Perceived Beneficiaries and Support for the Globalization of Higher Education: A Survey Experiment on Attitudes toward International Students

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*F*oreign students are one of the most significant immigrant categories in many North American and Western European countries. Yet as their numbers have swelled, many governments have experienced increasing pressures to cap their entry. This is true despite the sizable benefits that foreign students bring to host countries, and despite standard political economy concerns about immigrants—that they take away jobs or abuse public entitlements—not applying to foreign students. We field a nationally-representative survey experiment in the U.K., one of the top destinations for foreign students, to examine potential activators of public support for capping the number of foreign students. Results show that support for caps is most activated when citizens are primed to think about foreign students competing with domestic students for scarce admissions slots at universities.

Foreign students are one of the most important types of immigrants. Across the world, there are nearly 5 million foreign students, and by 2025, OECD estimates predict that figure to rise to 8 million (ICEF 2017). Many countries in North America and Western Europe welcome hundreds of thousands of foreign students each year (OECD 2018). In the U.K., for example, more immigrants moved to the country in 2018-19 to study than even to work (Sturge 2019). Yet amid these sizable numbers, many countries have witnessed strident anti-foreign-student calls. In the U.K., a writer in one prominent newspaper refers to a "culture of hostility towards international students" (Paton 2013). In the U.S., scholars identify "a backlash movement against further international student growth" (Miller-Idriss and Streitwieser 2015). The *Washington Post* editorial board (2019) says that America now sends a clear signal to foreign students: "get lost." Even outside North America and Western Europe, foreign students have raised the ire of public officials. For instance, several Australian universities have restricted foreign student numbers (Ross 2019). Singapore has also capped its foreign students (Tan 2011).

Despite the controversy they provoke, the determinants of policy preferences over foreign students have received little attention.[1] Extensive research analyzes attitudes toward high-skilled immigrants (Bansak, Hainmueller, and Hangartner 2016; Hainmueller and Hiscox 2010; Hainmueller and Hopkins 2015; Iyengar et al. 2013; Valentino et al., 2017; Wright, Levy, and Citrin 2016). Yet foreign students are a distinct category. Foreign students are important not only because of their numbers, but also because they are a particular immigrant type that one might expect to be immune to backlash. Overwhelming evidence shows that foreign students enrich host countries economically

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[1]Ward, Masgoret, and Gezentsvey (2009), for instance, note that "[t]here has been a paucity of empirical research on attitudes toward international students." What few studies exist are mostly in psychology and sociology.

(IIE 2018; Kennedy 2019; London Economics 2018). Unlike other immigrants (Mayda 2006; Scheve and Slaugher 2001), foreign students should not be perceived as posing an employment threat because they are only in the country to study. Additionally, unlike other immigrants (Cavaille and Ferwerda 2017; Facchini and Mayda 2009; Hanson, Scheve, and Slaughter 2007), foreign students should not be accused of abusing public entitlements because they are not expected to rely on social insurance.

In this note, we conduct the first political economy attempt at isolating the types of information that activate anti-foreign-student attitudes. We theorize that even if foreign students neither vie for the same jobs as domestic workers nor cost taxpayers money by relying on public entitlements, there are analogous ways in which they may pose competition and impose fiscal burdens. First, concerns about competition may arise if foreign students are perceived to "crowd out" domestic students for scarce admissions slots at universities. Although empirical evidence on whether foreign students crowd out domestic students is mixed (Borjas 2004; Machin and Murphy 2017; Shih 2017; Zhang 2009), citizens may perceive that foreign students take away admissions slots from their children, relatives, and other domestic students. Second, concerns about fiscal burdens may arise if foreign students are perceived to cause "human capital flight." When foreign students acquire state-subsidized skills but then depart without contributing to the national economy by working, this may be seen as subsidizing the labor force of other countries (Docquier and Rapoport 2012; Haupt, Krieger, and Lange 2015).

Anecdotal evidence suggests that concerns about both crowding out and human capital flight are salient in public debates. The media and other actors often report on the challenges of domestic students getting admitted to universities due to foreign students taking limited slots. Take, for example, headlines such as "Surge in Foreign Students May Be Crowding Americans Out of Elite Colleges" (*Washington Post*), "British Undergraduates at Oxbridge

Fall amid Concern They Are Being 'Squeezed Out' by Foreign Students" (*The Telegraph*), or "Lucrative Foreign Students 'Taking Oxbridge Places from State Pupils'" (*The Times*) (Anderson 2016; Turner 2019; Bennett 2020). The *Wall Street Journal* (n.d.) reports that "many people worry the influx of international students is depriving qualified American youths of slots in top schools." Writing in the *Times Higher Education*, Sir Keith Burnett (2015) says that "[a]n obsession with cleansing the country of foreigners regardless of their contribution was once seen as a right-wing, crypto-racist issue." Now, he laments, it is "a feeling in some families that their children are denied access to higher education because of 'all these students from overseas'."

