PIIE PETERSON INSTITUTE FOR INTERNATIONAL ECONOMICS

POLICY BRIEF

26-10 Class Dismissed: The Effect of International Student Exclusion on the US STEM Workforce and Economic Growth

Michael A. Clemens, Jeremy Neufeld, and Amy M. Nice

June 2026

Note: This Policy Brief summarizes findings from Clemens, Neufeld, and Nice (2025), commissioned by the National Academies of Sciences, Engineering, and Medicine (NASEM). The authors gratefully acknowledge support from NASEM; helpful comments from Adam Posen, Marcus Noland, Jed Kolko, Kimberly Clausing, Warwick McKibbin, and Greg Auclair; and support from the Peterson Institute for International Economics and Coefficient Giving. The views expressed here are exclusively those of the authors and do not represent any institution.

Michael A. Clemens is an economist and professor at the Johns Hopkins University School of Government and Policy and nonresident senior fellow at the Peterson Institute for International Economics.

Jeremy Neufeld is director of immigration policy at the Institute for Progress.

Amy M. Nice is an immigration law and policy fellow at Cornell Law School and a distinguished immigration counsel at the Institute for Progress.

EXECUTIVE SUMMARY

A suite of new US federal government policies adopted since 2025 seeks to reduce the number of international students who enroll at US universities and transition into the labor market after graduation. The government has demanded that public and private universities accept fewer international students, has stated it intends to end graduates' access to work authorization, and has moved to cut the duration of student visas shorter than most students' course of study (forcing uncertain petitions to continue). In the latest available data, student visa issuance is about one-third below typical levels before these restrictions began.

These and other steps will curtail the US supply of university-educated workers in science, technology, engineering, and

mathematics (STEM). Foreign-born workers account for 30 percent of the high-skill STEM workforce overall and 49 percent of STEM workers holding a PhD. Most of them arrived in the United States as students. Foreign workers *trained in the United States as international students* make up 19 percent of the total US STEM workforce for all university degrees combined, and 35 percent of those with a PhD.

Cutting the supply of high-skill STEM talent in the United States will reduce economic growth. High-skill STEM workers are known to have large positive effects on innovation, entrepreneurship, and productivity growth. These long-term effects are documented in a well-established and consensus research literature that we draw on below. Such effects on national productivity are separate from, and dwarf, the negative effects on universities themselves. To be sure, training international students at US universities is a major export industry, exporting $43 billion in services every year. So, any curtailment of international students has direct, short-term negative economic effects on universities and college towns, effects that have been documented elsewhere. We focus instead on indirect effects: How the reduced supply of skilled workers will slash national productivity in every corner of the economy.

A sustained one-third decline in the annual flow of foreign STEM graduates from US universities into the US labor force would shrink the high-skill STEM workforce by 6.2 percent overall and by 11.5 percent at the PhD level. Economists' best evidence implies that such a decline would lower the annual growth rate of total factor productivity (TFP) by 0.08 to 0.16 percentage points. After a decade, real US GDP would be 0.8 to 1.6 percent smaller than it would otherwise be—an annual loss, at current GDP, of $240 billion to $481 billion. This conservative estimate assumes that the one-third decline in students arriving will not be aggravated and compounded by increased departures by those who do arrive.

In comparable past episodes, neither foreign-trained workers from abroad nor US-born students stepped in to fill the gap. We see no reason this time will be different. The annual loss to the US economy after ten years would be similar to the annual GDP of South Carolina or Wisconsin, and larger than the economies of most other US states. But it is not too late to avert these losses.

Congress can act now: by preventing disruptions of students' visa status during their course of study, codifying postgraduation employment in law, reforming barriers between students and work visas, and helping graduates of US universities get around the green card backlog.

