Switching to English to Attract Global Talent

Yihui Cao[*], **Thomas P. Triebs**[†], and **Justin Tumlinson**[‡]

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Abstract

When organizations' demand for talent exceeds national supply, they could attract it from abroad. However, language differences often impede the match. In theory, both could communicate in the *lingua franca*. Using European higher education as a laboratory, we measure the performance and labor mobility effects of switching operations to English. Using a staggered difference-in-differences design, we show that the number of top (Q1) publications by European universities' new hires increase by 128% of the sample mean after introducing a degree program taught in English. The proportion of international new hires increases 24% of the sample mean. These performance gains must be balanced against other costs. For education policy makers, these include cultural preservation and supplying the native-speaking labor market.

Keywords: Labor Mobility; Research Performance; Language

[*]University of Westminster, y.cao@westminster.ac.uk
[†]Loughborough University, t.triebs@lboro.ac.uk
[‡]University of Exeter, j.tumlinson@exeter.ac.uk

We started teaching in English... when it was illegal. — Jean Tirole[1]

1 Introduction

When Jean Tirole and Jean-Jacques Laffont broke French law by introducing English as the language of instruction in 1995, the Toulouse School of Economics (TSE) was considered 'minor league' (Kuper, 2015). Today, TSE is world-renowned. Switching to English attracted top students from abroad, and globally leading faculty followed. Research publications in international journals soared. In the 25 years since then, many universities in non-English-speaking countries have joined TSE in switching their instruction to English. However, in places like Belgium and Scandinavia, policymakers and university officials, concerned with preserving national culture and supplying the native-speaking labor market, have imposed quotas on English language programs (Guimarães & Kremer, 2020; Nordic Council, 2007). Switching university instruction to the *lingua franca* has benefits and costs.

In this paper, we quantify the impact of switching to English on the quality of universities' newly-hired staff. We surveyed some of the world's earliest switchers, Dutch, Belgian, German, and Spanish universities, for the dates when they first introduced a Business or Economics degree program completely in English. Using Scopus publication records, we show that the academic ability of new faculty after a switch is significantly higher than that for non-switchers. This implies that the strategic choice to switch language of instruction to the *lingua franca* reduces language barriers to talent mobility, and potentially increases universities' recruiting and research power.

Figure 1 provides descriptive evidence for four switching universities in our sample. The horizontal axis has time. The vertical axis has academic ability of newly-hired staff, proxied for by their publication record. The vertical lines give the years the universities introduced their first English business or economics degree program: Tilburg University in 1995, Wageningen in 2002, TU Berlin in 2006, and University of Twente in 2013. In each case, the academic ability of its new hires increases in the following years. There is also some evidence

[1] Kuper, 2015

it increases relative to US universities, our control group.

