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Gaurav Khanna

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Gaurav Khanna
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ABSTRACT

This paper examines the rise of high-skill migration from Asia to the United States over the past three decades and its consequences for both sending and receiving economies. Between 1990 and 2019, migrants from five Asian countries—India, China, South Korea, Japan, and the Philippines—accounted for over one-third of the growth in US software developers and a quarter of the increase in scientists, engineers, and physicians. Drawing on census microdata, visa records, and administrative sources, I show how US demand for talent in information technology, higher education, and healthcare interacted with Asia’s demographic and educational transformations to generate this migration boom. Policy reforms (notably the H-1B, F-1, and J-1 visa programs) and sectoral shifts—such as the internet revolution, declining public support for universities, and aging-related healthcare demand—created persistent needs for foreign students and workers. Asian economies were uniquely positioned to meet this demand through rapid tertiary expansion, strong STEM institutions, English proficiency, and diaspora networks. These inflows boosted US innovation, entrepreneurship, and service-sector productivity while fostering “brain gain” and “brain circulation” in Asia. Together, these trends reveal how talent flows from Asia have become central to the structure and growth of the modern US economy.

Gaurav Khanna
University of California, San Diego
School of Global Policy and Strategy
and NBER
gakhanna@ucsd.edu

From Asia, With Skills

Gaurav Khanna*

UC San Diego

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1 Introduction

Between 1990 and 2019, the share of US college-educated workers from five key Asian countries doubled to 7.3%. Over this period, migration from these countries contributed to over 38% of the growth in software developers, 25% of the increase in scientists and engineers, and 21% of the growth in physicians ([ACS, 2019](#)). In this article, I examine the rise in high-skill migration from Asia, arguing two key points related to its causes and consequences: First, specific factors uniquely positioned certain Asian countries to meet the United States’ growing demand for specialized talent. Second, these migration flows strengthened high-skill sectors in the US, with substantial impacts on both the US and Asian economies.

Recent migration from Asia has materially changed the US economy, which has undergone three decades of high innovation, service-led growth, and entrepreneurship in skilled sectors. Remarkably, countries like India – despite having just 5% of US per capita income and half its literacy rate in 1990 ([WDI \(2025\)](#) 2021 international \$) – played a pivotal role in expanding America’s high-talent workforce. While recent political, media, and academic discourse has largely centered on Latin American migration, the highly educated nature of Asian migration is poised to earn its place in the long history of how immigrants shaped America.

This paper begins with an investigation of broader trends, and how we got here. It focuses on the underlying reasons for migration from five Asian countries: India, China, South Korea, Japan, and the Philippines, with comparisons to other groups. Various push factors from these five countries and pull factors from the US reshaped the skilled workforce landscape.

This migration was concentrated in critical sectors, including higher education, information technology, entrepreneurship, innovation, and healthcare. I analyze how Asian migrants filled critical skill gaps and met the rising demand for these sectors in the US. Yet, trends in each sector

*Email: gakhanna@ucsd.edu. School of Global Policy and Strategy, University of California, San Diego. econ-gaurav.com. Thank you to Sam Bazzi, Breno Braga, and Hannah Postel for discussions, to Michael Clemens, Heidi Williams, Tim Taylor, and Jonathan Parker for comments, and to Braden Clark for excellent research assistance. Thank you to Ruixue Jia and Young Yang for sharing data. This manuscript is a preliminary draft prepared for publication in the *Journal of Economic Perspectives*.

differ by origin country, given underlying country-specific advantages. Using census data, visa records, and surveys, I explore both US demand-side factors and Asian supply-side dynamics that contribute to these trends.

Concurrently, I examine the broader economic impacts of such migration on the US economy. High-skill sectors have been an important driver of US value-added productivity (Jorgenson et al., 2016). These critical sectors have an outsized impact on the US. Innovation in high-tech sectors like IT, has downstream impacts on sectors that use technology as an input (e.g., car manufacturing), and thus has wider productivity implications. Furthermore, higher education and medical services have played a major part in the service-led growth of the US. Together, these findings underscore the significance of visa policies, the student-to-skilled worker pipeline, and the contributions of Asian-born professionals to innovation and productivity.

Looking ahead, several factors will determine whether the US can continue to attract and utilize talent from Asia. First, the political focus, particularly on student visas, and the highly contentious H-1B visa (the primary temporary work visa for college-educated workers), will determine policy. The H-1B program has recently been scrutinized, with policymakers calling for reform. At the same time, growing competition from other countries, such as Canada, Australia, and parts of Europe and East Asia, will affect the US's ability to compete for global talent. Together, these trends will decide where the next technological innovations, whether in AI or pharmaceuticals, may occur.

