The Political Economy of Exporting Higher Education:

A Case Study on the Introduction of Tuition Fees for International Students in Baden-Württemberg

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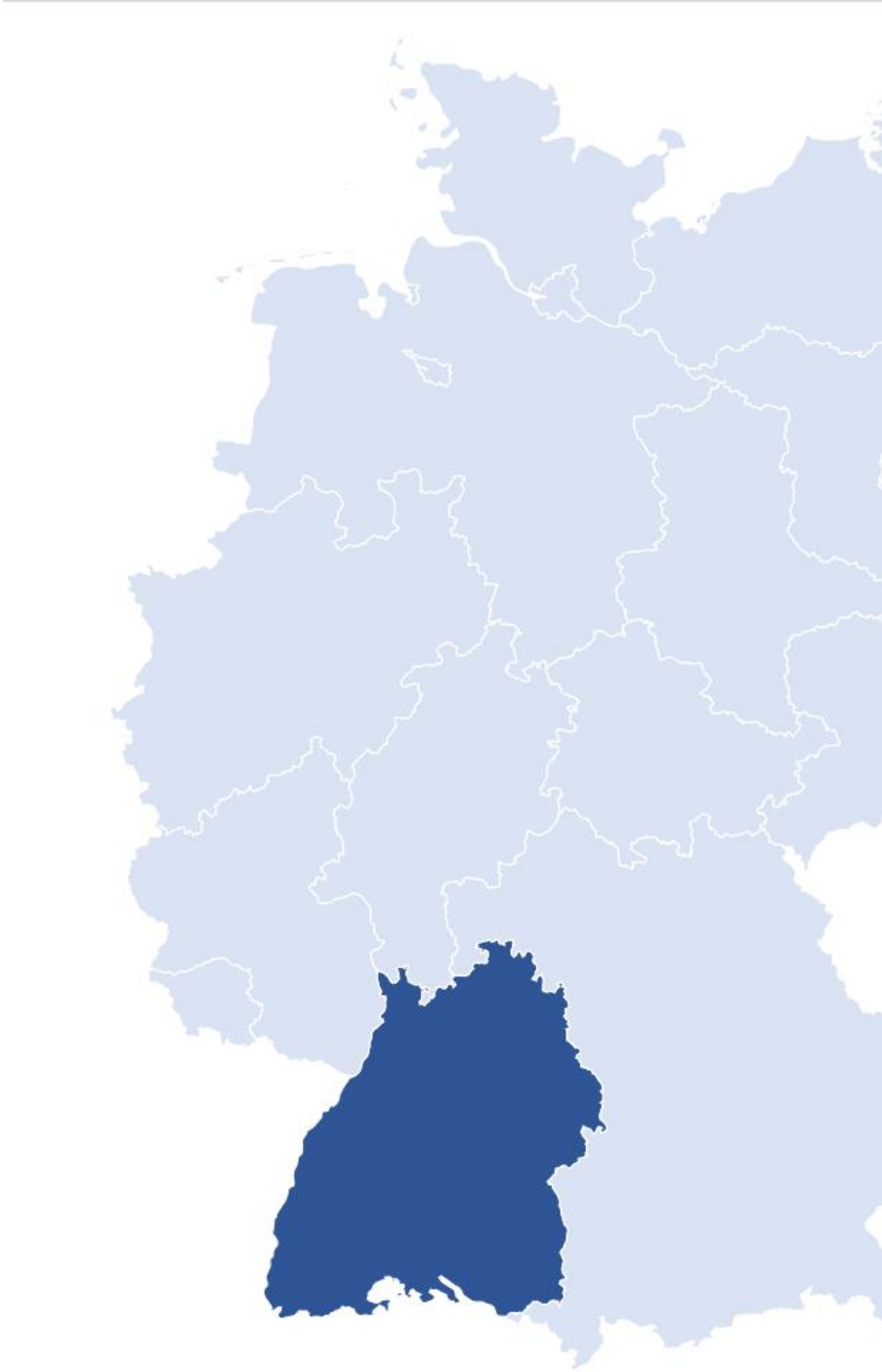
Context

