The Cost of Nativism: Evidence from the Netherlands*

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Abstract

We study language preferences and how they relate to nativism, using the Netherlands, a typical high-income education-exporting country, as a case study. Against the oft-heard claim that education in the national language is preferrable, our pre-registered discrete choice experiment shows that natives have a precisely estimated zero willingness to pay for Dutch-language education, relative to English, with more universalist respondents willing to pay more for English. We quantify the effect of a language switch on the size of Dutch universities: switching from English to Dutch triggers an 8.6% contraction of the university sector. In turn, this contraction generates losses in scientific output equivalent to 1.1 - 1.6% of GDP, with only trivial gains in other domains. Our results highlight the massive costs of nativism.

Keywords: Language; Discrete Choice Experiments; Internationalization; Parochialism; Nativism; Migration
JEL: D70; F22; I23; J24; Z13

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1 Introduction

Many parts of the world are experiencing a golden age of nativism. Language, like few other variables, hits at the core of who "we" are. The rise in the use of English is often framed by media and politicians as a loss of ethno-national identity, and sometimes outright exploited by political entrepreneurs (Glaeser 2005) as an opportunity to mobilize the electorate.

For example, in 2017, Emmanuel Macron was heavily criticized for delivering a speech in English: Marine Le Pen tweeted "Pauvre France" (Poor France; Salomone 2022, p. 74). In 2013, French education minister Geneviève Fioraso put forward a legislative proposal aimed at increasing the use of English in higher education. Commentators, politicians, and academic writers argued, variously, that the proposal would marginalize the French language, was a humiliation to French speakers, would result in an abandonment of linguistic sovereignty, or, according to one political party, would turn France into a "banal province of a vast English-speaking Euro-Atlantic group" (Salomone 2022, pp. 80-81).

The cultural anxiety over language is palpable: fears of loss of national identity are clear, and far from unique to France. Similar debates played out in Italy, where linguist Tullio De Mauro making the implausible claim that a switch to English would be detrimental to university students' intelligence. Courts described the Italian language as a fundamental element of Italian identity (Salomone 2022, p. 93). While language debates are common in industrialized countries, as the French and Italian examples attest to, they are not the preserve of wealthy countries: scholars have studied questions of language and linguistics, also in the broader migration discussion, in a wide array of countries including South Africa (Le Cordeur 2013), India (Jayaram 1993), Sudan (Alkhair and Mugaddam 2022), Turkey (Cengiz 2022), or Pakistan (Tamim 2014).

Against this backdrop, this paper studies preferences over language of education in the Netherlands, a typical education-exporting high-income country, a category which includes much of Western and Northern Europe. In such countries, the most common arguments in favour of teaching in English (which is a key component of the broader process of internationalization) are that it brings people closer together, opens job opportunities for domestic students (because it improves their English), and increases the size of the domestic talent pool (by attracting foreign students who stay after graduation). Arguments against the use of English are that it harms domestic students because it makes them less fluent in the national language; that it costs the taxpayer too much money; or that the influx of student migrants puts pressure on the infrastructure and public services.

Some of these considerations pertain to the supply side of the higher education market: internationalization is good for the country because, e.g., it attracts skilled migrants and fills important labour shortages. Some other considerations, in turn, are explicitly demand-side: internationalization is variously argued to be good or bad for the consumers of education, i.e. the students. What is missing

from the state of knowledge, crucially, is a quantification of the latter. There is a limited amount of literature, which we review below, using surveys which directly ask people whether they think, e.g., that English is important. But what we simply do not know is whether the demand side, who is immediately affected by language policy, would prefer to receive education in English or not. This is an important knowledge gap: one can make various arguments as whether might be helped or hurt by any given policy, but a necessary first step is taking into account the preferences of those most directly affected by policy; in this case, consumers of higher education.

This paper makes three contributions to the literature. First, we tackle the question of whether and how much constituents value the national language of higher education, using a pre-registered discrete choice experiment, which allows us to elicit a willingness-to-pay for the national language relative to English (or vice-versa). We field the study to a sample of Dutch respondents (N=501), European Economic Area (EEA) respondents (N=201), and non-EEA respondents (N=200). The Netherlands is a natural setting for our hypothesis: the higher education system offers many study options in both English and Dutch, and the country is currently debating whether undergraduate education should be conducted much more predominantly in Dutch than it is now. Two of the three largest parties in parliament[1], which together account for 41% of parliamentary seats, explicitly state in their election manifestos that Dutch will become the sole language of undergraduate education. Against this backdrop, it is thus particularly important to understand what constituents want.

If Dutch respondents feel strongly that English is very advantageous, then the willingness-to-pay for English (relative to Dutch) should be large. Conversely, if Dutch respondents believe English-language higher education to be highly detrimental to their study and subsequent career options, then *ceteris paribus*, we should observe a large willingness-to-pay for Dutch, relative to English. Instead, we find that Dutch respondents are exactly indifferent between English and Dutch, as the willingness-to-pay in order to trade off one language for the other is €1.60 per year of study – in practical terms, zero. There is very little demographic heterogeneity in this result: across genders, student status, and quartiles of the income distribution, the largest willingness-to-pay we estimate is smaller than €60 per year in absolute value, which is a trivial fraction (3%) of actual university fees paid by Dutch students.

Second, we contribute to the literature on universalism vs. particularism in policy preferences (Enke et al 2022, 2023). In our pre-registration, we hypothesized that moral universalism, i.e. the tendency to attach similar weights to the welfare of others regardless of how culturally or geographically distant they might be, would be associated with larger willingness-to-pay for English. This is because people who value English-language education might do so for two reasons: (1) because English has *instrumental* value, furthering one's educational and employment opportunities, and/or (2) for

[1] Namely, the Freedom Party (PVV), led by Geert Wilders, and the People's Party for Freedom and Democracy (VVD), led by Dilan Yeşilgöz and formerly led by Mark Rutte.

universalist reasons: because English provides a lingua franca via which one can build bridges to other groups and cultures. The use of the national language is strongly particularist: by definition, teaching in Dutch (or any other national language in Europe) excludes a large number of 'other' groups, culturally further away, from participating. In support of our hypothesis, we find that willingness-to-pay for English is positively associated with universalism. Importantly, while universalism is generally correlated with left-leaning political orientation, we also show that left-right placement is essentially uncorrelated with language preferences, such that we really are capturing the connection between universalism and language preference (as opposed to capturing the correlation between broad political orientation and language preference).

Third, we use our estimates to quantify, conservatively, the economic damage from the nativist turn in higher education for high-income education-exporting countries like the Netherlands. Fielding our discrete choice experiment to non-Dutch natives (namely EU and non-EU respondents) allows us to estimate how many international students would study in the Netherlands in the 'Treatment' scenario, where the language is Dutch, relative to the 'Baseline' scenario, where the language is English. We find that the loss of international students would be very large: in raw numbers, just 21% of those who would come to the Netherlands in the baseline would still come to the Netherlands in the treatment. Excluding Belgian nationals (who are over-represented in our sample and two-thirds of whom are native Dutch speakers), the retention rate we estimate is 13%. More importantly, switching languages would permanently reduce student numbers by 8.6%. Under the assumption that the size of the university sector (in terms of research, grants, and other sources of income and expenditure) is proportional to the size of the student body, the university sector is expected to become, permanently, 8.6% smaller. This, in turn, will have drastic adverse consequences for science and society: based on estimates from the literature (Waldinger 2016) and our own simulations, the loss of scientists is expected to cost between 1.1 and 1.6% of annual GDP. In the unlikely boundary case where scientific productivity is normally distributed, losses still amount to about 1% of GDP. In the interest of completeness, in the Appendix, we also consider the costs and benefits of a shrinking university sector across a wide range of markets. We do not find any meaningful benefits to having fewer highly educated migrants.[2]

Thus, we also contribute to the literature on the costs of nativism. While a large literature examines the effects of the *arrival* of migrants or particular groups perceived to be culturally distant (e.g. Hornung 2014; Mitaritonna, Orefice, and Peri 2017; Beerli et al 2021; Peri and Yasenov 2019), the effects of the *departures* of migrants or particular groups are less well understood, with only few studies examining those specifically. We thus contribute to the specific strand of literature on the costs

[2] Specifically, we find that a shrinking university sector would: (i) negatively affect aggregate demand, government finances, and labour markets; (ii) generate about €1.3 million per year in gains in amenity quality and public good provision, which is 7,600 times less than scientific output loss alone; (iii) most likely generates small aggregate losses in the rental real estate market.

of nativism. Long et al (2022) show that the Chinese Exclusion Act of 1882, which drove large numbers of Chinese migrants out of the United States, had adverse effects for native workers across the skill distribution. Similarly, Abramitzky et al (2023) show that the U.S. nativist wave of the 1920s, which led to migration restrictions and the departure of already-present migrants, had large negative consequences. The Aryanization of Nazi Germany (meaning the expulsion of German Jews, who of course were not migrants), triggered long-lasting declines in scientific productivity (Waldinger 2016), large losses for listed firms (Huber et al 2021), and lower investment in human capital (Akbulut-Yuksel and Yuksel 2015). Stöckl and Rode (2024) show that populist electoral success triggers volatility in financial markets. While the populist-nativist backlash is clearly on the rise (Colantone, Ottaviano and Stanig 2024; Mudde and Rovira Kaltwasser 2018), its economic effects are by now clearly dire (Funke, Schularick and Trebesch 2023; Bellodi, Morelli and Vannoni 2024), as we also show in this paper.

Our results offer a cautionary tale to policy makers: nativist policies may indulge a particular short-term entrepreneurial-political appetite, but wishful thinking cloaked in vague promises makes for dismal policy. Most wealthy countries have an aging population and low fertility: there are no fiscal miracles. Closing the door on high-skill migration is, as we will show, a uniquely bad policy proposition.

2 Related Literature and Background

2.1 Related Literature

The literature on the opinions of domestic students about studying in a domestic university in a foreign language (almost invariably English) is small, but unambiguously suggests that domestic students are in favour of English-language education. Across seven universities in Nordic countries, Buvke (2019) shows that student attitudes towards English are positive, which is true for both genders. In South Africa, Klapwijk and van der Walt (2016) find that students are motivated to learn in English and exhibit no desire to abandon their native language and culture. The cultural anxieties we discuss in the introduction are thus largely unfounded. Tsui and Ngo (2017) document positive attitudes of Hong Kong students towards English-language education, with instrumental reasons (material benefits) featuring prominently. Yemini et al (2014) also document the importance of instrumental motives in Israel, where students display favourable attitudes not only towards English, but also towards other aspects of internationalization (e.g. cross-cultural proficiency, study abroad opportunities, engaging with international students). Tatzl (2011) and Kirgöz (2005) finds that Austrian and Turkish students (respectively) also hold pro-English attitudes, for a variety of instrumental and ‘integrative’ (e.g. wanting to learn about other cultures) reasons.

We depart from these studies by using a discrete choice experiment (DCE) aimed at quantifying the willingness to pay for English, from the perspective of both domestic and foreign respondents. While direct survey questions are doubtless valuable, a DCE improves on a classic survey in three main ways. First, a DCE allows us to put the decision-maker in a realistic scenario, with a menu of options to choose from, which more closely mirrors real-life decisions. Second, since the various options provided to decision-makers vary along several attributes (language, price, and location), we can infer the relative importance of each attribute and express it in monetary terms. Third, using the estimated model parameters, we can conduct a simple counterfactual analysis by setting language to either English or Dutch and estimating how many respondents would choose to study in the Netherlands in either scenario, as we do in Section 6.

2.2 Background: English in The Netherlands

The Netherlands consistently ranks near the global top for English proficiency among non-native English-speaking countries, alongside Denmark, Norway, and Singapore.[3] Proficiency in English is a feature of the Dutch secondary education system: to complete any of the main high school tracks (VWO, VMBO, and HAVO), students must obtain a passing grade in English. There are minimal options to offset low grades in English with high grades in other subjects. For our purposes, this educational requirement suggests that there is little variability in English proficiency among Dutch natives, such that our results are highly unlikely to be driven by differences in English proficiency across respondents. This standard is reflected in Dutch university admissions: there are no additional English tests for Dutch high school graduates, as it is assumed they possess the necessary English skills to succeed in higher education.

A large share of bachelor's programs (28%) is taught in English, as well as a majority of master's degrees (76%), as of 2019 (Salomone 2022, p. 111). Fields of study that are 'consumer-facing" and oriented towards the domestic market, such as medicine and law, continue to be taught primarily in Dutch. In spite of these facts, the Netherlands has not escaped cultural anxieties over language of higher education. The same arguments made elsewhere, as discussed in the introduction, also have been made in the Netherlands. Public broadcaster NOS (Nederlandse Omroep Stichting) spoke of an 'English disease' (Salomone 2022, p. 124), while philosophy professor Ad Verbrugge coined the term 'linguicide' (Beter Onderwijs Nederland 2017) and made the (at best) dubious association that

[3] See for example: https://www.ef.com/wwen/epi/

"command of Dutch is no longer a prerequisite for a university education. This immediately makes it clear that ultimately our national culture and identity are at stake."[4]

In July 2023, outgoing education minister Robbert Dijkgraaf put forward a legislative proposal aiming at severely restricting language of education at Dutch universities. According to the proposal, at least two-thirds of each bachelor's program must be delivered in the Dutch language. During the same month, having reached an impasse over the proposed curtailment of family reunification policies for refugees, the coalition government collapsed. In the official party manifestos for the November 2023 election, most major parties took explicit positions on the question of language in higher education, which demonstrates that this is indeed a salient issue. The issue was also talked about with constituents: for example, New Social Contract party leader Pieter Omtzigt frequently appealed to the same type of cultural anxiety and fear of status loss we discuss in the introduction. Speaking at the University of Twente, in his home town of Enschede, Omtzigt stated: "An own language is not only preserved by using it every day, but also by speaking it in cultural and scientific areas. Otherwise it will become a regional language, like Twents"[5] (Koehorst 2023; Twents is the dialect of the Twente region, in the east of the Netherlands).

The importance and timeliness of this research are thus apparent, given the political appetite (at least on the supply side of the political market) to eliminate English as the language of university education, with little to no mention of potential negative consequences, and no attempts to provide any evidence. We bring data to bear on this issue in this paper.

3 Data

Our data collection and analyses were pre-registered, following the AsPredicted template. An anonymous (double-blind) view-only pre-registration is available at this link.

3.1 The Discrete Choice Experiment

3.1.1 University Selection

We are interested in studying the effect of language on the likelihood of choosing a given 'menu' of options for university education. A discrete choice experiment is thus ideally suited to this purpose.

[4] In the original Dutch: "Beheersing van het Nederlands is immers ook geen voorwaarde meer voor een universitaire opleiding. Daarmee is meteen ook duidelijk dat uiteindelijk onze nationale cultuur en identiteit in het geding zijn." Source: Beter Onderwijs Nederland (2022).

[5] In the original Dutch: 'Een eigen taal wordt niet alleen behouden door het dagelijks te gebruiken, maar ook op cultureel en wetenschappelijk gebied te spreken. Anders wordt het een streektaal, zoals het Twents.'

Discrete Choice Experiments (DCEs) aim to mirror real-life decisions by asking people to evaluate options which differ along multiple dimensions, also known as attributes. Causal identification comes from the randomized variation in attributes across options (Stantcheva 2023). DCEs present many advantages: they are realistic, easy to understand, typically less subject to social desirability bias than other survey-based methods, and allow for identification using only within-respondent variation, since each respondent completes multiple tasks (Stantcheva 2023). On the other hand, DCEs do present some challenges. External validity may be a concern; however, Hainmueller et al (2015) find DCE choices to be predictive of real-world behaviour. Another concern is that, since the enumeration of attributes is multiplicative, the number of attributes in each option must be kept low, which we take care to do, as explained below. We also make sure to avoid cognitive fatigue by asking each participant to make only 6 choices, following Bech et al (2011).

Our approach consists in experimentally varying languages, prices, and universities, while holding academic quality, cost of living, and location preferences approximately constant. In order to avoid a ballooning number of options, we therefore select four universities in the same geographic region, Western Europe, that are closely matched in terms of academic quality and cost of living.

In Figure 1, we plot university quality (averaged across the three major rankings: Shanghai/AWRU, QS, and Times Higher Education) against city-level cost of living (which we obtain from the Numbeo website). We then select the four universities marked in red: Erasmus University Rotterdam, University of Groningen (both in the Netherlands), KU Leuven (Belgium), and Uppsala University (Sweden). These four universities are close together in terms of academic quality and cost of living at the relevant location. We believe these universities are also good matches for each other in the sense that a student who considers any of these for an undergraduate degree, would likely also consider the others. Belgium, the Netherlands, and Sweden are geographically close and culturally fairly similar. Because the universities may not be well-known to the respondents, the survey instrument displayed the country name next to each university name, on each choice set, such that the choices were meaningful, as opposed to picking between options one knows nothing about (as our results will corroborate).[6]

[6] Ghent University and the University of Bonn are also close to the universities we select, but offer only few undergraduate programs in English. Their inclusion would therefore have been unrealistic.

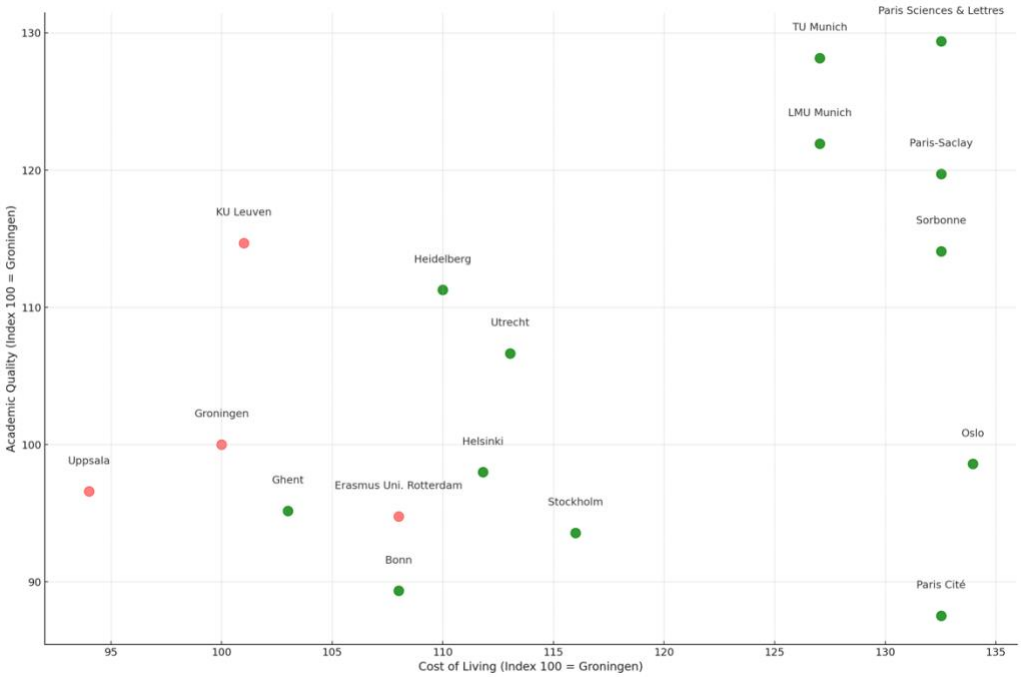


Figure 1. Cost of living and academic quality: universities in continental Europe.

3.1.2 Choice Sets

Each menu (study option) consists of a university, a language, and a price. There are 4 universities, 2 possible languages per university (English and Dutch for KU Leuven, University of Groningen, and Erasmus University Rotterdam; English and Swedish for Uppsala University), and 2 possible prices per university (the actual fees charged to incoming students; the actual fees plus 20%). In order to be able to separately identify the effect of price, prices need to vary within a given university-language combination. If, say, every occurrence of (Erasmus University Rotterdam; English) were to be priced at €2,314 per year, price would vary only between options, not within, which makes ceteris paribus interpretations more difficult. For each university-language combination, we therefore use the actual fees and 120% of the actual fees as our two price levels).

There exist a total of 4 * 2 * 2 = 16 distinct options; a full factorial design thus yields $16^2 = 256$ choice sets. Using four straightforward assumptions,[7] we reduce the universe of possible comparisons to 12 or 11 comparisons (depending on whether the respondent is based in the European Economic Area). The universities in our sample (and most European universities) have two fee schedules: one for nationals of the European Economic Area (EEA, which is the European Union plus Norway, Iceland, Liechtenstein and Switzerland), and one for nationals of any other country. We therefore build two arrays of choice sets, using the relevant prices in each case. These are shown in Tables 1 and 2.

Table 1. Choice sets shown to respondents from the European Economic Area. Prices are in Euros per year of study.

Choice Set	**Option A**			**Option B**		
	University	*Language*	*Price*	*University*	*Language*	*Price*
1	Rotterdam	Dutch	2,314	Groningen	English	2,777
2	Leuven	Dutch	1,185	Groningen	English	2,777
3	Groningen	Dutch	2,777	Uppsala	English	0
4	Rotterdam	Dutch	2,777	Uppsala	English	0
5	Rotterdam	Dutch	2,777	Groningen	English	2,314
6	Rotterdam	English	2,777	Groningen	Dutch	2,314
7	Rotterdam	Dutch	2,314	Rotterdam	English	2,777
8	Leuven	Dutch	1,185	Rotterdam	English	2,777
9	Groningen	Dutch	2,314	Groningen	English	2,777
10	Leuven	English	1,185	Rotterdam	Dutch	2,777
11	Leuven	English	1,185	Groningen	Dutch	2,777
12	Rotterdam	English	2,314	Groningen	Dutch	2,777

[7] Specifically, these assumptions are as follows:

(i) Since we are interested in willingness to pay for Dutch relative to English and vice-versa, we drop the choice sets which do not contain both an English option and a Dutch option.

(ii) Holding university constant, we assume one never picks Dutch if it is more expensive than English.

(iii) Given a pair of options where the universities are the same and the language-price ordering is the same, keep the one that maximizes the price difference. E.g.:

- Choice set A = {Erasmus, English, €2,000 vs Groningen, Dutch, €1,800}
- Choice set B= {Erasmus, English, €,2200 vs Groningen, Dutch, €1,900}
- One does not need to estimate both of these choice sets, since the relevant information's ordering (price) is identical across choice sets.

(iv) For non-European respondents only, we assume that one would not pick a more expensive Dutch-language study program in the Netherlands over a cheaper English-language study program in the Netherlands.

Table 2. Choice sets shown to respondents from outside the European Economic Area. Prices are in Euros per year of study.