INTRODUCTION: THE DECLINE IS ALREADY UNDERWAY

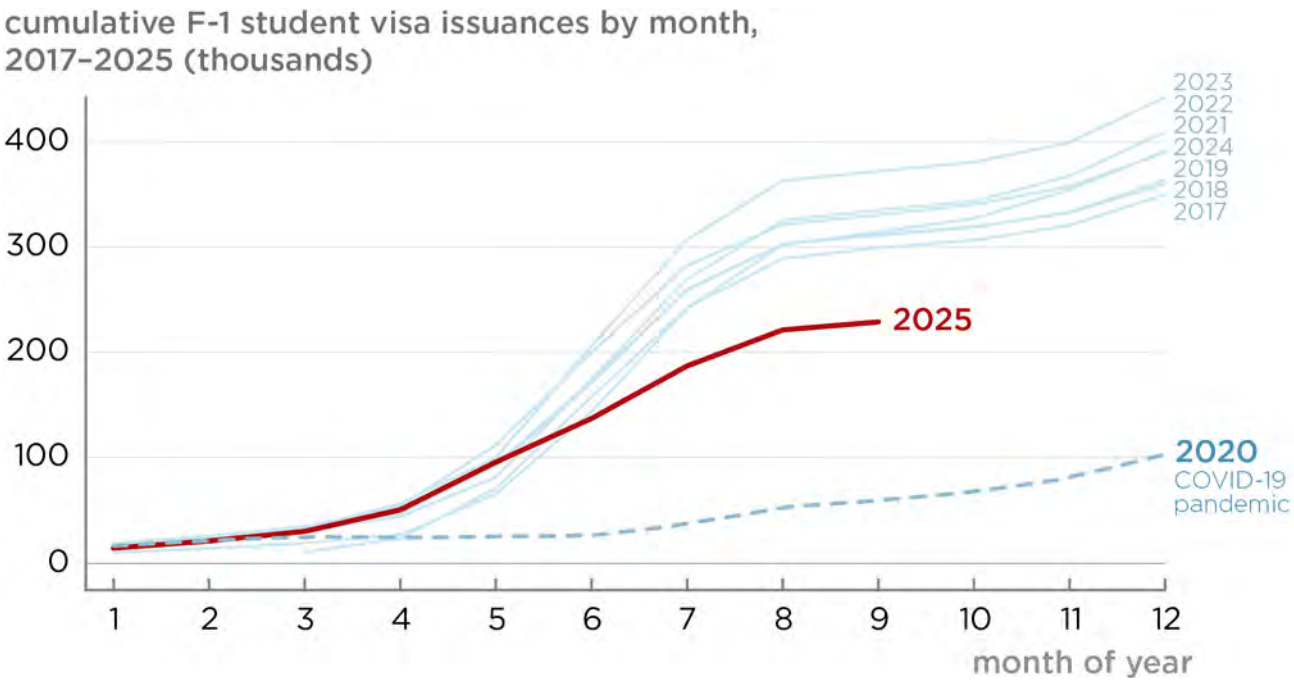
A major and enduring economic advantage of the United States has been its ability to recruit and educate top talent from around the world (Bloom, Van Reenen, and Williams 2019; Glennon 2024; Ganguli and MacGarvie 2025). Most of that talent arrives on student visas. Of the foreign-born founders of America's highest-potential venture-backed start-ups, 75 percent first came to the United States as international students (Amornsiripanitch et al. 2023). Immigrants account for 44 percent of the founders of America's billion-dollar start-ups, and immigrant inventors are responsible for roughly one-third of aggregate US innovation, in part by raising the patenting rates of their US-born colleagues (Bernstein et al. 2022).

A rapidly expanding bundle of federal policy actions threatens this pipeline. The US government has demanded that public and private universities reduce international student admissions as a condition for receiving federal grants, has denied or canceled student visas en masse, has moved to restrict the duration of student visas as well as graduates' access to US employment, and has announced that it will severely limit transitions directly from student visas to green cards. The director of US Citizenship and Immigration Services in 2025 described his policy goal in this way: "We've got to do everything we can to really make it abundantly difficult…for [graduating foreign] students…to continue to live and work in the United States."

This policy suite has succeeded in deterring international students: In September 2025, US student visa issuance was down by a third relative to normal levels (setting aside the COVID-19 pandemic year of 2020). This is seen in figure 1 (page 4), which shows monthly US issuance of student visas (F-1) in 2025 compared to previous years. (The latest available data at the time of writing run only through September 2025 because the US Department of State began reporting visa issuance data with a very long lag.)

Figure 1

US student visa issuance dropped sharply in 2025



Source: Authors' calculations based on US Department of State, Monthly Nonimmigrant Visa Issuance Statistics (through September 2025, the latest released by the Trump administration).

This is a decline of roughly one-third in the very inflow that constitutes the entry to America's high-skill talent pipeline. This decline is likely to become more severe. In a September 2025 survey of 1,039 current international students and postdocs in the United States on F-1 and J-1 visas, heavily concentrated in STEM, over 49 percent said that if they had known in advance about the wave of new restrictions, they would "probably" or "definitely" not have come to study in the United States in the first place.