2 Economic and Policy Drivers of Skilled Migration

I begin by documenting the major trends in high-skill immigration from Asia and the policy environment that facilitated them. Historically, Asian migration to the United States accelerated after the passage of the Immigration and Nationality Act of 1965, which abolished restrictions and national quotas. The Act prioritized both family reunification and skills. Since 1990, Asian migration to the United States has been predominantly high-skilled, and at a scale and impact that is unprecedented. In 2019, among working adults in the US labor force, 78% of Indian-born and 63% of Chinese-born workers held at least a four-year college degree, compared to 39% of US-born workers (ACS, 2019).

Multiple push and pull factors drive flows of talent from Asia. The skill bias among Asian migrants is partly attributable to specific features of US immigration policy, and sector-specific US labor demand. Skill expansions, income growth, and demographic advantages in Asia help Asian countries supply a skilled workforce. Each of the five countries under study had a diverse set of characteristics that helped meet this US demand, including high-quality engineering schools in India and nursing schools in the Philippines, as well as rapid income growth and educational expansion in China.

2.1 The US’s Changing Need for Skills from Abroad

Technological change, evolving consumer preferences for specific services, and domestic policies have had a distinct impact on the US’s need for skilled labor from abroad. While these factors do not target any particular source country, migrants from Asia were especially well-positioned to meet the rising need for talent. Four distinct factors underpinned this surge in demand.

First, beginning in the early 1990s, the Internet began to be used for commercial purposes, resulting in a substantial increase in the number of Internet users. The decommissioning of the National Science Foundation Network in April of 1995 spurred nationwide commercial traffic on the Internet (Leiner et al., 1997). The entry and growth of tech firms, like Yahoo, Amazon, and eBay, contributed to the IT boom of the 1990s. This boom dramatically increased the demand for software developers and computer scientists (hereafter, CS).

While overall US employment grew by about 28% between 1990 and 2019, the number of CS workers grew fourfold from about 1 million workers in 1990 to 4.34 million in 2019 (ACS, 2019). According to the US Census, the number of employed individuals working either as computer scientists or computer software developers increased by 161% between the years 1990 and 2000. As a comparison, during the same period, the total number of employed workers with at least a bachelor’s degree increased by 27%, while the number of workers in other STEM (Science, Technology, Engineering, and Mathematics) occupations increased by 14%. These increases in employment were concurrent with increases in wages. From the US Census, we observe an 18% increase in the median real weekly wages of computer science workers between 1990 and 2000. The simultaneous increase in employment and real wages suggests an increase in the demand for CS workers, likely driven by the rapid rise in internet usage for commercial purposes. While many US-born workers acquired skills valued in the tech industry, the rapid pace of growth meant US firms also looked abroad to attract CS workers.

Second, technological innovation in the IT sector had broader impacts on tech-related industries. The National Science Foundation (NSF) estimates that in the 2000s, computer technology patents were the largest contributor to US patenting activity (followed by patents in digital communication), and the fastest-growing (NSF, 2019). Research and Development (R&D) expenditure has been rapidly growing since the 1990s, broadly led by private businesses. The R&D increase was further linked to the IT boom as much of the value-added growth in the early 2000s was driven by IT-using industries Jorgenson et al. (2016). US firms increasingly sought scientists and engineers – trained domestically and internationally – to drive innovation in a wide range of industries. Indeed, between 1990 and 2019, about one-fourth of the increase in Engineers employed in the US, was driven by those born in the five Asian countries under study.

Third, the US higher education sector underwent dramatic changes over the last few decades. These include sharp reductions in state support for colleges, which led public research universities to increase enrollment from full-fee paying foreign students (Bound et al., 2020). While state appropriations for public universities have been declining since the 1980s, there were particularly

large, dramatic decreases during the recessions in the early 1990s, the dot-com bust in 2001, and the Great Recession in 2008. The availability of international students changed the revenue model of US higher education, with the introduction of new master’s programs in STEM fields (Bound et al., 2021). The rise in students from China was particularly pronounced at public research universities, between 2005 and 2016, after which there was a rapid growth in students from India.