- Baden-Württemberg introduces tuition fees for international Non-EU students in amount of 1.500 EUR per semester from winter semester 2017/2018;
- **Four-fifths (EUR 1.200)** of each fee charged goes to the state to consolidate its structural deficits;
- **One-fifth (EUR 300)** goes to the local higher education institution to provide additional support for international students;
- The tuition fees for German students in a second-degree programme amounted to 600 EUR per semester;
- From the winter semester 2024/2025, the Technical University Munich introduces fees for internationals between 2.000 – 6.000 euros per semester



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Development of tuition fees in Germany from 1949

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1949-1969
Rule of CDU/CSU
Low tuition fees/ low enrolment level
Goal: avoid massification of higher education

protests + Ost-West scientific race + high-skilled labour demand

1969-1982
Rule of SPD/ FDP
NO tuition fees/ high subsidies/ high enrollment rate
Goal: democratization of higher education

1982-1998
Rule of CDU/CSU
No tuition fees/ capped loan

High costs of the policy + oil crisis

1998-2006
Rule of SPD/ Die Grünen
trial to prohibit tuition fees by federal law
Result:constitutional court permitted the state governments to introduce tuition fees

2006-2011
6 CDU/CSU-led states introduced tuition fees

Massive protests

2011-2014
all the fees were abolished by subsequent left-wing governments or referendum

BW from 2016
the coalition of The Greens&CDU
Introduction of tuition fees for
international students and local students in the second degree

Structural reasons in Baden-Württemberg

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- In 2009, the German Bundestag and the Bundesrat launched debt brake in the Basic Law (Grundgesetz)
- federal states must balance their budgets from 2020 onwards
- Baden-Württemberg had a requirement for consolidation of around 1.82 billion EUR until 2020
- The Ministry of Science, Research and the Arts in Baden-Württemberg was required to contribute an amount of 48 million EUR to the consolidation
- The Ministry of Science didn’t want to cut spending on Higher Education
- **Expectation:** 40 million EUR, with 32 million EUR being allocated to the state budget and 8 million EUR being retained by local universities

Political reasons in Baden-Württemberg

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Bündnis 90/Die Grünen & SPD coalition agreement (2011):

- to increase the number of international students in state's higher education institutions and to **improve the accessibility** to higher education for **everyone**

VS.

Bündnis 90/Die Grünen & CDU coalition agreement (2016):

- To increase the number of **high-skilled international students** in order to position Baden-Württemberg even better in global knowledge networks and on international education markets

Green Science Minister Theresia Bauer: "international students have to choose higher education institutions in Baden-Württemberg **for their quality and welcoming atmosphere, rather than for low costs**" (Interview by Deutschlandfunk (2015))

➢ **prioritize the quality of education over accessibility**

Research Question

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What effect does the introduction of tuition fees for international students have on the demand for international students to study at higher education institutions in Baden-Württemberg?

(-) negative

Higher Education Institutions as a normal good: the general law of demand says that the increase of price leads to decrease of demand .

- HEI with tuition fees will be substituted by the HEI with no tuition fees.

(+) positive

Higher Education Institutions as a Veblen good: the price increase leads to an increase of demand.

- The demand in HEI with tuition fees will increase

Research Question

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What effect does the introduction of tuition fees for international students have on the demand for international students to study at higher education institutions in Baden-Württemberg?

Hypothesis of Landtag: The choice of study location is not dependent on tuition fees, instead the quality of education and international reputation matters more than study costs -> minimal or non-existent decrease -> **HE^in BW is a Veblen good**

Literature Review

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	Topic	Dependent variable	Data	Method	Result
Kerstin Bruckmeier & Berthold Wigger (2014)	Germany's re-introductions of tuition fees in 7 of 16 German states from 2006 to 2014	enrolment rate of domestic high-school graduates	DESTATIS	Dif-In-Dif	significant and negative for Hessen and Lower Saxony no effect for others
Malte Hübner (2012)	equivalent	enrolment probability	DESTATIS	DiD+ FE	Significant negative
Ralf Minor (2023)	equivalent	log (domestic high-school graduates)	DESTATIS	DiD + FE	Significant negative
Mateo Zullo and Olga Churkina (2023)	equivalent but the effect on **international** first-year students	log (first-year **international** student)	DAAD	DiD+ FE & synthetic control method	significant and negative for Lower Saxony no effect for others