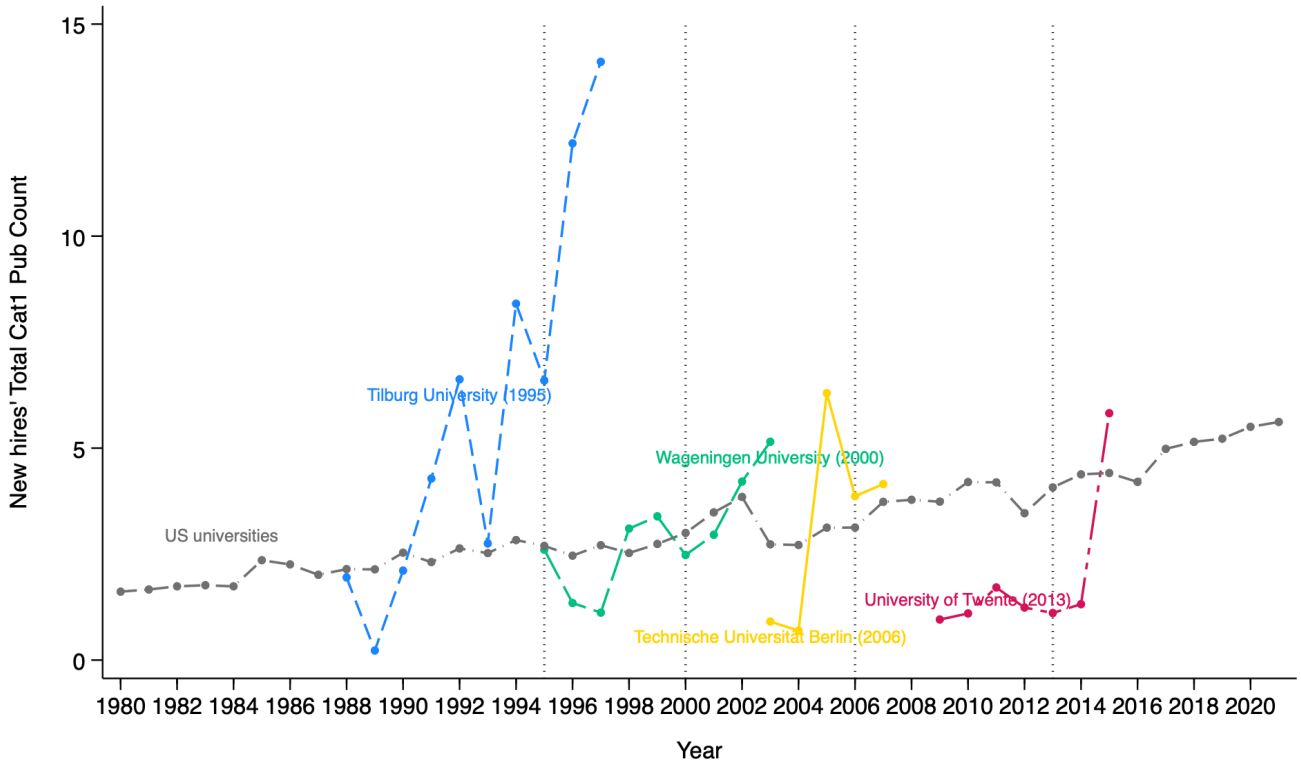
We confirm the patterns in Figure 1 using the extended two-way fixed effects (ETWFE) estimator, controlling for cohort and year fixed effects. Across different models, the switch increases academic ability of a department's new hires by 1.28 times the sample mean value. We suggest the mechanism is that introducing English-taught programs allows universities to hire from a broader global talent pool.

We contribute to a wider literature on labour mobility and its productivity consequences. Immigrant inventors directly contribute to an increase in innovations (Kerr & Lincoln, 2010). Giesing and Laurentsyeva (2018) show that lowering barriers to international labour mobility causes a brain drain and reduces productivity in the home country. However, skilled emigration positively affects innovation in source countries (Fackler et al., 2020). Braunerhjelm et al. (2020) empirically show that talent mobility positively affects firm innovation. The positive relationship between labour mobility and innovative activities is due to increasing knowledge flows and improving networks (Kaiser et al., 2011). Looking at the population of R&D active Danish firms between 1999 and 2004, Kaiser et al. (2015) show that labour mobility increases the total innovative activity of both bew and old employers through knowledge transfer. Compared to research networks, labour mobility is a stronger driver of innovation (Miguélez & Moreno, 2013). We show that switching the language of instruction to English removes language barriers to global talent mobility, which potentially accelerates knowledge diffusion and increases university research power.

We also contribute to a small literature on language and university performance. Perhaps closest to our work, Van Hoorde (2015) documents a correlation between universities' international academic ranking and their switch to English. Cao et al. (2024) show that a university's regional language's distance to English correlates with its international ranking.

Finally, the trade-off between the costs and benefits of using a foreign language in the workplace is analysed by Dale-Olsen and Finseraas (2020). They show that requiring greater English proficiency may mitigate observed negative impacts of language diversity on workplace productivity.

The next section of this paper shows the identification strategy. Section 3 describes the data collection process and the variables. Section 4 discusses the results, and the final section concludes.



The graph provides descriptive evidence from a subset of switching universities compared to US universities, which by definition never switch. Academic ability of newly-hired staff by year is measured by the count of their publications in top-ranking journals. Dates of introducing first English degree program are given in parentheses and denoted by vertical dot lines.

Figure 1: Switch to English Drives Academic Ability

2 Identification

To identify the causal effect of switching to English on academic ability, we use the extended two-way fixed effects (ETWFE) estimator by Wooldridge (2021):

$$Y_{it} = \alpha + \sum_{g \in G} \beta_g D_g + \sum_{t=2}^{T} \gamma_t f_t + \sum_{g \in G} \sum_{t=g}^{T} \tau_{gt}(D_g \times f_t) + \lambda X_{it} \tag{1}$$

where i indexes universities and t years. The dependent variable Y_{it}, is the academic ability of university i's newly-hired staff in year t.