Choice Set	Option A			Option B		
	University	*Language*	*Price*	*University*	*Language*	*Price*
1	Rotterdam	Dutch	11,600	Groningen	English	14,660
2	Leuven	English	3,764	Rotterdam	Dutch	13,920
3	Groningen	Dutch	12,217	Groningen	English	14,660
4	Rotterdam	Dutch	13,920	Uppsala	English	10,643
5	Rotterdam	Dutch	11,600	Uppsala	English	12,772
6	Rotterdam	English	13,920	Groningen	Dutch	12,217
7	Rotterdam	Dutch	11,600	Rotterdam	English	13,920
8	Leuven	Dutch	3,764	Groningen	English	14,660
9	Leuven	English	3,764	Groningen	Dutch	14,660
10	Groningen	Dutch	14,660	Uppsala	English	10,643
11	Leuven	Dutch	3,764	Rotterdam	English	13,920

3.2 Sample

Data were collected on Prolific between September 11 and September 18, 2023. Participants opted in to the study, and received an average of £11.20 per hour, which is 7.5% higher than the UK minimum wage. The survey was conducted in English. Following our pre-registration, we drop respondents who gave a non-sensical answer in the attention check question (i.e. respondents who agreed that cats can fly faster than airplanes). Figure 2 breaks down the country of residence of all respondents who provided valid answers. We purposefully sample residents of (i) the Netherlands, (ii) the rest of the European Economic Area, and (iii) the rest of the world. For the Dutch sample, Figure 2 shows that the spatial distribution of Dutch respondents (Panel A) closely mirrors the spatial distribution of the Dutch population (Panel B). Summary statistics for the three sub-samples are available in Tables A3 – A5 in the appendix.

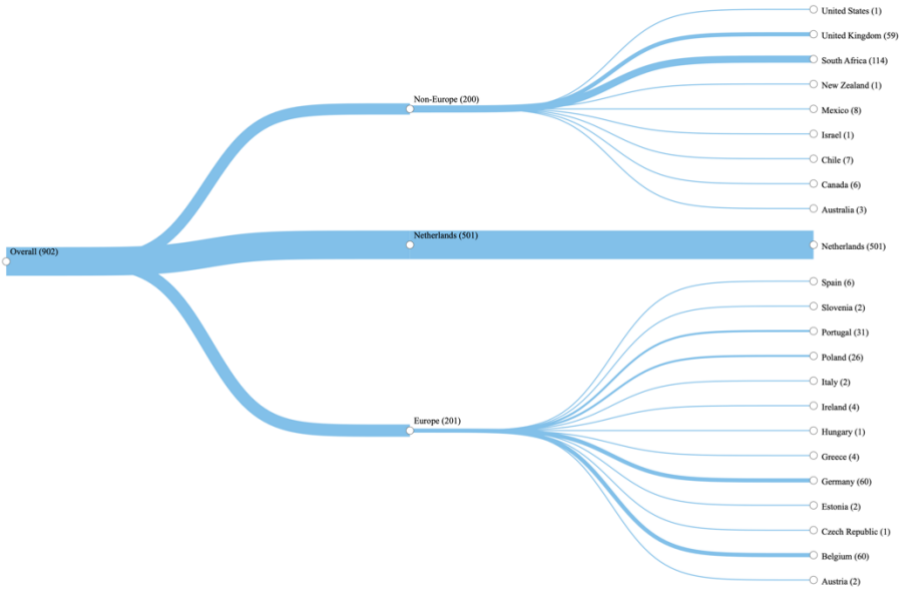
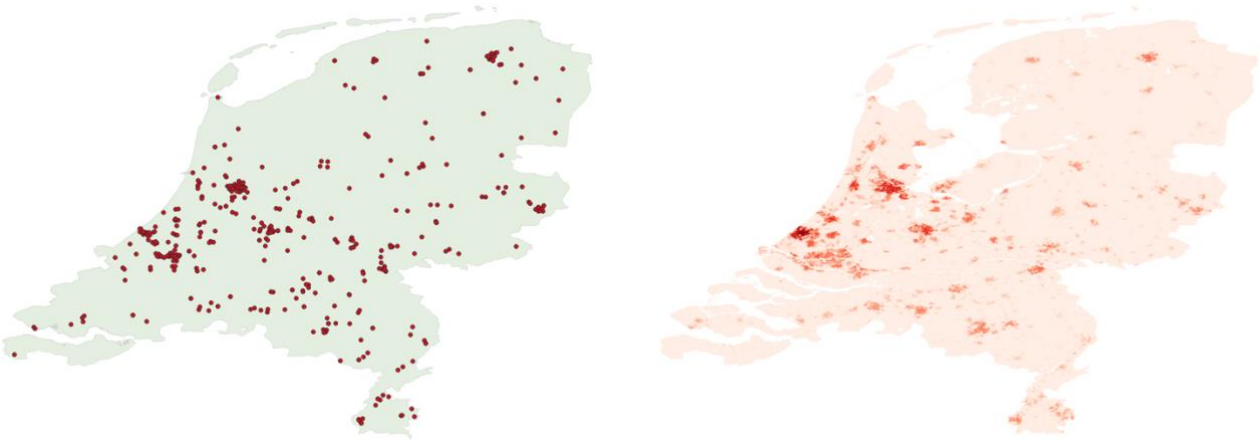


Figure 2. Respondents by country of residence.



A. Sample B. Population

Figure 3. Spatial distribution of Dutch respondents (left) and the Dutch population (right).

4 Empirical Approach and Main Results

4.1 Empirical Approach

We estimate fixed effects conditional logit models (McFadden 1974) of the form:

$$\Pr(Y_i = j) = \Phi\left[\sigma_i + Price_j + English_j + Groningen_j + KU\ Leuven_j + Uppsala_j + \epsilon_{ij}\right]$$

where the dependent variable Pr($Y_i = j$) is a dummy variable equal to 1 if individual *i* chooses option *j*, and 0 otherwise, Φ is the cumulative distribution function of the logistic distribution, and ϵ is the error term. Thus, $Pr(Y_i = j)$ is the probability that individual *i* chooses option *j*. On the right-hand side, the explanatory variables are the attributes of each study option. These are price, language, and university of study. The dummy variable *English* is equal to 1 for study options in English, and 0 otherwise. The *Groningen, KU Leuven,* and *Uppsala* dummies are equal to 1 for the respective universities, with the reference category being Erasmus University Rotterdam.

Because each respondent makes multiple choices, we are able to control for unobserved heterogeneity between respondents using a full set of respondent fixed effects, σ_i. We can therefore estimate the effect of each key attribute on choice, while accounting for potential differences between decision-makers. Standard errors are clustered over respondents.

4.2 Main Results: Dutch Sample

As per our pre-registration, we report three estimates of interest: regression coefficients; *ceteris paribus* probabilities that English is picked; and willingness to pay for English. Also following our pre-registration, we report these estimates for the full Dutch sample, by income quartile, and by gender. In addition, since student status was available from the Prolific demographics without necessitating additional data collection, we also report estimates by student status. This allows us to gauge whether respondents who are themselves 'closer' to the hypothetical decision (where to study) answer differently from respondents who are further-removed from it (i.e. non-students).

In our pre-registration, we did not distinguish explicitly between nationals and residents of the Netherlands. Ex post, it is clear to us that the sample of interest is Dutch nationals rather than Dutch residents. Non-nationals are over-represented in the latter sample, and may overwhelmingly favour English in a way that is not necessarily informative of the Dutch voters' preferences. Thus, we focus our discussion in the manuscript on Dutch nationals. The results for all Dutch residents are available in the Appendix (Table A1, Figures A1-A2).

Table 3 presents the regression results for Dutch nationals. The coefficient of *English* in Column (1) is almost exactly zero. This indicates that, holding price and location constant, Dutch nationals are almost exactly as likely to study in English as they are to study in Dutch. Thus, we can conclude that there is certainly no mass appetite from Dutch constituents to be educated in the national language. This is a sobering result which illustrates the differences in positions held by constituents, on the one hand, and political parties, on the other, many of whom claim that Dutch students want to study in Dutch.

As one respondent indicated in the optional free text field at the end of the survey, "Language isn't the biggest issue when choosing what to study, the cost is." We verify that price is indeed negative

and significant. The coefficients of KU Leuven and Uppsala are both large, negative and significant, indicating that Dutch respondents, perhaps unsurprisingly, have strong location preferences.

Our second estimate of interest is the *ceteris paribus* probability that English is chosen, as implied by the regression coefficients. This is calculated as $1 - 1 / (\exp(ß_{English}) + 1))$, where $\exp(ß_{English})$ is the odds ratio of English. For example, if the odds ratio of English is 3, this means that, ceteris paribus, for every person who chooses Dutch program, 3 people choose English. The probability that English wins is thus $1 - 1 / (3 + 1) = 0.75$, or 75%. Using the estimates from Column (1), we find that the probability of picking English is 0.5007, which again indicates that Dutch respondents are indifferent between English and Dutch. Appendix Figure B1 displays the analogous probabilities across sub-groups; all are approximately equal to 0.5.

Our last outcome of interest is the willingness to pay for a switch from Dutch to English, holding other attributes constant. The willingness to pay for English is equal to the marginal rate of substitution between English and the price, in absolute value, i.e. $| ß_{English} / ß_{Price} |$, which for the overall sample in Column (1) is equal to €1.60 per year of study. Figure 4 presents Dutch nationals' willingness to pay (WTP) for English by sub-group; all WTPs are small, constituting at most 2.6% of the actual statutory fee Dutch students are liable to pay at Dutch universities (€2,314 per year as of academic year 2023-24).

In our pre-registration, we hypothesized that Dutch respondents would be willing to pay more for English than for Dutch. While our hypothesis is not supported, it is also certainly not the case that Dutch nationals value Dutch-language education more than English-language education.[8]

[8] One might be concerned that our sample may be fully representative of the Dutch population. When we apply weights to account for gender, age, and place of residence (at the level of municipalities, which are NUTS-2 regions and comparable to U.S. counties), the implied willingness to pay for English increases to approximately €219 per year. However, this estimate remains far from significant, with a *p*-value for *English* equal to 0.49.

Table 3. Regression results: Dutch nationals.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Overall	Income Quartile				Gender		Student	
		Q1	Q2	Q3	Q4	Female	Male	No	Yes
English	0.003	-0.046	0.035	0.086	-0.058	0.077	-0.092	-0.046	0.007
	[0.064]	[0.128]	[0.126]	[0.121]	[0.136]	[0.091]	[0.090]	[0.096]	[0.105]
Price	-0.002***	-0.002***	-0.002***	-0.002***	-0.001***	-0.002***	-0.002***	-0.002***	-0.002***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Uni. Groningen	-0.605***	-0.582***	-0.688***	-0.610***	-0.552***	-0.594***	-0.631***	-0.657***	-0.583***
	[0.082]	[0.163]	[0.173]	[0.166]	[0.160]	[0.125]	[0.112]	[0.118]	[0.160]
KU Leuven	-3.077***	-3.155***	-3.257***	-3.454***	-2.564***	-3.401***	-2.820***	-2.877***	-3.156***
	[0.261]	[0.570]	[0.518]	[0.541]	[0.461]	[0.369]	[0.379]	[0.357]	[0.477]
Uppsala Uni.	-4.396***	-4.835***	-4.690***	-4.938***	-3.264***	-4.954***	-3.921***	-4.231***	-4.181***
	[0.445]	[0.964]	[0.920]	[0.836]	[0.811]	[0.637]	[0.643]	[0.618]	[0.792]
Observations	4,128	1,032	1,056	1,032	1,008	1,944	2,136	1,896	1,332
N. Respondents	344	86	88	86	84	162	178	158	111
Pseudo R^2	0.085	0.080	0.102	0.102	0.071	0.093	0.085	0.087	0.093

Notes. Heteroskedasticity-robust standard errors in brackets are clustered over respondents. Reference category for the set of university dummies: Erasmus University Rotterdam.

***, **, and * denote significance at the 1, 5, and 10% levels respectively.

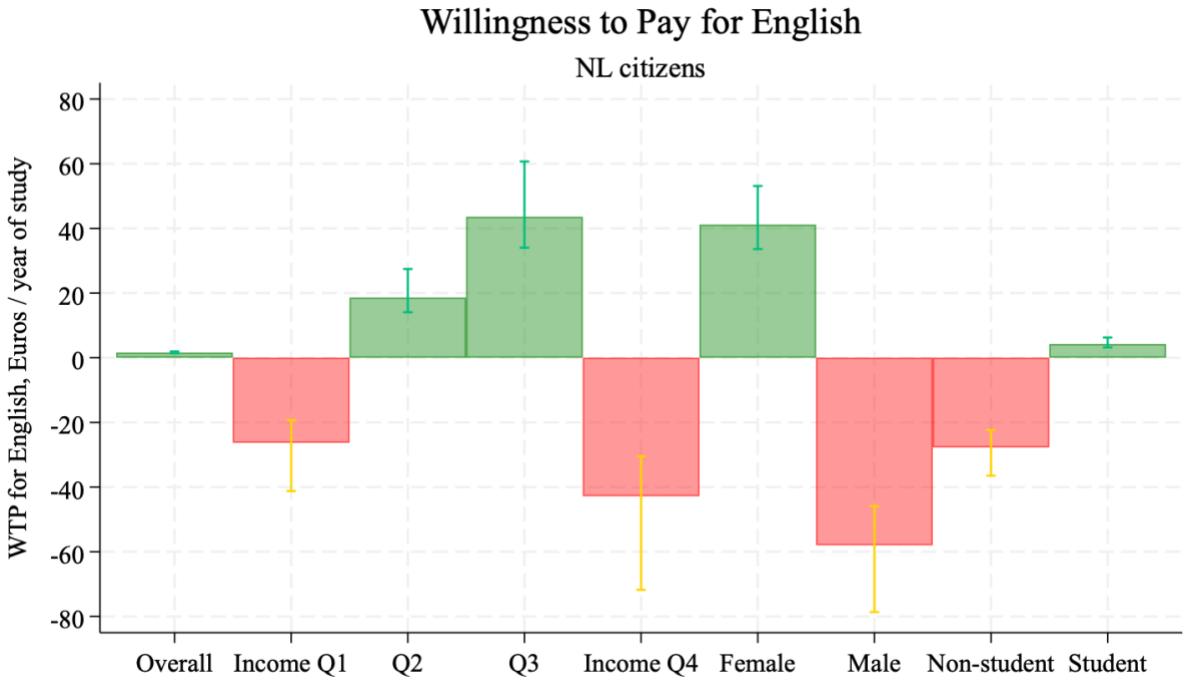


Figure 4. Willingness to pay for English, Dutch citizens overall and by sub-group.
Note: capped spikes represent 95% confidence bands obtained by dividing the point estimate for *English* by the upper and lower limits of the 95% CI of *Price*.

The pattern we see in Figure 4 is that those in a relatively strong position in the labour market (the top income quartile, males, and non-students) are those with the smallest willingness to pay for English. This is consistent with a Becker-style model where incumbent groups (wealthy; male; non-student) already in an advantageous position and thus comparatively less in need of career-enhancing investments such as studying in English. Note that respondents from the bottom income quartile are also less willing to pay for English, which may be because (i) they are competing, at the margin, for jobs which do not require a strong command of English, and thus do not stand to benefit materially from English fluency, and (ii) they face a more binding credit constraint than higher-income groups.

In any case, the WTPs and the pairwise differences in WTPs across the groups shown in Figure 4 are small relative to the annual fees charged by Dutch universities. We thus find limited evidence of heterogeneity across demographic sub-groups. We also further explore potential heterogeneities in WTPs across sub-groups of respondents, in a data-driven manner, in Appendix Figure A5. We do not find evidence to suggest sizable heterogeneities across any sub-groups.[9]

[9] Specifically, we split respondents into sub-groups based on covariate similarity. Our analysis proceeds in four steps:
(i) Starting from the full set of covariates (latitude, longitude, learning motivation, left-right views on social issues, left-right views on economic issues, instrumental-English beliefs (see Section 4.3 for a definition), universalism, age, gender, and socio-economic status), we use principal components analysis (PCA) to reduce the dimensionality of the covariate set.

4.3 Who Wants to Pay for English?

Demographic differences, as documented in Section 4.2, appear to matter little. What correlates with willingness to pay for English, then? In our pre-registration, we formulated two such hypotheses.

First, we expect *instrumental beliefs about English* to matter. By *instrumental beliefs*, we mean beliefs that being educated in English is a source of material benefits for one's career. We therefore asked respondents to indicate their agreement, on a 0 – 100 scale, with the statement: "A university degree taught in English is helpful for my current or future career."[10] Our hypothesis, simply put, is that individuals who believe English is materially useful are more willing to pay for it.

Second, we expect *universalist preferences* to matter. Enke et al (2022, 2023) convincingly show that universalism, defined as the extent to which one attaches similar weights to the welfare of others *irrespective* of how culturally or geographically distant they are (or are perceived to be), is a strong determinant of policy preferences, going beyond the traditional left-right political divide. We hypothesized that more universalist respondents would be more willing to pay for English, since the use of English allows Dutch and non-Dutch students to be educated in the Netherlands. A universalist person values the welfare of socially close and socially distant individuals equally; deciding on whether to be educated in Dutch (exclusive) or English (inclusive) is therefore a good testing ground for the role of universalism in shaping policy preferences.[11]

4.3.1 Instrumental Beliefs about English

First, we show in Figure 5 that Dutch nationals largely agree that English is materially important for one's current or future career. On a 0-100 scale, nearly 20% of respondents answer with 90 or above, with a mean of 68, and just 7.5% of answers in the bottom quartile.

(ii) We retain $d = \{1, 2, 3, 4, 5\}$ dimensions from the PCA. We keep at most 5 dimensions since further dimensions have eigenvalues smaller than 1.

(iii) We perform k-means clustering on the d dimensions from step (ii), with $k = \{2, 3, 4, 5\}$, thus yielding k sub-groups for each number of dimensions.

(iv) We re-estimate the model for each sub-group of observations, yielding 70 willingness to pay estimates. Those estimates are shown in Appendix Figure A5. They are small for all sub-groups (Mean = -9; Min. = - 226; Max = 216).

[10] The wording of this question is adapted from Dörnyei & Németh (2006), who study Hungarian students' attitudes towards language.

[11] One may worry that universalism and instrumental beliefs about English may be correlated, or that either or both of these variables may be correlated with socio-economic status. However, in the data, universalism and instrumental beliefs about English are almost exactly orthogonal, and neither variable correlates with socio-economic status (Appendix Figure A6). As such, the patterns we observe cannot be explained by differences in education levels or other variables that vary systematically across socio-economic groups.

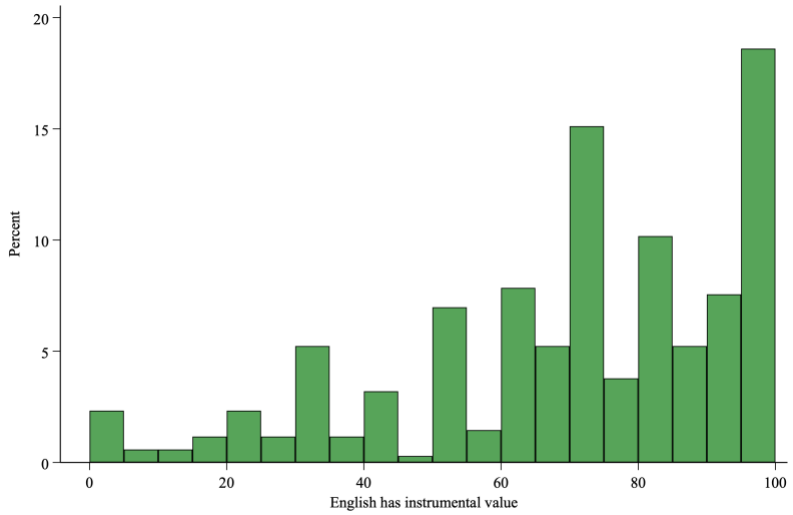


Figure 5. Distribution of instrumental beliefs about English education.

In Figure 6, we show that instrumental-English beliefs are strongly correlated with willingness to pay for English. The heterogeneity is quite stark: in the two top quintiles, the willingness to pay for English is approximately equal to € 251 and € 674 respectively (11% and 29% of actual university fees).

In Column (1) of Table 4, we interact *English* with instrumental-English beliefs. The interaction is positive and highly significant: the more one holds positive views about the material benefits of studying in English, the more likely it is that one chooses a study option in English.

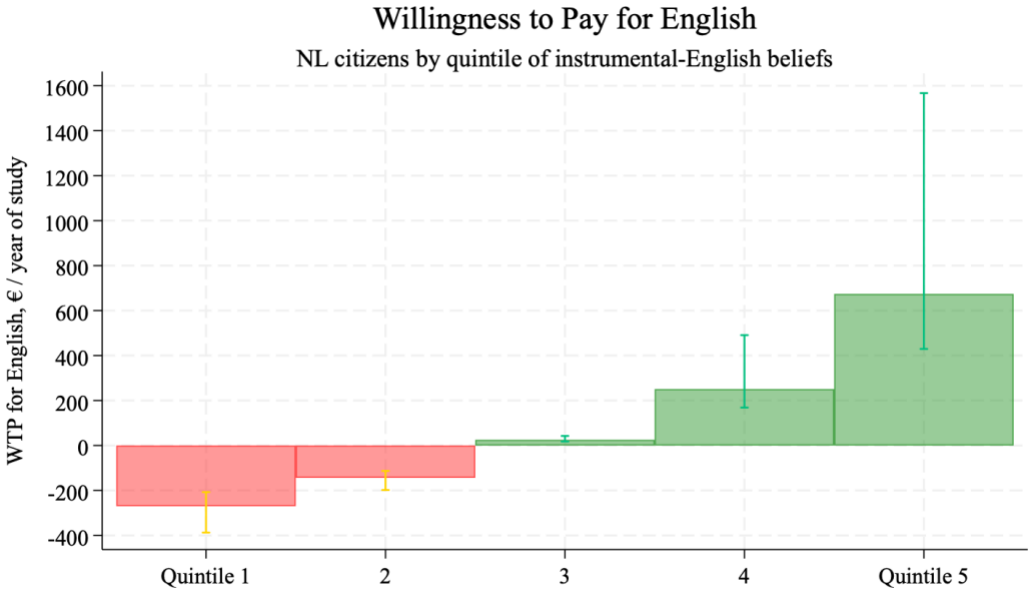


Figure 6. Willingness to pay for English, Dutch citizens by quintile of instrumental-English beliefs.

Note: capped spikes represent 95% confidence bands obtained by dividing the point estimate for *English* by the upper and lower limits of the 95% CI of *Price*.

One potential concern with Figure 6 is that people who agree with the statement "A university degree taught in English is helpful for my current or future career", might be indicating their beliefs about the value of university education generally, rather than about the value of English-language university education. To attend to this concern, we ask respondents to answer the following question, taken from Vallerand et al's (1992) academic motivation scale: "How much do you think a university degree is useful for my career?". We then obtain *residualized* instrumental-English beliefs as the unexplained component of a regression of instrumental-English beliefs on instrumental-university-degree beliefs. Appendix Figure A3, which shows willingness to pay for English by quintile of residualized instrumental-English beliefs, is very similar to Figure 6, such that our results specifically speak to beliefs about the material benefits of English education, rather than beliefs about the benefits of education more generally.

Table 4. Mechanisms.