International faculty saw a concurrent increase in demand with the expansion of the US higher education sector ‘exporting services’ to an international consumer base. Many faculty were graduates of US universities themselves, and as universities cater to student demand from abroad, there was a coincidental increase in demand for foreign-born faculty. While declining state support was a significant driver of demand for international students from US universities, many students remained in the US and transitioned into the US labor force, particularly in high-tech sectors.

Fourth, demographic aging in the US has sharply increased healthcare utilization over the last few decades, placing sustained pressure on the supply of physicians, nurses, and long-term care providers (De Nardi et al., 2015; Jung et al., 2017; Auerbach et al., 2020). Yet, policy restrictions in the production of US-educated medical professionals imply that there is likely a shortfall of physicians and nurses (AAMC, 2021). These restrictions include a moratorium on new medical schools, fixing class size, capping federal funding for residencies, and freezing residency positions (Orr, 2020). Recognizing this shortfall in the early 2000s, US healthcare establishments have an increased demand for medical residents and, consequently, physicians from abroad. These were, in concordance with changes in US immigration policy that facilitated the migration of physicians, particularly for residency programs, and then established a pathway to the labor force.

Together, these factors determine the demand for high-skill talent from abroad. Some of these factors are related to domestic policy, such as the opening up of the Internet for commercial traffic, state funding for innovation, the fall in higher education support, and restrictions in the physician production market. Others are related to market forces and consumer demand, such as the increased demand for education, healthcare, and computing services. While none of these factors specifically target Asian countries, I argue below that Asian migrants were particularly suited to meet this rising demand from the US.

2.2 US Immigration Policy

The increase in demand from various sectors of the US economy was mediated through US immigration policy, which grants visas by ‘reason for entry’ into the US. Asian immigration to the US remained heavily restricted until the late 1960s. As Postel (2025) documents, the history of migration from Asia was marked by exclusionary laws and systematic barriers. This began to change with the 1965 Immigration and Nationality Act, and the removal of country-specific barriers.

Until about 1990, many immigrants entering the US labor market were originally granted entry via permanent residency or “green card” provisions. The post-1965 system emphasized family sponsorship, but generations of historical exclusion meant few family sponsors. Yet, since the

early 1990s, there has been a shift in US immigration policy, with the aim of attracting high-skill immigrants under ‘temporary’ status. As a result, most new high-skill migrants from Asia initially entered under temporary work status with the H-1B visa, under student status with the F visa, or as an exchange visitor (including scholars and physicians) with a J-1 visa.

Even before the 1990s, US immigration policy had a mild preference for high-skill workers. The focus of policy in the 1940s and 1950s was on pathways to permanent residency, and the 1948 Displaced Persons Act prioritized high-skill immigrants. The 1952 Immigration and Nationality Act established national quotas, but reserved 50% of each country’s quotas for high-skill workers. This was replaced by the 1965 Immigration and Nationality Act, which still strongly governs the granting of permanent residency today, whereby employment-based green cards are awarded primarily to individuals who were already in the US.

Employment-based green cards require US firms to petition to hire an immigrant worker and certify that they cannot hire a US citizen for the particular position. Most employment-based green cards are currently granted through an adjustment of status for individuals already in the US. As such, entering on a temporary work or student visa is the first step to entry for most high-skill migrants from Asia. [Bound et al. \(2015b\)](#) show that in 2010, temporary work visas accounted for 39% of the first visa status of IT workers aged 25–34, and student visas accounted for about 35%. In contrast, older cohorts were more likely to have entered through permanent residency pathways.