$G \subseteq \{1, ..., T\}$ is the set of cohorts, and D_g indicates cohort fixed effects. T is the last time period, and f_t indicates year fixed effects. $D_g \times f_t$ is the treatment indicator, taking value one from the year university i switches and zero before. The treatment group includes Dutch, Belgian, Danish, German, and Spanish universities, which 30 universities switched to English by the end of the sample. We use 146 R1 doctoral universities in the United States, which by definition never switch, as the never-treated control group.[2] We focus on research-intensive universities, as the outcome of interest is research power. Hence, the aggregated $\tau_{gt} > 0$ implies that switching to English increases the academic ability of newly-hired faculty.

X_{it} is a set of time-varying, university or country-level control variables. We control for the number of new hires, and career length at hiring. We further control for R&D expenditure in higher education as a proxy for research funding, GDP per capita as a proxy for academic wages,[3] and exchange rate – national currency per US dollar. Including time-varying control variables which potentially relate to the treatment would bias the estimated effect (Wooldridge, 2021). Consequently, we make the number of new hires, career length at hiring, and R&D expenditure as time invariant for the treated group.[4]

[2]There are 146 institutions that are classified as "R1: Doctoral Universities – Very high research activity" in the Carnegie Classification of Institutions of Higher Education.

[3]There might be more accurate measures of academic wages today but these data do not go back to the beginning of our sample.

[4]For each of these control variables in the treated group, we take the average across years before the treatment, using the average value across the panel to make it time invariant.

3 Data

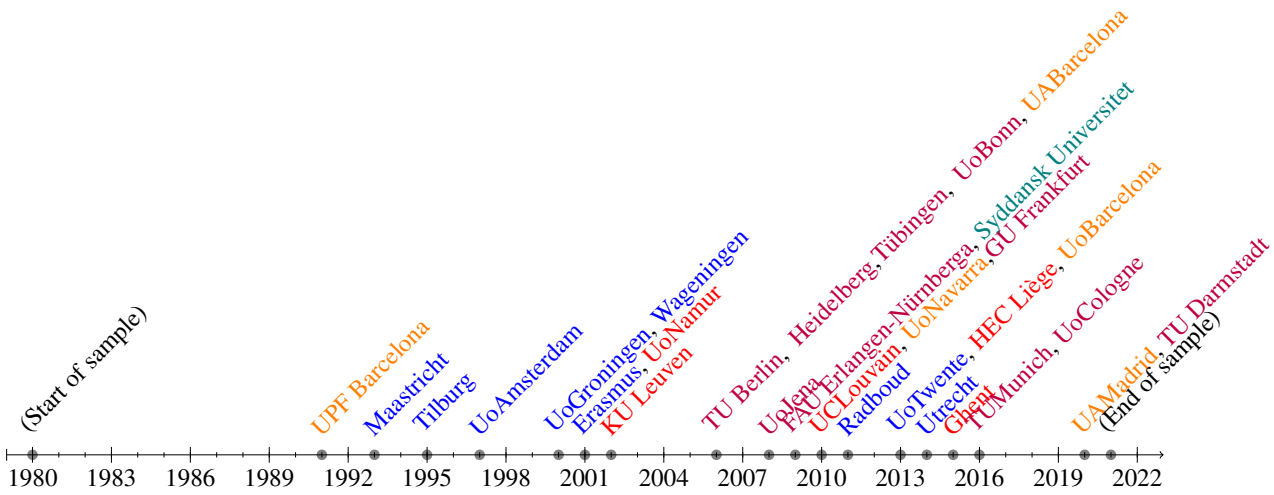
We surveyed 49 research-intensive universities in the Netherlands, Belgium, Denmark, Germany, and Spain on their switching dates, since universities in these countries switched relatively early.[5] We focus on research-intensive universities because the outcome of interest is research ability. The survey question was: 'When did the first Business or Economics program switch to English?' We surveyed 'the first' switching program because: (1) universities do not seem to have official records and the first might be better remembered, and (2) this should be sufficient for the mechanism, assuming that universities can hire international staff after introducing the first English-taught program. Obviously, using the first switching program as a proxy for the treatment provides a lower bound of the effect if more programs follow. Also, we surveyed at the program level, while the department might have introduced English-taught courses before the program switching to English. Again this would lead us to underestimate the effect. We focus on Business and Economics, because it allowed us to rely on our personal networks yielded a very high response rate — about 71% of the contacted universities. We observe switches for 30 universities — 9 Dutch, 5 Belgian, 1 Danish, 10 German, and 5 Spanish — between 1980 and 2021.[6]