Likewise, the concern that taxpayers partially foot the bill for foreign students—even though those students typically leave after graduation—is often featured in the press and other outlets. *Fox News*'s Tucker Carlson, for example, has demanded that the U.S. "ceas[e]...subsidizing the education of the children of Chinese elites": "Our colleges and universities—almost every one of which is supported by taxpayers in the end—educate, at a net loss, the children of the people who are trying to displace us. Why are we doing that?" he asks (quoted in Chapman 2020). Similarly one former government official in Canada has complained that "[w]hen an international student comes to a Canadian university..., he or she arrives to a system that has been bought and paid for by Canadian taxpayers. There's no logical reason to subsidize international students" (Rothenburger 2019). "[T]he argument that tax payers are bleeding funding to pay for international students' free education in Denmark is powerful and speaks into an existing agenda against foreigners that is increasingly dominating the European world," observes a Danish university administrator (quoted in Smith 2015).

We test whether anti-foreign-student attitudes are activated by concerns about competition ("crowding out") and fiscal burdens ("human capital flight"), when compared with

merely making the topic of foreign students salient and providing basic facts about their numbers. To do so, we conduct a nationally-representative survey experiment in the U.K., one of the world's top destinations for foreign students (UNESCO 2016)[2] and a country where foreign students have become especially controversial (Buchan 2018; Paton 2013; Parr 2012). Our objective is to understand how information about the use of a core public service by immigrants affects attitudes toward that service, and how these attitudes can vary depending on how the costs of foreign students are presented. We field an experiment because it enables us to simulate and unpack the kind of information about foreign students that citizens might be exposed to in real-life—for example, from the media, politicians, and activists. It offers insight into how political messaging and communication (Allen 2016; Haynes, Merolla, and Ramarkrishnan 2016) shapes public opinion toward policies regulating entry of foreign students.

The U.K. is a useful test case not only due to its large number of foreign students and the controversies that foreign students have elicited there, but also because U.K. universities charge among the steepest tuition fees in the world and offer limited financial aid to foreign students (OECD 2019; Murphy, Scott-Clayton, and Wyness 2017). This means that foreign students contribute more to their own educations than in many other countries.[3] To the extent that our treatments still increase calls for foreign student caps, we should expect these results to be at least as salient in other contexts that provide more generous educational benefits. The U.K. is also a clear case where attitudes toward immigration have demonstrably affected government policy. As exemplified by Brexit, attitudes toward immigration are a significant force in politics, in some cases even shifting policymaking

[2]As seen in Appendix Figure A1, the U.K. has a much higher share of foreign students relative to the U.S. and the European average.

[3]See Garritzman (2016) for a discussion of the "Four Worlds of Student Finance."

against the preferences of elites and the governing class (Goodwin and Milazzo 2017; Hobolt 2016). Public opinion toward foreign students may factor prominently not only in public discussions, but also in the policy levers that elected officials pull in response to constituent demands.

Our results reveal differential impacts of our treatments in shaping public support for foreign student caps. On average, the likelihood of respondents supporting a cap is 53 percent when not provided any treatment, compared to 56 percent when receiving a generic treatment that provides information neutrally about the large number of foreign students studying in the U.K. As expected, priming respondents about crowding out significantly increases support for a cap—an 8 percentage point increase compared to neutral information about the large number of foreign students in the country. Priming respondents about human capital flight, however, has a smaller effect in raising support for a cap that is statistically indistinguishable from zero—a 5 percentage point increase over the generic treatment about the large number of foreign students in the U.K. This is consistent with an ambiguous connection between perceptions of fiscal burdens and support for a foreign student cap. Additionally, with some exceptions we find directional evidence that respondents who otherwise are less inclined to support a cap on foreign students absent priming are most responsible for driving this main result.

Our study sheds light on the drivers of public opinion toward policy governing foreign students. A considerable literature in political economy suggests that concerns about immigrants taking away jobs and abusing public entitlements can heighten anti-immigrant attitudes.[4] Less effort, however, has been made to analyze whether analogous effects apply

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[4]This is in contrast to some scholarship that has downplayed the importance of such considerations compared to factors like culture, race, or identity (Hainmueller and Hopkins 2014; Newman and Malhotra and 2019).

to different categories of immigrants, such as foreign students, for whom such concerns do not directly apply.[5] We provide a framework for thinking about the calculations that inform voter preferences that could be adjusted and extended to study attitudes toward other specific immigrant types. Our study also contributes to a growing literature on the political economy of higher education (Ansell 2008, 2010; Garritzmann 2016, 2017; Jungblut 2016). Although this scholarship generally analyzes the origins of funding for universities and the redistributive aspects of resourcing tertiary education, we complement existing analyses by examining how citizens react to participation in the sector by foreign students. We show that political controversies can arise over the perceived beneficiaries of the globalization of higher education.

The Survey

To test the activators of anti-foreign-student attitudes, we conduct an original survey experiment in the U.K. that primes respondents to think about the large number of foreign students who enter the country, as well as the competition and fiscal burden effects that they might induce. We fielded our survey in the U.K. in February 2018. Survey Sampling International (SSI) (now known as Dynata), a global survey company, collected the data online from a panel of respondents who agreed to participate in surveys on various topics. U.K. citizens 18 years of age and older were eligible to take the questionnaire. Our final figures were nationally representative according to age, sex, and statistical regions of the

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[5]However, for some examples of research on specific categories of immigrants, see: Iyengar et al. (2013); Levy, Wright, and Citrin (2016); and Malhotra, Margalit, and Mo (2013).

overall population in the U.K.[6] Our survey included completes for 3,000 respondents, from a base of 3,505 eligible individuals who started the survey.