	(1)	(2)	(3)
English * Instrumental-English Beliefs	0.017***		0.017***
	[0.002]		[0.002]
English * Universalism		0.009***	0.009***
		[0.003]	[0.003]
Price	-0.002***	-0.002***	-0.002***
	[0.000]	[0.000]	[0.000]
Uni. Groningen	-0.618***	-0.606***	-0.619***
	[0.084]	[0.083]	[0.085]
KU Leuven	-3.158***	-3.085***	-3.166***
	[0.260]	[0.262]	[0.260]
Uni. Uppsala	-4.584***	-4.406***	-4.594***
	[0.440]	[0.446]	[0.441]
English	-1.147***	-0.415***	-1.580***
	[0.183]	[0.154]	[0.220]
Observations	4,128	4,128	4,128
N. Respondents	344	344	344
Pseudo R2	0.113	0.091	0.118

Notes. Heteroskedasticity-robust standard errors in brackets are clustered over respondents. Reference category for the set of university dummies: Erasmus University Rotterdam. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

4.3.2 The Role of Universalism

To measure universalism, we rely on the survey module developed by Enke et al (2022). The questions on their survey module are experimentally validated, meaning that respondents answer these questions in a way that is highly correlated with actual behaviour in experiments incentivized with real monetary stakes. Enke et al's (2022) module relies on three hypothetical allocation tasks. The respondent is asked to imagine they have a fixed sum of money (€100 in our case) that they need to allocate, using a slider, to an in-group member or an out-group member. The survey taker is told that the two potential recipients are equally rich, and cannot find out who sent them the money. The three pairs of recipients, for each allocation task, are as shown in Table 5 below (adapted to the Dutch context).

The survey module gives the respondent three allocation tasks, with an in-group and an out-group member in each task, with in- or out-group status variously defined at the domestic, foreign, or global level. The final measure of universalism is the average amount transferred to the out-group across the three tasks. Simply put, the less one prioritizes their own in-group members, the more universalist they are.

Table 5. Enke et al (2022) universalism module: transfer recipients, adapted to Dutch context.

Context	**Person A (in-group)**	**Person B (out-group)**
Domestic	A member of one of your past or current organizations (local church, leisure club or association, etc.)	A randomly selected person in the Netherlands
Foreign	A randomly selected person in the Netherlands	A randomly selected person anywhere in world
Global	Someone who speaks your same language and lives anywhere in the world	A randomly selected person anywhere in world

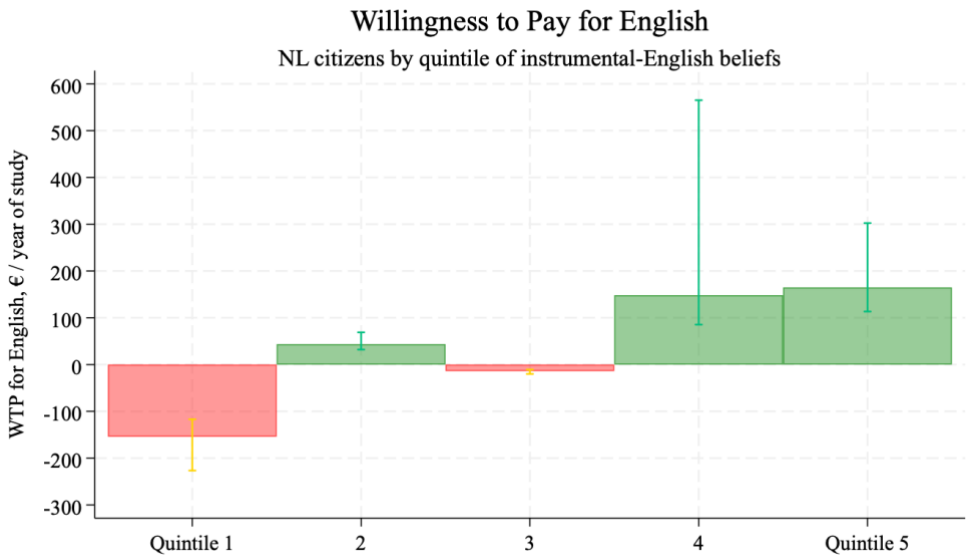


Figure 7. Willingness to pay for English, Dutch citizens by quintile of universalism.

Note: capped spikes represent 95% confidence bands obtained by dividing the point estimate for *English* by the upper and lower limits of the 95% CI of *Price*.

In Figure 7, we find strong support for our hypothesis: Dutch respondents' willingness to pay for English-language increases with universalist preferences. In the top two quintiles, respondents are willing to pay €148 and €164 for a switch from Dutch to English, which is approximately 6-7% of actual fees. The most parochial (i.e. least universalist) respondents, on the other hand, are willing to pay €154 (6.7% of annual fees) for a switch from English to Dutch. This is consistent with the view that individuals who attach low weights to the welfare of out-groups would seek to exclude them from participating in higher education in the Netherlands. Column (2) of Table 4 confirms these results: the interaction of *English* with *Universalism* is positive and highly significant.

Validation. Qualitative observation of the supply-side of the Dutch political landscape corroborates our universalism result. Let us briefly take stock of the correlation between universalism and policy positions on language in higher education held by the largest political parties in the Dutch parliament, as determined by the November 2023 election.

While we lack a comprehensive measure of policy universalism, the Manifesto Project (Lehmann et al 2023) allows us to capture each party's positions towards a closely related concept: multiculturalism. The assumption here is that a party which does not take issue with multiculturalism, or praises it, is more likely to value the welfare of all people equally, regardless of group membership, i.e. is more likely to be universalist. We calculate each party's position towards multiculturalism as the

difference between the volume of negative and positive mentions of multiculturalism, per 100 quasi-sentences, in party manifestos from the 2021 election.[12]

We compare the policy positions on multiculturalism to the policy positions on the use of English in higher education. For each party, we collect language policy positions from the 2023 election manifestos. Then, using GPT-4, we order the positions from least to most restrictive of the use of English.[13] Figure 8 plots the correlation between the two dimensions of interest. It is plain to see that political parties who are less universalist (to the right) are also more in favour of severe restrictions or complete elimination of English as a language of instruction in higher education (i.e. place lower on the vertical axis). The starkest example is Geert Wilders' PvV (Freedom Party), which holds that all Bachelor's degree will be taught in Dutch, and whose main campaign slogan was "Putting Dutch people first again" (*Nederlanders op weer een*). Thus, it is clear that the connection between parochialism and policy positions can also be seen on the supply side of politics.

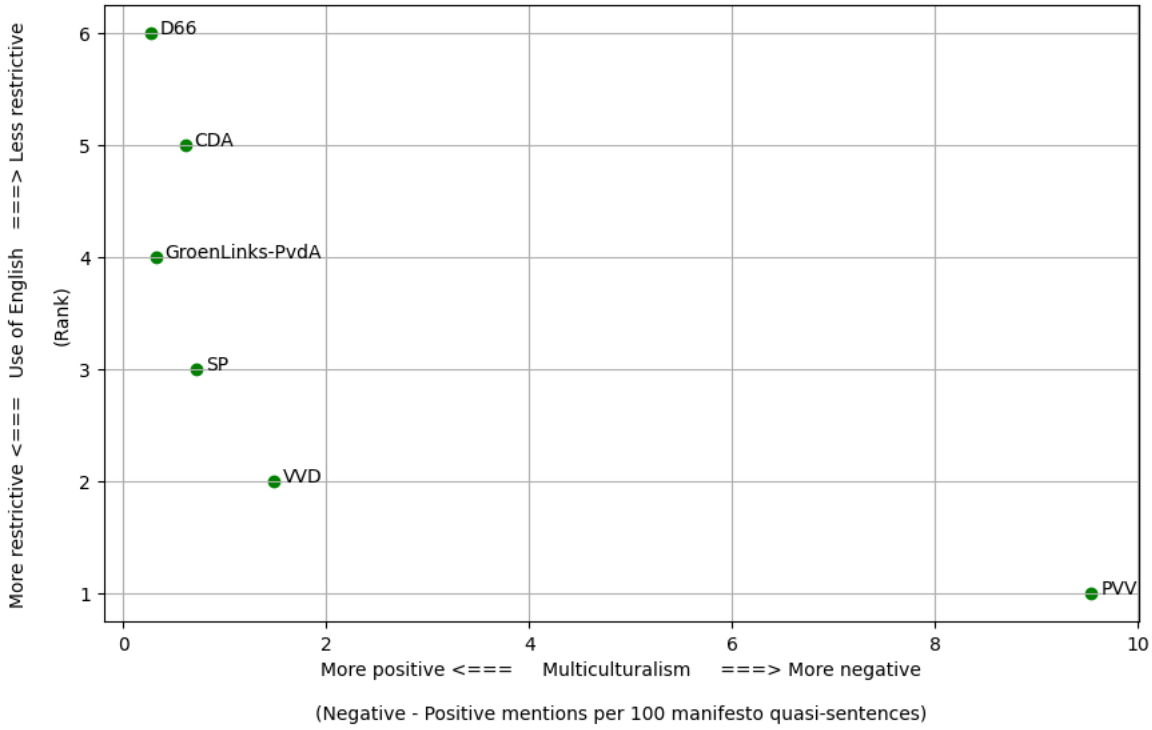


Figure 8. Dutch political parties: stance towards multiculturalism vs. restrictiveness towards the use of English in higher education.

[12] More details are available in Appendix F and in the Manifesto Project coding notes: https://manifesto-project.wzb.eu/down/tutorials/primer.html#structure-of-the-main-dataset

[13] The exact query and output from GPT-4 can be accessed here. This analysis excludes the Farmer-Citizen Movement (BBB) because there is no explicit language policy position in their 2023 manifesto, and New Social Contract (NSC) because the party was formed in 2023 and thus there is no data from the Comparative Manifesto Project as to NSC's stance on universalism and/or multiculturalism.

4.3.3 Do either Instrumental-English Beliefs or Universalism Dominate?

Having established that both instrumental-English beliefs and universalism matter, we now turn to the question of whether these two explanations can hold simultaneously, or whether one of them strictly dominates the other. To answer this question, we re-estimate our regression equation with two interaction terms: *English * Universalism* and *English * Instrumental-English Beliefs*. If, say, universalism is driving all of the effect, then we would expect *English * Universalism* to be significant, and *English * Instrumental-English Beliefs* to be insignificant. In Column (3) of Table 4, we find that: (i) for a 10-point increase in universalism (0-100 scale), the marginal effect of English rises by 0.09 (p = 0.002); (ii) for a 10-point increase in instrumental-English beliefs (0-100 scale), the marginal effect of English rises by 0.17 (p = 0.000). Thus, it is clear that both mechanisms hold simultaneously.

In Figure 9, we report WTP estimates for English by quintile of *residualized* universalism (the variation in universalism that is not explained by instrumental-English beliefs; Panel A) and *residualized* instrumental-English beliefs (vice-versa; Panel B). This allows to assess whether WTP rises monotonically with either variable, while accounting for the effect of the other. We find that this is indeed the case, with a small caveat for residualized universalism, where the effect is only approximately monotonic. More importantly, the WTPs we estimate here are very similar to those from Figures 6-7, estimated without residualizing the variables, which gives us confidence that both of our hypotheses hold simultaneously.

In the Appendix, we also consider whether the results we document so far, as regards universalism, are simply the result of 'politics as usual', i.e. policy positions reflecting placement on the standard left-right political spectrum. Put differently: we examine whether is it simply the case that left-wing respondents want English education for all, and right-wing respondents do not. We do not find this to be the case: Figure A4 shows that political orientation is essentially uncorrelated to willingness to pay for English. In Appendix Table A2, we re-estimate the regression model from Table 4 above while interacting each of economic views and socio-cultural views with *English*, and continuing to interact *English* with universalism and instrumental-English beliefs. In all cases, the size the size and significance of *English * Universalism* does not change; thus, we are not simply picking up politics-as-usual, but rather the association between universalism and WTP for English.[14]

[14] While these results may seem counterintuitive, we add to a body of evidence suggesting that the 'old' left-right divide is becoming increasingly decoupled from actual policy positions (Laméris et al 2018; Bonomi et al 2021; Abou-Chadi and Hix 2021; Gethin et al 2022). Above all, universalism is a crucial feature of liberalism (Fukuyama 2022) rather than a marker of left-right positioning, from which universalism is conceptually and empirically distinct, as Enke et al (2022, 2023) also show.

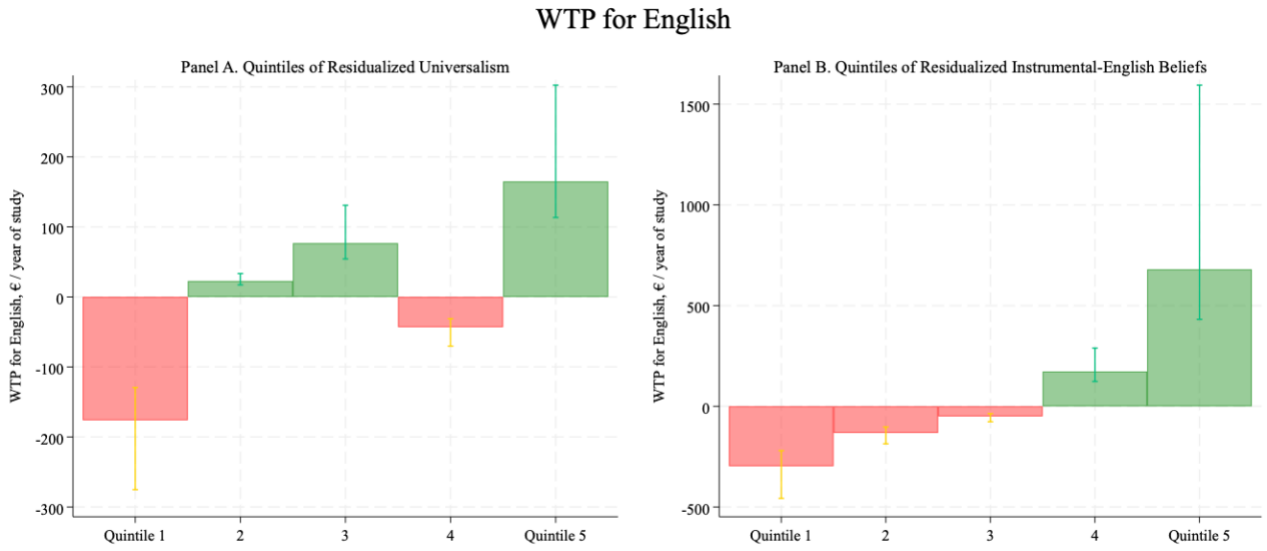


Figure 9. Dutch citizens: WTP for English by quintile of residualized universalism and residualized instrumental-English beliefs.

Note: capped spikes represent 95% confidence bands obtained by dividing the point estimate for *English* by the upper and lower limits of the 95% CI of *Price*.

5 Results: Non-Dutch Respondents

So far, we have documented that for Dutch respondents, the average WTP is close to 0. This point estimate, however, masks substantial heterogeneity. While demographic variables (gender, income, student status) do not matter much, WTP for English rises substantially when one holds universalist preferences (i.e. attaching similar weights to the welfare of those socially close and socially distant) and when one has believes that English-language education has material benefits for one's career.

In this section, in order to set the stage for Section 6, where we quantify the economic burden of language nativism, we report the results from our discrete choice experiment for non-Dutch respondents, across the European Economic Area and the rest of the world.

5.1 European Economic Area Countries

Table 6 reports the regression results for EEA respondents (European Union, Iceland, Switzerland, Liechtenstein, Norway), who are entitled to pay the same fees as Dutch students, and were thus shown the same choice sets (listed in Table 1). Column (1) shows the results for the full sample, while the remainder of the table breaks down the estimation into the sub-samples of interest as listed in our pre-registration (income quartile, gender, student status).

Across the board, the coefficient of English is positive, large, and highly significant throughout. The main estimate (Column (1)) shows that a degree taught in English has a log-odds 1.8 times greater than a degree taught in Dutch, holding price and university of study constant. This means that the English language degree is $e^{1.8} = 6.05$ times more likely to be chosen than an otherwise identical Dutch language degree. In terms of implied win margins, this means that, *ceteris paribus*, English is chosen 1 – 1 / (6.05 + 1) = 86% of the time, while Dutch is chosen 14% of the time. Appendix Figure C1 reports these win margins for the overall sample and by sub-group.

In terms of willingness to pay, Figure 10 shows that EEA respondents are willing to pay substantial amounts to study in English, relative to Dutch. The WTP estimate for the overall sample amounts to €1,672, which is 72% of the actual fee, and is substantial for any sub-group (minimum = €1,026; maximum = €2,568).

Table 6. Regression results: European Economic Area (excluding the Netherlands).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Overall	Income Quartile				Gender		Student	
		Q1	Q2	Q3	Q4	Female	Male	No	Yes
English	1.798***	1.841***	1.767***	1.682***	2.076***	1.767***	1.848***	1.672***	1.896***
	[0.176]	[0.352]	[0.372]	[0.310]	[0.364]	[0.257]	[0.242]	[0.235]	[0.340]
Price	-0.001***	-0.001	-0.001**	-0.001	-0.002***	-0.001**	-0.001***	-0.001***	-0.001**
	[0.000]	[0.001]	[0.001]	[0.000]	[0.001]	[0.000]	[0.000]	[0.000]	[0.001]
Uni. Groningen	-0.220**	-0.022	-0.199	-0.283	-0.373**	-0.225	-0.211	-0.159	-0.129
	[0.108]	[0.204]	[0.225]	[0.244]	[0.183]	[0.150]	[0.158]	[0.147]	[0.179]
KU Leuven	-0.658	-0.231	-1.06	0.043	-1.795*	-0.238	-1.146*	-0.434	-1.385*
	[0.410]	[0.968]	[0.760]	[0.611]	[1.012]	[0.563]	[0.602]	[0.561]	[0.773]
Uppsala Uni.	-2.358***	-1.297	-1.54	-1.788	-5.075***	-1.932*	-2.874**	-2.427**	-2.685
	[0.806]	[1.692]	[1.311]	[1.299]	[1.847]	[1.078]	[1.211]	[1.057]	[1.656]
Observations	2,412	636	576	636	564	1,224	1,188	1,212	684
N. Respondents	201	53	48	53	47	102	99	101	57
Pseudo R^2	0.415	0.444	0.444	0.373	0.432	0.409	0.425	0.362	0.454

Notes. Heteroskedasticity-robust standard errors in brackets are clustered over respondents. Reference category for the set of university dummies: Erasmus University Rotterdam. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

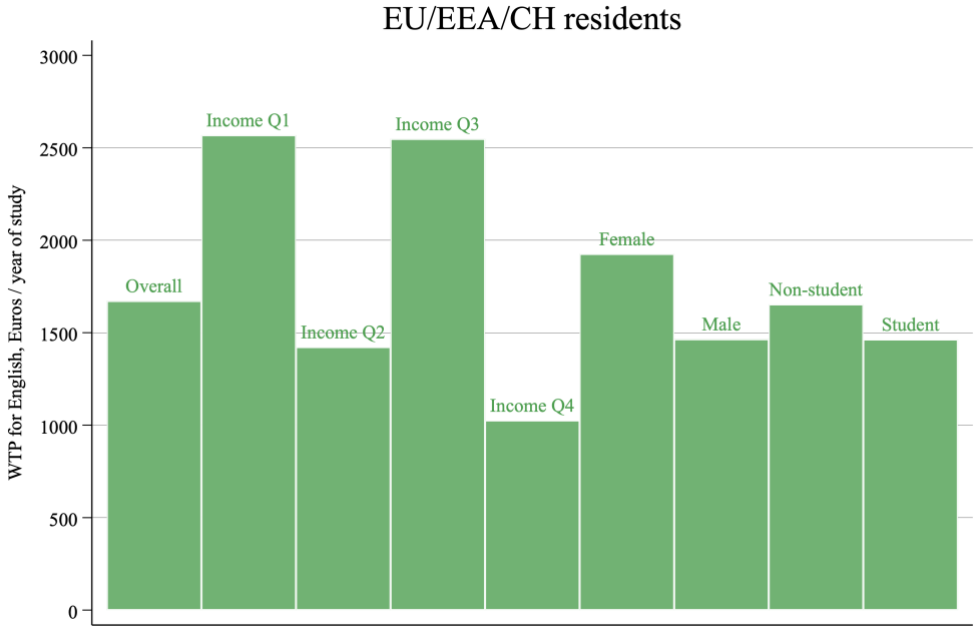


Figure 10. WTP for English: European Economic Area respondents.

5.2 All Other Countries

In Table 7, we report regression results for respondents from countries outside the European Economic Area. These respondents are not eligible for the EEA fee schedule; in the interest of realism, they were therefore presented with the fees as shows in Table 2, which apply to non-EEA students.

In Column (1), the coefficient of English is 2.353, which implies that, *ceteris paribus*, English is chosen $1 - 1 / (e^{2.353} + 1) = 91\%$ of the time, whereas Dutch is chosen 9% of the time. Appendix Figure C2 shows that English by a similarly overwhelming margin across demographic sub-groups.

Figure 11 reports WTPs for English overall and across sub-groups, as above. The overall estimate is € 46,143 per year. The size of the estimates is likely an artefact of the setup: we are artificially constraining the universe of choices to include only four universities, all of which are in Western Europe. It is thus likely that respondents pick the English language program even when it is a lot more expensive, because they do not view Dutch as a viable option. This would tend to produce inflated WTP estimates for English. Yet, without having to necessarily take these exact WTPs at face value, what we learn from these estimates is that non-EEA respondents are highly unwilling to study in Dutch.

On the other hand, several public universities in the US charge comparable or higher tuition and fees to international students, including Michigan State University ($ 44,935 = € 41,923), the University of Virginia ($ 56,650 = € 52,871), or the College of William and Mary ($ 49,412 = € 46,143).[15] Thus,

[15] See here, here and here respectively for Michigan State, the University of Virginia, and William & Mary.

although large at first glance, our WTP estimates are not outside the range of prices people are willing to pay for education, especially considering that one incurs 4 years' worth of fees at US universities but only 3 years' worth at European universities.