The timeline below (and Table 7) summarizes treatments by year. UPF Barcelona switched first in 1991. Maastricht University had its first Business bachelor's switching in 1993. University of Amsterdam followed in 1997. Belgian law only permits an official English program if the same program is also offered in Flemish (in Flanders) or French (in Wallonia). Hence, among our sample of Belgian universities, only Katholieke Universiteit Leuven (KU Leuven) has a bachelor's program completely in English.[7] Université de Namur's (UNamur) in 2001 launched its research master's, the first English master's program in Belgium. All of German universities in our sample switched after 2005.

[5] According to the Universities of The Netherlands (UNL), there are 14 research-intensive Dutch universities. For other universities, as there is no official records on research-intensive universities, we restrict to those listed as top-1000 in the Academic Ranking of World Universities (ARWU), assuming that top ranking universities are research-intensive.

[6] We identify the first switching program as, for instance, Erasmus University Rotterdam had its Bachelor's International Business Administration switch to English in 2001 and its Bachelor's Business and Economics in 2007. We take 2001 as its treatment year.

[7] Université Libre de Bruxelles provides some fraction of the courses in English. HEC Liège provides the opportunity to apply for a special bachelor's final year full in English. Université catholique de Louvain (UCLouvain) has the bachelor's program in French for the first two years and in English for the last year.



We use data from Scopus, a commercial, source-neutral, abstract and citation database, to contruct our proxy for academic ability.[8] We include all journal articles in Business and Economics published by a university's faculty, querying by university and subject area.[9] We trace an author's mobility across universities by publication year and author affiliation information, interpreting a change in primary affiliation as a job move. We collect the publication data for the surveyed Dutch, Belgian, Danish, German, and Spanish universities, and 146 R1 doctoral universities in the United States.[10]

To measure the quality of new hires at the university level, we proceed in two steps: (1) we proxy for new hire $j's$ unobserved academic ability in year t, as the count of new hire $j's$ publications in Category 1 (CNRS, 2020)[11] journals over observed career:

[8]We do not use performance indicators from well-published institutional rankings, like the Times Higher Education (THE) World University Rankings, the Academic Ranking of World Universities (ARWU), or the QS World University Rankings. The earliest switches occurred in the 1990s, before these rankings began.

[9]For each document listed, the Scopus (*www.scopus.com*) extract provides the document title, ISSN number, citation counts, affiliation name and ID, published year, author name and ID (up to ten), subject area, document type (article, conference paper, review, etc.), source title, source type (journal, book, etc.), and publication stage (final or article in press). Business and Economics subject areas are denoted 'Business, Management and Accounting' and 'Economics, Econometrics and Finance' in Scopus respectively. We include publications by both incumbent and previous staff. This should not bias the estimator as long as the staff is considered as 'new' in that particular year.

[10]There are 146 institutions that are classified as "R1: Doctoral Universities – Very high research activity" in the Carnegie Classification of Institutions of Higher Education.

[11]Comité national de la recherche scientifique. (2020). Categorization of Journals in Economics and Management. We assume Category 1 journals are top journals.

$$\theta_j \equiv \frac{1}{\bar{T}_j - T_j} \sum_{\tau=T_j, k \in P_{j\tau}}^{\tau=\bar{T}_j} 1\{k \in Cat1\}$$

where τ is the set of years, P publications, and (2) we take the sum of new hires' career publications by university i in year t:

$$Y_{it} \equiv \sum_{j \in H_{it}} \theta_j$$

where H_{it} denotes the set of new hires by university i in year t.