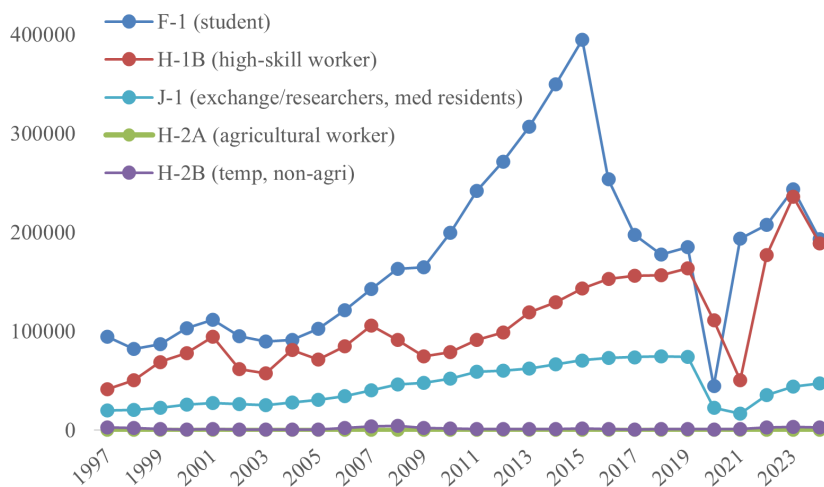


Figure 1: Visas granted to citizens of India, China, South Korea, Japan, and the Philippines. F-1 visas apply to students, H-1B visas for high-skill workers, J-1 visas for exchange researchers/medical residents, and H-2A/B visas for agricultural and non-agricultural work, respectively. Data from Fiscal Years 1997 to 2024. Author’s calculations using data from ([Department of State, 2025](#)).

Figure 1 shows visas granted to individuals from the five Asian countries. Several factors stand out: First, visas are predominantly issued to college students and graduates. Visas for students (F-1), high-skilled workers (H-1B), and researchers/medical residents (J-1) vastly outnumber those for low-skilled agricultural and non-agricultural work (H-2A and H-2B), despite media attention

and political focus on the latter. Second, starting in 2005, there was a sharp increase in F-1 student visas, peaking in 2015. As discussed later, the rapid growth in the 2000s, and the slump after 2016 were both primarily driven by China.¹ The recent sharp declines (following the Covid-19 crisis) were later met with a resurgence in student flows, primarily fueled by Indian nationals. Finally, H-1B visas have experienced steady growth since the 1990s; however, due to Congressional caps on the visas, this growth has been muted compared to student visas as a pathway. As discussed below, H-1B visas were predominantly granted to IT sector workers from India. Together, visa policies, along with the demand from US universities for international students and from the IT sector for tech workers, played a significant role in driving the skill bias in recent Asian migration.

Several key aspects of US immigration policy are essential to examine in order to understand the various pathways into the US economy. First, student visas are an important pathway into the US labor market. Unlike most other categories, student visas are uncapped and do not require a costly petition from a US-based employer, and so student visas have the largest room to grow. Although student visas are plentiful and inexpensive, they come with political costs to public universities that taxpayers expect to cater to local students. US immigration policy somewhat facilitates the transition from student visas to the US labor market, especially since graduating from a US university allows workers to temporarily join the US labor force through the OPT (Optional Practical Training) program. Each degree (bachelor’s, master’s, PhD) allows the student to work in the US on an OPT for one year, and an additional two years if the degree is in a STEM field. As discussed below, migrants from Asia have always been more inclined towards STEM fields; however, the STEM-OPT extension further encouraged Asian students to choose STEM fields once in the US (Anelli et al., 2023). In addition, US immigration policy grants an extra 20,000 H-1B visas for those with US graduate degrees, again incentivizing students to obtain a graduate degree from the US, and then stay on and participate in the US workforce. Together, these factors enable many Asian migrants to initially enter the US on a student visa, viewing higher education as a stepping stone into the US labor force.

Second, the US attempts to tailor immigration policy to areas and industries where there is a need. The H-1 visa was initially established by the 1952 Act, but it was not until reforms in 1990 that the current H-1B program came into existence. The H-1B visa is capped by a numerical amount determined by the US Congress, with exceptions for those employed at centers of higher education (e.g., faculty and scientists), and those in nonprofits. The uncapped H-1B facilitates the growing representation of foreign-born scientists, faculty, and researchers at US non-profit universities and research centers. The cap itself is raised and lowered after a process of deliberation and lobbying in Congress. Furthermore, the H-1B visa is demand-driven, in that firms and organizations must petition for workers (unlike many other countries, where skills determine visa success, often without requiring concrete job offers). The H-1B visa is restricted to ‘specialty occupations,’ and so employment must be in certain high-skill jobs that require ‘theoretical and practical application

¹The decline in 2017 was partly driven by changed requirements for English Language Programs (ICE, 2016).

of a body of highly specialized knowledge.’

Third, this needs-based focus also emerges in other aspects of high-skill migration policy. These include visas for entrepreneurs, managers within multinational firms, and for specific service occupations that require specialized skills.