Literature Review

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	Topic	Dependent variable	Data	Method	Result
Andreas Vortisch (2024)	Baden-Württemberg's policy to charge international students' tuition from the winter semester 2017/2018 Until (WiSe 2019/2020)	enrolment share (Internationals/ All Students)	DESTATIS + the states' statistical offices to differ between EU and Non-EU	DiD+FE & Event Study	Significant negative
My study (2024)	equivalent - but data until WiSe 2022/2023 - Different control variable for the quality of HEIs	equivalent	the states' statistical offices + DESTATIS (other data set)	DiD+ FE	Significant negative

DATA

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- **States' Statistical Offices** of Baden-Württemberg, Bayern, Hessen, Rheinland-Pfalz and Nordrhein-Westfalen to construct a sample of shares of first-year Internationals

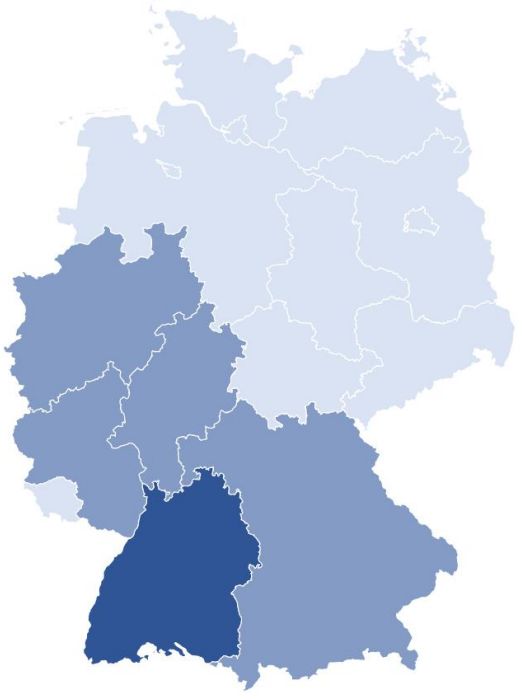
- **DESTATIS Statistics of** 16 German federal states **:** to calculate the share of Non-EU international students in comparison to all international first-year students

DATA

- **States' Statistical Offices** of Baden-Württemberg, Bayern, Hessen, Rheinland-Pfalz and Nordrhein-Westfalen to construct a sample of shares of first-year Internationals
- Baden-Württemberg's HEIs – Treatment Group
- HEIs in Bayern, Hessen, Rheinland-Pfalz & (Nordrhein-Westfalen) – Control Group

	Baseline Regression
BW	28 public HEIs (9 universities and 19 universities for applied sciences),
RP	11 HEIs (4 universities and 7 universities for applied sciences)
HES	11 HEIs (5 universities and 6 universities of applied sciences)
BAY	26 HEIs (9 universities4 and 17 universities for applied research)

Treatment and Control groups



DATA: States' Statistical Offices

$$\textbf{Share\_ist} = \frac{\textbf{International First-Year Students\_ist}}{\textbf{Total First-Year Students\_ist}}$$

i – university, s – state, t - semester

semester	university	kind_of_hei	state	all_students	int_student	share_int_students	treatment	after2017
2014_2015	U_Freiburg	1	bw	3950	598	0,15139241	1	0
2014_2015	U_Bamberg	1	bay	1600	193	0,120625	0	0
2014_2015	TU_Darmstadt	1	hes	3888	588	0,15123457	0	0
2014_2015	TU_Kaiserslautern	1	rlp	1778	258	0,14510686	0	0

DATA: States' Statistical Offices

$$\textbf{Share}\_\text{ist} = \frac{\textbf{International First-Year Students}\_\text{ist}}{\textbf{Total First-Year Students}\_\text{ist}}$$