We identify staff j as new hires in year t through staff's first publication in university i. For instance, if staff j has first publication associated with university i in 2010, We identify the staff as new in 2010. We assume the gap between the year staff joining a university and the year of first publication is small.[12]

We identify international staff by family name's nationality. We use the information from Forebears (2022), which is a genealogy portal providing the national population with a particular surname. We proxy nationality as the nation with highest population of staff's surname. We then identify staff as international if their surname's nationality is not Dutch, Belgian, Danish, German, Spanish or US.[13]

Table 1 gives the variable description and Table 2 gives the summary statistics. International new hires' proportion has maximum value 1 due to the imprecise measurement. For instance, the proxy for author's nationality might pick up Dutch authors with US family names as US. We use regional-level GDP per capita available since 1995, and country-level GDP per capita for earlier years.[14] Higher education (HE) expenditure and exchange rate are available at the

[12]This proxy might bias if staff never has a move, for instance, a former PhD student stays in the university as an academic staff. For future research, we might consider excluding staff who never have a move across universities.

[13]This proxy might cause an overestimation of international staff impact.

[14]We use region level 2 from Nomenclature of territorial units for statistics (NUTS2), which is a geographical nomenclature subdividing the economic territory of the European Union (EU) into regions. For US, we use country-level data.

country level.

Table 1: Variable Descriptions

Variable	Description	Source
New hires' ability (Cat1 pub count)	The sum of new hires' career publications for university i in year t	*www.scopus.com*
International new hires' proportion	The proportion of international new hires for university i in year t	*www.scopus.com, forebears.io*
Number of new hires	The number of university i's new hires in year t	*www.scopus.com*
Career length (at hiring)	The average academic length to date of university i's new hires in year t	*www.scopus.com*
R&D expenditure	Gross domestic expenditure on R&D (GERD) at national level	*ec.europa.eu/eurostat, www.aaas.org/programs/r-d-budget-and-policy/rd-colleges-and-universities*
GDP per capita	Gross domestic product divided by population at NUTS3 (Nomenclature of territorial units for statistics) level	*ec.europa.eu/eurostat, data.worldbank.org*
Exchange rate	National currency per US dollar	*ec.europa.eu/eurostat, data.worldbank.org*

Table 2: Summary Statistics

Variable	***Observations (N)***	***Mean***	***SD***	***Min***	***Max***
New hires' ability (Cat1 pub count)	6996	3.27	3.89	0.00	32.51
International new hires' proportion	6996	0.63	0.19	0.00	1.00
Number of new hires	6996	7.47	6.90	0	52
Career length (at hiring)	6996	4.42	4.16	0	39
Higher education research funding (billion euro)	6996	8.75	5.02	0.19	20.66
GDP per capita (thousand euro)	6996	35.18	15.33	6.13	88.17
Exchange rate (national currency per US dollar)	6996	0.99	0.28	0.613	8.32

Higher education research funding is at country level, GDP per capita at NUTS3 (Nomenclature of territorial units for statistics) level for European universities. All variables for US universities are at country level.

4 Results

Figure 2 and 3 provide some descriptive evidence. Figure 2 plots the yearly treatment effects of switching to English on the academic ability of new hires, using the event study in the traditional TWFE estimator.[15] The horizontal axis represents event time, indicating the exposure length of the treatment. Figure 3 plots the effect on the proportion of international new hires. Pre-treatment coefficients of the variable of interest center around and do not statistically differ from zero, implying that the trends before switching to English are common. Both figures together imply that switching to English increases the academic ability of new hires through attracting more international talents.