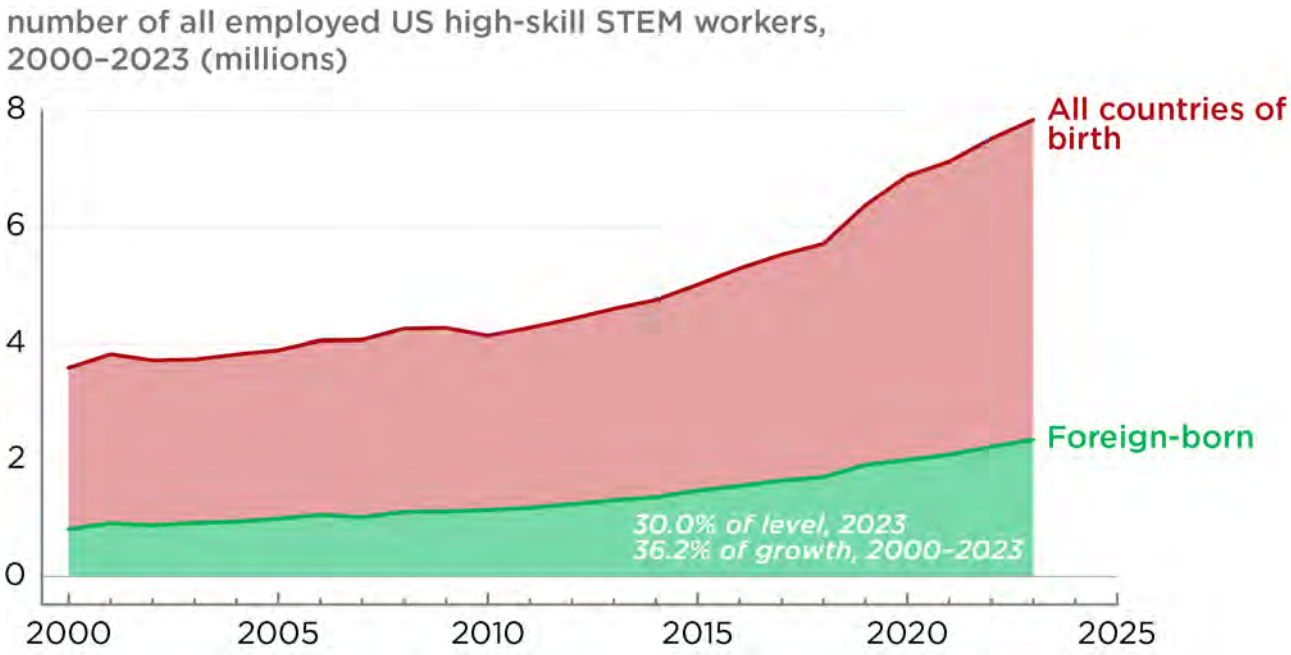
But to be conservative, we consider the scenario of a sustained decline of one-third in international student arrivals. Below we summarize our estimates of the effect of such a decline on (1) the US supply of high-skill STEM workers and thus on (2) US productivity and economic growth. Details of the methods and data sources are available in the full working paper, commissioned by the National Academies of Sciences, Engineering, and Medicine, that underlies this brief (Clemens, Neufeld, and Nice 2025).

THE PRIMARY PIPELINE THROUGH WHICH FOREIGN STEM TALENT ENTERS THE US WORKFORCE

Foreign-born workers are central to the US high-skill STEM workforce and have been for at least a quarter century. In 2023 they accounted for 30.0 percent of all workers in Census-defined STEM occupations who hold a bachelor's degree or higher, and for 36.2 percent of all growth in that workforce from 2000 to 2023 (figure 2).

Figure 2

The number of foreign-born high-skill STEM workers in the United States is high and rising



Note: Figure includes workers aged 18–65 with at least a bachelor's degree in occupations classified by the National Science Foundation as Science and Engineering.

Source: Clemens, Neufeld, and Nice (2025).

At higher levels of training the foreign-born share is larger still. In 2023, foreign-born workers made up 42.1 percent of STEM workers whose highest degree is a master's and 49.2 percent of STEM workers whose highest degree is a PhD. They accounted for 50 percent of all growth in STEM workers at the master's level from 2000 to 2023 and 62.2 percent at the PhD level.

The US immigration system, however, has almost no way to recruit foreign-born workers directly from abroad. Employment-based green cards mostly go to people already living and working in the United States, who adjust status after years on a temporary visa. The H-1B serves mainly to retain workers already here, not to recruit them from outside. In practice, recruitment of high-skill STEM talent into the United States happens primarily at US universities. As one National Academies committee chair has observed, "the United States has a talent program; it's called graduate school."