Table 7. Regression results: Non-European respondents.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Overall	Income Quartile				Gender		Student	
		Q1	Q2	Q3	Q4	Female	Male	No	Yes
English	2.353***	2.616***	1.877***	1.989***	5.457***	2.429***	2.305***	2.652***	2.371***
	[0.232]	[0.432]	[0.450]	[0.365]	[0.592]	[0.331]	[0.331]	[0.350]	[0.710]
Price	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Uni. Groningen	-0.158	0.174	-0.724*	0.075	-0.947	-0.099	-0.184	-0.073	0.021
	[0.157]	[0.221]	[0.409]	[0.232]	[0.687]	[0.249]	[0.198]	[0.217]	[0.364]
KU Leuven	0.247	-1.427	2.376	-0.488	-0.169	-0.11	0.471	-0.491	0.051
	[0.830]	[1.399]	[2.366]	[0.947]	[3.477]	[1.267]	[1.109]	[1.064]	[2.273]
Uppsala Uni.	0.413	0.148	0.57	0.47	14.065***	0.873	0.098	0.271	1.203
	[0.385]	[0.426]	[0.930]	[0.657]	[0.664]	[0.574]	[0.508]	[0.420]	[1.421]
Observations	2,400	744	456	696	504	1,200	1,200	1,236	696
N. Respondents	200	62	38	58	42	100	100	103	58
Pseudo R2	0.583	0.602	0.507	0.487	0.871	0.625	0.546	0.642	0.568

Notes. Heteroskedasticity-robust standard errors in brackets are clustered over respondents. Reference category for the set of university dummies: Erasmus University Rotterdam. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

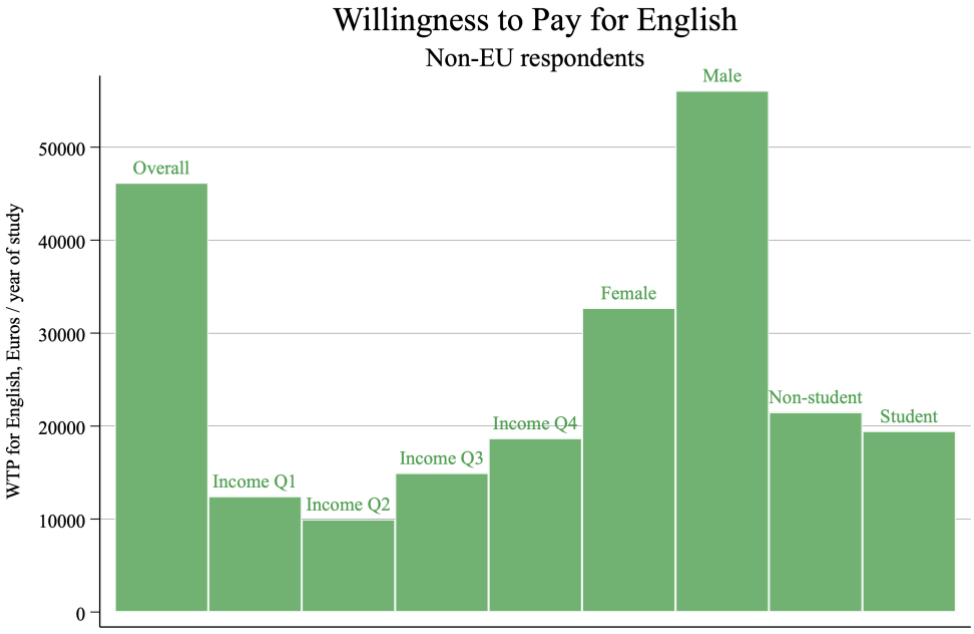


Figure 11. WTP for English: non-EU/EEA respondents.

Note: capped spikes represent 95% confidence bands obtained by dividing the point estimate for *English* by the upper and lower limits of the 95% CI of *Price*.

6 Quantitative Implications of the Discrete Choice Experiment

6.1 Retention Rates

So far, we have focused on *conditional* choices between study options, which has allowed us to establish how willing people are to trade off English for Dutch, in otherwise identical education menus (i.e. holding location and price constant). In the real world, however, all else is never equal; a question of interest to policy-makers is thus what happens to student numbers if Dutch replaces English as the language of instruction. Here, we estimate the implications of such a language switch from the perspective of Dutch policy-makers.

To determine how many students would still come to the Netherlands if English replaces Dutch, we need to calculate the predicted probabilities of picking each study option, based on the parameter estimates we obtain from the fixed effects conditional logit models from Sections 4 and 5. For example, based on Column (1) of Table 1, the log-odds of the probability that Dutch respondents from attending Erasmus University Rotterdam when the language is English is equal to:

$$E[Erasmus\ Uni. \mid X] = -0.0017 * 2314 + 0.0027 * 1 = -3.96$$

where -0.0017 is the coefficient of price, 2314 is the price Erasmus University Rotterdam charges, and 0.0027 is the coefficient of the English dummy, which is switched on, as indicated by the 1 which multiplies its coefficient. After calculating the analogous log-odds of probabilities for the other three universities, the baseline probability (when the language is English) that respondents choose to study in the Netherlands is obtained by taking the sum of the exponentiated log-odds for Dutch universities, divided by the sum of all exponentiated log-odds (thus normalizing to 1):

$$\Pr(Netherlands \mid English) = \frac{e^{E[Groningen \mid X]} + e^{E[Erasmus \mid X]}}{e^{E[Groningen \mid X]} + e^{E[Erasmus \mid X]} + e^{E[Uppsala \mid X]} + e^{E[KU\ Leuven \mid X]}}$$

Performing the analogous calculation for the treatment of interest (Dutch universities switch to English) yields Pr(Netherlands | Dutch). The ratio Pr(Netherlands | Dutch) / Pr(Netherlands | English) is thus the share of respondents who would still study in the Netherlands if the language were to switch to Dutch, relative to the share of respondents who would study in the Netherlands at the baseline (English), i.e. the retention rate.

Figure 12 presents the estimated retention rates for our three samples of interest (Netherlands, other EEA countries, other countries). The retention rate for Dutch respondents is 99.9%, indicating that very few Dutch nationals would choose to study abroad if education were to be conducted in Dutch. However, the same cannot be said for international students. Just 24.4% of EEA students would remain. Excluding Belgian respondents brings this number down to just 11.7%.[16] The student loss is similarly large for non-EEA respondents (13.8%).[17] In any case, our estimates imply that nativist language policies will result in the loss of at least 75% of international students.

[16] Alternatively, one could also exclude Belgians and Germans, since German belongs to the same language family as Dutch. In this scenario, the result is almost identical: just 11.6% of EEA students would remain.

[17] The results are even more sanguine if we take differences in the composition of the sample, relative to the population, into account. In the main analysis, the overall retention of international students is 21.4%, which is the average of 13.8% (non-EEA retention rate) and 24.4% (EEA retention rate), weighted by the shares of EEA and non-EEA students in the actual international student population. However, when we correct for the over- or under-sampling of all countries by using the ratio of each country's share in the population to its share in the sample as a weight in the regression, we obtain an adjusted overall retention rate of just 17.8%. This adjusted rate is approximately one-fifth smaller than the main estimate.

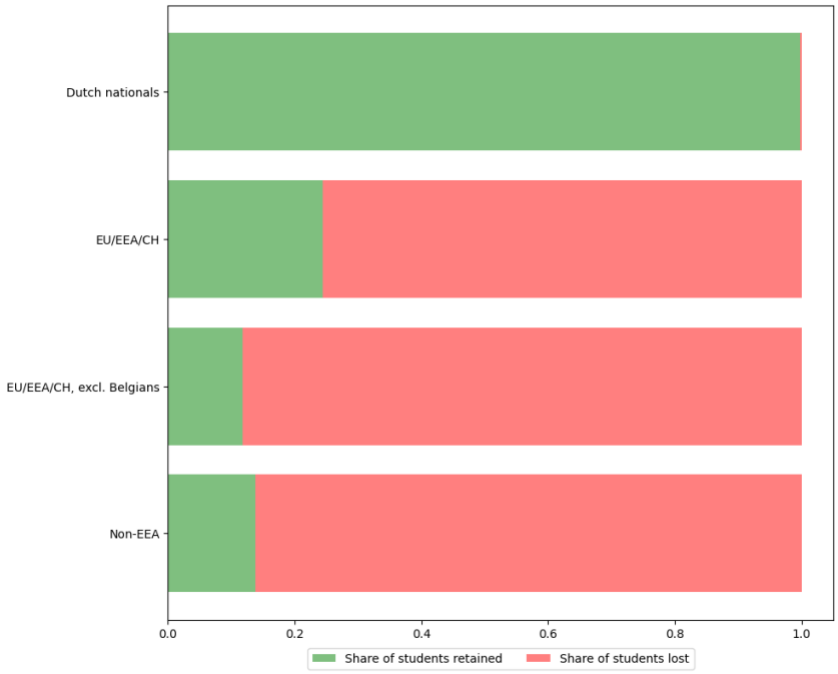


Figure 12. Student retention rates, based on our DCE estimates, by national origin.

Our estimates are likely conservative for another reason: we are artificially constraining the set of possibilities for non-Dutch respondents to comprise of 50% Dutch universities. Dutch universities, as an artefact of the discrete choice setup, are over-represented here, which should bias the probability of choosing a Dutch university upward. Thus, our estimates of student loss should be understood as a lower bound. In practice, it is highly likely that students would not consider the Netherlands at all if Dutch universities switch to Dutch. Even so, we show that the retention rates are very small, and the policy will likely cause substantial damage to the Dutch economy, which we turn to in the next sub-section.

6.2 Economic Implications

6.2.1 How Large is the Shock?

How many students do Dutch universities stand to lose from a language switch? We assume, very conservatively, that student losses will only affect Bachelor's degrees, since Master's degrees, to date, have not been explicitly targeted by any policy proposals. In our opinion, it is highly unlikely that prospective Master's students do not respond to the legislation: policies are signals (Glaeser et al 2021) and people learn from them. Thus, for the sake of argument, we cast aside the chilling signal the Netherlands sends to the rest of the world as far as its welcoming-ness to international students and other high-skill migrants.

As per the education consortium Nuffic,[18] there are 85,296 international students in bachelor's degrees in the Netherlands, as of 2022. 4,780 international students are from Belgium; 59,542 students are from EEA countries other than Belgium, and 20,974 from non-EEA countries. In the discrete choice experiment, we estimated that just 90.9% of Belgians, 11.7% of non-Belgian EEA nationals, and 13.8% of non-EEA nationals would still come to the Netherlands if the language were Dutch. The number of international students lost to the language switch is therefore 4,780 * (1 – 0.909) + 59,542 * (1 – 0.113) + 20,974 * (1 – 0.138) = 71,328. In addition, 0.1% of Dutch students would go abroad, or 791 individuals, for a total of 72,119 students lost to the policy.

The combined number of Bachelor's and Master's students in the Netherlands (all nationalities) is approximately 834,551.[19] Losing 72,119 students means the university sector permanently shrinks by 8.6%. This is a truly epic contraction. In the Dutch context, this would be equivalent to shutting down all of Erasmus University Rotterdam, Tilburg University, VU Amsterdam, and Maastricht University, which together are home to approximately 67,500 students. In the U.S. context, this is roughly equivalent of the state of New York (population = 19.7 million, similar to 17.5 million in the Netherlands) doing away with New York University (enrolment = 59,144; Welding 2023).

In what follows, we assume the contraction in the university sector is proportional to the reduction in student numbers, i.e. an elasticity equal to 1. Since higher education in the Netherlands is mainly funded by the state in proportion to student numbers, a large drop in student numbers will mechanically reduce funding, and thus make current wage bills unsustainable, necessitating an equivalent downward adjustment. In fact, our assumed elasticity of 1 may be too small. For the 2018 – 2022 period (the earliest and latest years for which we could find information on student and scientist numbers), the elasticity of the number of scientists with respect to the number of students is 2.16. Thus, there is certainly a case for why the sector might contract much more than what our calculations below assume, which will result in larger damages.

6.2.2 An Overview of Estimated Effects

What have universities ever done for us? First, one should note that human capital (not specific to, but certainly not excluding university education), is of crucial importance for economic growth and development (Mincer 1984, Benhabib and Spiegel 1994, Tamura 2006, Madsen and Murtin 2017, Galor 2020). Second, the literature establishes that - *specifically* - universities are associated with several socially and economically desirable outcomes. Cantoni and Yuchtman (2014) provide evidence that medieval European universities played a major role in accelerating the Commercial Revolution, via fostering legal training, thus leading to better institutions and greater economic activity. Madsen et al

[18] https://www.nuffic.nl/en/subjects/facts-and-figures/countries-of-origin

[19] This number includes students from the two main types of Dutch universities: 14 research universities (WO, wetenschappelijk onderwijs) and 43 universities of applied science (HBO, hoger beroepsonderwijs).

(2015, p. 192) document that, in countries where universities where established earlier, contemporary living standards are higher. Marozau et al (2021) show that universities contribute to economic development both via human capital formation and via innovation. Valero and Van Reenen (2019) demonstrate that universities contribute not only to economic development, but also to civic norms, as measured by pro-democratic views.

We focus on the most immediate consequence of a permanent contraction of the university sector, namely the loss of scientific output, in the next sub-section. In the interest of completeness, we also estimate effects in other sectors as shown in Figure 13, where we also report approximate amounts for each channel. The relevant estimates are detailed in Appendix E. On balance, they are overwhelmingly negative, such that our estimate of interest (scientific output loss) can only be understood as a lower bound on the true effects of the language switch. Before we move on to our examination of losses of scientific output, we discuss two (in our view) important items from Figure 13.

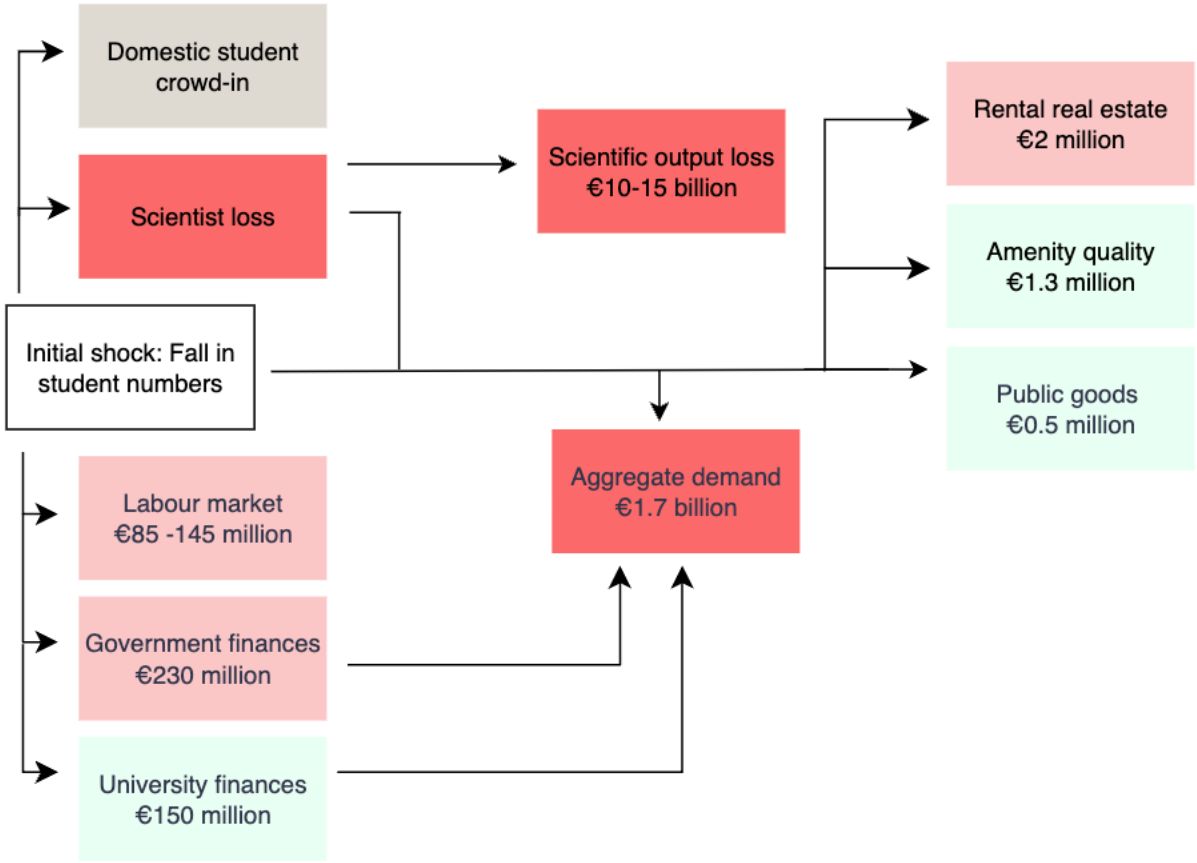


Figure 13. Summary of the economic effects of an 8.6% drop in student numbers.

Domestic student displacement / crowding out. According to the crowding out phenomenon, international students displace domestic students, effectively "taking their spots" at universities. However, this idea is incompatible with the data (see our analysis in Appendix E, Section A). While politicians frequently allude to such displacement, the data are, if anything, more compatible with crowding *in*: international students may have allowed for an expansion in capacity, which in turn can provides more study options for domestic students. Our results thus corroborate Shih (2017), who finds that international students trigger a crowding in, not a crowding out, of domestic students in the United States.

Labour market effects. A reduction in high-skill labour has clear negative consequences in the labour market. In addition to increasing labour market frictions and search costs at large, fewer highly skilled (more productive) individuals means lower aggregate productivity. Based on the literature, we would also expect the wages of the remaining high-skill workers to decline: Carneiro et al (2023) show that exogenous increases in human capital in Norway led to *increases* in high-skill wages, owing to a large increase in demand for high-skill labour. Closely related to our setting, Peri et al (2015) show that the effect of migrants in STEM occupations on the wages of both high- and low-skill natives are positive.

A full quantification of the labour market effects of a switch to Dutch is beyond the scope of this report. However, the prominent economics and public policy research institute SEO Amsterdam Economics (2024) has produced such an estimate, as pertains to the effect of switching to Dutch, as far as economics and business study programmes are concerned. SEO consider the dynamic effects of student departures and scientist departures, which provides temporarily better opportunities for natives, until the labour demand adjusts. Their best estimate (SEO 2024, p. iii, Table S.1) of the labour market costs of a switch to Dutch is a loss of €85 – 145 million per year, which we reproduce in our Figure 13. What is striking in the SEO (2024) report, beyond the size of the loss, is that firms are well aware that the labour market effects will be large and negative. For the purposes of the report, SEO interviewed 16 large companies with operations in the Netherlands (including e.g. IBM, Heineken, and Elsevier); the companies' stance towards a language switch admits no ambiguity. As SEO (2024, p. iv) state, "Businesses are worried about plans to reduce the number of foreign students. Many companies are affected if this happens in technical courses, some (especially accountants and consultants) also in economics courses. According to the companies, foreign students are sorely needed to keep the economy running (…). Some companies are considering further growth outside the Netherlands."[20] One

[20] The translation is ours; the original text reads as follows: "De bedrijven zijn ongerust over de plannen om het aantal buitenlandse studenten te verminderen. Veelbedrijven worden geraakt als dat bij technische opleidingen gebeurt, een deel (met name accountants enconsultants) ook bij economische opleidingen. Volgens de bedrijven zijn buitenlandse studenten hard nodigom de economie draaiende te houden (...). Enkele bedrijven overwegen ombuiten Nederland verder te groeien."

interviewee stated (p. 48) that the language switch would set the Netherlands "back by thirty years" (*dertig jaar terug* in the original).

6.2.3 Loss of Scientific Output

What happens when large numbers of scientists leave? How do the effects of scientist departures map into economic damages? We tackle these two questions in this section.

Size effect. Using a rare natural experiment, Waldinger (2016, Table 3 Column 10) estimates that a 10% reduction in the number of scientists reduces long-run scientific output (i.e. publications) by 0.212 SD. The context for this estimate is the large-scale dismissals of Jewish and politically 'undesirable' scientists in Nazi Germany and post-annexation Austria, on the eve of World War II. In our context, 8.6% of scientists exit the university sector; the reduction in scientific output is thus 0.212 * 0.86 = 0.18 SD. Simply put, fewer scientists will translate to less output, setting aside for the moment the matter of selection into exit, which we will return to shortly.

Composition effect. A core feature of science is the exchange of ideas between people who bring different perspectives. The effect of diversity on innovation is well-established in the literature, and quantified by Hunt and Gauthier-Loiselle (2010, p. 33). They find that the increase in the share of the population who are skilled migrants (with a college degree) "from 2.2 percent to 3.5 percent increased patents per capita by 12–21 percent". We use their central estimate (16.5) as a basis from which we calculate the diversity effect of departing scientists. In our case, there are 28,195 persons classified as high skill migrants or researchers by Statistics Netherlands (2022), i.e. 0.161% of the Dutch population. The university sector employs 69,182 scientific employees, 8.6% of whom exit the university sector. Assuming only non-Dutch nationals leave, the change in the population share of high skill migrants in the Netherlands, due to the policy, is (69,182 * 0.086) / 17.5 million. We then use this change in the share to re-scale Hunt and Gauthier-Loiselle's (2010) estimate.

We now turn to the question of how scientific output translates to economic output. We estimate the equation:

$$\ln(GDP_t) = \alpha_0 + \ln K_t + \ln Hours_t + \ln\ HC_t + \ln(Patent\ Stock_t) + \epsilon_t$$

where K is physical capital, Hours is the number of hours worked, and HC is a human capital index accounting for both years of schooling and returns to education. All three variables are from the Penn World Tables (Feenstra, Inklaar and Timmer 2015). The patent stock is constructed from the number of patent applications to the European Patent Office (Teorell et al 2022), using a depreciation rate of

15% and dividing the earliest value by 0.15 to calculate the initial patent stock, following Hall et al (2010). We estimate the regression equation over all available years, namely 1979-2017. We constrain the production to have constant returns to scale, so we normalize the sum of the coefficients of ln K, ln Hours, ln HC, and ln (Patent Stock) to 1. In this fashion, we estimate an elasticity of GDP with respect to the patent stock equal to 0.076, which is in line with country-specific estimates from the literature.[21]

It is also worth noting that, by design, a reduction in the labour inputs (caused by scientist outflows) will necessarily reduce ln(Hours) and ln(HC), and thus ln(GDP). Since we focus on the effect of reductions in the stock of knowledge, we ignore these other effects, and our estimates will therefore understate the true extent of the cost of scientist departures. Moreover, a reduction in the labour inputs, to put it more bluntly, is a negative shock to the labour market: for example, the semiconductor company ASML hires a large share of its employees, many of whom are international, from Dutch universities. Doing so would no longer be feasible if Dutch becomes the language of education.

Main estimate. Equipped with our estimates of (i) how scientist departures affect scientific output and (ii) how scientific output affects GDP, we can now examine the effect of scientist departures on GDP. We do so by computing a counterfactual patent stock, which reflects the size adjustment and composition adjustment as implied by the estimates from Waldinger (2016) and Hunt and Gauthier-Loiselle (2010). Over the 1979 – 2017 period, annual counterfactual GDP is on average 1.29% smaller than actual GDP, which is staggeringly large. For comparison, the loss of scientific output is almost as large as the Netherlands' military expenditure (1.6% of GDP), and more than half of the Netherlands' expenditure on R&D (2.3% of GDP).

A feature of scientist attrition is that it is expected to be highly selective: more productive scientists have better exit options and are thus more likely to leave. De la Croix et al (2023) show that, already in the Middle Ages, higher-quality scientists were more likely to sort into higher-quality institutions and to migrate to geographically distant universities. Exit options for scientists are thus a very real phenomenon, and quantifying the productivity differences between leavers and stayers is thus important. If we have a measure of productivity differences, we can determine the proportion of economic losses attributable to a pure size effect (fewer scientists stay) vs. a quality effect (worse scientists stay). From Waldinger (2016, Table 1), we calculate the degree of positive selection as the ratio of the productivity of dismissed scientists to the productivity of stayers.[22] We find that the average dismissed scientist in his data is 1.79 times more productive, in terms of publications, than the average

[21] Blind and Jungmittag (2012) estimate elasticities equal to 0.047 (United Kingdom), 0.059 (Italy), 0.072 (France), and 0.094 (Germany).