Treatments

Respondents were randomly assigned to one of three main treatments or a control (see Appendix Table A1 for full text of vignettes). The *Control* group received no information. *Treatment*1 (*Simple foreign*) informed respondents about the large number of foreign students who attend universities in the U.K. This was designed to absorb a residual foreign student effect. *Treatment*2 (*Crowdout*) provided the same information as *Treatment*1, but also informed respondents that competition exists for entry into U.K. universities, in which domestic students vie against foreign students for admission. *Treatment*3 (*HC flight*) provided the same information as *Treatment*1, but also informed respondents that most foreign students leave the U.K. after completing their coursework and take the skills they obtained with them.[7]

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[6]Appendix Table A2 shows that the average value of the covariates are balanced across treatment groups, indicating successful randomization. That table also shows demographic means for respondents in our sample relative to national U.K. means. For the covariates we include in our main regressions, the only substantial deviation from national averages is that respondents are considerably more likely not to be employed.

[7]We also embedded a pair of subtreatments into *Treatment*2 (priming respondents to think about foreign students coming from "Western" or "non-Western" countries) and *Treatment*3 (priming respondents to think about foreign students having skills in STEM or non-STEM fields). As reported in Appendix Table A3, none of the disaggregated treatments are statistically significant relative to their baseline.

Dependent Variable

We derived our dependent variable from the question: "Should there be a cap on the number of foreign students who can study at U.K. universities?" Respondents could answer either "Yes" (coded 1) or "No" (coded 0). We kept the DV as a clear binary choice between supporting or rejecting a cap on foreign students because it provides the simplest representation of the option to limit foreign student participation and signals that respondents are broadly dissatisfied with permitting large numbers of foreign students into the country.

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We estimate linear probability models to measure the effects of our treatments on support for a cap on foreign students.[8] For robustness, we also re-estimate our main results using probit regression (see Appendix Table A7).[9]

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[8]For all main regressions, we include the following standard individual-level demographic covariates: gender (female), age, parental status (having children), race (white), country of birth (born in the U.K.), education (university graduate), employment status (not employed), and household income. We re-estimate the main tables without covariates in Appendix Table A4. We also use post-sample stratification to approximate the composition of our sample based on national employment figures (ONS 2018b). As shown in Appendix Table A5, results remain almost identical. We also fit models with additional political and contextual level variables. Results are shown in Appendix Table A6 and again are almost identical.

[9]Probit models yield essentially identical results.

Aggregate Effects

We first test for an aggregate foreign-student effect by comparing respondents who received any of the treatments to those who received the control. Model 1 of Table 1 reports these results. The coefficient on *Anytreatment* is positive and statistically significant (.08), suggesting that people are more likely to support a cap when assigned to one of the treatments. As shown in Figure 1, when holding the control variables at their average values, 53 percent of citizens support a cap on foreign students when assigned to the control, compared to 61 percent when assigned to one of the treatments. The size of these treatment effects should be viewed against a relatively high baseline of citizens supporting a cap even absent priming, suggesting less room for movement than on a policy receiving less initial support.

TABLE 1   *Marginal effects of treatments on support for a cap on foreign students*

	(1)	(2)
Any treatment	0.0827***	0.0317
	(0.0233)	(0.0303)
Crowdout		0.0872***
		(0.0260)
HC flight		0.0404
		(0.0260)
Observations	3000	3000
R^2	0.079	0.083

Displays results from linear regression models, with individual covariates as described in the text. Model 2 shows the effect of the Simple foreign student treatment (line 1) and the marginal effects of the Crowdout and HC flight treatments (lines 3 and 5, respectively), over and above the Simple foreign student treatment. Robust standard errors in parentheses. $^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1.   Predicted probability of supporting a cap on foreign students (with 95% CIs), comparing respondents receiving any of the treatments with the control.
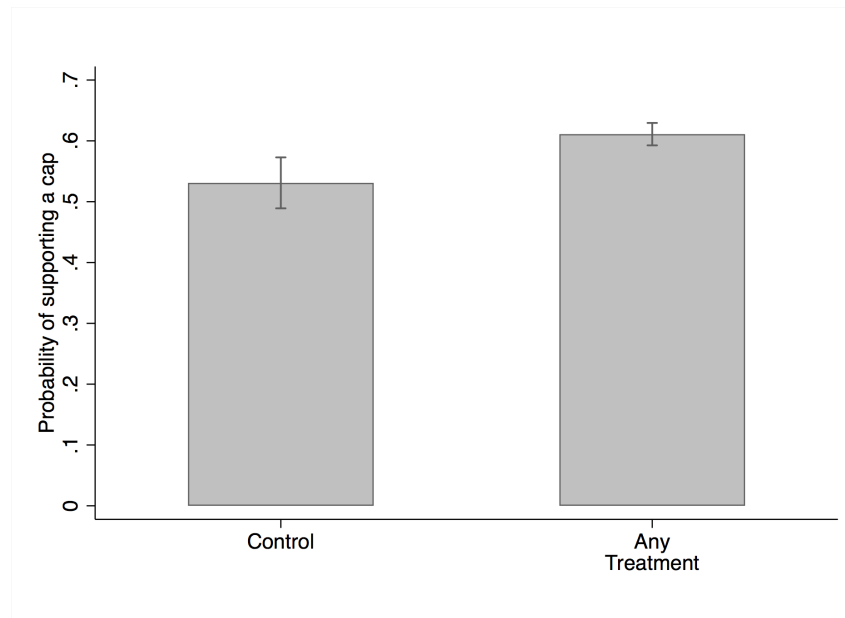