i – university, s – state, t - semester

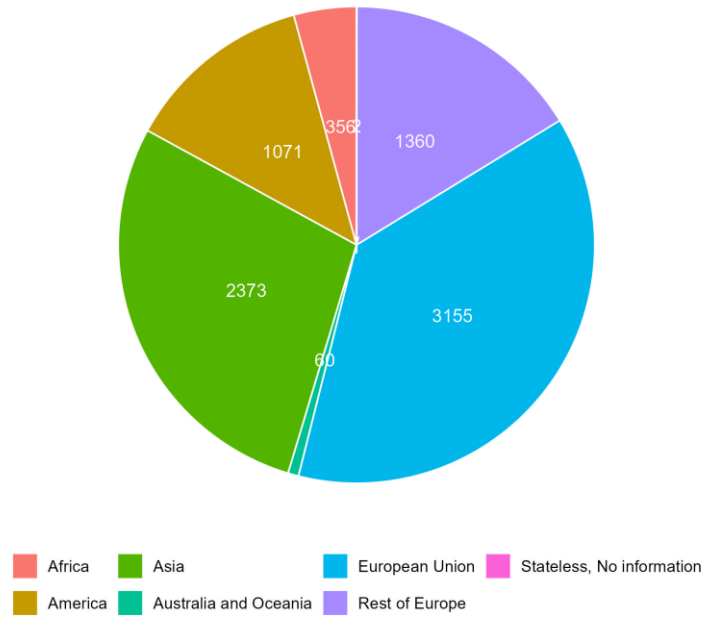
Summary statistics of the share of international students

	state	average_share	count_obs
1	bay	0.1242	227
2	bw	0.1137	244
3	hes	0.1197	99
4	rlp	0.112	99

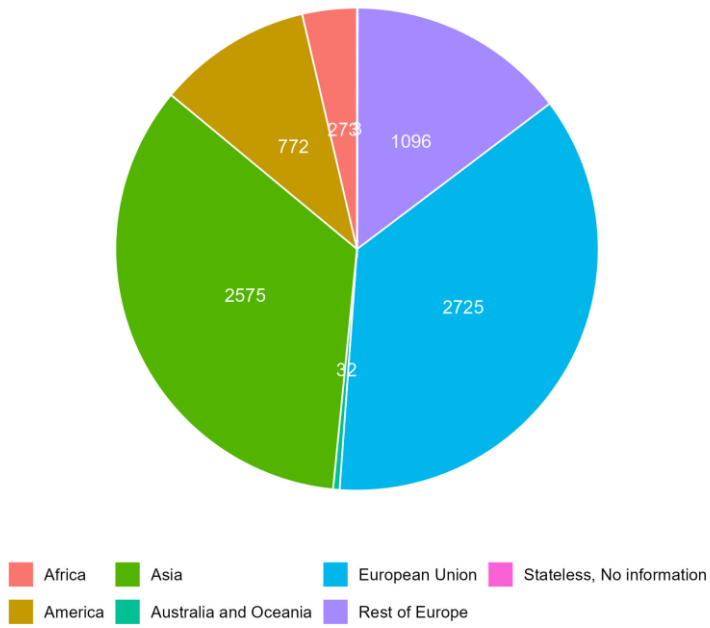
DATA

- **DESTATIS Statistics of** 16 German federal states **:** to calculate the share of Non-EU international students in comparison to all international first-year students

Share of Students by Continent in Baden-Württemberg in the Semester 2014/201



Share of Students by Continent in Baden-Württemberg in the Semester 2022/2023



DATA

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- **DESTATIS Statistics of** 16 German federal states **:** to calculate the share of first-year Non-EU international students in comparison to all international first-year students

Summary statistics of the share of international students

	state	average_share_non eu	count_obs
1	Baden-Württemberg	0.6225	9
2	Bayern	0.6372	9
3	Berlin	0.6478	9
4	Brandenburg	0.6848	9
5	Bremen	0.8793	7
6	Hamburg	0.7241	9
7	Hessen	0.7589	9
8	Mecklenburg-Vorpommern	0.7647	9
9	Niedersachsen	0.773	9
10	Nordrhein-Westfalen	0.6684	9
11	Rheinland-Pfalz	0.5903	9
12	Saarland	0.5904	7
13	Sachsen	0.7347	9
14	Sachsen-Anhalt	0.83	9
15	Schleswig-Holstein	0.744	9
16	Thüringen	0.8129	9