[22] For example, in physics, 23.8% of publications are produced by dismissed scientists, who account for 15% of all scientists. Thus, dismissed physicists are more productive than stayers by a factor of $\frac{23.8/15}{(100-23.8)/(100-15)} = 1.77$.

non-dismissed scientist. What would the economic losses be, in our context, if departing and staying scientists had the same productivity? We can answer this question by dividing our estimated losses (1.29% of GDP) by the productivity gap, i.e. 1.29 / 1.79 = 0.72. Should there be no quality differences between stayers and leavers, the losses would amount to 0.72% of GDP, which is the pure size effect, with quality differences accounting for the remainder (0.57% of GDP). Therefore, both the size and quality of the scientific workforce clearly matter.[23]

Alternate estimate 1: heavy-tailed scientific productivity distribution. There may be concerns that the dismissal of scientists from universities in Nazi Germany and Austria is perhaps too idiosyncratic a setting on which to base our analysis. We therefore set our main estimate aside and ask what would be the amount of scientific output lost under two alternate scenarios. The first of these two scenarios draws on real data, namely the citations of economists on RePEc. We believe this scenario is realistic, since the literature has shown that scientific productivity is usually distributed thus (Ghiglino 2012, Liao 2021, Bol et al 2018, Chan et al 2014). The intuition is that science displays a Mathew effect: i.e. a "rich get richer" pattern: the tail of the distribution decays slower than an exponential, meaning that extreme values are more likely to be found than in less-heavy-tailed distributions. In turn, this means that the superstar effect occurs frequently in science, with a small number of individuals achieving significantly more success than others. In this analysis, we use data from RePEc for age-adjusted citations, over the past ten years, for the top 5% of economists worldwide.[24] Our analysis has four steps:

(i) We first calculate total scientific output, i.e. citations summed across all scientists in the sample.

(ii) Since our previous estimates suggest that 8.6% of scientists depart, we randomly assign the 'departing' status to 8.6% of scientists (we perform 1,000 draws). We allow departing scientists to be drawn from the top or top quartiles of the distribution, since more productive scientists have better outside options. This gives us the scientific output of departing scientists.

(iii) Once we have the output of leavers (Step (ii)) and the total output (Step (i)), we calculate how much scientific output is lost because of scientist departures.

(iv) We recalculate the counterfactual patent stock and associated GDP losses.

The results of this analysis are shown in Table 8. If the leavers are drawn from the top quartile of the productivity distribution, 19% of scientific output is lost, which corresponds to a 1.6% loss in GDP. If the leavers are instead drawn from the top 2 quartiles, economic losses amount to 1.1% of GDP. These

[23] To be exact, size accounts for 51% of the effect, quality accounts for 46%, and diversity accounts for 3%.
[24] We verify that this distribution is heavy-tailed (Appendix Figure E1) and that it approximately follows a power law (Appendix Figure E2).

estimates are similar to the 1.4% of GDP loss we obtained using Waldinger's (2016) estimate, which gives us confidence in our results. We can safely conclude that the Waldinger data certainly do not exhibit a one-off, peculiarly winner-take-all pattern which skews our results.

Table 8. Distribution of scientific productivity: empirical distribution of economists' citations.

Leavers drawn from …	**Scientific Output Loss**	**GDP Loss**
Top quartile	19.0%	1.6%
Top 2 quartiles	13.0%	1.1%

Note. Age-adjusted citations, past 10 years, top 5% of economists worldwide (RePEc).

Alternate estimate 2: normally distributed scientific productivity. As a boundary case, we consider a scenario where scientific productivity is normally distributed, meaning we explicitly preclude the possibility of superstar effects that is a feature of science. Even in this unlikely case, we find GDP losses between 0.9% and 1. These results and explanatory notes can be found in Appendix Table E2.

6.2.4 Why these estimates are conservative

Our estimates should be understood as a lower bound on the losses from nativism for at least four reasons:

(i) First, our estimates pertain to scientific output loss only. We set aside the changes in other domains, which according to Figure 13 and the relevant appendices, amount to approximately €2 billion worth in additional yearly net losses. Most notably, aggregate demand, government finances, and labour markets all clearly suffer large losses from the departure of large numbers of high-skill workers.

(ii) Second, throughout, we assume unchanged enrolment in master's degrees, which is unlikely, but mechanically reduces the intensity of the treatment of interest (namely an 8.6% contraction of the university sector).

(iii) Third, the analysis implicitly assumes a world with no path dependencies, where bad policies can be undone seamlessly, and forgone benefits can be recaptured. This assumption is extremely unlikely to be true. To see why, consider the following thought experiment. Suppose the Dutch parliament passes measures effectively ending the use of English as a language of instruction. International student numbers drop, and foreign scientists leave. After a few years, the Dutch parliament reinstates English. Do foreign scientists return? The interaction between policymakers and scientists now suffers from the classic commitment problem: having already banned English once before, policymakers cannot credibly commit

not to ban English again, whenever it might become politically expedient to do so. By virtue of backward induction, not all scientists who would have otherwise considered a move to the Netherlands, now do. The end result is that the damage to Dutch science and society is permanent. The same problem applies to all high-skill labour, from students to graduates. One would be hard-pressed to find a policy that so effectively deters high-skill migration, which most industrialized countries are generally supportive of.

(iv) Fourth, and relatedly, there is mounting evidence that suitable alternatives to the Netherlands, from the perspective of high-skill migrants, are going in the opposite direction: most notably, Germany is pressing ahead with further internationalization of its universities. Even setting aside the commitment problem described in (ii), for policies to be reversible, alternatives need to remain unchanged, which is a clearly untenable assumption. We live in a world of strategic interactions, and astute policymakers from other countries would do well to notice that, should English fall out of favour at Dutch universities, there will be ample opportunities to recruit students and scientists, and may thus choose to adjust their own policies accordingly to facilitate high-skill migration. Thus, here too, there are path dependencies that must be taken into consideration. Otherwise, the damage to Dutch science and society may be irreversible.

To be sure, there is ample historical evidence that large flows of human capital can permanently alter the course of science in both sending and receiving regions. Russian science never recovered from the outflow of scientists after the fall of the USSR. Escaping fascism, Enrico Fermi, Niels Bohr, and Albert Einstein, among many others, left Europe for the United States shortly before (or during) World War II. The war, in turn, jump-started American science (Gross and Sampat 2023), leaving a legacy of 'big science' supported by the national laboratories (e.g. Oak Ridge and Los Alamos). While we do not have a counterfactual world without the rise of fascism in the 1930s, it is not hard to imagine that most European scientists would have remained in Europe but for fascism, and the U.S. would not have as easily become the scientific superpower it is today without European scientists.

7 Conclusion

We have shown that language nativism, i.e. switching from English to the national language in higher education, entails dire economic consequences, in the order of 1.1 – 1.6% of GDP. This estimate is highly conservative: it only takes losses from scientific output into account, while ignoring other effects, which as we show in Figure 13 and discuss in Section 6.2.4, are overwhelmingly negative. Our main

estimate can therefore only be understood as a lower bound on the fallout from language nativism in higher education.

First, this paper began by establishing that Dutch nationals are monetarily indifferent between English and Dutch, while more universalist individuals strongly prefer English, above and beyond its material benefits for one's career. In addition, in Appendix D, we show, using sentiment analysis, that Dutch nationals are strongly opposed to an actual proposal aimed at restricting or eliminating the use of English in universities. Coupled with the fact that non-Dutch participants have a large willingness to pay for English-language education, there is no compelling rationale for eliminating English, unless one is prepared to inflict large losses on constituents.

In liberal democracies, the freedom to choose matters. Thus, instead of embarking on a path that promises to be disastrous, we would like to suggest three alternative (and not mutually exclusive) policies for decision-makers in high income education-exporting countries:

(i) If the objective is to promote studying in the national language, then the price mechanism provides a ready-to-use option. At least in the EU, universities do not have the legal ability to price-discriminate according to national origin, but pricing different degrees differently according to language of instruction should be feasible. This would alleviate some cultural anxiety concerns (namely that domestic students no longer master the domestic language because they do not use it in higher education), without severely restricting the choice set for those domestic students who genuinely prefer to study in English.

(ii) If the price mechanism is not a feasible avenue, quantity restrictions may be considered. If domestic universities have caps on international students, this may induce scarcity from the perspective of international students, and thus higher prestige. In turn, the average quality of international students might increase, which could mitigate some of the losses.

(iii) If the objective is to avoid investment in students who depart after graduation (from whom the host country arguably reaps little tax revenues),[25] then policies aimed at increasing staying rates are needed. The market for skilled labour is global, and it is wishful thinking to assume that forcing the domestic language upon foreign students will improve their downstream labour market outcomes and convert more of them into local taxpayers. As our results show, students will pre-emptively select out of countries with heavy-handed language regulation, in the first place.

[25] Note that it is far from clear that non-staying graduates do not benefit the host country after graduation. A clear example is the widespread, overt use of higher education as an instrument of international soft power (see for example Spilimbergo 2009). Low stay rates post-graduation are also a problem in the United States: Beine, Peri and Raux (2023) describe it as human capital leakage.

As a final word, let us return to an important aspect we overlook in this paper, as it is beyond the scope of our analysis. Ideas and innovation unlock prosperity (Jones 2003), and diversity unlocks innovation (Hunt and Gauthier-Loiselle 2010, Campo et al 2022); language nativism will therefore wreak immediate havoc in labour markets and negatively affect the production of ideas. This is not simply our conjecture: while we have taken stock of politicians' and constituents' arguments, we have only briefly discussed the view from the business sector. The words of Peter Wennink, CEO of Eindhoven-based semi-conductor giant ASML, are self-explanatory:

> "We cannot keep our company afloat without this knowledge migration. (…) One of our biggest problems is attracting enough talent. When you talk about the major innovations, which are necessary for the energy transition, for example, then a lot of talent is needed. We therefore need more knowledge migration, not less (…) The entire technology industry speaks English." (Eindhoven News 2023).

Consequently, one should carefully consider a broad range of unintended consequences when implementing any new policy, and even more so when such policies will cause mass departures of human capital, including university graduates and scientists. These two groups are not the only ones for whom exit options are alive and well: exit options are present for firms, too. When H-1B visas become more restrictive, US companies expanded their operations in China, India, and Canada, hiring more workers there (Glennon 2023). Or, as ASML CEO Peter Wennink stated:

> "Ultimately, we can only grow this company if there are enough qualified people. We prefer to do that here, but if we cannot get those people here, we will get those people in Eastern Europe or in Asia or in the United States. Then we will have to go there" (NL Times, 2024).

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The Cost of Nativism: Evidence from the Netherlands

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ONLINE APPENDIX

Appendix A: Additional Results, Netherlands Sample

Table A1. Fixed effects conditional logit results: All Dutch residents (citizens and non-citizens).

	Overall	Income Quartile				Female	Male	Student	
		Q1	Q2	Q3	Q4			No	Yes
English	0.521***	0.281**	0.681***	0.640***	0.541***	0.677***	0.360***	0.467***	0.569***
	[0.063]	[0.113]	[0.134]	[0.132]	[0.129]	[0.091]	[0.088]	[0.094]	[0.107]
Price	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Uni. Groningen	-0.493***	-0.611***	-0.474***	-0.381***	-0.456***	-0.499***	-0.501***	-0.459***	-0.471***
	[0.064]	[0.129]	[0.128]	[0.129]	[0.127]	[0.095]	[0.088]	[0.093]	[0.119]
KU Leuven	-2.169***	-2.632***	-1.807***	-2.303***	-1.921***	-2.270***	-2.114***	-1.975***	-2.332***
	[0.207]	[0.429]	[0.420]	[0.448]	[0.377]	[0.290]	[0.301]	[0.289]	[0.372]
Uppsala Uni.	-2.971***	-4.031***	-2.429***	-3.133***	-2.218***	-3.107***	-2.885***	-2.790***	-3.047***
	[0.358]	[0.735]	[0.753]	[0.704]	[0.671]	[0.503]	[0.520]	[0.511]	[0.620]
Observations	6,012	1,680	1,464	1,380	1,488	2,976	2,988	2,712	1,956
N. Respondents	501	140	122	115	124	248	249	226	163
Pseudo R2	0.0883	0.07	0.122	0.106	0.0937	0.111	0.0728	0.0768	0.102

Notes. Heteroskedasticity-robust standard errors in brackets are clustered over respondents. Reference category for the set of university dummies: Erasmus University Rotterdam. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

Figure A1. Willingness to pay for English (€ / year) by sub-group: All Dutch residents (citizens and non-citizens).

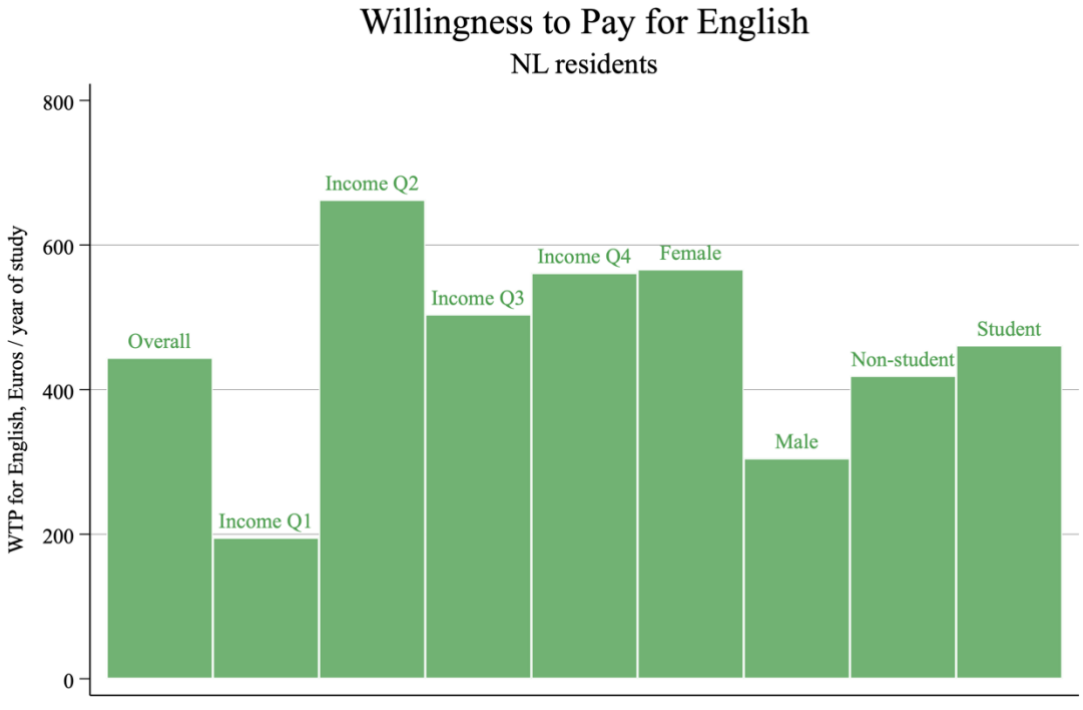


Figure A2. Probability of picking English (conditional on price and location) by sub-group: All Dutch residents (citizens and non-citizens).

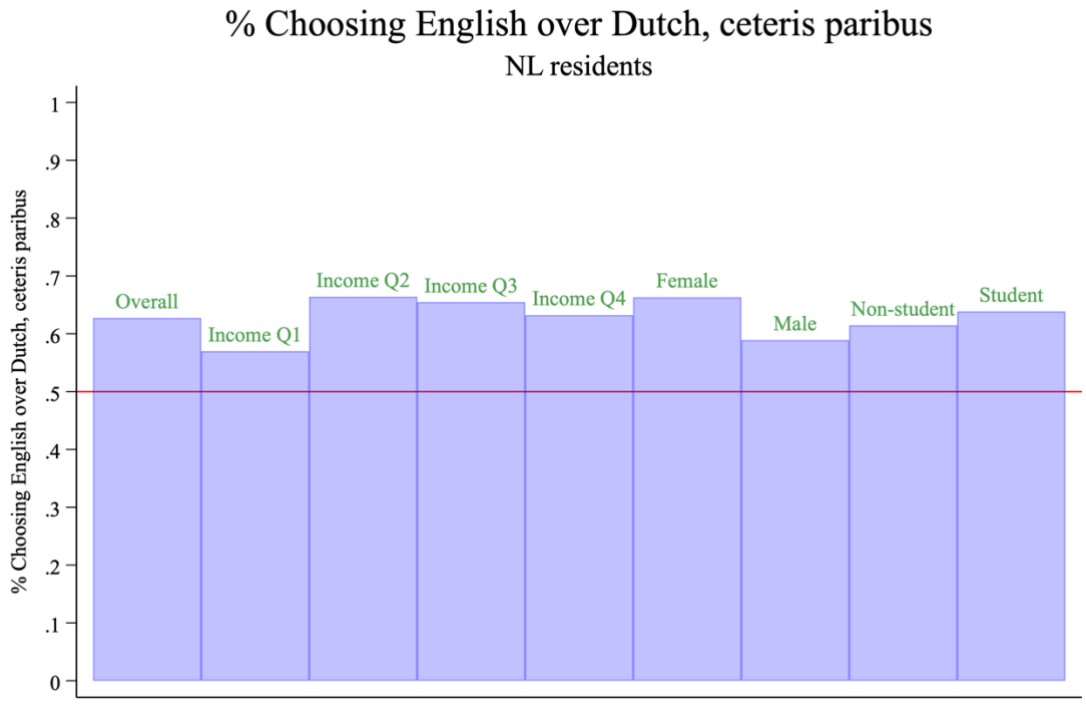


Figure A3. Willingness to pay for English, Dutch citizens by quintile of *residualized* instrumental-English beliefs.

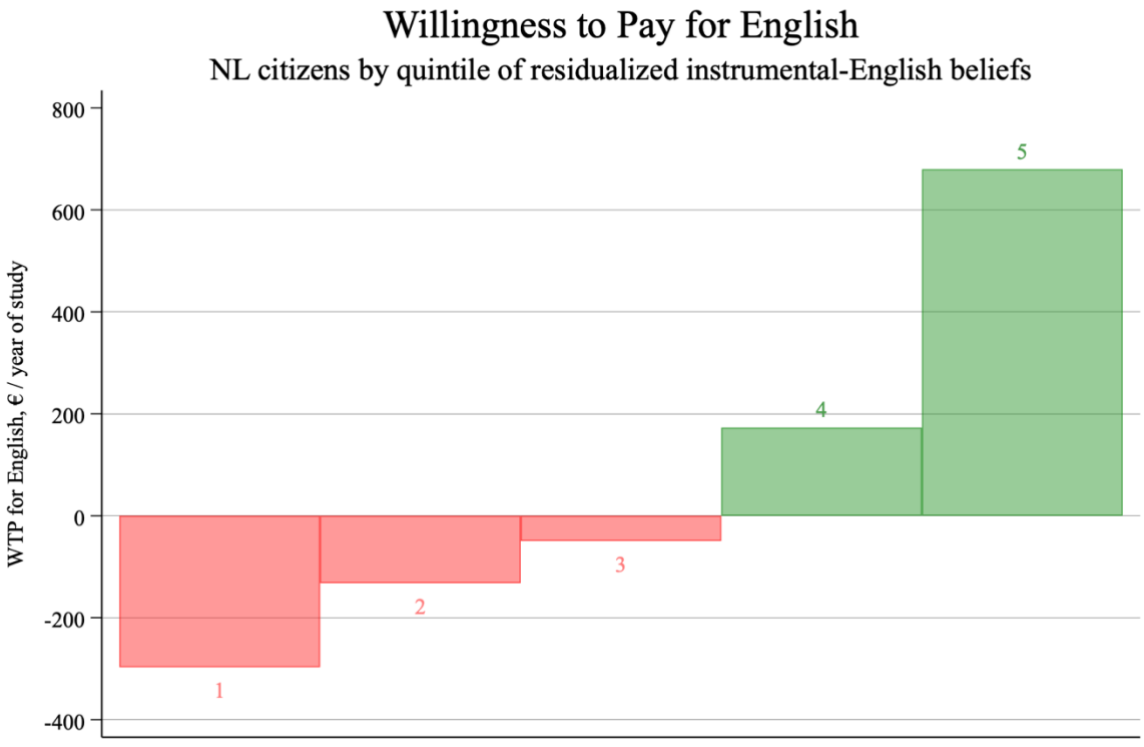
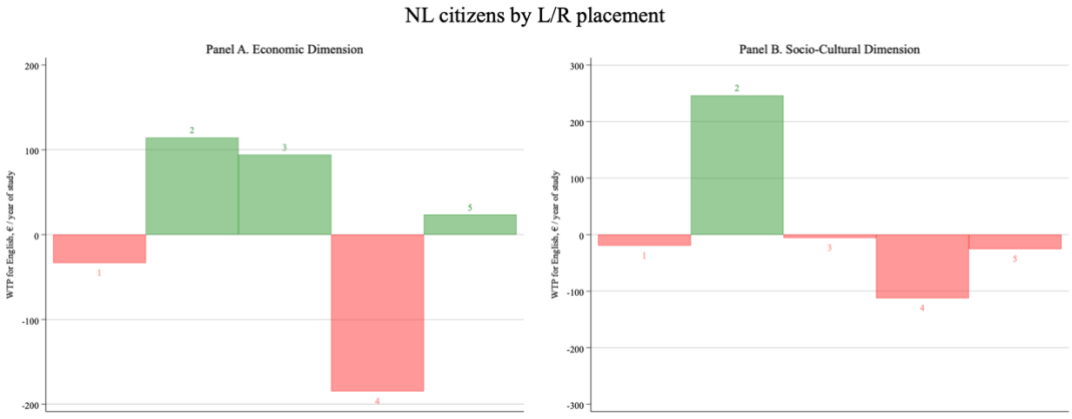


Figure A4. Dutch citizens' political leanings and willingness to pay for English.



Notes. We ask survey respondents to place themselves on the left-right political spectrum, separately for economic views (Panel A) and socio-cultural views (Panel B), which we then link to their WTP for English.

Figure A5. Distribution of WTPs across sub-groups (see footnote 8 in the main text).