To meet the shortfall of US physicians and nurses, immigration policy was tailored to attract medical professionals to stay and work in high-need areas. US immigration policy for nurses operates through Schedule A visa designations, which identify occupations facing chronic domestic shortages and therefore exempt employers from the labor certification process normally required for employment-based green cards. Under this provision, hospitals and healthcare institutions can directly sponsor foreign nurses—predominantly from the Philippines—without demonstrating the unavailability of US workers ([Abarcar and Theoharides, 2024](#)). Immigration policy also mediates the pathway from residency to clinical practice. Traditionally, International Medical Graduates (IMGs) may work in the US as medical residents on a J-1 visa. Traditionally, physicians are required to return to their home country for at least two years before they can apply for a temporary work visa in the US. However, the Conrad 30 Visa Program was established in 1994 to waive this home residency requirement as long as physicians transition to a longer-term work visa at the end of residency in a “medically under-served area” or “health professional shortage area.” To receive a waiver, a foreign physician must be recommended by an interested government agency. Since 2001, more than 18,000 foreign physicians have participated in the program, concentrated in rural and under-served areas. As [Braga et al. \(2024\)](#) show, the program responds directly to demand pressures: states facing greater physician shortfalls make fuller use of their waiver allocations, thereby channeling foreign-trained doctors toward underserved regions. Once again, visa waivers are concentrated among those from Asia, with the majority of participants coming from the Philippines, India, and Pakistan ([Ranasinghe, 2015](#)).

Together, these features of US immigration policy pointedly aim to attract specific migrants in distinct sectors of the economy. The next section describes why Asian-born individuals were particularly well-suited to meet these criteria.

2.3 Asia’s Advantage in Meeting Rising Demand

While US immigration policy facilitated the increase in demand from sector- and occupation-specific changes, migrants born in Asian countries had a distinct advantage in meeting this rising demand from the US.

First, large and growing youth populations offered these countries a demographic advantage. Over the course of the 1990s, many Asian countries experienced a dramatic increase in the number of young people completing high school and undergraduate college education. These are first reflected in simple demographic trends, whereby India has more youth (between 20 and 34 years of age) than the entire US population, and second in education policies across Asian countries. For instance, China’s 211 Project dramatically increased the size of the higher education sector, increasing the

number of colleges from 1,000 in 1999 to 2,900 in 2021, and the number of graduates from 1.1 million to 7.9 million over this period (Jia et al., 2025). In China, the gross enrollment ratio in tertiary education expanded from 3% to 75% between 1990 and 2023, while in India, this ratio grew from 6% to 33% (World Bank, 2025). In Korea, the gross enrollment ratio expanded from 33% in 1990 to 100% by 2021.

Second, and related, is sufficient mass in the right tail of the skill distribution, enabling the US to select top talent. Under standard assumptions that talent and ability distributions are similar in the US and abroad, the density of highly talented innovators would be the same in various countries worldwide. Yet, given the large number of college-ready and college-educated youth in South and East Asia, the quantity of potential talent is substantial. US firms and institutions can choose from a larger pool of talent, and attract them with higher wages and career opportunities.

Third, limited opportunities at home for such talent in Asian countries imply that the returns to such skills are far more valuable in the US, than at home. Given the substantial wage differentials in high-skill sectors, much talent from India, China, and the Philippines initially looked to the US. For instance, H-1B lottery winners earn substantially higher wages in the US, than in India. (Clemens, 2013) uses personnel records from a large Indian multinational information technology firm to compare the earnings of H-1B lottery winners and losers. Exploiting the random allocation of visas, the paper estimates a causal return to moving a software developer from India to the United States. They find a six-fold increase in earnings (in exchange rate terms), highlighting the substantial wage premium associated with US employment. These findings underscore the high returns to human capital in the US—potentially driven by technological complementarities and location-specific spillovers. In contrast, potential migrants from high-income regions (say, Europe) would have ample opportunities at home to employ their talent. To attract talent from such high-income countries, US firms may need to offer substantially higher wages. Being able to attract top talent at relatively lower wages from a large talent pool is what makes countries in Asia particularly attractive for US employers.

In a simple (Roy, 1951)-style framework, the above three factors would enable Asian countries to dominate the flow of high-skill migrants to the US. Limited opportunities for students and workers at home, combined with a large number of talented youth in the right tails of the aptitude distribution, allow US institutions to tap into such talent. For instance, the fact that US wages are significantly higher than those in India, but not substantially higher than those in Germany, implies that workers from India are more likely to take advantage of the H-1B program.

However, a few other significant events reinforced these trends. Fourth, rapid income growth in Asian countries increased the affordability of overcoming the cost of migration. China’s per capita GDP in PPP-adjusted constant 2021 dollars has increased more than 13-fold since 1990. Khanna et al. (2023) show that the manufacturing boom in China (after it joined the WTO) led to substantial income gains and, consequently, student migration to the US. Households in Chinese cities that grew as a result of favorable tariffs sent more youth to the US, as they were now more

able to afford a US higher education degree. Such income gains were more limited in other parts of the world that were potential sources of migrant students and workers.

