DEA is a mathematical programming technique that produces a single aggregate measure for each DMU in terms of its utilization of inputs to produce desired outputs (Kao and Hung, 2008).

- DEA offers two main possible orientations in efficiency analysis *(Charnes et al 1994)*:

    - **Input-oriented models**

    - **Output-oriented models**

O: Projection with the Output-oriented Model
I : Projection with the Input-oriented Model

Ⅰ **Various regions ("Länder") of Germany**

Graduate rates (2010)

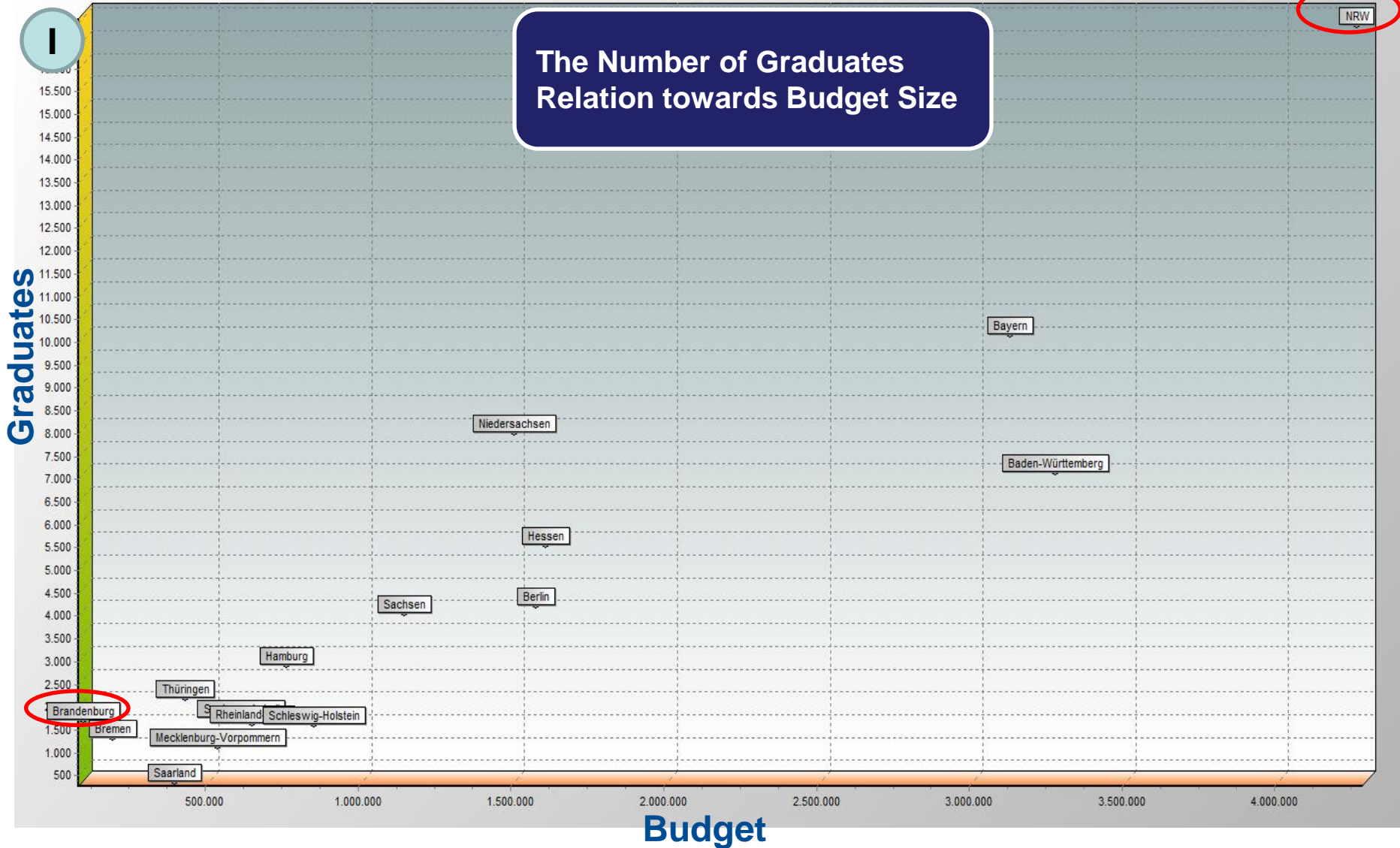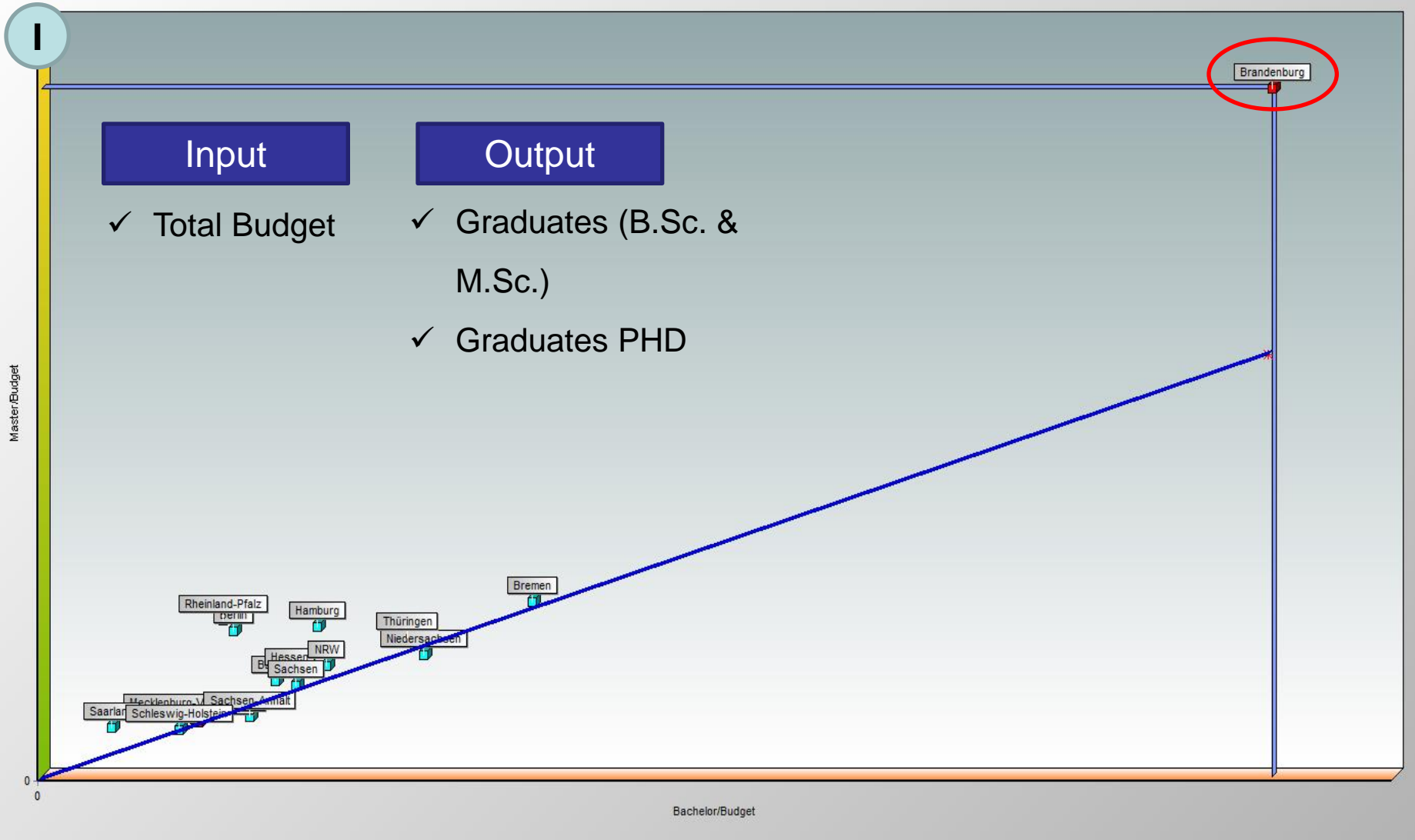**Causes of the difference:**

- Varying demographics
- Varying economic dynamics
- Mobility of students
- Different financial margins

The Number of Graduates Relation towards Budget Size

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II **Institutional differentiation: Types of higher education**