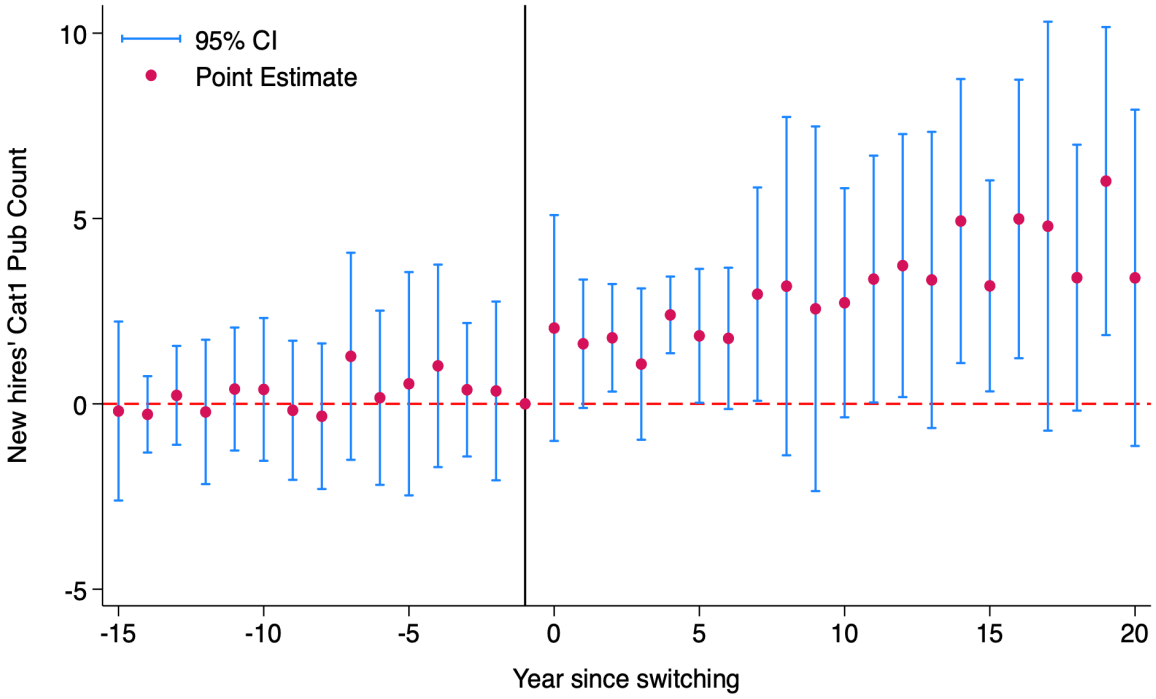
Table 3 gives the aggregated treatment effects of switching to English on the academic ability of new hires using the extended two-way fixed effects (ETWFE) estimator, controlling for the number of new hires.[16] The coefficients of the variable of interest from column (1) to (6) provide the weighting exposure effect. The exposure effect is up to 30 lags, and we report the first 5 lags. Column (7) shows the aggregated single weighted effect for all the 30 lags. It indicates that the academic ability of new hires increases by 4.181 of the total publicaton counts in Cat1 journals at the university level after switching to English. Table 4 further controls for career length, higher education research funding, GDP per capita, and exchange rate.[17]

Table 5 shows the aggregated treatment effects of switching to English on the proportion of international new hires. The coefficient in column (7) indicates that the proportion of international new hires increases by 0.147 after a university switches to English. Table 6 controls for career length, higher education research funding, GDP per capita, and exchange rate.

[15]Clarke, D., & Tapia-Schythe, K. (2021). Implementing the panel event study. *The Stata Journal, 21*(4), 853-884.

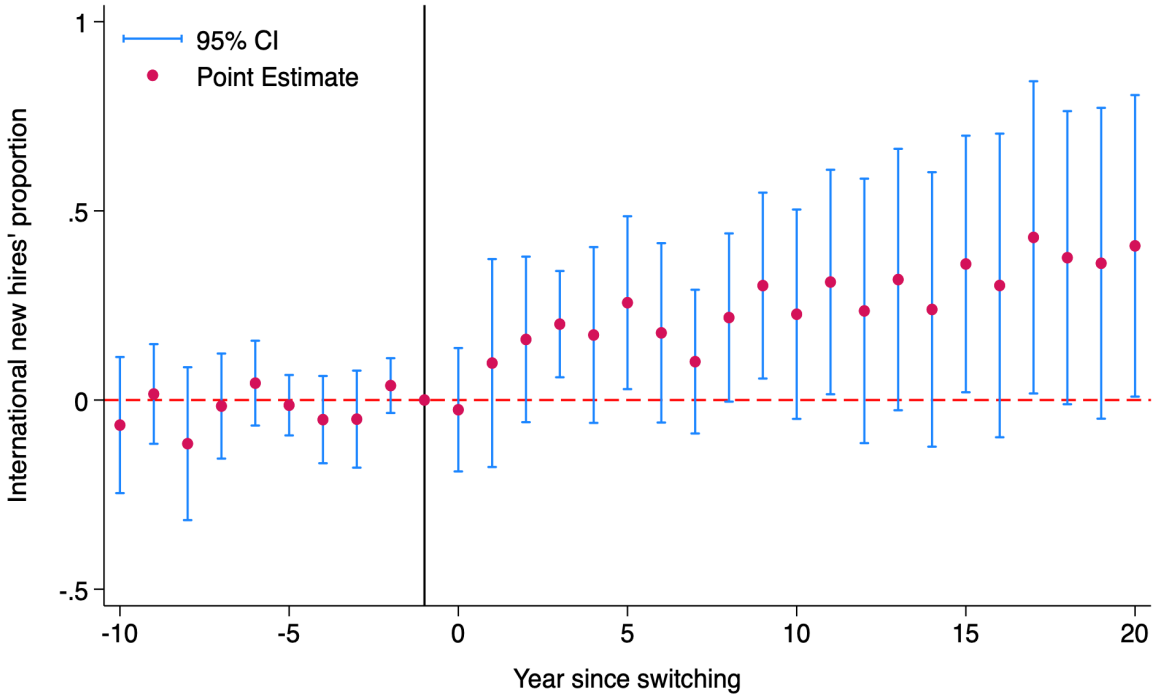
[16]The number of new hires is highly likely affected by switching to English. We make its value as time invariant for the treated group universities.