Fifth, early investments in high-quality STEM institutions allowed Asian-educated students to meet the growing skill requirements of the US. The first Indian Institutes of Technology were established in the 1950s, offering high-quality skill development, and are among the highest-return universities in the world, when compared to a common labor market (Martellini et al., 2024). Furthermore, the urban population in South Asia was widely comfortable and trained in English, making many of these skills transferable across borders. Recent investments in China, under the 211 Project and Project 985, have aimed to replicate the success of high-quality institutions abroad through substantial increases in funding and infrastructure. Korean and Japanese technological universities were established to drive growing local high-tech industries. Many of these STEM-related skills may also be complementary to the education offered in US institutions (or workers trained in Canada, the UK, or Australia), and US firms may seek such talent to work in teams with their own locally educated workforce (Peri et al., 2015).

Similarly, the Philippines has long held a structural advantage in supplying nurses abroad. Its nursing education system was modeled on the US system during the twentieth century, with English-language instruction, US-aligned curricula, and licensure standards designed to meet international requirements. This institutional alignment made Filipino graduates particularly attractive to US employers under the Schedule A visa category. Moreover, Abarcar and Theoharides (2024) document that the Philippines has an extensive network of nursing schools, many established to serve the export market, which expanded rapidly in response to overseas demand. As a result, US policy shocks—such as visa expansions or increased hospital demand—translate quickly into higher domestic nursing enrollment and training capacity in the Philippines.

Sixth, professional and alumni networks gave Asian countries a further advantage. For instance, India had sent a fair number of top engineers during the earlier hardware boom of the 1970s and 1980s, and the diaspora helped establish strong connections and a reputation for well-trained workers (Saxenian, 1999). As Bhatnagar (2006a) notes, Indian professionals in Silicon Valley built networks and established strong reputations, which they then leveraged to help attract the next wave of Indian migrants to the expanding IT sector within US firms. The reputation was further bolstered by the offshoring of low-level tasks during the Y2K crisis, and the 12-hour time lag that allowed coding to be easily sent to India (Arora and Athreye, 2002).

Yet this rapid late twentieth-century rise in Asian migration to the US also reflects the possible release of long-suppressed demand created by decades of exclusionary policy. For much of US history, immigration from Asia was effectively prohibited: naturalization was barred from 1871 to 1952, and entry was restricted for those “ineligible for citizenship” from 1917 onward (Postel, 2025). When these legal and network constraints were finally relaxed, migration rose rapidly from a very low base. The long history of exclusion thus also shaped both the timing and the high-skill composition of Asian immigration.

While Asian immigrants were well-suited to meet this rising demand from the US, the next section analyzes how much of the growth was attributable to push and pull factors.

2.4 Major Occupations of Asian Migrants: The Role of Demand and Supply

The role played by demand for certain skills from the US, and the supply from Asian countries is evident in the occupational concentrations of Asian migrants. Figure 2, using Census data on college graduates in the US labor force, shows that from 1990 to 2019, the fastest-growing occupation among Asian-born immigrants was software development, followed by managers, computer scientists, nurses, faculty, scientists, accountants, engineers, and physicians. As discussed in the previous sections, these are primarily the occupations for which the US had a growing demand, and Asian countries were well-suited to supply.