Crowding Out and Human Capital Flight Effects

Next, we turn to our main hypotheses by estimating the extent to which concerns about crowding out or human capital flight may explain these findings. Model 2 of Table 1 reports these results. Although the *Simple foreignstudent* treatment informing respondents about the large number of foreign students in the U.K. makes people more likely to support a cap, this effect (.03) is not significantly different from zero. As expected, *Crowdout* has a large and statistically significant marginal effect (.09, with a total effect when added to the *Simple foreignstudent* treatment of .12). *HCflight* also has a positive marginal effect, but it is not statistically significant (.04, with a total effect with the *Simple foreignstudent* treatment of .07; the latter is significantly different from zero). The effect of *Crowdout* is

larger than that of *HC flight*, and the difference is statistically significant.[10] Figure 2 plots the predicted probabilities of supporting a cap on foreign students, holding the covariates at their average values. 53 percent of respondents favor a cap when receiving the control. That number increases to 56 percent when receiving the simple foreign student treatment, to 61 percent when receiving the human capital flight treatment, and to 64 percent when receiving the crowding out treatment.

Figure 2.   Predicted probability of supporting a cap on foreign students (with 95% CIs), comparing respondents receiving each of the treatments with the control.
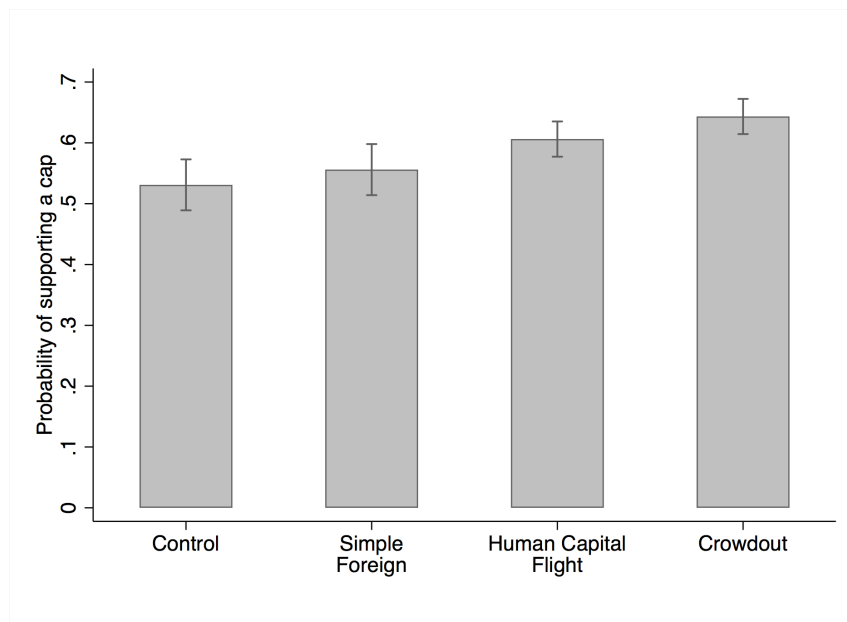
Finally, we parse which respondents most contribute to the significant result by strati-

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[10]Appendix Table A8 shows the total effects of each of the treatments compared to the control group (Model 1), as well as the difference in the effects of the treatments compared to the crowding out treatment (Model 2).

fying responses to the *Crowdout* treatment by our standard demographic characteristics, as well as additional political and contextual-level variables (see Appendix Table A9). Holding the control variables at their average values, Figure 3 plots predicted levels of support for a cap across a selection of these key variables.[11] Directionally, it shows that respondents who have the lowest initial support for a foreign student cap (males, non-whites, non-parents, non-UK-born residents, Brexit remainers, non-Conservatives, and non-middle-aged residents) generally have the most elastic preferences in response to the crowding out treatment.[12]

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[11]Analogously, we estimate subgroup effects for the human capital flight treatment and show them in Appendix Table A10. Effects are only significantly different from the average effect of the *HCFlight* treatment for different age brackets, with older residents experiencing smaller effects.

[12]With some exceptions: Residents who are university graduates, high-income earners, employed, and live in high-immigration areas have lower initial support for a cap and are also less responsive to the crowding out treatment.