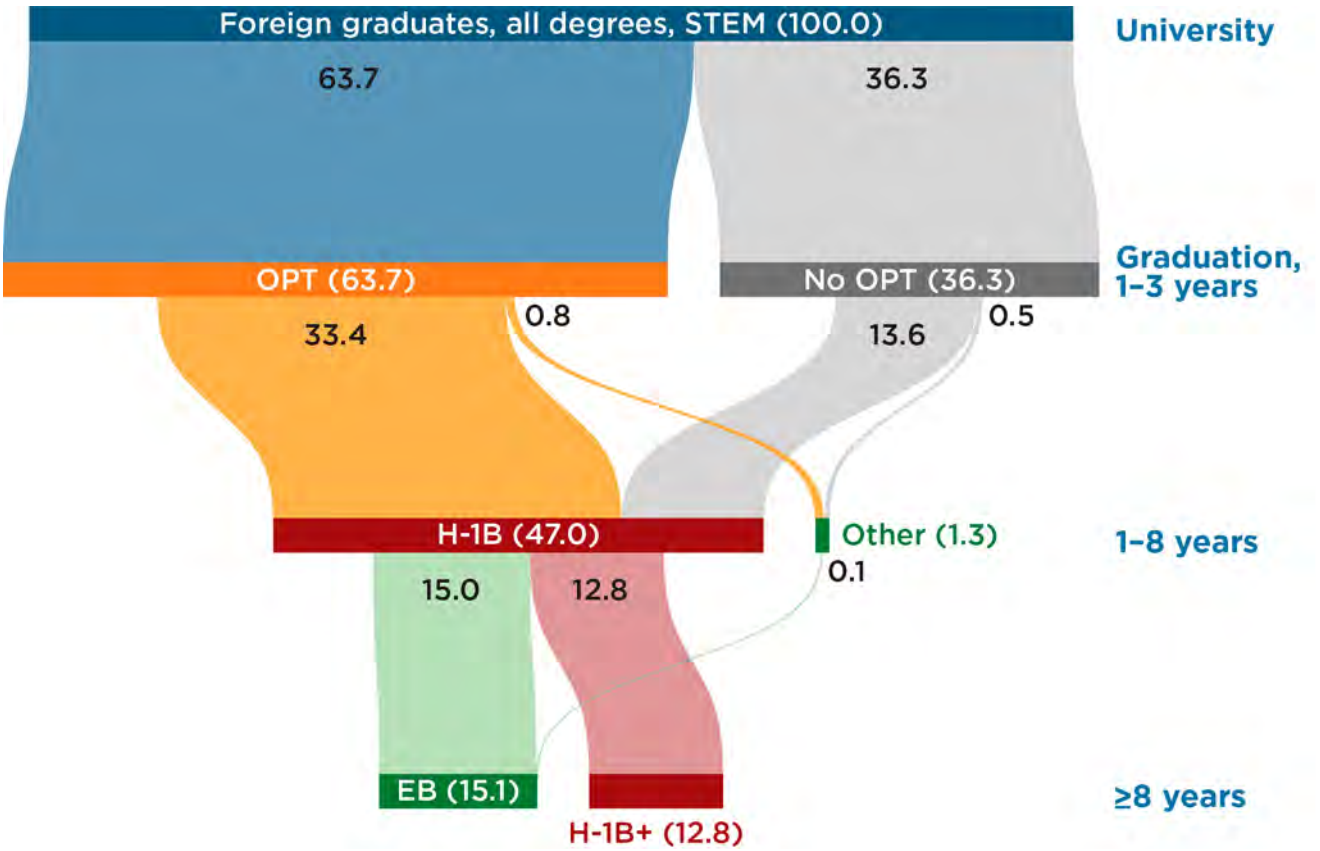
In practice, recruitment of high-skill STEM talent into the United States happens primarily at US universities.

Figure 3 (page 7) traces the primary pipeline through which more than 78 percent of foreign students earning STEM degrees at a US university enter and remain in the US workforce. Of every 100 foreign STEM graduates of US universities, 64 enter the labor force right after graduation on Optional Practical Training (OPT), which provides up to three years of postgraduation work authorization for STEM graduates and serves as the key bridge between student status and the H-1B lottery, and 36 do not enter OPT. Within one to three years after graduation, about 33 move from OPT to H-1B status. Another 14 move directly from F-1 to H-1B without OPT, and 0.5 move directly from F-1 to another nonimmigrant work visa without entering OPT. Overall 47 obtain H-1B status. This primary pipeline omits various other unrelated but much smaller pathways (marriage, asylum, intracompany transfer visas, and the like).

Long-term retention is smaller but still substantial. Of every 100 foreign STEM graduates, about 28 remain in the US high-skill STEM workforce eight years after graduation after entering through the primary pipeline, with 15 obtaining employment-based permanent residency (EB) and around 13 remaining in long-term H-1B–related status (H-1B+). About 38 remain long-term overall, counting all other paths (like marriage, asylum, the Diversity Visa lottery, and others) (Clemens, Neufeld, and Nice 2025). Any policy that shrinks the number of international students entering this pipeline will shrink the number reaching the US workforce.

Figure 3

The main pipeline for foreign STEM graduates of US universities



Source: Clemens, Neufeld, and Nice (2025), based on full-universe SEVIS administrative data, 2018–2022, obtained from the US Department of Homeland Security under the Freedom of Information Act. Numbers describe percentages of the original cohort of 100 F-1 STEM graduates.

HOW MUCH WOULD THE US STEM WORKFORCE SHRINK?

What would a sustained one-third decline in the annual flow of foreign STEM graduates mean for the US STEM workforce? We address this by applying observed historical retention rates to the current population of foreign-born, US-trained STEM workers. That is, whatever the retention rate, if inflows of students in all previous years had been uniformly one-third lower, today's stock of high-skill foreign STEM workers trained at US universities would be one-third lower.

Table 1 (page 8) reports this calculation. A sustained one-third reduction in inflows over all previous years would have shrunk

the foreign-born, US-trained component of the high-skill STEM workforce today by 6.2 percent overall, 9.4 percent at the master's level, and 11.5 percent at the PhD level. Because the foreign-born share of that workforce has been growing, the implied reduction in the growth of that workforce since 2000 is somewhat larger: 7.6 percent overall, 11.2 percent at the master's level, and 14.3 percent at the PhD level.

Table 1

Long-term impact on the overall high-skill STEM labor supply due to a one-third reduction in the annual flow of retained foreign STEM graduates from US universities

Category	Actual stocks of high-skill foreign US-trained STEM workers		Impact on 2023 stock due to 1/3 decline in prior inflows (percent)	
	In 2003	*In 2023*	*Impact: Stock*	*Impact: Growth*
STEM, all degrees	532,311	1,464,701	–6.2	–7.6
STEM master's	225,688	659,446	–9.4	–11.2
STEM PhD	91,477	217,226	–11.5	–14.3

Note: "Impact: Stock" describes the long-term percent change in the size of the employed US high-skill STEM workforce. "Impact: Growth" describes the percent change in growth of that workforce between 2003 and 2023.