Method: Difference-In-Difference

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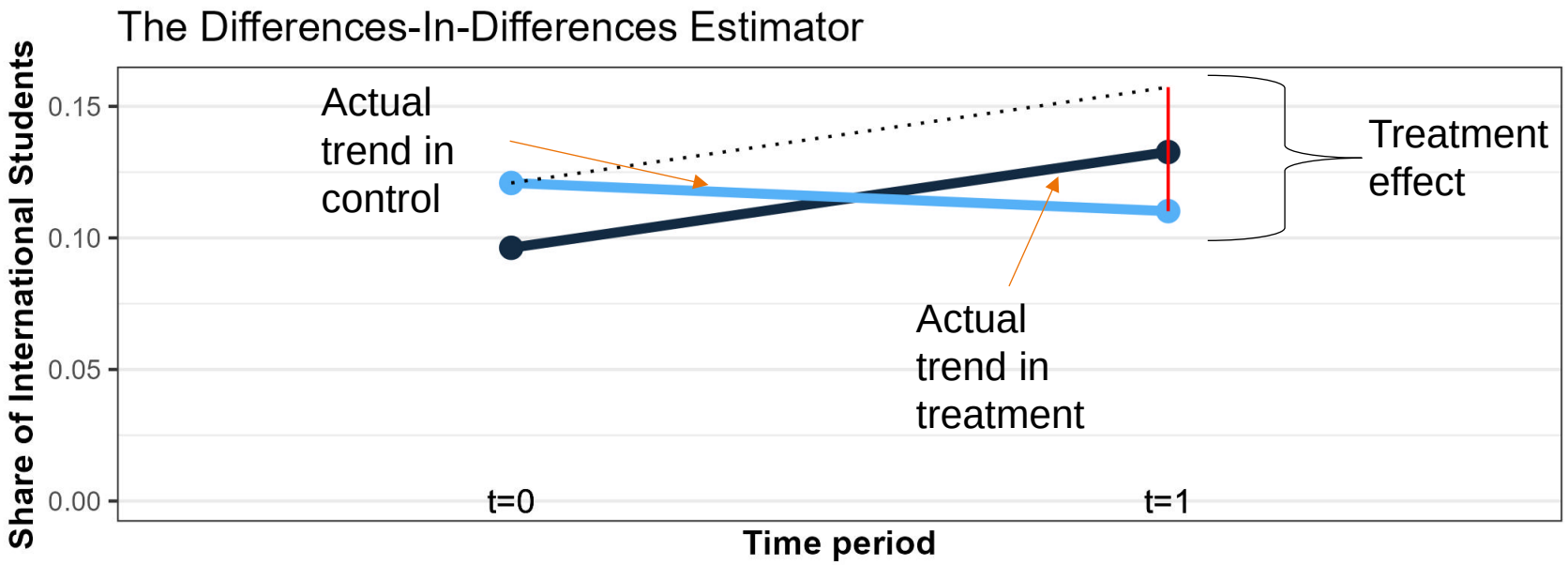
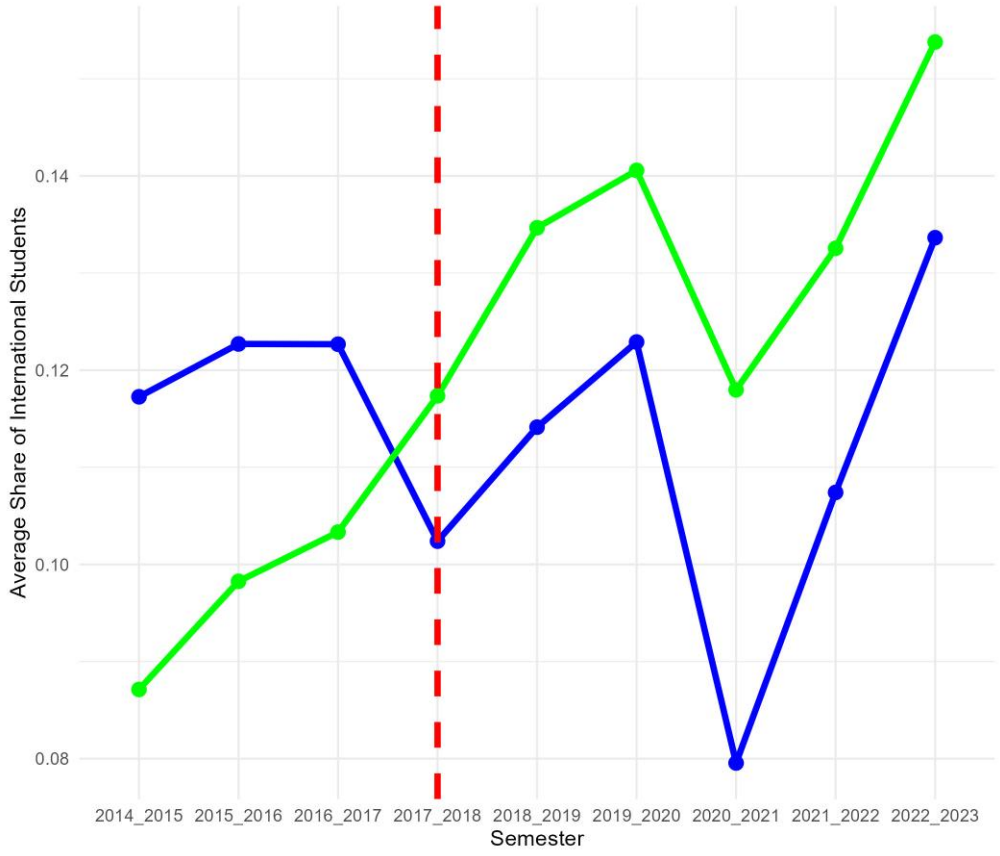
The Differences-in-Differences (DiD) estimator calculates the difference across treatment and control groups over time (Wooldridge 2014)