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Figure 3. Predicted probability of supporting a cap on foreign students (with 95% CIs), by respondent subgroup, for those receiving the Simple foreign student treatment (left estimates) and the Crowdout treatment (right).
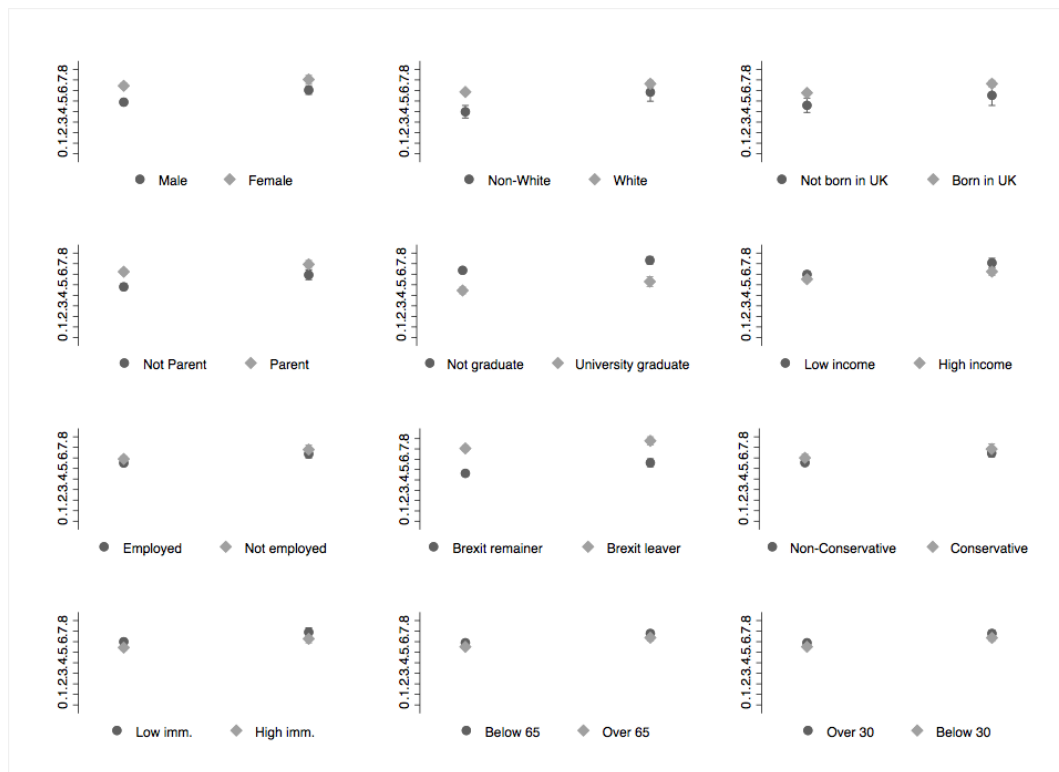
Note: For ease of representation in the figure only, we dichotomize three continuous variables: household income, immigration exposure, and age. We dichotomize the first two into below median and above median levels in our sample. We dichotomize age in two ways: below and over 65 and below and over 30.

DISCUSSION AND CONCLUSION

Foreign students are one of the largest categories of immigrants. In many countries, however, calls for restricting the number of foreign students have grown louder. This is the case even though foreign students yield large benefits for host countries, and despite typical criticisms of immigrants—that they take away jobs and abuse public entitlements—not applying to foreign students. In this note, we test whether anti-foreign-student preferences can be attributed to analogous ways that foreign students are perceived to generate competition and to impose fiscal burdens on taxpayers. In a nationally-representative survey experiment in the U.K., we find that priming respondents to consider how foreign students compete with domestic students for finite university admissions slots significantly activates support for capping their numbers. Priming respondents to consider how foreign students impose fiscal burdens by leaving the country after receiving state-subsidized schooling, however, does not significantly activate support for caps. In general, we find that citizens who are least supportive of a cap absent priming have the most elastic preferences in response to our treatments.

Our results suggest that different types of priming about the costs of foreign students can have asymmetric effects in activating anti-foreign-student attitudes. Simply framing foreign students in an ostensibly negative way does not automatically lead to greater support for capping their numbers. Instead, public opinion appears to be conditional on the types of information provided to citizens. There may be several potential reasons for our mixed results. With crowding out, for example, citizens may see competition for scarce admissions slots at universities as especially straightforward. Or, citizens may perceive that its downsides for students and families are particularly high-stakes and concentrated. By contrast, with human capital flight, citizens may simply not detect a link between foreign

students and subsidizing the labor force of other countries, or educational subsidization in the U.K. may be too modest compared to elsewhere (e.g., the Nordic countries) to make a difference. Alternatively, citizens may detect a link, but not think that it is a major problem if their primary concern is ensuring that immigrants do not, in their view, take away jobs or abuse public entitlements.

In addition to providing a framework for analyzing attitudes toward a specific category of immigrant, our study may also have broader implications for scholarship on the political economy of education (Busemeyer and Trampusch 2011; Gift and Wibbels 2014). Most analyses, including those on higher education (Ansell 2008, 2010; Garritzmann 2016, 2017; Jungblut 2016), examine the determinants of citizen support for education spending and reform. Proposed caps on foreign students, however, have received little scholarly attention, despite being an important policy over which considerable public disagreement exists. Going forward, scholars could probe whether our treatments bring to the fore latent preferences toward foreign students or actually create—or shift—attitudes. Scholars could also test how citizens react to positive, not just negative, information about foreign students. Another question is how perceived cultural threats of foreign students compare to the political economy concerns presented here. Understanding attitudes toward specific immigrant types should be a priority area for research. With foreign students, we found that citizen attitudes can be susceptible to activation.