Source: Clemens, Neufeld, and Nice (2025, table 3).

Next year's cohort of new STEM workforce entrants will shrink by a larger percentage than the existing workforce, because foreign students are a substantial fraction of all new STEM graduates from US universities. Table 2 (page 9) reports the short-term impact. A one-third reduction in foreign STEM graduates would shrink the next graduating cohort's contribution to the US STEM workforce by 5.4 percent overall, by 11.0 percent at the master's level, and by 11.5 percent at the PhD level.

Table 2

Short-term impact of a one-third reduction in the annual cohort of foreign STEM graduates from US universities on the total cohort of all STEM graduates

Category	STEM graduates from US universities, all degrees, 2023		US retention of foreign graduates, year 1 (percent)	Short-term impact of 1/3 reduction on total cohort (percent)
	Foreign	*Total (native + foreign)*		
STEM, all degrees	187,416	897,938	77.8	–5.4
STEM master's	123,651	282,436	75.6	–11.0
STEM PhD	16,905	38,794	79.4	–11.5

Note: "Short-term impact" describes the percent reduction in the size of the next year's cohort of new STEM workforce entrants from US universities, including both foreign-born and US-born graduates, that would result from a one-third reduction in the annual flow of foreign STEM graduates.

Source: Clemens, Neufeld, and Nice (2025, table 4).

WOULD OTHER WORKERS FILL THE GAP?

The estimates in tables 1 and 2 are mechanical. They describe what would happen to the US STEM workforce if the inflow of foreign-born, US-trained STEM workers fell by one-third and nothing else adjusted.

Could other workers fill the gap? Two possibilities are sometimes raised: foreign-trained workers arriving from abroad, and US-born students taking up STEM training in greater numbers. Neither is supported by the evidence.

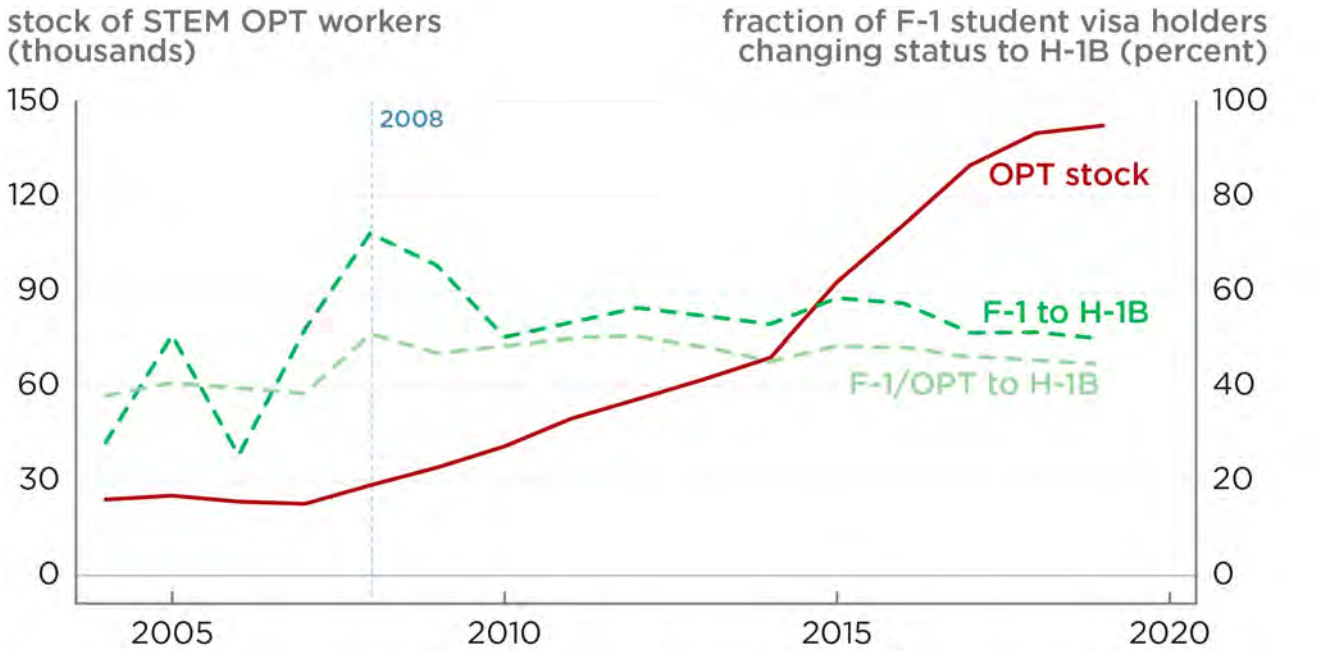
Foreign-trained workers from abroad could in principle fill the gap. The supply of private-sector H-1B visas has been capped at 85,000 since 2005. A decline in US-trained F-1 graduates would free up cap slots for workers entering on petitions from abroad.