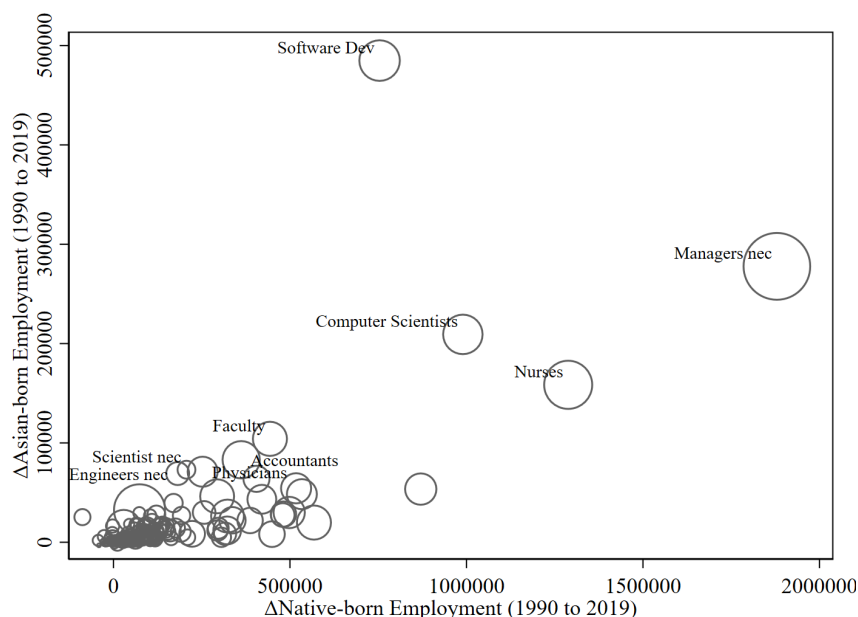


Figure 2: Change in number of college-graduate workers between 1990 and 2019, by native-born and Asian-born employment. IPUMS occ90 occupation codes, ‘nec’ is ‘not elsewhere classified.’ ‘Faculty’ includes HS/College subject instructors. Source: 1990 US Census and 2019 ACS.

Yet, a natural question is: Does this high growth in specific occupations primarily reflect the US demand or supply-side push factors from Asia? This answer to this question has significant implications for the impacts of high-skill migration on the US labor market. If, for instance, supply-side forces from Asia were driving the growth in occupation-specific employment in the US, then we may expect Asian migrants to ‘crowd out’ US-born workers in these specific high-skill occupations. If, on the other hand, the occupation-specific growth reflects rising US demand, and the supply of local talent is constrained, then crowding out of US-born counterparts is less likely to occur.

Of course, both demand and supply forces are at play. However, the fact that Figure 2 shows a roughly upward-sloping relationship between the growth in native-born and Asian-born employment

suggests that US demand-side factors play a dominant role. For instance, innovation in the tech sector increased the demand for all software developers, whether born in the US or Asia, resulting in growth for both US-born and Asian-born software developers. That is not to say the growth in US-born programmers may have been higher in the absence of supply from Asia. Had the relationship been downward sloping, that would suggest Asian-born programmers were displacing US-born ones rather than meeting a growing demand.

For this narrative to be true, at least a few constraints must exist. First, supply from abroad must be constrained so as not to swamp the US labor market. This can be either by population demographics (not enough workers abroad), or immigration caps. While population demographics likely constrain supply from smaller countries elsewhere in the world, large populations in the Asian countries under study make it unlikely that this is the constraint. In contrast, US policy imposes strict caps and limits, such as for the H-1B program or the Conrad 30 physician visa waiver.

Second, why was US demand for these occupations not satisfied by US-born workers? For this, there have to be certain frictions in the supply of US workers. For instance, fixing medical school class sizes, freezing residency positions, and imposing moratoriums on opening new medical schools likely made it difficult for US-born workers to meet the rising demand for healthcare professionals. While there were no similar constraints on scientists, engineers, and computer scientists, acquiring such skills can be challenging and costly. Furthermore, as these are non-routine tasks, firms are likely to seek out top innovators, rather than workers who meet some minimum criteria.

Third, this upward-sloping relationship in Figure 2 may also reflect the fact that immigrant-led innovation (Kerr and Lincoln, 2010), and complementarities in production will increase the demand for native-born employment (Peri et al., 2015). That is, more tech workers may push out the technology frontier at these firms, leading to firm growth, and the hiring of complementary workers (managers, HR personell, and warehouse workers) as well.

Together, these trends suggest that demand from the US was an important driving force, and Asian countries were well-positioned to meet this demand. Yet, as discussed in Section 2.3, supply-side factors, are likely to determine the specific composition of occupational groups.

In subsequent sections, I build off of Figures 1 and 2, to study the following groups in detail: students and faculty (the higher education sector), software developers and computer scientists (the IT boom), managers and scientists (entrepreneurship and innovation), and nurses and physicians (medical professions). For each group, I dig deeper into the (1) Demand-side factors from the US, (2) implications and downstream impacts on the US economy, and (3) unpack why Asian countries were best suited to meet this demand.

3 The Higher Education Sector: Students and Faculty

I begin by examining the role of international student migration, a conduit through which Asian talent enters the US economy. International student migration affects not only US higher education

but also the broader economy, as students often transition to the US labor force. For instance, in 2010, 27% of all foreign-born workers and 35% of foreign-born IT workers in the US initially arrived on a student visa (Bound et al., 2015b). Asian-born students are heavily concentrated in STEM fields, such as computer science, engineering, and mathematics. Since the number of student visas is not capped – unlike work visas – many migrants use them as a stepping stone into the high-tech US labor market.