Total 395 educational institutes

- 96 Universities
- 225 Universities of applied sciences (FH)
- 58 Art and music schools
- 11 Church-related universities and colleges
- 5 Teacher training universities and colleges

✓ Oriented towards the practical use of theoretical knowledge
✓ No PhD programs

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II **Share of graduates - universities and universities of applied sciences**
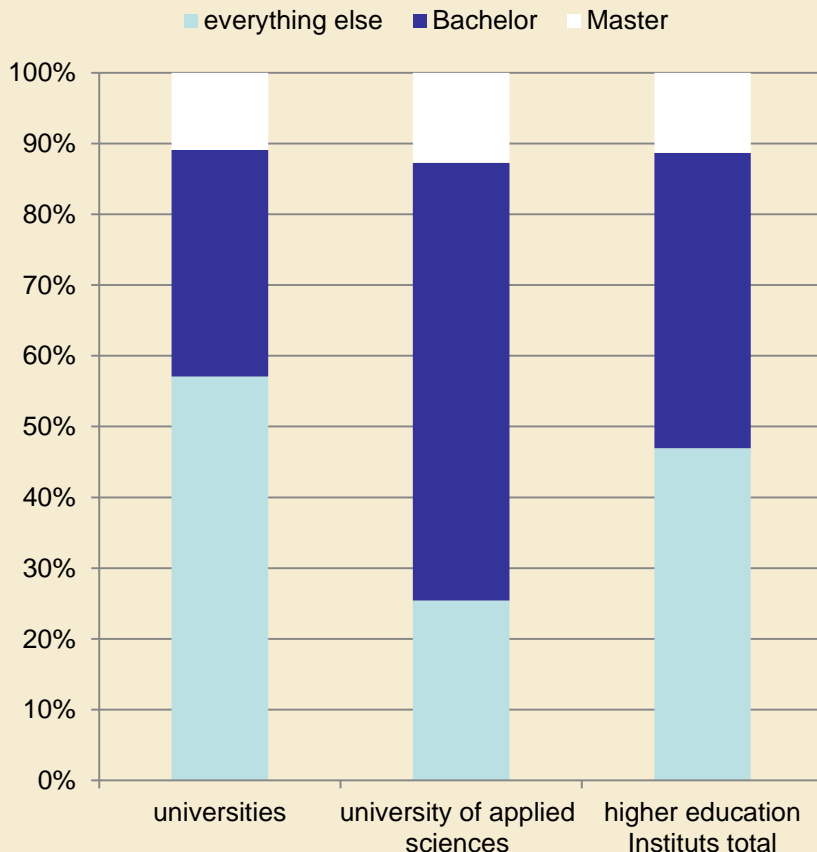
Efficiency analysis based on the university type – case study:

- 23 universities
- 11 universities of Applied Sciences

Legend: ■ everything else ■ Bachelor ☐ Master

Chart (y-axis 0%–100%):
- universities
- university of applied sciences
- higher education Instituts total

Input	Output
✓ Total Budget	✓ Graduates (B.Sc. & M.Sc.) ✓ Graduates PHD ✓ Third-party funds