[17]We make career length and higher education research funding as time invariant for the treated group universities.



The graph plots the yearly treatment effects of switching to English on the academic ability of new staff, using the event study in the traditional TWFE estimator by Clarke, D., & Tapia-Schythe, K (2021), controlling for the number of new hires, career length, higher education research funding, GDP per capita, and exchange rate. Pre-treatment coefficients of the variable of interest center around and do not statistically differ from zero, implying that the trends before switching to English are common. Academic ability of new staff increases since switching to English.

Figure 2: Yearly Treatment Effects of Switching to English



The graph plots the yearly treatment effects of switching to English on the academic ability of new staff, using the event study in the traditional TWFE estimator by Clarke, D., & Tapia-Schythe, K (2021), controlling for career length, higher education research funding, GDP per capita, and exchange rate. Pre-treatment coefficients of the variable of interest center around and do not statistically differ from zero, implying that the trends before switching to English are common. The proportion of international new hires increases since switching to English.

Figure 3: Yearly Treatment Effects of Switching to English

Table 3: Switch to English Attracts Better New Hires (Controlling for Number of New Hires)

	Dep.Var.= New hires' ability (Cat1 Pub Count)						
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Immediate	One-period Lag	Two-period Lag	Three-period Lag	Four-period Lag	Five-period Lag	Aggregated
Switch to English (==1)	3.306***	3.314***	2.636***	3.889***	4.395***	4.199***	4.181***
	(0.285)	(0.379)	(0.214)	(0.229)	(0.406)	(0.610)	(0.292)
DV mean	3.271	3.271	3.271	3.271	3.271	3.271	3.271
N	6996	6996	6996	6996	6996	6996	6996
Cohort FE	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓

* p <0.05, ** p <0.01, *** p <0.001, standard errors clustered at the university level. Panel is 1980 to 2021. Missing values due to no observed Cat1 publications in some years.

Dependent variable is the university-level count of new hires' publications in Cat1 journals across their career length, controlling for the number of new hires.

Coefficients of the variable of interest from column (1) to (6) report the weighting exposure effects. The exposure effect is up to 30 lags, and column (7) an aggregated single weighted effect for all the 30 lags.

Table 4: Switch to English Attracts Better New Hires (With All Controls)

	Dep.Var.= New hires' ability (Cat1 Pub Count)						
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Immediate	One-period Lag	Two-period Lag	Three-period Lag	Four-period Lag	Five-period Lag	Aggregated
Switch to English (==1)	1.023	0.585	0.607	2.883**	2.925**	2.255	5.263**
	(0.812)	(0.994)	(0.751)	(1.018)	(0.898)	(0.174)	(1.648)
DV mean	3.271	3.271	3.271	3.271	3.271	3.271	3.271
N	6745	6745	6745	6745	6745	6745	6745
Cohort FE	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓

* p <0.05, ** p <0.01, *** p <0.001, standard errors clustered at the university level. Panel is 1980 to 2021. Missing values due to no observed Cat1 publications in some years.

Dependent variable is the university-level count of new hires' publications in Cat1 journals across their career length, controlling for the number of new hires, career length, higher education research funding, GDP per capita, and exchange rate.

Coefficients of the variable of interest from column (1) to (6) report the weighting exposure effects. The exposure effect is up to 30 lags, and column (7) an aggregated single weighted effect for all the 30 lags.