But a natural experiment provides direct evidence on this question. In 2008, the US government greatly expanded

employment opportunities for international STEM graduates from US universities by extending the OPT employment authorization. This caused the number of STEM OPT workers to rise sixfold by 2019. If those additional F-1 graduates in the US labor market were competing over a fixed number of H-1B visas, the probability that each one transitioned to H-1B status would have declined over time. But as figure 4 shows, that probability remained steady at around 50 percent. Many F-1 STEM graduates went to work in academia or nonprofit institutes, where H-1B visas are not subject to a quota, expanding the H-1B pie. Since this large expansion of international students entering the US labor market did not substantially crowd out foreign-educated STEM workers' access to H-1B visas, this experience does not suggest that restricting international students would substantially crowd in more foreign-educated STEM workers to replace them.

Figure 4

STEM OPT participation and F-1 to H-1B transitions before and after the 2008 OPT extension, 2004–2019



OPT = Optional Practical Training

Source: Clemens, Neufeld, and Nice (2025, figure 8), based on SEVIS administrative data obtained from the US Department of Homeland Security under the Freedom of Information Act.

What about US-born students? Here too the evidence is inconsistent with substitution. A large body of research has investigated whether the presence of international students at US universities crowds US-born students out of higher education, including out of STEM fields. Although that research has found crowding out in a handful of elite schools where slots are effectively fixed, it fails to detect crowding out across the higher education system as a whole, where slots are flexible and expand with demand (Borjas 2007; Jackson 2015; Shih 2017; Ransom and Winters 2021). Increases in foreign student enrollment in fact cause increases in native student enrollment, in part because foreign student tuition revenue allows universities to expand programs available to all students, particularly in graduate education (Shih 2017; Bound et al. 2020; Jia et al. 2025).

EFFECTS ON US PRODUCTIVITY AND ECONOMIC GROWTH

The largest economic effects would arise not from direct, mechanical reductions to the institutions that train students, but from reduced STEM labor supply (Robinson et al. 2020). A workforce shrinkage of the magnitude in tables 1 and 2 (pages 8 and 9) will reduce aggregate productivity growth. There is strong and consistent evidence in the research literature that high-skill immigration drives US productivity and economic growth, with the largest effects from STEM-trained immigrants. Leading economists who consider all available policy levers to raise productivity in the United States conclude that the single lever with the greatest impact on productivity, backed by the strongest evidence, is policy to encourage high-skill immigration (Bloom, Van Reenen, and Williams 2019).

High-skill immigrants raise productivity through several channels. They patent at higher rates than otherwise comparable US-born workers (Bernstein et al. 2022). Those who arrived as international students patent at even higher rates (Hunt 2011). Beyond their own inventions, immigrant inventors raise patenting rates among their US-born colleagues (Bernstein et al. 2022). Inflows of foreign STEM workers raise patenting in US cities (Kerr and Lincoln 2010) and entrepreneurship in US regions (Tareque, Guzman, and Wang 2024). Foreign-born master's graduates raise entrepreneurship

rates, including among US-born entrepreneurs (Beine, Peri, and Raux 2024). Foreign STEM PhD students report greater preference for entrepreneurship than their US-born colleagues (Roach, Sauermann, and Skrentny 2020). Historical increases in barriers to skilled immigration caused measured reductions in US scientific productivity (Moser, Voena, and Waldinger 2014).

We translate this workforce effect into a long-run growth effect using the productivity elasticity estimated by Peri, Shih, and Sparber (2015). They estimate that an increase of 0.27 to 0.54 percent in annual TFP growth is caused by each one percentage point increase in high-skill foreign STEM workers as a fraction of the overall US labor force. High-skill STEM workers represent 4.7 percent of the US labor force; a 6.2 percent reduction in their numbers therefore equates to a 0.29 percentage point reduction in their share of the labor force. The Peri-Shih-Sparber elasticity thus implies a reduction in annual TFP growth of 0.08 to 0.16 percentage point. Hunt and Gauthier-Loiselle (2010) estimate these broader channels independently and find roughly similar magnitudes.

Over a ten-year period, lost annual productivity growth of 0.08 to 0.16 percentage point causes GDP at the end of that decade to be 0.79 to 1.57 percent smaller than it would otherwise have been. This is a percent decline in annual GDP, not a percentage point decline in annual growth of GDP. Amid the United States's $30.4 trillion economy in late 2025, that loss would be worth $240 billion to $481 billion each year—comparable to the disappearance of the entire economy of South Carolina (1.2 percent of national GDP), Utah (1.0 percent), or Wisconsin (1.5 percent).

After a decade, a sustained one-third decline in foreign STEM graduates would reduce annual real US GDP by as much as the entire economy of South Carolina, Utah, or Wisconsin.

This is a rough estimate that does not account for the outsize effects of workers in specific STEM fields most directly linked to productivity growth but constitutes the best quantitative evidence available currently. It is a long-term "static" estimate in the sense that it captures the ongoing effects *today* of a sustained reduction in student inflows *in all prior periods*. That is, it captures the losses we would be incurring today if student exclusion policies had prevailed in the past. It does not reflect the dynamic effects of beginning student exclusion today, from scratch.