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Appendix for:
"Perceived Beneficiaries and Support for the
Globalization of Higher Education:
A Survey Experiment on Attitudes toward
International Students"

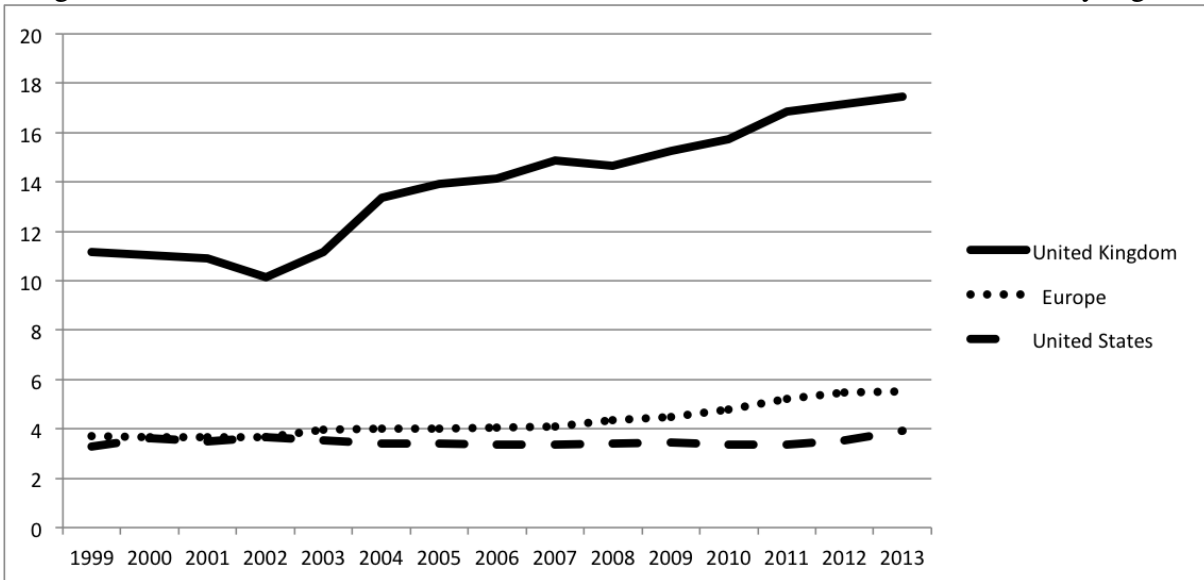Thomas Gift and Carlos X. Lastra-Anadón

Contents

1 International student trends

Figure 1: International students as a share of total number of students in the country/region

Source: UNESCO (2016). Note: Flow numbers for Europe include the U.K.

2 Treatments

Table A1: Summary of primes each treatment group received (top) and corresponding vignettes

(bottom)

Control: [No information]
Treatment 1: [Simple foreign student]
Treatment 2a: [Simple foreign student][Crowdout][Western]
Treatment 2b: [Simple foreign student][Crowdout][Non-Western]
Treatment 3a: [Simple foreign student][HC flight][Non-STEM]
Treatment 3b: [Simple foreign student][HC flight][STEM]

Simple foreign student: The U.K. is a magnet for foreign university students. At some U.K. universities, more than 50% of the student population is foreign.[1]

Crowdout: Competition for entry to U.K. universities is fierce, with domestic students vying for admissions slots against foreign students

Western: hailing from places like North America and Western Europe.

Non-Western: hailing from places like Asia and Africa.

HC flight: Recent data reveal that 97% of foreign students depart the U.K. after completing their coursework, taking the skills they acquired with them[2]

Non-STEM: in subjects such as art, history, and literature.

STEM: in subjects such as engineering, medicine, and computer science.

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1 https://www.timeshighereducation.com/student/news/world-ranked-universities-most-international-students.

2 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/639621/second-report-on-statistics-being-collected-under-exit-checks.pdf. For simplicity, we use this 97% figure—which has been widely reported. (https://monitor.icef.com/2017/08/uk-net-migration-questioned-new-data-shows-97-international-students-leave-time/)—because it signals a significant number of foreign students leaving the U.K. The reality is more complicated, as it only applies to non-EAA students and includes only students who did not extend their visa for other purposes. Recent data, however, indicate that the vast majority of foreign students who do extend their visas do so for further study (80%) rather than work (14%) (https://www.gov.uk/government/publications/immigration-statistics-january-to-march-2017/how-many-people-continue-their-stay-in-the-uk).