(4) $(\bar{Y}_{\text{treatment, after}} - \bar{Y}_{\text{treatment, before}}) - (\bar{Y}_{\text{control, after}} - \bar{Y}_{\text{control before}})$ (ibid.)



Parallel Trend Assumption



the trends have to be the same on average for the treated and untreated before the treatment (DiTraglia 2022)

- Until 2016/2017 – positive trend in both groups
- WiSe 2017/2018 – Decrease of Students in the treatment group **vs.** Increase of Students in the control group

Regression equation

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(6) $Share\ of\ inernational\ students_{ist} = a_s + y_t +$

$\sum_{t=1,\square t\neq 0}^{T} \beta_1 treatment_{st} + \beta_2 after2017 + \beta_3(treatment_{st} *$

$after2017) + \beta_4 excellence_{ist} + \beta_5 kind\ of\ HEI_{is} + \varepsilon_{ist}$

where i is the higher education institution, s stands for federal state (Baden-Württemberg, Bayern, Rheinland-Pfalz) and t – winter semester from 2014/2015 to WS 2022/2023.

Excellence – a dummy variable as a measure of institutional quality in Germany. If the institution belongs to the HEIs of excellence =1 , otherwise excellence = 0
Kind of HEI – a dummy variable; if university = 1; university of applied sciences (Fachhochschule) = 0)

	Y = Share of International Students				
	OLS			panel linear	
	(1)	(2)	(3)	(4)	(5)
Constant	0.096***	0.087***	0.087***		
	(0.004)	(0.004)	(0.004)		
treatment	0.025***	0.026***	0.025***	0.019	0.018
	(0.006)	(0.006)	(0.006)	(0.064)	(0.067)
treatment: after2017	**-0.047*** **	**-0.047*** **	**-0.048*** **	**-0.047*** **	**-0.048*** **
	(0.008)	**(0.008)**	**(0.008)**	**(0.003)**	**(0.002)**
after2017	0.036***	0.036***	0.036***	0.057***	0.056***
	(0.006)	(0.006)	(0.006)	(0.003)	(0.004)
kind_of_hei		0.025***	0.025***		0.025***
		(0.005)	(0.005)		(0.008)
excellence			0.014*		0.013
			(0.007)		(0.011)
Observations	669	669	669	669	669
R^2	0.058	0.098	0.102	0.035	0.082
Adjusted R^2	0.054	0.093	0.095	0.014	0.060
Residual Std. Error	0.058 (df = 665)	0.057 (df = 664)	0.057 (df = 663)		
F Statistic	13.611*** (df = 3; 665)	18.067*** (df = 4; 664)	15.005*** (df = 5; 663)	7.809*** (df = 3; 654)	11.667*** (df = 5; 652)
Note:					*p<0.1; **p<0.05; ***p<0.01

Baseline-Regression

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	Y = Share of International Students				
	OLS			panel linear	
	(1)	(2)	(3)	(4)	(5)
Constant	0.096***	0.087***	0.087***		
	(0.004)	(0.004)	(0.004)		
treatment	0.025***	0.026***	0.025***	0.019	0.018
	(0.006)	(0.006)	(0.006)	(0.064)	(0.067)
treatment:after2017	**-0.047*** **	**-0.047*** **	**-0.048*** **	**-0.047** **	**-0.048*** **
	(0.008)	**(0.008)**	**(0.008)**	**(0.003**	**(0.002)**
after2017	0.036***	0.036***	0.036***	0.057**	0.056***
	(0.006)	(0.006)	(0.006)	(0.003)	(0.004)
kind_of_hei		0.025***	0.025***		0.025***
		(0.005)	(0.005)		(0.008)
excellence			0.014*		0.013
			(0.007)		(0.011)