CONCLUSION

The challenges facing America's high-skill immigration system have implications far beyond elite universities or coastal hubs. The United States has no real mechanism for recruiting foreign STEM talent directly from abroad. America's principal recruiter is its university system. Restrictions on duration of status, restrictions on or the rescission of OPT, and the reordering of H-1B allocation by seniority each strike a different stage of the pipeline that runs from that system to the US workforce. The September 2025 data on F-1 visa issuances show that these announcements have already produced a deterrent effect as large as the scenario we analyze. The survey evidence we summarize suggests the effect will continue to grow.

If that scenario is sustained, the US high-skill STEM workforce will be 6.2 percent smaller than it would otherwise be, and 11.5 percent smaller at the PhD level. Annual US GDP a decade from now will be 0.79 to 1.57 percent smaller—a loss equal to the disappearance of a mid-sized state economy. After 2008, when the United States greatly expanded employment opportunities for US-trained international STEM students, neither foreign-trained workers nor US-born students were crowded out. We see no reason to expect either substitution to reverse this process. These high-skill STEM workers lost to the United States won't disappear; they will supply their talents instead to competitor countries: For every 10 high-skill STEM workers barred from the United States by visa barriers, 6 supply their talents at home (such as China and India) and 4 go elsewhere (such as Canada and Germany) (Glennon 2023).

The cumulative cost to the United States would reach hundreds of billions of dollars per year after a decade. The true cost is likely larger still, for the reasons documented above: Immigrants founded a large share of America's most successful new firms; immigrant inventors raise the patenting rates of their US-born colleagues; and high-skill immigration has been the single most important policy lever for US productivity growth in recent decades.

It is not too late to avert these losses. Congress can prevent this sustained decline in international enrollment by taking concrete actions to stop interruptions to STEM graduates transitioning into

the US labor force. At least four distinct components of the primary pipeline are leaking talent but can be strengthened by better policy:

- **Prevent disruption of course of study:** First, students' status expiring in the middle of an academic program or before a period of work authorization needlessly requires a renewal stage during a course of study, which creates unnecessary uncertainty and friction. Congress can shore up certainty by guaranteeing that international students, scholars, and researchers admitted to US programs on F-1 and J-1 status can retain their status (subject to maintaining the terms of that status) for the length of the programs they came to complete, including any postgraduation employment.
- **Codify postgraduation employment:** Second, OPT is critical for the primary pipeline but faces unnecessary regulatory and legal uncertainty. Congress could address this by clarifying that the definition of F-1 status for international students includes postgraduation employment experience related to the field of study, as in the proposed Keep Innovators in America Act introduced earlier in 2026.
- **Increase access to work visas:** Most international graduates fail to get an H-1B or other nonimmigrant visa and so do not enter the labor force long term. Congress could make it easier for international graduates to secure H-1Bs by replacing the weighted H-1B lottery that prioritizes relative experience (and hence disadvantages recent graduates) with a ranking based on the compensation of foreign workers. Since F-1 students receive higher-salary job offers than other initial H-1B workers, ranking based on compensation would increase F-1 students' chances of securing H-1Bs, especially for doctoral graduates (Neufeld 2025).
- **Ease green card backlog:** Green card availability is a critical bottleneck at the end of the primary pipeline. The green card backlogs are increasingly deterring enrollment and thwarting transitions into the workforce. Kahn and MacGarvie (2020) and Khosla (2018) find that stay rates of international STEM graduates have fallen as wait times for green cards have ballooned. Congress could make more green cards available for STEM talent. Some of these issues were addressed in 2024 in the proposed FORTRESS Act, which would have made 5,000 green cards available for graduates from security partner countries

who have STEM PhDs in critical fields and are working on research projects critical to US national security.

REFERENCES

Amornsiripanitch, Natee, Paul A. Gompers, George Hu, and Kaushik Vasudevan. 2023. Getting schooled: Universities and VC-backed immigrant entrepreneurs. *Research Policy* 52, no. 7: 104782.

Beine, Michel, Giovanni Peri, and Morgan Raux. 2024. *The Contribution of Foreign Master's Students to U.S. Start-Ups*. NBER Working Paper w33314. Cambridge, MA: National Bureau of Economic Research.

Bernstein, Shai, Rebecca Diamond, Abhisit Jiranaphawiboon, Timothy McQuade, and Beatriz Pousada. 2022. *The contribution of high-skilled immigrants to innovation in the United States*. NBER Working Paper w30797. Cambridge, MA: National Bureau of Economic Research.

Bloom, Nicholas, John Van Reenen, and Heidi Williams. 2019. A Toolkit of Policies to Promote Innovation. *Journal of Economic Perspectives* 33, no. 3: 163–84. DOI: 10.1257/jep.33.3.163.

Borjas, G. 2007. Do foreign students crowd out native students from graduate programs? In *Science and the University*, ed. P. Stephan and G. Ehrenberg, pp. 134–49. Madison: University of Wisconsin Press.

Bound, John, Breno Braga, Gaurav Khanna, and Sarah Turner. 2020. A passage to America: University funding and international students. *American Economic Journal: Economic Policy* 12, no. 1: 97–126.