3 Summary statistics

Table A2: Comparison with U.K. national figures and balance of the covariates across the different treatment groups

	(0) U.K. Mean	(1) Control Mean	(2) Simple foreign student Mean	(3) (2) - (1)	(4) Crowdout Mean	(5) (4) - (1)	(6) HC flight Mean	(7) (6) - (1)
Female	0.508	0.523 (0.500)	0.494 (0.500)	-0.029 (0.032)	0.496 (0.500)	-0.027 (0.027)	0.532 (0.499)	0.009 (0.027)
Age	48.332	46.743 (17.824)	46.030 (17.528)	-0.713 (1.117)	46.703 (17.489)	-0.039 (0.963)	46.037 (17.657)	-0.705 (0.970)
Parent	N.A.	0.623 (0.485)	0.596 (0.491)	-0.027 (0.031)	0.608 (0.488)	-0.014 (0.027)	0.633 (0.482)	0.011 (0.026)
White	0.870	0.896 (0.305)	0.908 (0.289)	0.012 (0.019)	0.912 (0.283)	0.016 (0.016)	0.908 (0.289)	0.012 (0.016)
Born in U.K.	0.86	0.922 (0.268)	0.926 (0.262)	0.004 (0.017)	0.926 (0.262)	0.004 (0.014)	0.930 (0.256)	0.008 (0.014)
University graduate	0.384	0.333 (0.472)	0.356 (0.479)	0.023 (0.030)	0.382 (0.486)	0.048* (0.026)	0.362 (0.481)	0.028 (0.026)
Not employed	0.244	0.441 (0.497)	0.418 (0.494)	-0.023 (0.031)	0.435 (0.496)	-0.007 (0.027)	0.446 (0.497)	0.005 (0.027)
Household income	28,400	32,146 (23.245)	31,460 (25.174)	-0.686 (1.532)	32,932 (26.135)	0.786 (1.380)	31,909 (25.407)	-0.237 (1.353)
Conservative	0.404	0.265 (0.442)	0.306 (0.461)	0.041 (0.029)	0.298 (0.457)	0.032 (0.025)	0.276 (0.447)	0.010 (0.024)
Brexit leaver	0.374	0.481 (0.500)	0.430 (0.496)	-0.051 (0.031)	0.419 (0.494)	-0.062** (0.027)	0.417 (0.493)	-0.064** (0.027)
Immigration pct.	0.114	0.121 (0.107)	0.121 (0.098)	-0.000 (0.007)	0.120 (0.102)	-0.001 (0.006)	0.121 (0.108)	-0.001 (0.006)
Observations		501	500		1,001		998	

Displays mean values of covariates in each of the treatment groups and their difference with the control. Household income is in thousands of pounds. Immigration percentage is the share of immigrants during the period 2007-2016 over the resident population in 2016. UK means source for gender, age, ethnicity and place of birth is ONS (2018a), employment and income is ONS (2018b), university graduate is ONS (2020a), and immigration share in the local authority is ONS (2020b). Conservative reflects answer to the question "What Party do you feel closest to?" in our sample, and average forced voting intentions by party in several national polls in February 2018 (Pack 2020). Brexit leaver reflects answer to the question "Did you vote in the 2016 'Brexit' referendum on whether the United Kingdom should remain in or leave the European Union? If yes, how did you vote?" in our sample, compared to official data from the Electoral Commission (2020). In parentheses, standard deviations for means and standard errors for differences in means. $^{+} p < 0.10$, $^{*} p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

4 Disaggregated model with subtreatments

Table A3: Marginal effects of treatments on support for a cap on foreign students, disaggregating Crowdout and HC flight treatments

	(1)	(2)
Crowdout	0.0872***	0.0860**
	(0.0260)	(0.0297)
HC flight	0.0404	0.0474
	(0.0260)	(0.0300)
Crowdout X Non-Western		0.00246
		(0.0296)
HC flight X STEM		-0.0140
		(0.0296)
Observations	3000	3000
R^2	0.083	0.083

Displays results from linear regression models, with individual covariates as described in the text. Model 1 reproduces Model 2 from Table 1. Model 3 disaggregates each of the main treatments into its two component sub-treatments (Western and non-Western for Crowdout, and STEM and non-STEM for HC flight) Robust standard errors in parentheses. $^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5 Alternative versions of main models

Table A4: Marginal effects of treatments on support for a cap on foreign students, with no individual covariates

	(1)	(2)
Any treatment	0.0801**	0.0251
	(0.0243)	(0.0315)
Crowdout		0.0874**
		(0.0269)
HC flight		0.0502^{+}
		(0.0271)
Observations	3000	3000
R^2	0.004	0.007

Table analogous to Table 1, with no individual covariates. Model 2 shows the effect of the Simple foreign student treatment (line 1) and the marginal effects of the Crowdout and HC flight treatments (lines 3 and 5, respectively), over and above the Simple foreign student treatment. Robust standard errors in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A5: Marginal effects of treatments on support for a cap on foreign students, using post-stratification weights on employment

	(1)	(2)
Any treatment	0.0810***	0.0271
	(0.0244)	(0.0313)
Crowdout		0.0901***
		(0.0267)
HC flight		0.0447^{+}
		(0.0267)
Observations	3000	3000
R^2	0.077	0.081

Displays results from linear regression models, with individual covariates as described in the text, weighing observations to account for differences in the percentage of respondents employed, as compared to the U.K. population. Model 2 shows the effect of the Simple foreign student treatment (line 1) and the marginal effects of the Crowdout and HC flight treatments (lines 3 and 5, respectively), over and above the Simple foreign student treatment. Robust standard errors in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A6: Marginal effects of treatments on support for a cap on foreign students, with additional individual political and contextual-level covariates