The Number of Graduates Relation towards Budget Size
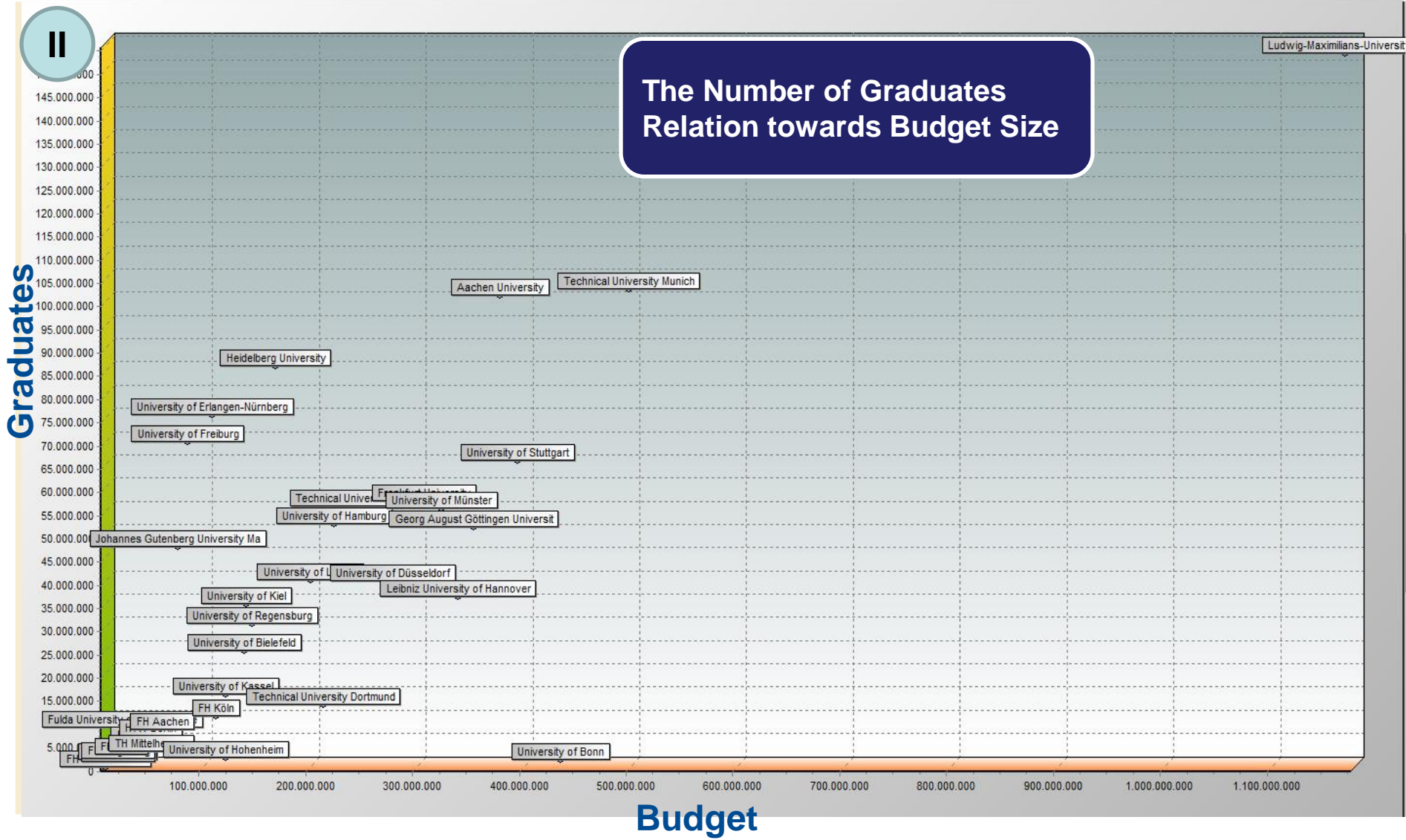
II	University Name	Efficiency Score
University	Johannes Gutenberg University Mainz	100
University	University of Freiburg	100
University of Applied Sciences	FH Düsseldorf	100
University	University of Erlangen-Nurnberg	96.04
University of Applied Sciences	Hochschule Fulda	76.73
University	Heidelberg University	76.16
University of Applied Sciences	HTW Berlin	75.28
University of Applied Sciences	FH Schmalkalden	60.15
University	University of Kassel	59.96
University of Applied Sciences	FH Trier	53.48
University	University of Leipzig	50.45
University	University of Hamburg	49.77
University	University of Regensburg	46.51
University	University of Munster	45.72
University	University of Bielefeld	45.25
University of Applied Sciences	FH Augsburg	43.20
University	University of Kiel	42.10
University of Applied Sciences	FH Augsburg	42.06
University of Applied Sciences	FH Köln	41.54

Average efficiency score:

Universities = 43.95

University of Applied Sciences = 53.61

Conclusion

- **Regional analysis** indicated differences in number of graduates in various regions of Germany ("Länder"). Such variations have been observed in efficiency levels of universities' regional performance.

- The <u>institutional divide is far less distinctive</u> as could have been suggested: **Universities as well as universities of applied sciences** are both ranked among very efficient as well as least efficient institutions.

Suggestions for further research

- Considering more participants and universities and accordingly a larger scale
- Considering publications as output in efficiency analysis
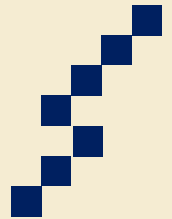
Thank you for your attention!

HELENA

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Higher Education Global Efficiency Analysis

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