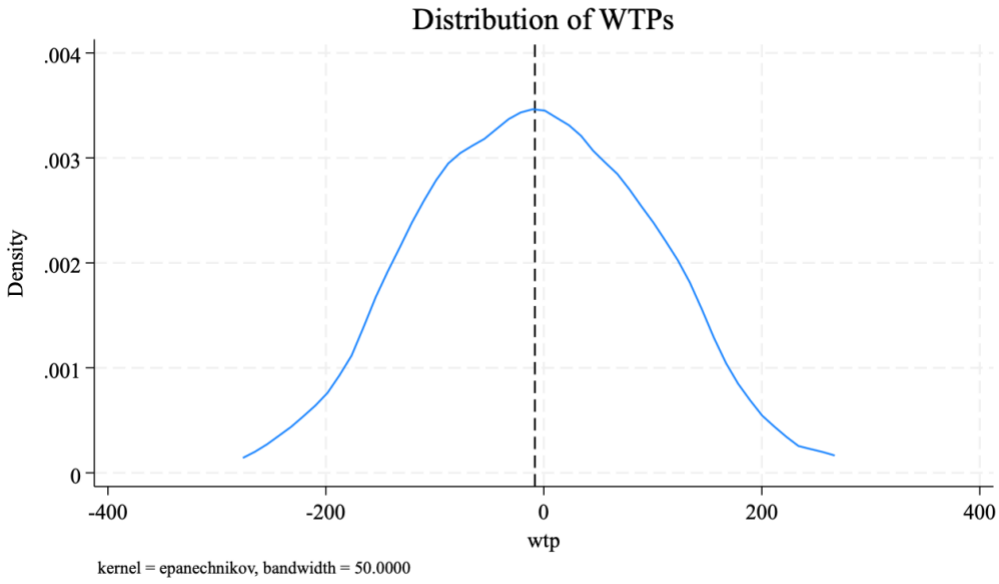


Figure A6. Correlations between socio-economic status, universalism, and instrumental English beliefs.

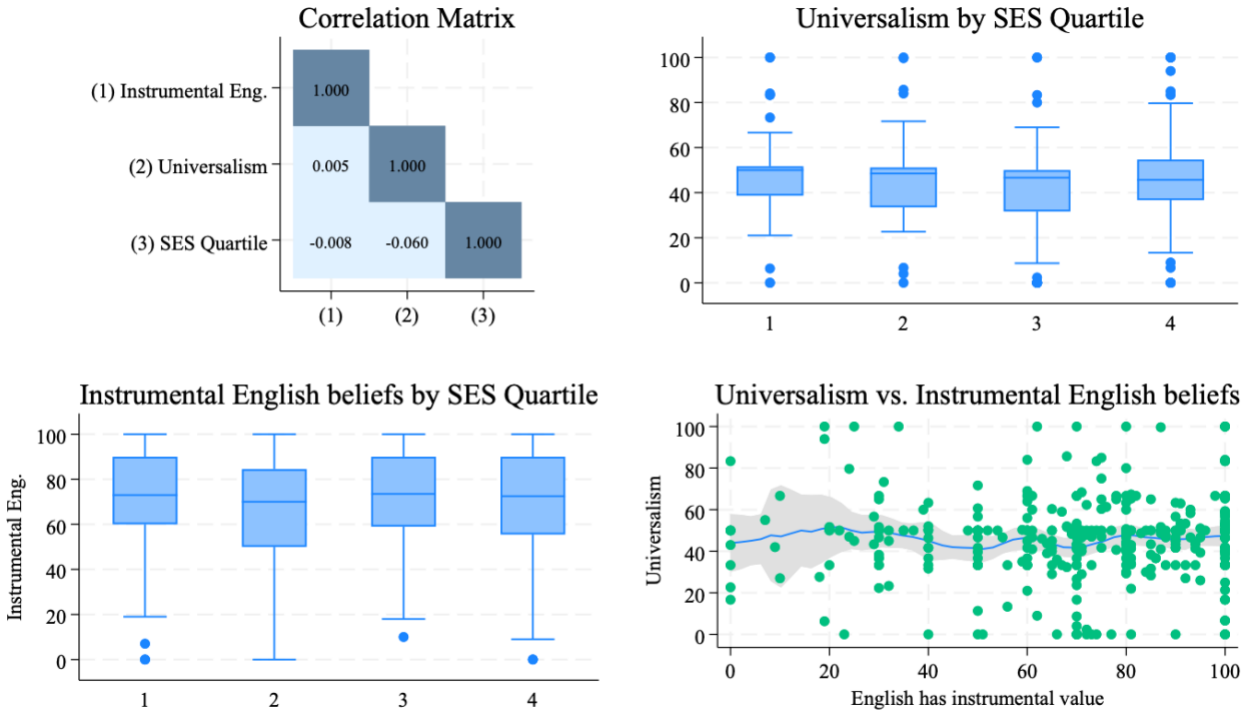


Table A2. Mechanisms: Left-Right orientation.

Note: Cols (1) – (3) reproduce Table 4 in the main text.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
English * Instrumental-Eng. Beliefs	0.017***		0.017***	0.017***	0.017***	0.017***	0.017***
	[0.002]		[0.002]	[0.002]	[0.003]	[0.003]	[0.002]
English * Universalism		0.009***	0.009***	0.009***	0.009***	0.009***	0.009***
		[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
English * L-R (economic)				-0.001		-0.001	
				[0.003]		[0.003]	
English * L-R (social)					-0.002	-0.001	
					[0.003]	[0.003]	
English * L-R (first p.c.)							-0.034
							[0.052]
Price	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Groningen	-0.618***	-0.606***	-0.619***	-0.619***	-0.620***	-0.620***	-0.620***
	[0.084]	[0.083]	[0.085]	[0.085]	[0.085]	[0.085]	[0.085]
KU Leuven	-3.158***	-3.085***	-3.166***	-3.164***	-3.168***	-3.166***	-3.166***
	[0.260]	[0.262]	[0.260]	[0.261]	[0.260]	[0.261]	[0.261]
Uppsala	-4.584***	-4.406***	-4.594***	-4.595***	-4.600***	-4.599***	-4.599***
	[0.440]	[0.446]	[0.441]	[0.441]	[0.441]	[0.442]	[0.441]
English	-1.147***	-0.415***	-1.580***	-1.527***	-1.513***	-1.497***	-1.559***
	[0.183]	[0.154]	[0.220]	[0.241]	[0.258]	[0.263]	[0.224]
Observations	4,128	4,128	4,128	4,128	4,128	4,128	4,128
N. Respondents	344	344	344	344	344	344	344
Pseudo R2	0.113	0.0905	0.118	0.118	0.118	0.118	0.118

Notes. Heteroskedasticity-robust standard errors in brackets are clustered over respondents. Reference category for the set of university dummies: Erasmus University Rotterdam. ***, **, and * denote significance at the 1, 5, and 10% levels respectively.

Table A3. Summary statistics: Dutch sample.

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	339	29.029	9.112	18	74
Male	340	.524	.5	0	1
Student	269	.413	.493	0	1
Employment: Full-time	257	.374	.485	0	1
Employment: Part-time	257	.397	.49	0	1
Employment: Other	257	.23	.421	0	1

Table A4. Summary statistics: EEA sample.

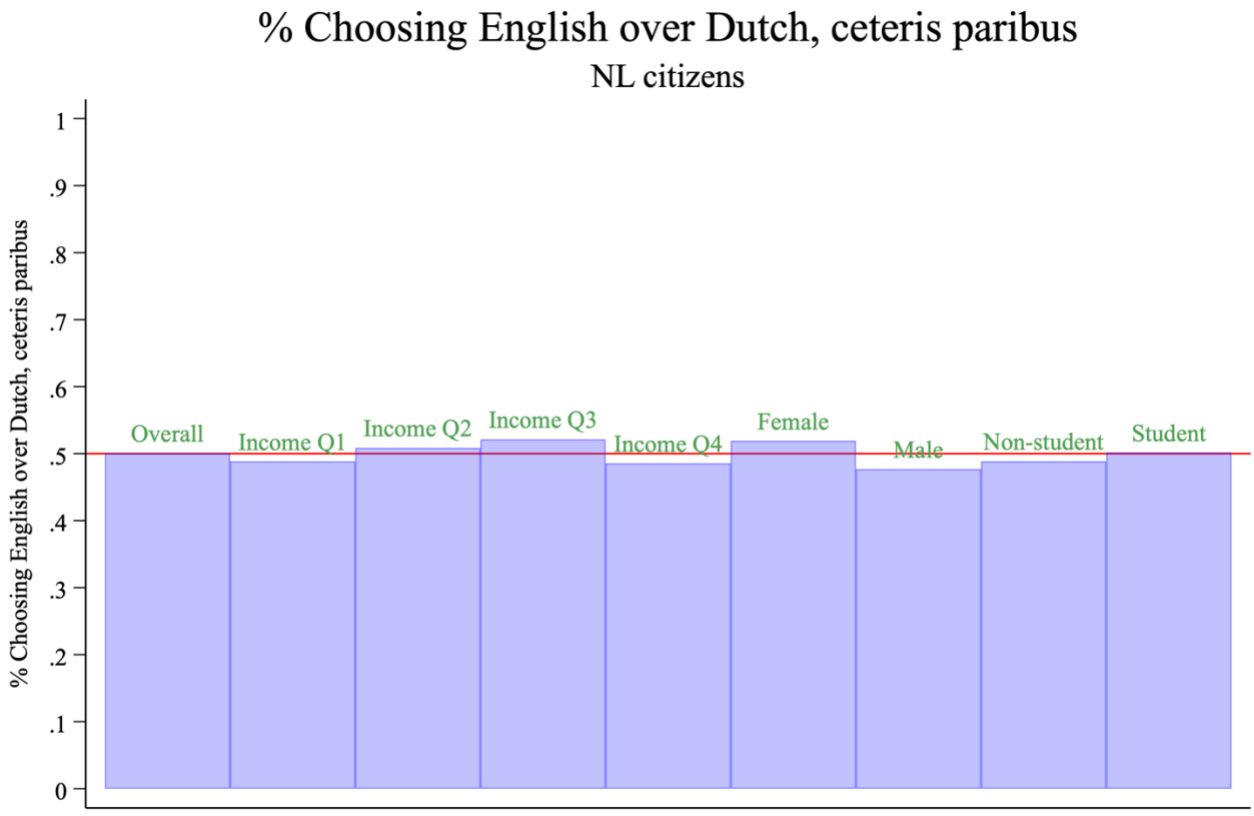
Variable	Obs	Mean	Std. Dev.	Min	Max
Age	201	31.453	10.597	19	72
Male	201	.493	.501	0	1
Student	158	.361	.482	0	1
Employment: Full-time	158	.519	.501	0	1
Employment: Part-time	158	.177	.383	0	1
Employment: Other	158	.304	.461	0	1

Table A5. Summary statistics: Non-EEA sample.

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	200	32.685	11.349	19	79
Male	200	.5	.501	0	1
Student	161	.36	.482	0	1
Employment: Full-time	154	.565	.497	0	1
Employment: Part-time	154	.13	.337	0	1
Employment: Other	154	.305	.462	0	1

Appendix B: Probability of Picking English, Dutch citizens

Figure B1. Probability of picking English: Dutch citizens.



Appendix C: Probability of Picking English, Non-Dutch Respondents

Figure C1. Probability of picking English: European Economic Area respondents.

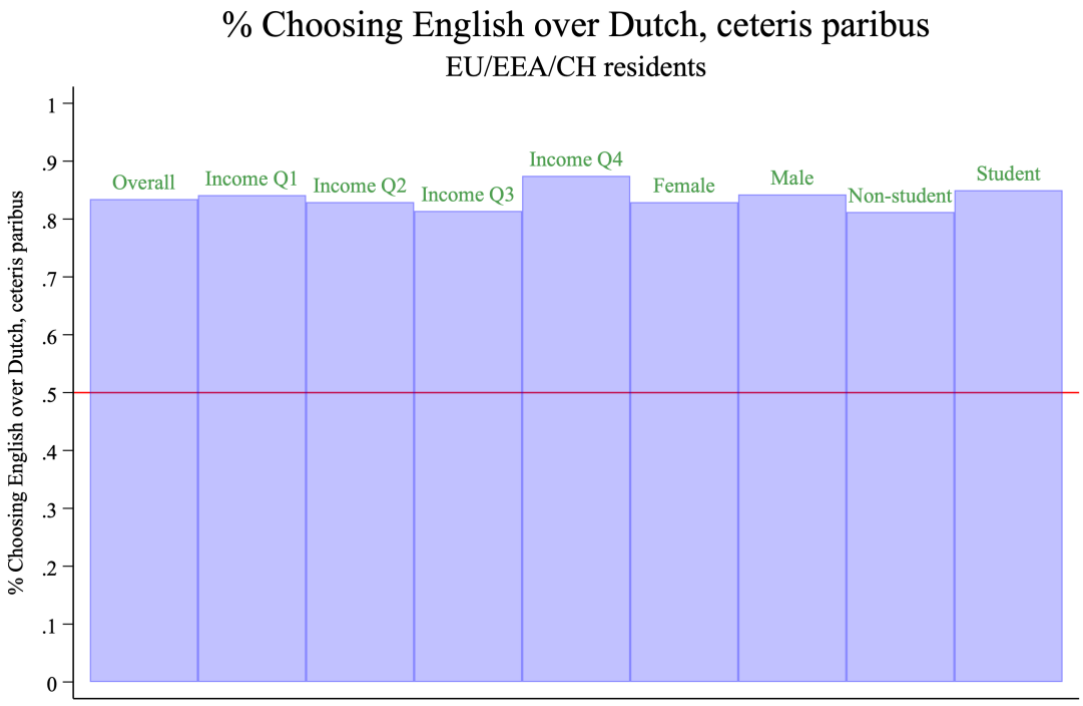
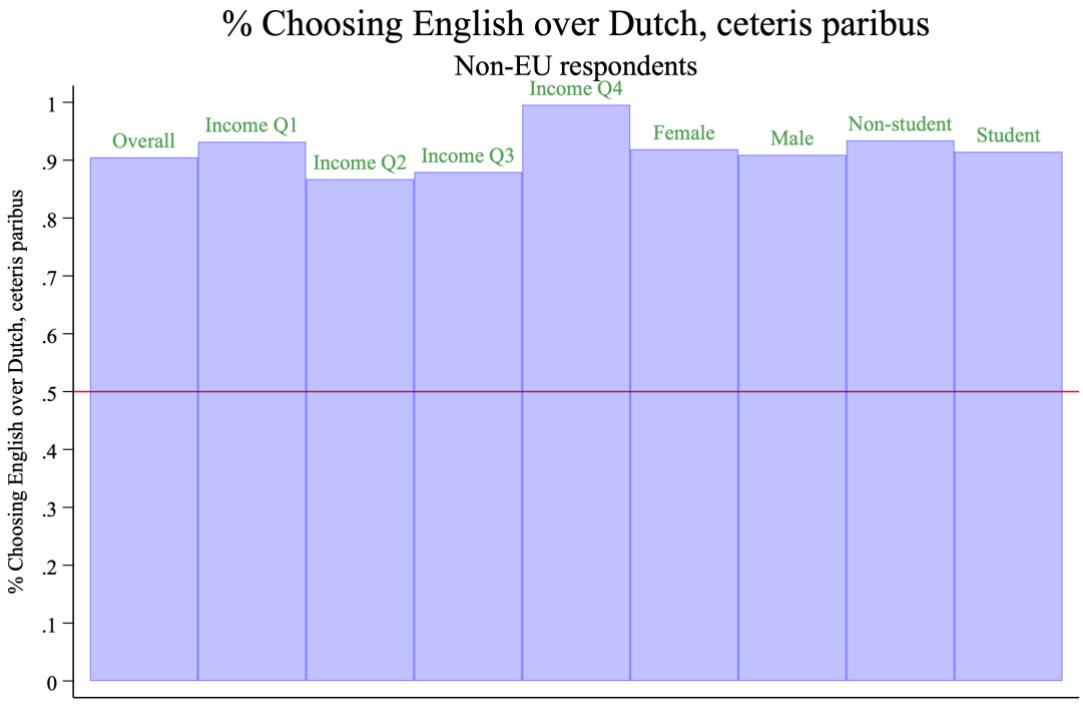


Figure C2. Probability of picking English: non-European Economic Area respondents.



Appendix D: Sentiment Analysis – Online Consultation

What do constituents think? We know from the literature that elected officials do not simply represent the true preferences of their constituents. Lee et al (2004) show that voters do not affect policy as much as previously thought. Tappin and Hewitt (2021) experimentally show that voters take cues from opinion leaders, i.e. adjust their beliefs on policy issues to match the stances of the political parties they have affinities to. More generally, a huge literature studies political persuasion (for a review, see Druckman 2022). It is therefore important to hear from constituents as directly as possible, rather than interpret policy proposals, by virtue of representation, as necessarily reflective of public opinion.

The Dutch government's online consultation process allows us to do just that. In the Netherlands, any member of the public can comment on any legislative proposals during a designated period of time, which in this case ran from July 14 to September 15, 2023. The public reactions to the legislative proposal aimed at curtailing English-language higher education are available at: https://www.internetconsultatie.nl/internationaliseringho/b1.

We conduct a sentiment analysis on the reactions to the proposal. We manually code each entry as positive (in favour of the proposal), neutral, or negative.[1] A total of 210 submissions were made; 4 had exact duplicates, resulting in 206 unique entries. Of these, 4 submissions dealt with aspects of the bill as it relates to secondary vocational education (middelbaar beroepsonderwijs, MBO) and did not take an explicit overall stance on the bill. We make no attempt to code these 4 entries. Of the 202 entries we analyze, 195 (96.5%) take an unambiguous stance as to whether the individual / entity is in favour or against the bill.[2]

Figure D1 summarizes the results. An overwhelming majority (79.5% of respondents) express views against the legislative proposal (Panel A). In Panel B, we present views on the proposal disaggregated by province. Darker reds mean a larger fraction of respondents against the proposal. The size of the dot is proportional to the number of answers from the respective province, and each dot appears at the coordinates of the province centroid. There is little evidence of spatial heterogeneity, with only one province (Drenthe, where N = 1) in favour of the proposal.

[1] We experimented with computer-assisted sentiment analysis using both LLaMa 2 and GPT 3.5, but the results were poor. For the first 100 entries in the online consultation, we instructed both models to rate, on a scale of 1 to 10, whether the respondent was against or in favour of the legislative proposal. The correlations between LLaMa 2 and GPT 3.5's ratings and our manual coding were only about 0.5. Both models also overvalue the importance of minor points.

[2] In some cases (N = 7, 3.5% of total), the entry discusses positive and negative points, without taking an unambiguous position on the bill overall. We label such entries as neutral. We briefly discuss examples of negative, positive, and neutral entries below.

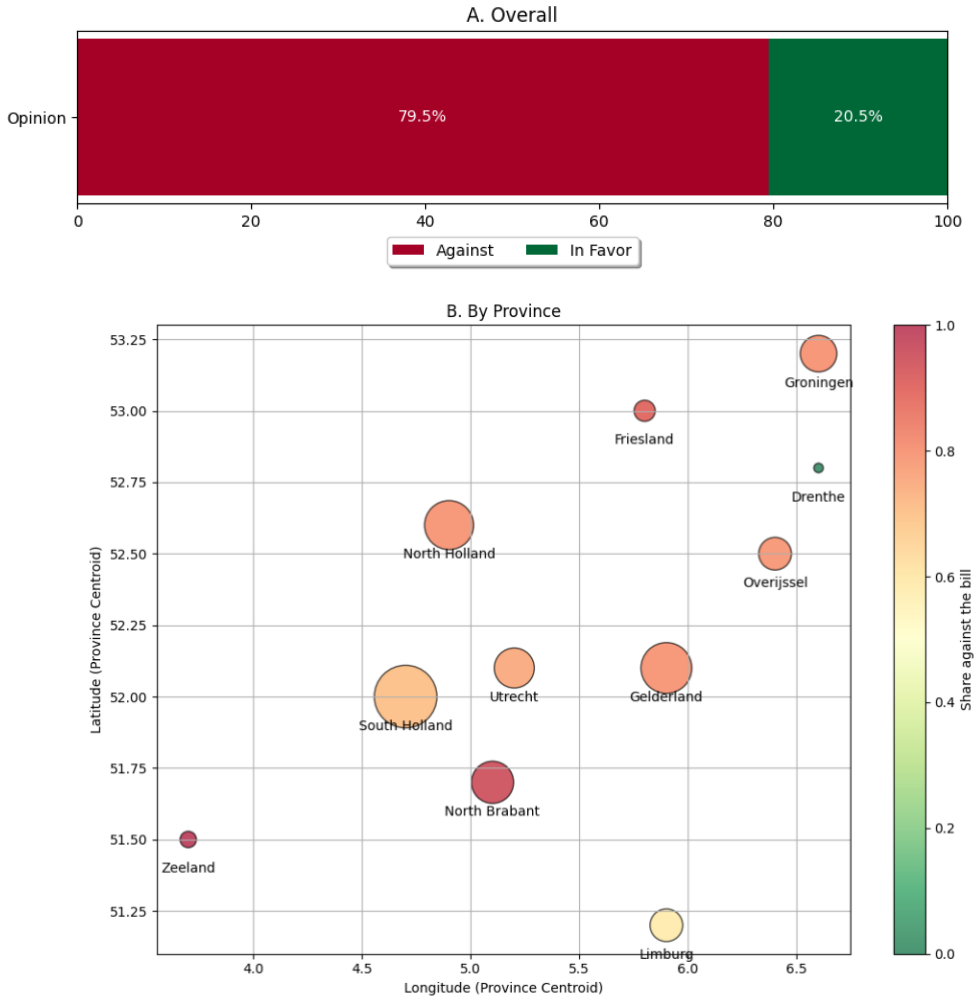


Figure D1. Sentiment analysis: Dutch public opinion on legislative proposal aimed at changing language of higher education from English to Dutch.

An obvious caveat applies to these results, which is that respondents self-select into participation in the online consultation. It is possible that people who feel more strongly negatively about the proposed legislation might disproportionately select into participation. In the spirit of Oster (2019), we can determine how much selection would be necessary to qualitatively change the take-away from the online consultation.

Let us assume the true distribution of beliefs is 50% in favour and 50% against. In order to observe, as we do in the online consultation, a distribution of 20.5% in favour and 79.5% against, it would have to be the case that negative opinions were oversampled by a factor of 79.5 / 50 = 1.59, while positive opinions are under-sampled by a factor of 20.5 / 50 = 0.41. This gives us a relative oversampling rate of 1.59 / 0.41 = 3.9, which means that we have oversampled negative opinions, relative to positive ones, by a factor of 3.9.

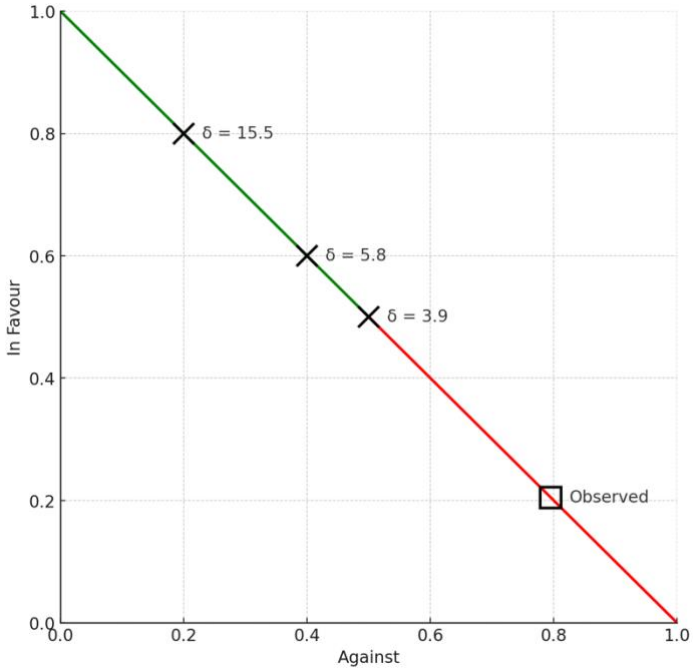


Figure D2. Relative oversampling rates δ necessary to overturn the take-aways from the online consultation.