Clemens, Michael A., Jeremy Neufeld, and Amy M. Nice. 2025. *Brain Freeze: How International Student Exclusion Will Shape the STEM Workforce and Economic Growth in the United States*. Paper commissioned by the US National Academies of Sciences, Engineering, and Medicine for the "Reimagining STEMM Graduate Education and Postdoctoral Career Development" Summit. Washington: The National Academies Press.

Ganguli, Ina, and Megan MacGarvie. 2025. *International Students, Immigration Policies and Implications for Innovation*. NBER Working Paper 34212. Cambridge, MA: National Bureau of Economic Research.

Glennon, Britta. 2024. Skilled immigrants, firms, and the global geography of innovation. *Journal of Economic Perspectives* 38, no. 1: 3–26.

Glennon, Britta. 2023. How Do Restrictions on High-Skilled Immigration Affect Offshoring? Evidence from the H-1B Program. *Management Science* 70, no. 2: 907–30.

Hunt, Jennifer. 2011. Which immigrants are most innovative and entrepreneurial? Distinctions by entry visa. *Journal of Labor Economics* 29, no. 3: 417–57.

Hunt, Jennifer, and Marjolaine Gauthier-Loiselle. 2010. How much does immigration boost innovation? *American Economic Journal: Macroeconomics* 2, no. 2: 31–56.

Jackson, Osborne. 2015. *Does Immigration Crowd Natives into or out of Higher Education?* Working Paper No. 15-18. Federal Reserve Bank of Boston.

Jia, Ruixue, Gaurav Khanna, Hongbin Li, and Yuli Xu. 2025. *The Ripple Effects of China's College Expansion on American Universities*. NBER Working Paper 34391. Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w34391.

Kahn, Shulamit, and Megan MacGarvie. 2020. The impact of permanent residency delays for STEM PhDs: Who leaves and why. *Research Policy* 49, no. 9: 103879.

Kerr, William R., and William F. Lincoln. 2010. The supply side of innovation: H-1B visa reforms and U.S. ethnic invention. *Journal of Labor Economics* 28, no. 3: 473–508.

Khosla, Pooja. 2018. Wait time for permanent residency and the retention of immigrant doctoral recipients in the U.S. *Economic Analysis and Policy* 57: 33–43.

Moser, Petra, Alessandra Voena, and Fabian Waldinger. 2014. German Jewish émigrés and U.S. invention. *American Economic Review* 104, no. 10: 3222–55.

Neufeld, Jeremy. 2025. *The "Wage Level" Mirage: How DHS's H-1B proposal could help outsourcers and hurt US-trained talent*. Institute for Progress.

Peri, Giovanni, Kevin Shih, and Chad Sparber. 2015. STEM workers, H-1B visas, and productivity in U.S. cities. *Journal of Labor Economics* 33, no. S1: S225–S255.

Ransom, Tyler, and John V. Winters. 2021. Do foreigners crowd natives out of STEM Degrees and occupations? Evidence from the U.S. Immigration Act of 1990. *ILR Review* 74, no. 2: 321–51.

Roach, Michael, Henry Sauermann, and John Skrentny. 2020. Are foreign STEM PhDs more entrepreneurial? Entrepreneurial characteristics, preferences, and employment outcomes of native and foreign science and engineering PhD students. In *The Roles of Immigrants and Foreign Students in U.S. Science, Innovation, and Entrepreneurship*, ed. Ina Ganguli, Shulamit Kahn, and Megan MacGarvie, pp. 207–228. University of Chicago Press.

Robinson, Sherman, Marcus Noland, Egor Gornostay, and Soyoung Han. 2020. *The Short- and Long-Term Costs to the United States of the Trump Administration's Attempt to Deport Foreign Students*. PIIE Working Paper 20-11. Washington: Peterson Institute for International Economics.

Shih, Kevin. 2017. Do international students crowd-out or cross-subsidize Americans in higher education? *Journal of Public Economics* 156: 170–84.

Tareque, Inara S., Jorge Guzman, and Dan Wang. 2024. High-skilled immigration enhances regional entrepreneurship. *Proceedings of the National Academy of Sciences* 121, no. 37: e2402001121.

PETERSON INSTITUTE FOR INTERNATIONAL ECONOMICS

This publication has been subjected to a prepublication peer review intended to ensure analytical quality. The views expressed are those of the authors. This publication is part of the overall program of the Peterson Institute for International Economics, as endorsed by its Board of Directors, but it does not necessarily reflect the views of individual members of the Board or of the Institute's staff or management.

The Peterson Institute for International Economics (PIIE) is an independent nonprofit, nonpartisan research organization dedicated to strengthening prosperity and human welfare in the global economy through expert analysis and practical policy solutions. Its work is funded by a highly diverse group of philanthropic foundations, private corporations, and interested individuals, as well as income on its capital fund. About 16 percent of the Institute's resources in 2025 were provided by contributors from outside the United States.

A list of all financial supporters is posted at:
https://www.piie.com/about/transparency-policy.

PIIE is committed to ensuring pdf accessibility for people with disabilities. We are continually improving the user experience for everyone and applying the relevant accessibility standards to comply with the Americans with Disabilities Act.