Background

In the 2018-2019 academic year, international students in undergraduate and graduate programs in U.S. colleges and universities account for 39.4% and 34.5%, respectively, and those in Optional Practical Training (OPT) account for 20.4% of 1,095,299 international students (Institute of International Education, 2019).

What is OPT visa?

OPT is a temporary employment program that permits international students with F-1 visas to work up to 12 months in the United States before and/or after completing their degrees, and it provides international students with opportunities to seek employment and apply for an H-1B work visa.

In April 2008, the Department of Homeland Security (DHS) announced a new rule that allows international students with degrees in STEM fields to apply for a 17-month extension following the completion of their OPT. A STEM degree thus increases accessibility to the U.S. job market for international students by allowing them to stay longer in the United States. In May 2012, DHS expanded the list of STEM majors eligible for the OPT extension. Compared to studies on student choices, little is known about supply side responses to the STEM OPT extension. A STEM degree thus increases accessibility to the U.S. job market for international students by allowing them to stay longer in the United States. In May 2012, DHS expanded the list of STEM majors eligible for the OPT extension.

Research questions are:

• How did business colleges and departments respond to the STEM OPT extension rule?
• What is the effect of the OPT extension rule on the number of domestic and foreign students’ STEM degree attainment?

Empirical strategy

I estimate a difference-in-differences model (1) and an event-study model (2) using the major code level data at U.S. universities.

\[ Y_{ict} = \beta_0 + \beta_1 \text{POST}_i \times \text{STEM}_c + \beta_2 \text{STEM}_c + \lambda_y + \delta_t + \epsilon_{iclt} \]  

for \( t \in \{2007, \ldots, 2018\} \). \( Y_{ict} \) is a dependent variable of interest at university \( i \), major CIP code \( c \) at degree level \( t \) at year \( t \). POST is a binary variable equal to 1 if \( t \) is later than 2012 and 0 otherwise. STEM is a binary variable equal to 1 if the major CIP code \( c \) at university \( i \) is eligible for the STEM extension after the rule change and 0 otherwise.

\[ Y_{ict} = \beta_0 + \sum_{y=0}^{5} \alpha_y (t - t' = y) \times \text{STEM}_c + \beta_2 \text{STEM}_c + \lambda_y + \delta_t + \epsilon_{iclt} \]  

for \( t \in \{2007, \ldots, 2018\} \) and \( t' = 2013 \). The coefficients \( \alpha_y \) represent the effect on outcome \( Y_{ict} \) in STEM business programs relative to non-STEM business programs in year \( t \) relative to year 2013.

Results

Figures 1(a) and 1(b) illustrate that STEM degree program offerings increase after the inclusion of STEM-OPT eligible list. Master’s program and bachelor’s program show a statistically significant difference between STEM-eligible business and non-STEM business programs. Event-study estimates show that the probability of offering STEM business programs increases by 1.9 to 10.2 percentage points one to five years after the visa policy change at the bachelor’s level and 5.5 to 25.5 percentage points at the master’s level.

Discussion

The growing number of international students applying for the OPT visa and their impact on U.S. economy and labor market illustrate the importance of immigrant policies related to U.S. higher education. This paper examines the effects of changes in the visa policy on the responses of university departments and students.

When implementing an immigration policy that applies to foreign students and workers, it is important to understand the effect on the supply of STEM programs and the demand of nonresident students, because the net changes in the number of STEM degree holders is affected by the responses from both the departments and the students. As DHS continues to expand the STEM-designated degree list, the agency could target specific field as this paper shows that there are enough incentives for departments to offer and for international students to major in a STEM-designated degree program.

Table 1: Effects on degrees awarded by resident status

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>BA</th>
<th>MA</th>
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<tbody>
<tr>
<td>Panel A: Effects on (Degrees awarded to nonresidents)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEM Business×</td>
<td>0.333***</td>
<td>0.185*</td>
<td>0.526***</td>
</tr>
<tr>
<td>Post-2013</td>
<td>(0.102)</td>
<td>(0.112)</td>
<td>(0.173)</td>
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<tr>
<td>Panel B: Effects on (Degrees awarded to residents)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>STEM Business×</td>
<td>0.073</td>
<td>0.076</td>
<td>0.264</td>
</tr>
<tr>
<td>Post-2013</td>
<td>(0.099)</td>
<td>(0.109)</td>
<td>(0.189)</td>
</tr>
</tbody>
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Note: This poster is prepared for 2022 ASSA/AEA Annual Meeting.