In Figure D2, we display the relative oversampling rates δ that must hold true in order to explain away the observed result, indicated by the square marker. If the true distribution of beliefs is 50% in favour and 50% against, then δ must be equal to or greater than 3.9. If the true distribution of beliefs is more heavily skewed towards opinions in favour (e.g. 60-40 or 80-20), then we need yet larger relative oversampling rates δ in order to obtain the observed distribution, potentially as large as 15.5. This amount of selection bias strikes us as implausible.

While the literature does not provide clear benchmarks for how much selection bias one should expect from opt-in surveys, the literature does allow us to benchmark the size of errors, i.e. (Sample average – Population average) / Population average. In our case, assuming the smallest possible error that would overturn the conclusions would require us to set the population average to 50. The percentage error is then (79.5 – 50) / 50 = 59%. How does this compare to estimates from the literature? We can benchmark this percentage error to existing estimates which compare known population parameters to non-probability samples (Yeager et al 2011) or weighted samples to unweighted samples (Haddad et al 2022). In Figure D3, we compare the percentage error necessary to wipe out our results to 36 estimates reported in these two studies. The largest percentage error in either study is close to 14%, while the mean error is 4.03%. These figures are dwarfed by the necessary percentage error we calculate. This gives us confidence that any concerns about representativeness in the online consultation are unlikely to be sufficiently large so as to overturn the conclusion that the Dutch public holds negative views about switching the language of university education from English to Dutch.

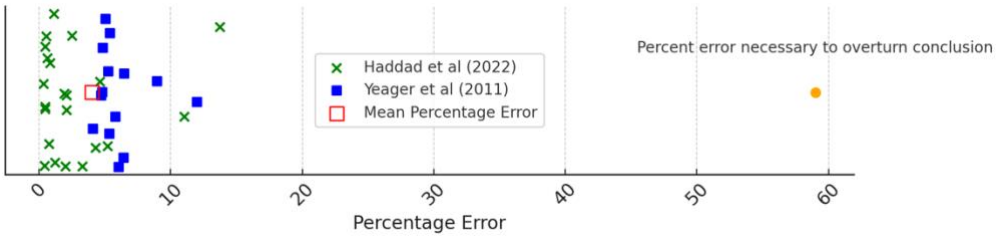


Figure D3. Percentage errors in non-probability samples relative to known population figures (blue squares) and weighted samples (green crosses).

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Opinions against the bill: Example 1

URL: https://www.internetconsultatie.nl//internationaliseringho/reactie/f64ae697-0a32-4bfb-8cf8-97c4762575ce

Original Dutch: De voertaal bij bedrijven in de brainport-regio is al het Engels, er is geen enkele reden waarom studenten aan de Technische Universiteit Eindhoven Nederlands zouden moet kunnen spreken. Dit werpt alleen maar hogere barrières op voor buitenlandse studenten en er is al een groot tekort aan ingenieurs, terwijl een verplicht Nederlandstalige opleiding Nederlandse studenten alleen maar schaad in hun carrièreperspectief.

De instroom van buitenlandse studenten is bovendien goed voor de diversiteit onder studenten. Het aandeel vrouwen onder studenten uit Oost- en Zuid-Europa lijkt bijvoorbeeld een stuk hoger dan onder Nederlandse studenten. Het normaliseren van meer vrouwen die technische opleidingen volgen kan ook een goede invloed hebben op de diversiteit onder Nederlandse studenten.

English translation (emphasis added): The working language at companies in the brainport region is already English, there is no reason why students at Eindhoven University of Technology should be able to speak Dutch. This only creates ***higher barriers for foreign students and there is already a major shortage of engineers***, while a mandatory ***Dutch-language education only harms Dutch students in their career prospects***.

The influx of foreign students is also ***good for diversity among students***. For example, the share of women among students from Eastern and Southern Europe appears to be much higher than among Dutch students. Normalizing more women taking technical courses can also have a ***positive impact on diversity*** among Dutch students.

Opinions against the bill: Example 2

URL: https://www.internetconsultatie.nl//internationaliseringho/reactie/7caf8979-7cce-4cea-8870-2a53afe75e48

Original Dutch: Het voorstel mist de belangrijke overweging dat internationale onderwijsprogramma's essentieel zijn om in met name meer perifere regio's internationaal talent te binden en te ontwikkelen. Met name in deze regio's krimpt door vergrijzing ook het beschikbare talent voor de arbeidsmarkt. Universiteiten zoals de RuG hebben als taak talent aan te trekken, te behouden en te blijven ontwikkelen. Die opgave staat onder druk door de discussie over internationalisering en studietaal. Hierbij speelt ook de verantwoordelijkheid die universiteiten hebben voor het onderhouden van een brede waaier aan disciplines die belangrijk zijn voor een gevarieerde arbeidsmarkt in Nederland. Een Engelstalige focus kan helpen bij deze variëteit, met name voor minder grote opleidingen.

English translation (emphasis added): ****The proposal misses the important consideration that international education programs are essential to attract and develop international talent, especially in more peripheral regions.**** Particularly in these regions, the available talent for the labor market is shrinking due to an aging population. Universities such as the RuG have the task of attracting, retaining and continuing to develop talent. This task is under pressure due to the discussion about internationalization and the language of study. This also includes the responsibility that universities have for maintaining a wide range of disciplines that are important for a varied labor market in the Netherlands. ****An English-language focus can help with this variety, especially for smaller courses.****

Opinions in favour of the bill: Example 1

URL: https://www.internetconsultatie.nl/internationaliseringho/reactie/fd3132ff-2d56-47a5-9a40-1d286f20747b

Original Dutch: "eens met voorstel ondanks dat ik sterk voor internationalisering ben, maar constateer ik laatste decennium dat de NL waarden, cultuur en taal (vooralsnog) in stand moeten blijven ....."

English translation (emphasis added): "***I agree with the proposal****, despite the fact that I am strongly in favor of internationalization, but I have noted in the last decade that the Dutch values, culture and language must be maintained (for the time being)..."

Opinions in favour of the bill: Example 2

URL: https://www.internetconsultatie.nl//internationaliseringho/reactie/a9c15eab-0924-4477-836a-a041a56638f6

Original Dutch: "Ik vind het een gebalanceerd voorstel dat zowel recht doet aan goed en toegankelijk onderwijs voor Nederlandse BSc studenten, als de mogelijkheid kennis te maken met internationaal onderzoek in de MSc fase. In de MSc fase is internationale instroom van talenten ook gewenst en haalbaar. We moeten het kind ook niet met het badwater weggooien.
Ik vind het erg belangrijk dat ook 1e-generatiestudenten en studenten die geen talenknobbel hebben goed onderwijs krijgen in ons systeem. Daarnaast is het belangrijk dat stafleden in het HO zich kunnen verhouden tot de samenleving waarbinnen ze werken.
Al met al is een goed evenwicht tussen NL en EN belangrijk. Mijns inziens voldoet dit voorstel daar goed aan."

English translation (emphasis added): "***I think it is a balanced proposal that does justice to good and accessible education for Dutch BSc students*,** as well as the opportunity to become acquainted with international research in the MSc phase. In the MSc phase, an international influx of talent is also desirable and feasible. We shouldn't throw the baby out with the bathwater either.
I think it is very important that 1st generation students and students who do not have language skills also receive good education in our system. In addition, it is important that staff members in higher education can relate to the society in which they work. All in all, ***a good balance between Dutch and English is important. In my opinion, this proposal meets these requirements well.***"

Neutral entries: Example 1

URL: https://www.internetconsultatie.nl//internationaliseringho/reactie/9f7acd7f-fde7-42ce-a901-ca70258b5208

Original Dutch: "Ik ben groot voorstander van internationalisering. Maar ik zie ook de problematiek die het met zich meebrengt. Studenten die geen geschikte huisvesting kunnen vinden. Studies die in het Engels gegeven moeten worden. En hoe zit het als onze studenten een uitstapje naar het buitenland maken voor studie? Kan het niet beter zijn dat er internationale afstemming komt tussen europeese populaire studielanden? Of is die er al? Zelf houd ik mij bezig met stages voor het mbo in Spanje. Ik zie wat een impact zo'n ervaring heeft op de student dus ik gun het iedereen die naar Nederland komt voor een (deel) studie of stage en vice versa."

English translation (emphasis added): ***"*I am a strong advocate of internationalization. However, I also see the challenges it brings.*** Students who cannot find suitable housing, the need for courses to be taught in English, and what about when our students venture abroad for their studies? Wouldn't it be better to have international coordination among popular European study destinations? Or is there already such coordination in place? Personally, I am involved in arranging internships for vocational education students in Spain. I witness the significant impact such an experience has on students, so I believe everyone coming to the Netherlands for a (part of their) study or internship, and vice versa, should have the opportunity to benefit from it."

Notes: The submitter is in favour of international study options, but recognizes the challenges. There are suggestions / questions about whether a different way is possible, but the submitter does not unambiguously state a position vis-a-vis of the bill.

Neutral entries: Example 2

URL https://www.internetconsultatie.nl/internationaliseringho/reactie/347f4a54-0261-4515-bce9-7cd89061546d

Original Dutch: "Uitstekend onderwijs is één van de belangrijkste taken voor de overheid."

English translation: "Excellent education is one of the most important tasks for the government."

Notes: The statement does not allow us to infer a position on the bill.

Appendix E: Economic Effects of the Shock

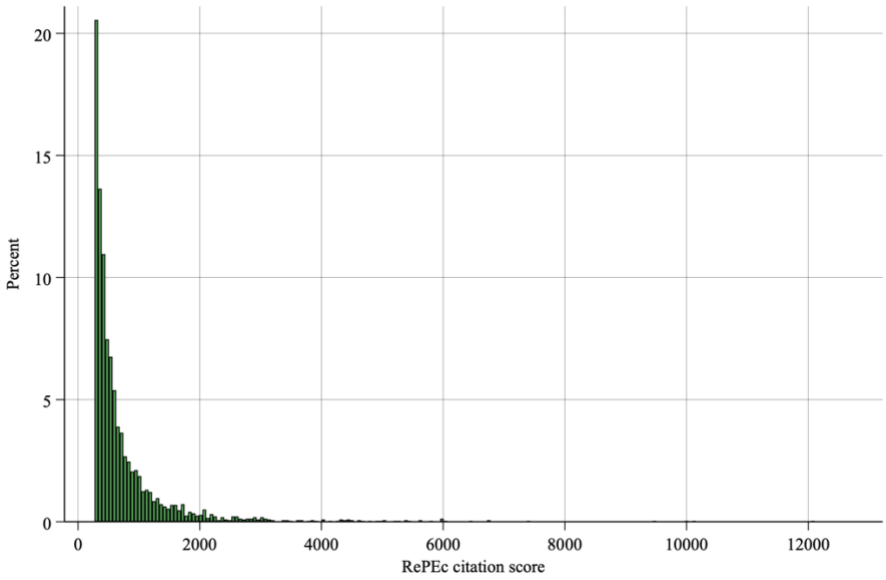


Figure E1. Distribution of economists' citations.

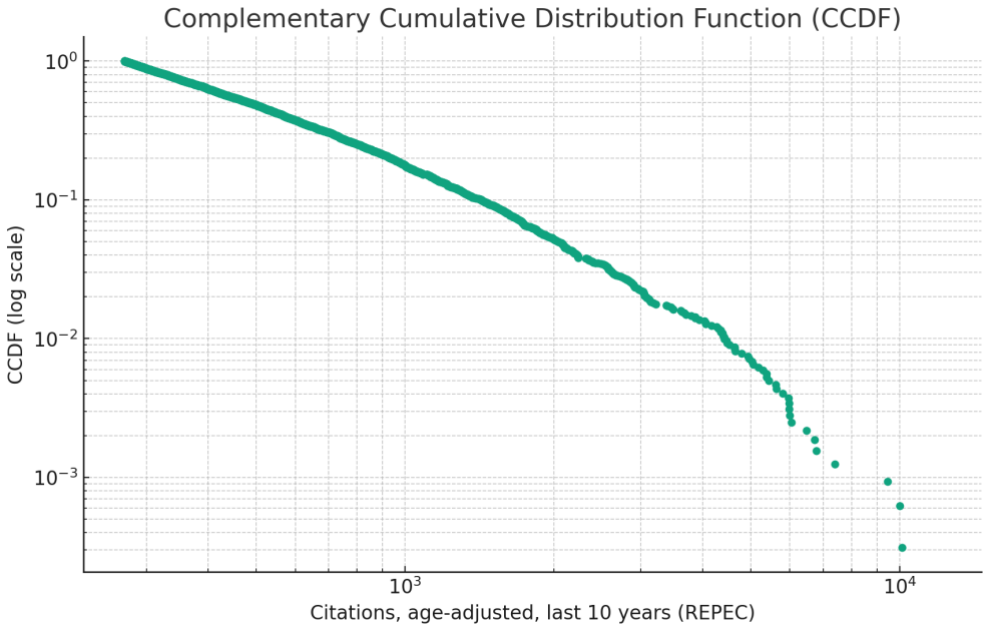


Figure E2. Complementary CDF for economists' citations.

Note: A linear relationship indicates that the distribution follows a power law.

Table E1. Summary of economic effects

Item	**Summary**	**Estimate**	**Loss or Gain**
Decline in scientific output	Scientists leave => Fewer patents => lower patent stock. See main text.	€10 - 15 billion (1-1.6% of GDP)	Loss
Crowding out of domestic students	Inconsistent with the data; Section A below	0	-
Real estate rental market	Lower rents: money gained for tenants, but lost to owners. Owners have higher marginal propensity to consume. Section B.	€2 million	Loss
Amenities	Decongestion effect in non-excludable, rivalrous goods. Section C.	€1.3 million	Gain
Public good provision	Heterogeneity decreases => more public goods (Alesina et al 1999) Section D.	€0.5 million	Gain
University finances	Drop in government subsidies, but also lower costs. Section E.	€146 million	Gain
University consumption	Shrinking university demands for goods and services. Section F.	€286 million	Loss
Government savings	Recouping government funding and re-spending, with multiplier	€395 million	Gain
Government fiscal position	Net present value of forgone net tax revenues from students	€625 million	Loss
Aggregate demand	Fewer international students and scientists	€1.5 billion	Loss
Labour market	Smaller work force; see SEO Amsterdam Economics (2024)	€85 – 145 million	Loss

Table E2. Distribution of scientific productivity: N (50, 16.62).

Leavers drawn from …	**Productivity of leavers / Productivity of stayers**	**GDP Loss**
Top quartile	12.2%	1.0%
Top 2 quartiles	10.9%	0.9%

Alternate estimate 2: normally distributed scientific productivity. As a boundary case, and as an alternative to Table 8 in the main text, we consider a scenario where scientific productivity is normally distributed, meaning we explicitly preclude the possibility of superstar effects that is well-documented in science. We thus simulate a standard normal distribution, re-scaled between 0 and 100, with N = 10,000, $\mu = 50$, and $\sigma = 16.62$.[3]

Even under the boundary scenario, where we arbitrarily nullify the superstar phenomenon, we find GDP losses between 0.9% and 1%. These results provide strong caution against policies that encourage the large-scale departure of scientists.

[3] The standard deviation is set to 16.62 in order to capture close to 100% of observations. According to the 68-95-99.7 rule, +/- 3 σ from the mean gives us 99.7% of the distribution. The total spread is thus 6 σ, so $\sigma = 99.7/6 = 16.62$

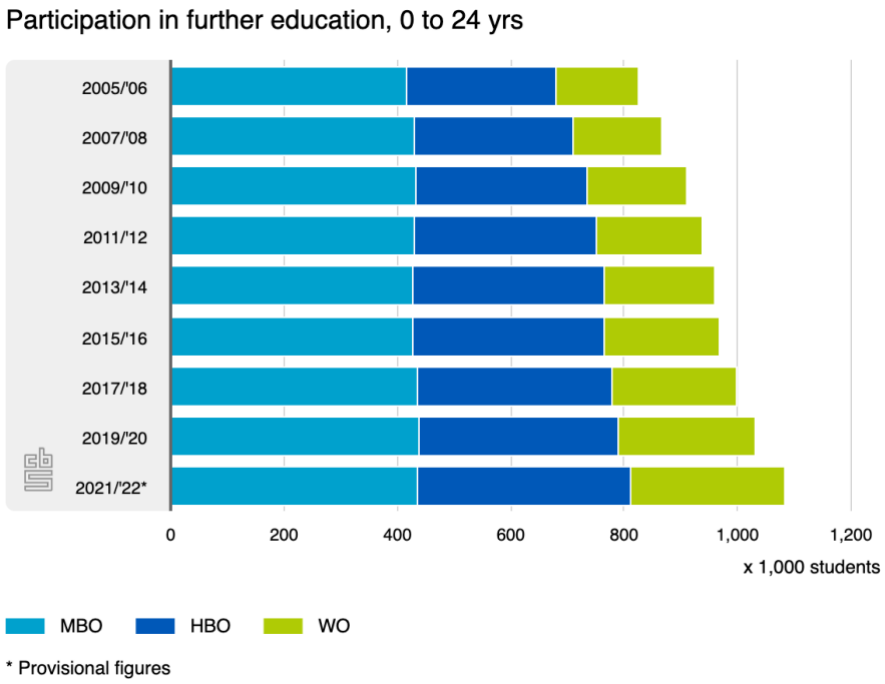
A. Displacement of domestic students

In the run up to the November 2023 legislative elections, Pieter Omtzigt, leader of the newly formed New Social Contract party (13% of seats in the lower house), stated: "Forty percent of the new first year students at Dutch universities come from abroad and then go back because we teach in English. And **this is one way of getting a labour shortage in crucial sectors because you've not actually educated your own population**" (The Guardian; emphasis ours). Omtzigt makes this claim without pointing to any evidence; burden of proof notwithstanding, this claim epitomizes the oft-heard argument that international students crowd out domestic students, leading to lower levels of education and/or shortages in key industries which would not have happened otherwise.

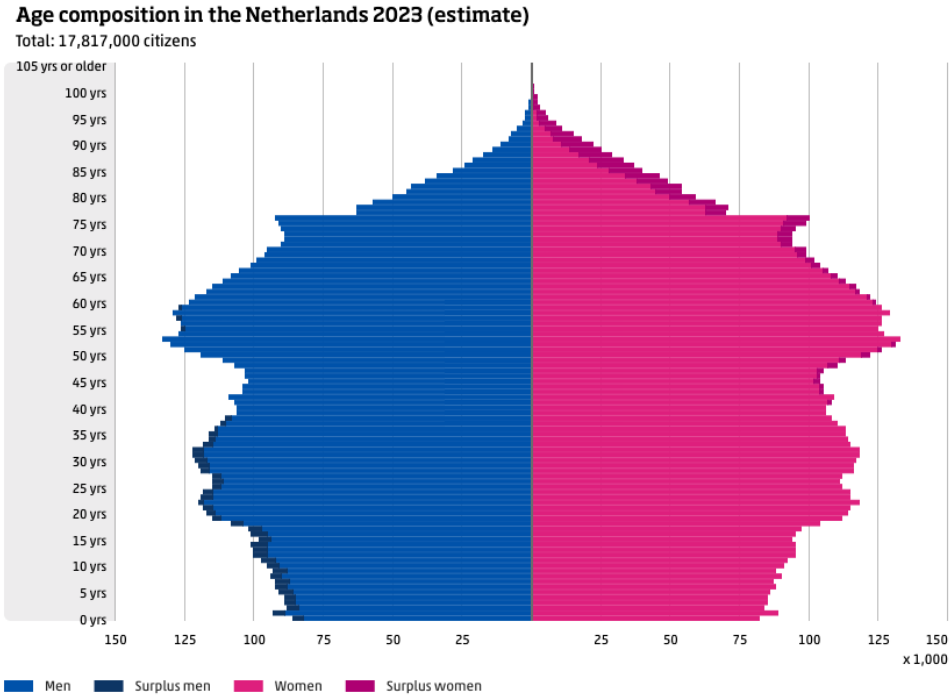
This claim is neither theoretically plausible nor supported by the data. First, there are two implicit and heroic assumptions: namely that universities are close to full capacity *and* that capacity cannot be expanded (e.g. via creating new universities). Why this should be the case is not clear to us. Second, a recent report by the Education Inspectorate, a branch of the Dutch Ministry of Education concludes that any displacement effects are likely to be negligible (Inspectie van het Onderwijs 2019). Displacement effects are either zero in most programs, or very small for some courses with capped enrolment.

Third, a first look at the data reveals that, if anything, international students might be crowding Dutch students in, not out, likely by virtue of providing a minimal critical mass beyond which certain study programs become viable, which would not have been otherwise, and other forms of cross-subsidization, as is documented for the U.S. (Shih 2017). Two simple facts illustrate this point:

(i) In absolute numbers, Dutch students are attending universities (research-oriented or applied sciences-oriented) in *increasing* numbers, while numbers are stagnant for vocational education, as Statistics Netherlands shows.



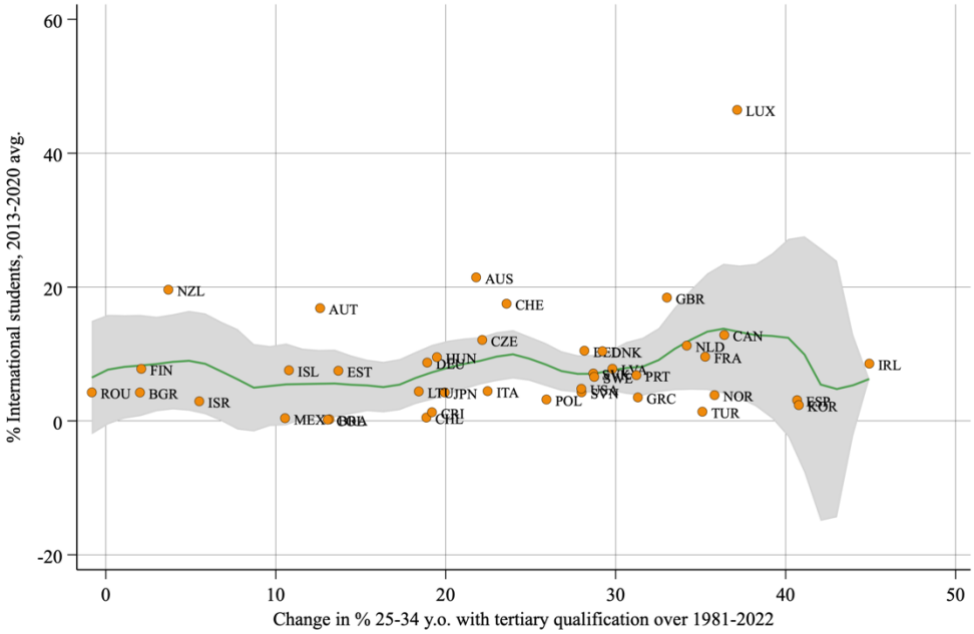
(ii) The age pyramid is shrinking (Statistics Netherlands):



There are fewer people under the age of 25 than there used to be, and yet there are more Dutch students enrolled in university education than there used to be. It follows that domestic enrolment *rates* have been rising while international student numbers have also been rising. This is *prima facie* inconsistent with a crowding out phenomenon.