- **Treatment*after2017** : - 0.048, c.p. the average share of international students decreased by about 0.048 points in higher education institutions of Baden Württemberg owing to the introduction of the tuition fees.
- **Kind_of_HEI** : 0.025 , positive and statistically significant
- **Excellence :** positive, but not statistically significant

Regression with NRW as a single control group

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	Share of International Students				
	OLS			*panel linear*	
	(1)	(2)	(3)	(4)	(5)
Constant	0.087***	0.072***	0.071***		
	(0.006)	(0.007)	(0.007)		
treatment	0.032***	0.037***	0.036***	0.032	0.036
	(0.008)	(0.008)	(0.008)	(0.414)	(0.441)
treatment:after2017	-0.033***	-0.033***	-0.034***	-0.033***	-0.034***
	(0.010)	(0.010)	(0.010)	(0.0002)	(0.001)
after2017	0.025***	0.024***	0.023***	0.111	0.114
	(0.008)	(0.008)	(0.008)	(0.070)	(0.070)
kind_of_hei		0.029***	0.028***		0.028**
		(0.005)	(0.005)		(0.011)
excellence			0.030***		0.029
			(0.007)		(0.026)
Observations	461	461	461	461	461
R^2	0.035	0.110	0.141	0.024	0.132
Adjusted R^2	0.029	0.102	0.132	-0.003	0.105
Residual Std. Error	0.051 (df = 457)	0.049 (df = 456)	0.049 (df = 455)		
F Statistic	5.598*** (df = 3; 457)	14.119*** (df = 4; 456)	14.969*** (df = 5; 455)	3.597** (df = 3; 448)	13.559*** (df = 5; 446)

Note: *p<0.1; **p<0.05; ***p<0.01

Regression with DESTATIS DATA

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e.g. Asia_Share = First-year Asian Students / First-year International Students

	Share of International Students				
	EU_share	Europe_share	Asia_share	Africa_share	America_share
	(1)	(2)	(3)	(4)	(5)
treatment:after2017	0.085***	-0.002	-0.050***	-0.032***	0.002
	(0.006)	(0.006)	(0.006)	(0.005)	(0.002)
Observations	142	140	140	140	140
R^2	0.176	0.0002	0.049	0.092	0.0004
Adjusted R^2	0.007	-0.209	-0.150	-0.097	-0.208
F Statistic	25.031*** (df = 1; 117)	0.017 (df = 1; 115)	5.905** (df = 1; 115)	11.684*** (df = 1; 115)	0.050 (df = 1; 115)
Note:					*p<0.1; **p<0.05; ***p<0.01

Shares of Students from Asia and Africa

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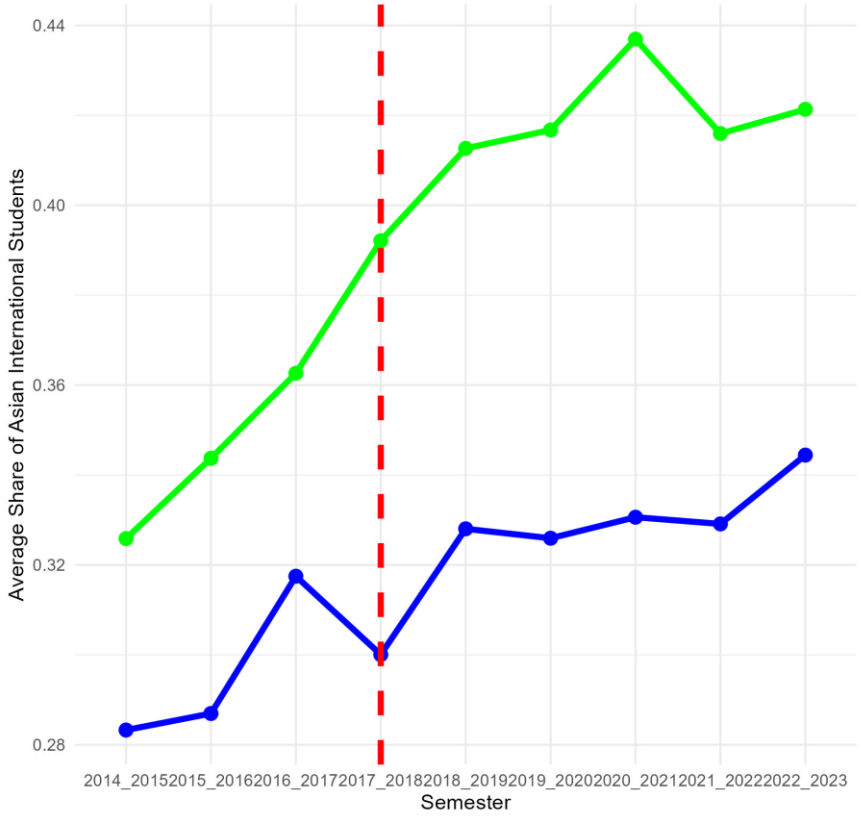