	(1)	(2)
Any treatment	0.0908***	0.0422
	(0.0245)	(0.0316)
Crowdout		0.0860**
		(0.0269)
HC flight		0.0356
		(0.0268)
Observations	2704	2704
R^2	0.109	0.113

Displays results from linear regression models, with all individual demographics covariates as in Table 1, plus additional Brexit vote variables (Brexit support and abstention), a party allegiance variable (Conservative or not), and an immigration percentage variable. Model 2 shows the effect of the Simple foreign student treatment (line 1) and the marginal effects of the Crowdout and HC flight treatments (lines 3 and 5, respectively), over and above the Simple foreign student treatment. Robust standard errors in parentheses. $^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A7: Marginal effects of treatments on support for a cap on foreign students, using probit models with <u>individual covariates</u>

	(1)	(2)
Any treatment	0.225***	0.0852
	(0.0630)	(0.0812)
Crowdout		0.242***
		(0.0711)
HC flight		0.111
		(0.0706)
Observations	3000	3000

Displays coefficients from probit models, with individual covariates as described in the text. Model 2 shows the effect of the Simple foreign student treatment (line 1) and the marginal effects of the Crowdout and HC flight treatments (lines 3 and 5, respectively), over and above the Simple foreign student treatment. Robust standard errors in parentheses. $^{+}\ p < 0.10$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Table A8: Total (not marginal) effects of treatments on support for a cap on foreign students

	(1)	(2)
Simple foreign student	0.0317	-0.0872***
	(0.0303)	(0.0260)
Crowdout	0.119***	
	(0.0260)	
HC flight	0.0721**	-0.0469*
	(0.0260)	(0.0209)
No primes		-0.119***
		(0.0260)
Observations	3000	3000
R^2	0.083	0.083

Displays results from linear regression models, with individual covariates as described in the text. Omitted categories are the Control group in Model 1 and recipients of the Crowdout treatment in Model 2. Robust standard errors in parentheses. $^+ p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

6   Additional results

Table A9: Effects of the Crowdout treatment on support for a cap on foreign students, by respondent subgroup

	(1)	(2)	(3)	(4)	(5)	(6)
Crowdout	0.113***	0.185**	0.113**	0.0966	0.0914**	0.0860**
	(0.0323)	(0.0649)	(0.0356)	(0.0725)	(0.0290)	(0.0303)
Crowdout X Female	-0.0527					
	(0.0364)					
Crowdout X White		-0.108^{+}				
		(0.0652)				
Crowdout X Parent			-0.0432			
			(0.0379)			
Crowdout X Born in U.K.				-0.0107		
				(0.0725)		
Crowdout X University graduate					-0.00843	
					(0.0384)	
Crowdout X Not employed						0.00298
						(0.0366)

	(7)	(8)	(9)	(10)	(11)	
Crowdout	0.0894**	0.101***	0.0529*	0.0622^{+}	0.0557*	
	(0.0286)	(0.0306)	(0.0156)	(0.0346)	(0.0255)	
Crowdout X Conservative	-0.00567					
	(0.0398)					
Crowdout X Brexit leaver		-0.0280				
		(0.0354)				
Crowdout X Age			0.000725			
			(0.00104)			
Crowdout X Household income				0.000754		
				(0.000715)		
Crowdout X Immigration pct.					0.246	
					(0.190)	

Estimates show effects of the Crowdout treatment interacted with covariates. The Simple foreign student treatment is the omitted category. Each model includes the corresponding baseline interacted covariate, the other standard demographic covariates as described in the text, and indicator variabless for the control group and the HC flight treatment. Robust standard errors in parentheses.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A10: Effects of the HC flight treatment on support for a cap on foreign students, by respondent subgroup.

	(1)	(2)	(3)	(4)	(5)	(6)
HC flight	0.0147	0.0449	0.0356	0.0248	0.0331	0.0475
	(0.0329)	(0.0663)	(0.0356)	(0.0741)	(0.0291)	(0.0306)
HC flight X Female	0.0473					
	(0.0365)					
HC flight X White		-0.00613				
		(0.0666)				
HC flight X Parent			0.00602			
			(0.0380)			
HC flight X Born in U.K.				0.0156		
				(0.0741)		
HC flight X University graduate					0.0208	
					(0.0386)	
HC flight X Not employed						-0.0164
						(0.0365)

	(7)	(8)	(9)	(10)	(11)
HC flight	0.0382	0.0439	0.137*	0.0708*	0.0530
	(0.0284)	(0.0302)	(0.0548)	(0.0346)	(0.0351)
HC flight X Conservative	0.0101				
	(0.0403)				
HC flight X Brexit leaver		-0.00265			
		(0.0355)			
HC flight X Age			-0.00211*		
			(0.00104)		
HC flight X Household income				-0.000990	
				(0.000729)	
HC flight X Immigration pct					-0.148
					(0.185)

Estimates show effects of the HC flight treatment interacted with covariates. The Simple foreign student treatment is the omitted category. Each model includes the corresponding baseline interacted covariate, the other standard demographic covariates as described in the text, and indicator variables for the control group and the Crowdout treatment. Robust standard errors in parentheses.

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$