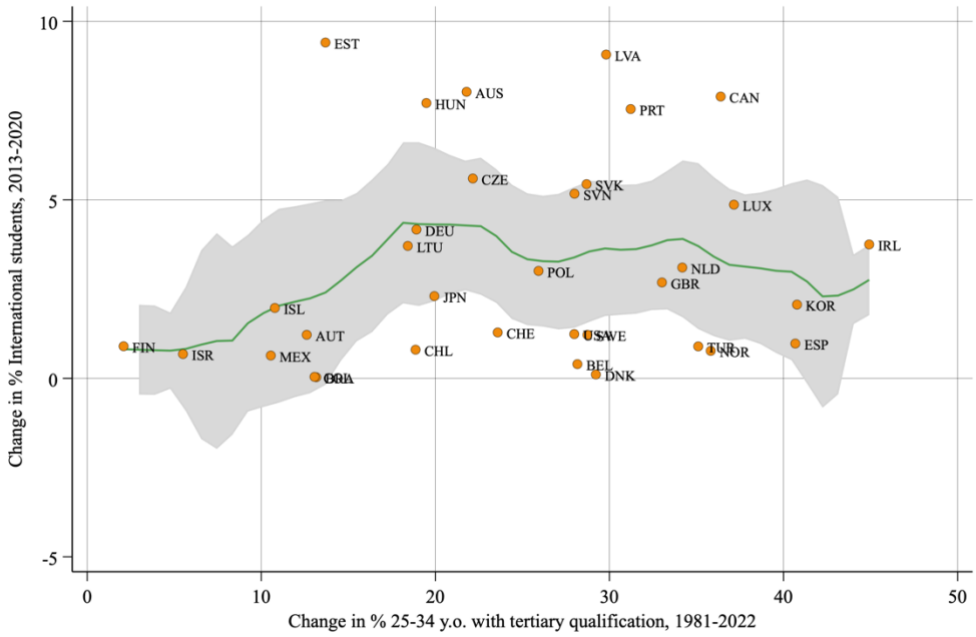
Nevertheless, we take crowding out concerns seriously, and use cross-country data from the OECD on international students enrolments (as a percentage of tertiary students) and percentage of the

population with a tertiary education. If international students displace domestic students, then those countries with the largest shares of international student enrolments will experience declines in the percentage of the population (aged 25-34) with a completed tertiary education. Such is not the case:



The data show that countries with large shares of international students have not experienced a decline in domestic tertiary qualifications. The linear regression coefficient is 0.118 (95% CI: -0.132 - + 0.368). If anything, the association is positive.

One could also argue that the stark, large inflow of international students induces changes in natives' education. We therefore examine whether the *change* in international students is correlated with the change in natives' education:



Here too, the correlation is positive (p = 0.06). Thus, while we do not suggest that this is smoking-gun evidence that international students crowd natives in, we can unequivocally conclude that crowding out is not a concern.

References:

Inspectie van het Onderwijs (2019). Internationalisering en de toegankelijkheid van het hoger onderwijs voor Nederlandse studenten. Utrecht: Inspectie van het Onderwijs.

Shih, K. (2017). Do international students crowd-out or cross-subsidize Americans in higher education?. *Journal of Public Economics*, *156*, 170-184.

B. Reallocation in real estate rentals

Assume that each researcher lives in a single home (with no co-tenants) and each student lives in a house shared with one other person. The decline in the number of dwellings demanded is thus the number of departing scientists plus half the number of departing students, i.e. 5,893 + 0.5 * 76,983 = 41,438.

There are 1.13 million dwellings in the private rental market in the Netherlands. The demand for dwellings thus contracts by 41,438 / (1.13 * 10^6) = 3.7%. What effect does this have on rents? For this, we use the estimate from Saiz (2003), who shows that a 9% increase in the number of renters in Miami in 1980 (after the Mariel boat lift) led to a 7% increase in rental prices by 1983. In our case, rents therefore drop by 2.9%. Average rent is €782 a month, so the decline is worth just under €23 per renter, or €24.3 million in total.

While this is clearly an improvement for renters, whether lower rental prices are welfare-enhancing ultimately depends on the marginal propensities to consume of tenants and owners. If owners and tenants have different marginal propensities to consume, then the multiplier effects from the change in rental prices will generate different effects across the two groups. In the interest of counting benefits from reallocation as generously as possible, we assume all tenants are in the lowest income quintile and all owners are in the highest income quintile.

The formula for the consumption multiplier is $M = \frac{1}{MPS}$ where *MPS* is the marginal propensity to save. By definition, $MPS = \frac{\Delta S}{\Delta Y}$, where *S* is amount saved and *Y* is income, both defined at the household level. Estimates of the MPS by quintile are not available for the Netherlands; we therefore construct them from existing data as follows.

The income distribution is available from Statistics Netherlands. We can use this as an estimate of Y. Savings rate *s* by income quintiles are available from Eurostat, which we can use to calculate S = s * Y. From this we can estimate $\frac{\Delta S}{\Delta Y}$ when moving from, e.g., the first quintile to the second quintile.

Data point 1: Income at the mid-point of the first quintile (10th decile) is equal to €15,000 a year. The savings rate in the first quintile is -0.288, such that households in the first quintile are in debt. The amount of savings in the first quintile is 15,000 * (-0.288) = - €4,320.

Data point 2: Income at the mid-point of the second quintile (30th decile) is equal to €21,000 a year. The savings rate in the first quintile is 0.021. The amount of savings in the first quintile is 21,000 * (0.021) = €441.

Using the above 2 data points, we can calculate the MPS for the bottom quartile as $\frac{\Delta S}{\Delta Y} = \frac{441-(-4320)}{21000-15000} = 0.79.$

For the top quartile: Income at the mid-point of the fourth quintile is €37,000 and the savings rate is 0.358. Income at the mid-point of the fifth quintile is €51,000 with a savings rate of 0.464. The MPS is therefore 0.74.

Recall that the departure of international staff and students reallocates €24.3 million per year from real estate owners to tenants. The lost consumption on the owners' side is equal to the amount lost by owners times the appropriate multiplier, i.e. 24.3 * 1 / 0.74 = €32.8 million. The consumption gained on the tenants' side is 24.3 * (1 / 0.79) = €30.7 million. The difference between the two is a loss of €2.1 million per year.

References

Saiz, A. (2003). Room in the kitchen for the melting pot: Immigration and rental prices. *Review of Economics and Statistics*, *85*(3), 502-521.

C. Amenities.

An oft-cited argument against migration is that migration reduced the quality of local amenities. A rare empirical test of this idea is performed by from Kim, Lee and Peri (2022). Averaging their results from Table 7 Panel B across 8 categories of amenities (daycare, private tutoring, waste, cultural amenities, senior centres, transportation, car crashes, class size), we find that a 1% increase in new migrants (relative to the stock of natives) decreases amenity quality by 2%. Their estimates are IV-LATE, so there is reason to suspect the ATE is smaller, but we proceed with the LATE nonetheless. Removing 71,881 students + 5,959 scientists from a population of 17.53 million is a 0.44% decline in population. According to Kim, Lee and Peri (2022), the quality of amenities should therefore increase by 0.8%.

How should amenities be priced? Garretsen and Marlet (2017, Table 1 Column 1) provide estimates of the correlation of house prices with 25 types of amenities for Dutch municipalities. Using their estimates, we calculate the effect of an increase in amenity quality as $0.008 * B_i$, where B_i is the parameter estimate of amenity *i*, which we then sum across all amenities, thus assuming that there is 0.8% improvement in all 25 amenities. Doing so results in an increase in property value equal to €0.051 per square meter. The average dwelling is 119 square meters; the average dwelling therefore improves in value by €6.12. Over the 2018-2022 period, 217,558 homes per year have been sold on average (Statista). The annual gains are therefore 217,558 * 6.12 = €1.3 million approximately.

References

Garretsen, H., & Marlet, G. (2017). Amenities and the attraction of Dutch cities. *Regional Studies*, *51*(5), 724-736.

Kim, H., Lee, J., & Peri, G. (2022). *Do low-skilled immigrants improve native productivity but worsen local amenities? learning from the South Korean experience* (No. w30464). National Bureau of Economic Research.

D. Public good provision.

Alesina, Baqir and Easterly (1999) show that more ethnically fractionalized cities in the US spend less, per capita, on public goods. We use their estimate to infer how much public good provision would increase in the Netherlands if fractionalization were reduced, due to the departure of 0.44% of the population, all of whom (for simplicity) are non-Dutch.

Alesina et al (1999, Table 2) show that per capita public spending on roads is $81, averaged across all cities, while mean ethnic fractionalization is 0.29. The slope of the per capita spending public with respect to fractionalization is -36.4 (Table 4).

How would fractionalization vary if 0.44% of the population (all foreign) left? First, let us calculate the ethnic fractionalization index assuming two broad groups: Dutch and non-Dutch. As of 2020, the share of migrants (non-Dutch) is 13.76% (Our World in Data). Fractionalization before the policy change is thus:

$$F_0 = 1 - \sum_{i=1}^{n} Group\ Share_i^2 = 1 - (0.1376^2 + (1 - 0.1376)^2) = 0.237$$

If a share equal to 0.004 (or 0.4%) of the population leave, and all of them are non-Dutch, then share Dutch increases by 0.004, and share non-Dutch declines by 0.004. The new fractionalization index, post-policy, is thus $F_1 = 0.232$.

Multiplying the difference (F_1 - F_0) by the Alesina et al (1999) coefficient: (0.005 * 36.4) = 0.182. The new level of public good provision is 0.182% larger than the pre-treatment level.

In the absence of an estimate from the literature about how spending translates to amenity quality, we assume that all spending translates directly to higher amenity quality, such that the latter increases by 0.2%. Plugging this last estimate into the Garretsen and Marlet (2017; see Section C above) estimate of the effect of amenities on house prices, the price of housing per square metre increases by €0.014. In turn, the price of the average dwelling rises by €1.61, resulting in €351,451 annual gains.

References

Alesina, A., Baqir, R., & Easterly, W. (1999). Public goods and ethnic divisions. *The Quarterly Journal of Economics*, *114*(4), 1243-1284.

E. University finances

Assuming student numbers remain constant and using the retention rates from Section 6.1 in the main text, we can calculate the economic burden from the student loss as the number of students lost (Enrolment * Loss Rate) multiplied by the fees paid by each student. In the table below, we estimate this burden to be approximately €337 million per year. This is a sizable amount: €337 million per year is 25% more than Tilburg University's annual income (€269 million in 2021, Rathenau Instituut 2022) and approximately equal to the annual income of the University of Essex (HESA 2023). While university incomes are admittedly a very imperfect way to assess the contribution of universities to prosperity, policy-makers should consider the fact that switching to the national language is equivalent to eliminating a university the size of Essex or Tilburg, which is far from trivial.

Student nationality	**Enrolment** 2022	**Fees** € per year	**Loss Rate** (1 – Retention rate)	**Loss in University Finances** (Enrolment * Loss Rate * Fees) € per year
Belgium	4,780	2,314	0.101	111,716
Other EEA	59,542	2,314	0.883	121,659,906
Other	20,974	11,909	0.862	215,309,813
Total				**337,081,435**

In the European Economic Area, national governments provide equal amounts of funding to universities for each EEA national enrolled. In the case of the Netherlands, the Dutch government's co-pay (*rijksbijdragen*) is €6,200 per student per year to universities of applied sciences, and €7,600 to research universities (CPB 2019). Of the 64,322 EEA nationals, 24,807 EEA are enrolled in universities of applied sciences and 39,515 in research universities. Assuming the attrition rate is the same across types of universities, the loss of co-pay to universities is €343,312,754.

Next, we also need to consider reductions in research income (€18,771,306 for universities of applied sciences; €181,520,000 for research universities) and other income (€9,971,356 for universities of applied science; €46,792,600 for research universities)

The annual loss to universities is thus the sum of the underlined numbers above, plus the loss in tuition fees from the above table, for an overall total of €937,449,451.

In turn, universities also bear lower costs when their workforces and student numbers are smaller. We bluntly reduce the costs by 8.6% across the board, again assuming student numbers and personnel both go down by 8.6%. Personnel costs, real estate, and other costs all go down by 8.6%. , generating savings of €1,083,151,080.

Subtracting losses in income from student contributions and government co-pay from the cost savings, university balance sheets are €145,701,629 greater. *Greater*, however, while true strictly from an accounting perspective, is a clear misnomer from a social welfare perspective, as we establish below.

References

HESA (2023). What is the income of HE providers? https://www.hesa.ac.uk/data-and-analysis/finances/income

Rathenau Instituut (2022). Income of universities in the Netherlands by source of funds. https://www.rathenau.nl/en/science-figures/investments/income-and-expenditure-universities-and-higher-education-institutions-1

F. Loss of university consumption

While a smaller university has a smaller wage bill (mechanically reducing financial liabilities), a shrinking university demands fewer goods and services from its local economy. In the extreme, an entire town may be primarily geared towards the provision of goods and services (like State College, Pennsylvania, or College Park, Maryland). We can calculate the ripple effects on aggregate demand of an 8.6% reduction in other consumption from research universities [(1.3414 billion + 520.7 million) * 0.086] and universities of applied science [(548.340 million + 253.147 million)* 0.086], i.e. a consumption shock worth €229,068,482.

As far as we are aware, the literature does not provide multiplier estimates for the consumption of universities; we therefore estimate a multiplier from the data. Using budgets from the Rathenau Institute (for research universities, 2004-2021) and the association of universities of applied science (2017-2021), we estimate the MPC as the response of ln(Consumption) to ln(Income) in a regression model with the constant set equal to zero. The MPC we estimate in this fashion is 0.80, which implies a multiplier equal to 1/0.8 = 1.25. The societal loss from the consumption shock is thus 229,068,482* 1.25 = €286,335,602.

G. Government finances: part 1

The immediate effect of no longer providing co-pay for as many EEA nationals, from the perspective of the Dutch government, is a gain of €343,312,754, as calculated in Section D. Now suppose the government recovers these monies and spends them. What are the societal gains from government spending? Ramey (2011) suggests that the government spending multiplier ranges between 0.8 and 1.5. Taking the mid-point from this range, the combined effect of the government savings and multiplier effect is equal to (0.8 + 1.5) / 2 * 343,312,754 = €394,809,667.

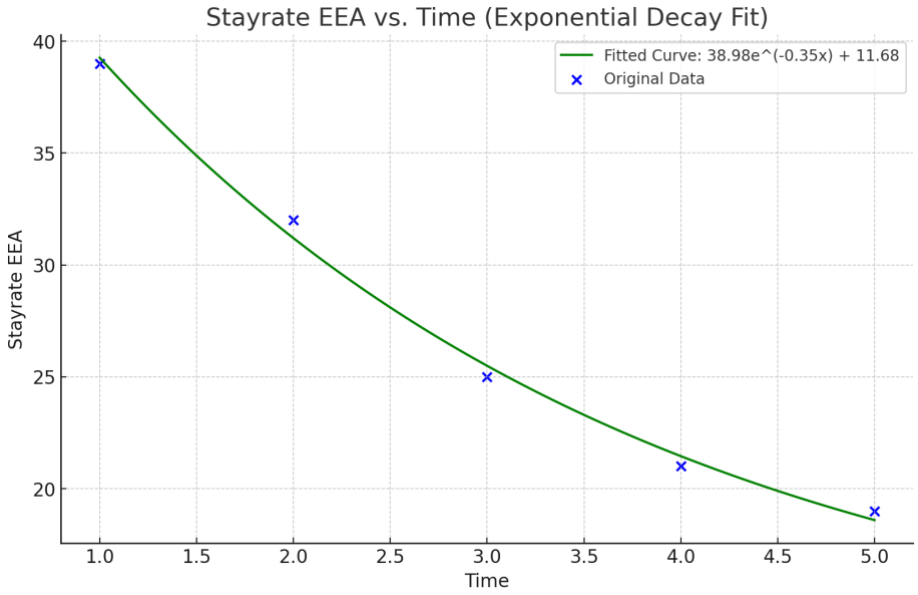
References

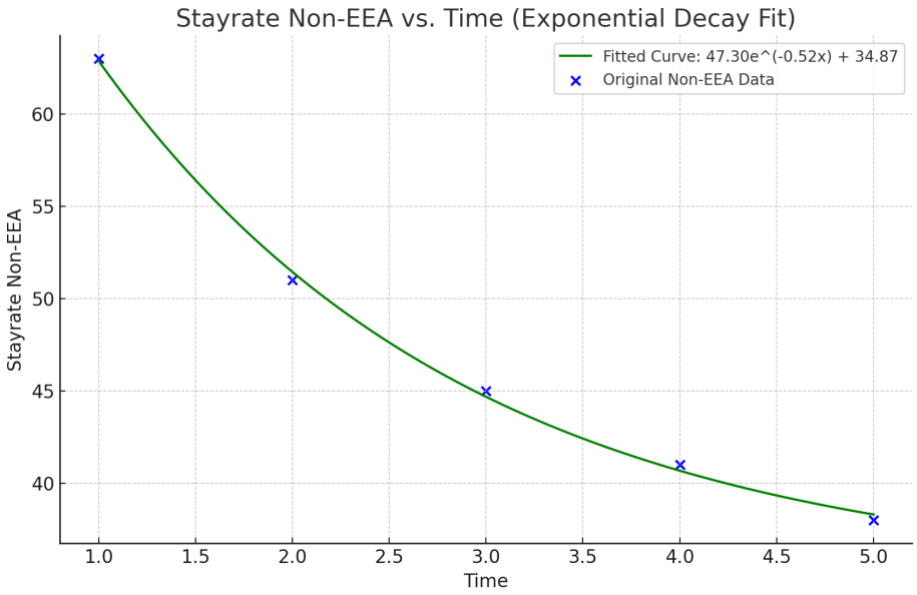
Ramey, V. A. (2011). Can government purchases stimulate the economy?. *Journal of Economic Literature*, *49*(3), 673-685.

H. Government finances: part 2

We now turn to lifetime fiscal contributions of international students from the Netherlands Bureau for Economic Policy Analysis (CPB 2019). A full quantification of fiscal costs and benefits requires access to extensive micro-data, which is what the CPB uses in their report. We thus take their estimates as given. We omit government co-pays, which we already take into account elsewhere. Given current enrolment levels and stay rates, we can calculate how much the sum of fiscal contributions and university fees would change if the language were to switch to Dutch. We again use the retention rates we obtained from the discrete choice experiment to quantify societal losses.

One issue we face is that asymptotic stay rates are not available. However, data on stay rates for each of the first five years after graduation are available. We therefore estimate asymptotic rates by fitting exponential decay functions as shown below, because we want to avoid overstating how many people actually end up staying. From fitting the models separately for EEA and non-EEA students, we obtain long-term stay rates of 11.7% for EEA nationals and 34.9% for non-EEA nationals.





The aggregate loss from a language switch amounts to €838,522,872, or €817 million per year. In other words, for each year where the student population is smaller than it otherwise would have been, the long-term fiscal position of the Dutch government is €839 million worse. What is the long-term in this case? For simplicity, assume that contributions are realized at retirement age, although in reality fiscal gains accrue more in earlier years and fiscal spending (on health) accrue more in later years, such that our calculation understates the burden. The net present value of €839 million accrued over the life course of a given group of students is:

$$NPV = \frac{€839\ million}{(1+\delta)^n}$$

where n is the relevant number of years and δ is the discount factor. Suppose a student starts studying in the Netherlands aged 18 and retires aged 67 (legal retirement age: 66 years 10 months): n = 67 – 18 = 49.

What should the discount factor be? Since we are interested strictly in time preferences, what is the most cost-effective way to secure €839 million in 49 years' time while minimizing risj? Government bonds (from countries with very low default risk) are widely considered to be the safest asset class. The long-term yield from such bonds is therefore a suitable measure for the opportunity cost of time. We obtain nominal 30-year bond yields from World Government Bonds for the countries rated AAA by both Moody's and S&P. Since these are nominal yields, we obtain real yields by subtracting the inflation forecast. Averaging the real yields for the seven countries for which data are available (see table below), the discount factor is 0.603. Plugging this number into the above equation yields an NPV = €625 million.

Country	30-year nominal bond yield (World Government Bonds)	3-year Inflation forecast (OECD)	Real yield
Australia	4.684	2.8	1.884
Canada	3.181	1.9	1.281
Denmark	2.574	2.5	0.074
Germany	2.465	2.1	0.365
Netherlands	2.679	2.4	0.279
Norway (20-year yield)	3.176	3.2	-0.024
Sweden (20-year yield)	2.565	2.2	0.365

I. Aggregate Demand: consumption loss from departing staff and students

Departing students and staff will also trigger a reduction in the demands for goods and services, with the attached multiplier. The table below shows the value of consumption for the 72,241 departing staff and students. If we allocate all leavers to the lowest income quintile, we get the smallest overall consumption figure, which we proceed with. In Part C, we calculated the consumption multiplier for the lowest quintile as 1 / 0.74. The overall value of lost consumption is therefore 1.08 / 0.74 = €1.5 billion.

Quintile	**Median income per capita**	**Savings rate**	**Consumption €**
1	15,000	0 (by assumption; true s < 0)	1.08 billion
2	21,000	0.021	1.49 billion
3	29,000	0.195	1.69 billion
4	37,000	0.358	1.72 billion
5	51,000	0.464	1.97 billion

Appendix F: Political parties by policy position

Table F1. Party positions on multiculturalism and language policy. Parties are ranked by restrictiveness towards the use of English in higher education (most restrictive to least restrictive), see footnote 9 in the main text.

Most against English	**Party**	**Parliamentary seats**	**English-language policy positions 2023 manifestos**	**Multiculturalism Negative – positive mentions per text volume, 2021 manifestos**
1	Freedom Party (PVV)	37 seats (24.7%)	Bachelor degrees in Dutch only (p. 33)	9.54
2	Forum for Democracy (VVD)	24 seats (16%)	Bachelor education is in Dutch, unless English-language education is required for the labour market, field or society. (p. 15)	1.48
3	Socialist Party (SP)	5 seats (3.3%)	It should be possible to complete any Bachelor's degree in Dutch (p. 22).	0.72
4	Green Left – Labour coalition (GroenLinks-PVDA)	25 seats (16.7%)	The choice of English-taught courses needs to be better substantiated, with stricter supervision from the minister. (p. 64)	0.32
5	Christian Democrats (CDA)	5 seats (3.3%)	In domains that primarily focus on the Dutch-speaking labour market, the Dutch is the primary language of instruction (p. 59)	0.61
6	Democrats 66 (D66)	9 seats (6%)	English may be used, provided it has added value (p. 113)	0.27