

The Regional Impact of Public Universities on the Economy: A Case Study from Baden-Württemberg



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Prof. Dr. Johannes Glückler Director Institute of Geography Email | glueckler@uni-hd.de

Robert Panitz, Dipl.-Geogr. Email | panitz@uni-hd.de Christian Wuttke, BSc. Email | wuttke@uni-hd.de Economic and Social Geography Institute of Geography Heidelberg University www.wirtschaftsgeographie.uni-hd.de

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Problem Definition | Intellectual Capital





- Economic policy guidelines recommend the pursuit of policy measures to foster the development of a knowledge-driven economy.
- In contrast to this transition:
 - Declining budgets of public authorities.
 - Alternative use of public funds.
- How do these framework conditions affect higher education institutions?
- What role do universities play in the development of regional economies?

Academic landscape in Baden-Württemberg



- 55 Research Institutes and 80
 Universities, among them some of the oldest in Germany.
- 49 of 55 Institutes are located in close proximity to public Universities.
- More than half of all 306.399 students were registered in one of the nine public universities (winter 2011/2012).
- In 2011, public universities attained 38 per cent of the income from third party funding
- Universities of Applied Sciences only rose 19 per cent, Pedagogical Universities only 18 per cent.

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How to assign a monetary value?



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Impact on	Demand	Gross value added	Income	Employment	Taxes
Gross effect	Gross expenditures	Expenditures on human resources	Gross incomes (employees + students)	University workplaces	Taxes from Universities and their members

Regional effect

Direct effect	Share of expenditures directed to BW	Expenditures on human resources	Gross incomes from employees and students in BW	Number of employees registered in BW	VAT from university spending and income taxes (ITX)
Indirect effect	Additional demand through increased production in other industries.	Additional gross value added from university demand.	Additional incomes through university expenditures.	Additional employment through increased demand in other industries.	VAT from students and employees + ITX from indirect incomes.
Induced effect	Additional demand through incomes in other industries.	Additional gross value added from indirect and induced demand effect	Additional income through indirect and induced demand effects.	Additional employment in other industries through increased incomes.	VAT and ITX from induced incomes and demand.
Total effect	= Sum (Direct + Indirect + Induced effects)				



Mill. EUR	Demand	Gross value added	Income	Employment	Taxes (BW)
Gross effect	4.545	2.000	2.746	40.836	770

Regional effects

Direct effect	2.403	2.000	2.746	36.191	298 (128)
Indirect effect	646	1.159	495	18.873	403 (176)
Induced effect	242	464	40	7.286	80 (35)
Total effect	3.292	3.615	3.291	62.350	781 (347)

Gross effect 4.617 Mill. EUR					
Material and Investment spending 1.049 Mill. EUR		Wages & Salaries (costs) 2.000 Mill. EUR	Student expenditure 1.568 Mill. EUR		
outside BW 454 Mill. EUR	inside BW 595 Mill. EUR	outside BW 201 Mill. EUR 1.799 Mill. EUR	outside BWinside BW218 Mill. EUR1.350 Mill. EUR		
		12 Mill. EUR Stud. assistants Stud. assistants			
		109 Mill. EUR564 Mill. EURSocial securitySocial security			
		20,7 % ¹ Income taxes	9,5 Mill. EUR Administrative contributions		
Impact on demand		X 79,6 % ² Marg. propensity to consume	× 100 % ² Marg. propensity to consume		
Regionalisation		× 10 % ³ Regional share × 90 % ³ Regional share	× 10 % ³ Regional share × 90 % ³ Regional share		
	Direct effect incl. VAT 595 Mill. EUR	Direct effect incl. VAT 630 Mill. EUR	Direct effect incl. VAT 1.229 Mill. EUR		
VAT	■ 12 % (12,5%) ⁴ VAT	- 15,6 % ⁵ VAT	15,9 % ⁵ VAT		
Combined multiplier	× 1,42				
VAT	+ VAT from direct, indirect und induced effects				
Total effect ind. VAT	3.364 Mill. EUR				

¹ StaLa-BW (2012) Enkommensmillionäre in Baden-Württemberg

² Destatis (2008) EVS net household income 2600-3600; Calculation: Private consume / disposable income = 2.486 EUR / 3.121 EUR = 79,6%; Net household income <1300; private consume > disposable income thus marg. prospensity to consume = 100%

³Blume & Fromm (1999)

⁴ Different VAT rates for medical faculties (12,5 %) and universities excl. med. faculties (12 %). ⁵ Calculation based on StaLa and Destatis (2013) LWR

Attraction of Third Party Funding





- Third party funding grew from 11,4% in 1999 to 16% in 2011.
- Public Universities make up for more than 90% of all third party funding in Baden-Württemberg.
- Each of the nine public universities attracted
 0.50 Euro per 1.00 Euro of basic funding provided by the Federal government.

Glückler J, Panitz R, Wuttke C (2013) Die wirtschaftliche Bedeutung der Landesuniversitäten für das Land Baden-Württemberg. Studie im Auftrag der Landesrektorenkonferenz Baden-Württemberg. Universität Heidelberg, Professur für Wirtschafts- und Sozialgeographie, Heidelberg

Total Impact of spending on gross value added





Each Euro at net value of basic funding creates an impact of 2,30 Euro on GVA.

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Budget cut: Saving vs. alternative allocation



- Absolute impact. A 10% reduction of public money for universities (204 mill. €) induces a reduction of the absolute regional impact of 368 mill.
 € in gross Value Added.
- Differential impact. When 10% of the university budget are reallocated to alternative uses, two extreme scenarios are possible:
 - A reallocation of the budget exclusively to employment in public administration generates a total regional effect of 250 m€ (GVA).
 - A reallocation of the budget exclusively to public expenses for services and goods generates a total regional effect of 92 m€ (GVA).

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Discussion



- This study uses exclusive primary data facilitated by the nine public universities in Baden-Württemberg with a precise regionalization of expenditures for salaries, goods and services and investments.
- Contrary to previous studies we use a combined multiplier method, which take's the consumer and the production side into account.
- In addition to traditional approaches, we included obligatory health insurance into the calculus by regionalizing contributions and expenses for health insurance at the level of a federal state.
- Since impact studies rely on the assumption of counterfactuality, we provided a rationale for estimating the real differential impact of public universities on the regional economy. The attraction of students for permanent residence and of external research funds explains why public budget generates the highest regional impact when allocated to higher education.

How to improve the multiplier analysis?



- Problem 1. The multiplier analysis only applies to a short-term perspective and assumes static relationships within the regional division of labour. New knowledge and innovations, however, transform production functions and affect the intersectoral division of labour. Since universities are sources of new knowledge and innovation, the play a major role in constantly transforming the regional economy.
- Problem 2. Especially developed economies have high export rates. However, exactly the estimation of regional exports is one of the weaknesses within an Input-Output regionalization.
- How to improve?
 - First, to measure the intellectual capital and its impact on universities.
 - Second, to calculate the monetary value and impact of this capital. One possibility is to merge the multiplier analysis with a theory of economic growth.
 - Third, to capture regional exports through a regional survey (e.g. Kronenberg, 2010).