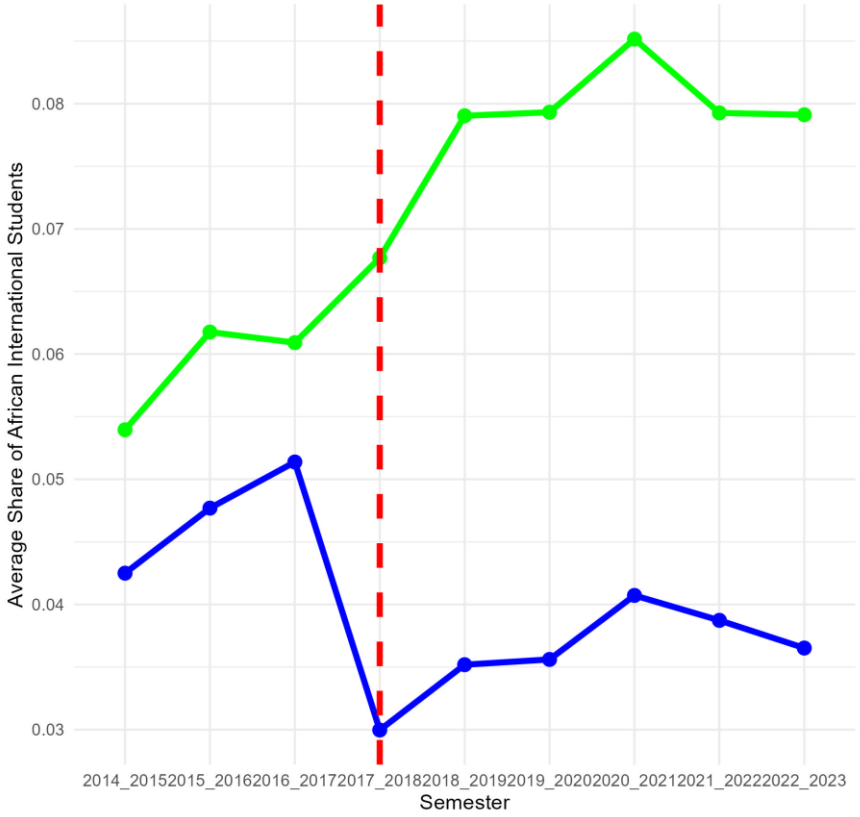

Conclusion

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- Introduction of tuition fees causes a negative effect on enrolment share of International Students in Baden-Württemberg;
- Using data from the winter semester of 2014/2015 to the winter semester of 2022/2023, we calculated that the introduction of fees reduced the student enrollment rate by 0.048 percentage points in the medium term,
- No effect for well-renowned higher education institutions,
- The demand for universities is higher than the demand for universities of applied sciences,
- There is a decrease of international students from Asia and Africa in higher education institutions (= Vortisch 2024); increase of international students from the EU in Baden-Württemberg
- The fee-charging institutions in Baden-Württemberg can be at least partially substituted by fee-free higher education institutions in other German federal states, indicating that the higher education in Bade-Württemberg is a normal good and not a Veblen good.

Literature Review (effect on tuition fees in Germany)

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Literature Review (Dif-In-Dif)

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Literature Review (Situation of tuition fees in Germany and in Baden-Württemberg)

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Thank You for Your Attention!

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