Table 5: Switch to English Attracts International New Hires (Without Controls)

	Dep.Var.= International new hires' proportion						
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Immediate	One-period Lag	Two-period Lag	Three-period Lag	Four-period Lag	Five-period Lag	Aggregated
Switch to English (==1)	0.053***	0.124***	0.094***	0.098***	0.110***	0.148***	0.147***
	(0.025)	(0.027)	(0.022)	(0.020)	(0.025)	(0.022)	(0.018)
DV mean	0.612	0.612	0.612	0.612	0.612	0.612	0.612
N	7560	7560	7560	7560	7560	7560	7560
Cohort FE	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓

* p <0.05, ** p <0.01, *** p <0.001, standard errors clustered at the university level. Panel is 1980 to 2021.
Dependent variable is the proportion of international new hires in the university.
Coefficients of the variable of interest from column (1) to (6) report the weighting exposure effects. The exposure effect is up to 30 lags, and column (7) an aggregated single weighted effect for all the 30 lags.

Table 6: Switch to English Attracts International New Hires (With All Controls)

	Dep.Var.= International new hires' proportion						
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Immediate	One-period Lag	Two-period Lag	Three-period Lag	Four-period Lag	Five-period Lag	Aggregated
Switch to English (==1)	0.135	0.236*	0.125	0.089	0.221	0.196	0.321
	(0.121)	(0.107)	(0.090)	(0.074)	(0.141)	(0.149)	(0.225)
DV mean	0.612	0.612	0.612	0.612	0.612	0.612	0.612
N	7560	7560	7560	7560	7560	7560	7560
Cohort FE	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓

* p <0.05, ** p <0.01, *** p <0.001, standard errors clustered at the university level. Panel is 1980 to 2021.

Dependent variable is the proportion of international new hires in the university, controlling for career length, higher education research funding, GDP per capita, and exchange rate.

Coefficients of the variable of interest from column (1) to (6) report the weighting exposure effects. The exposure effect is up to 30 lags, and column (7) an aggregated single weighted effect for all the 30 lags.

5 Conclusion

We show that switching to English increases the academic ability of new hires in European universities. Our evidence suggests this gain is due to reducing language barriers to academic research faculty's labour mobility. Attracting such global talent may accelerate knowledge diffusion and spur innovation. Policy makers in non-English speaking countries should weigh this gain against other priorities.

While the choice of corporate language for a business firm need not be as discrete as switching the official language of a degree program, the same forces are likely at work. As businesses strategically choose to operate more in the *lingua franca*, the labour pool from which they draw becomes more globalised. Hence, we expect industries most constrained by local human capital supply to switch to English first.

In this work we have considered only the partial impact on the switching university. If the mechanism is indeed mobility, then when a university switches there must also be competitive effects on universities in English-speaking countries that benefited from decades of intellectual cream-skimming, on universities in non-English countries that have previously made the switch and those who have chosen not to. We leave this for future research.

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Appendix

A English instruction list

Table 7: Timing of English Instruction

University	Country	Year
Maastricht University	Netherlands	1993
Tilburg University	Netherlands	1995
University of Amsterdam	Netherlands	1997
University of Groningen	Netherlands	2000
Wageningen University Research	Netherlands	2000
Erasmus University Rotterdam	Netherlands	2001
Radboud University Nijmegen	Netherlands	2011
University of Twente	Netherlands	2013
Utrecht University	Netherlands	2014
UNamur	Belgium	2001
KU Leuven	Belgium	2002
UCLouvain	Belgium	2010
HEC Liège	Belgium	2013
Ghent University	Belgium	2015
Syddansk Universitet	Denmark	2009
Technische Universität Berlin	Germany	2006
Universität Heidelberg	Germany	2006
Eberhard Karls Universität Tübingen	Germany	2006
Universität Bonn	Germany	2006
Friedrich-Schiller-Universität Jena	Germany	2008
Friedrich-Alexander-Universität Erlangen-Nürnberg	Germany	2009
Goethe-Universität Frankfurt am Main	Germany	2010
Technical University of Munich	Germany	2016
University of Cologne	Germany	2016
Technische Universität Darmstadt	Germany	2020
Universitat Pompeu Fabra Barcelona	Spain	1991
Universitat Autònoma de Barcelona	Spain	2006
Universidad de Navarra	Spain	2010
Universitat de Barcelona	Spain	2013
Universidad Autónoma de Madrid	Spain	2020