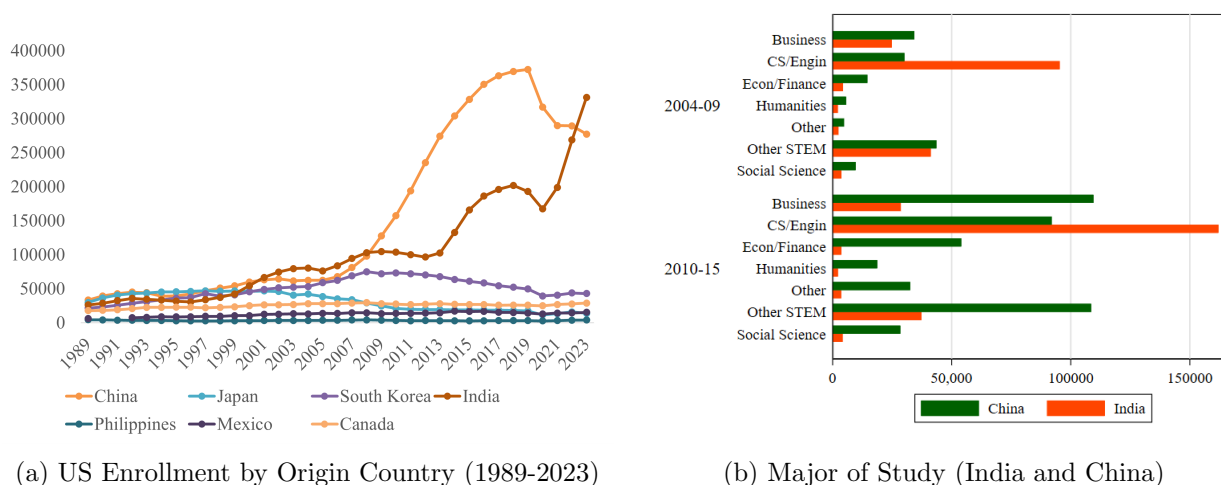


Figure 3: International Students at US universities. Left panel: Author’s calculations using Open Doors Data (Institute of International Education). International students in the US, by country of origin (1989-2023). Years represent the start of the academic year. Right panel: Author’s calculations using visa data obtained through a FOIA request. Numbers represent the sum of all new visas granted during a period. “CS/Engin” majors include computer science and engineering, while “Other STEM” excludes that category.

Trends. Figure 3a plots the trends in US international student enrollment by foreign country of origin. As this is overall enrollment (a stock measure, that includes seniors in college), these trends lag behind new visas issued to freshmen students (a measure of new flows).

A few important changes in patterns over time stand out. First, enrollment from China started increasing rapidly in the mid-2000s, and grew rapidly till about 2016. The slowdown was followed by a sharp decline in Chinese enrollment during the Covid-19 pandemic, which never really recovered. The initial growth and slowdown in enrollment, lag the visas granted (Figure 1), which is a measure of more immediate changes to demand and new flows.

Second is the steady rise in enrollment from India, which increases more rapidly after 2014, and then again jumps up after the end of the Covid-19 pandemic. Third, while not shown, the large initial increase in enrollment from China was for undergraduate degrees, whereas enrollment from India was initially in master’s programs, and only recently, also certain undergraduate programs. Finally, although other Asian countries were major sources of international students in the 1990s, they did not keep pace with the growth in flows from China and India.

Figure 3b plots the major of study for the two largest source countries: India and China. In the early growth period of 2004-09, India focused more on computer science (CS) and engineering majors, while Chinese students were relatively more concentrated in Business and other STEM majors. During the subsequent growth period, Chinese students in Business, CS/Engineering, and other STEM majors experienced uniform and substantial growth. Yet, for Indian students, there was little growth in business and other STEM majors, while the CS and engineering majors grew rapidly. These patterns of major specialization have subsequent downstream impacts on the labor force after these students graduate.

In the 2023/24 academic year, 23% of Chinese students and 43% of Indian students enrolled in Math/Computer Science majors (Institute of International Education, 2024). For Japanese students, the largest major was Business (18.3%), and for Koreans it was Engineering (17%).

What Drives Growth in International Student Enrollment? Why has the surge in international students since 2005 come primarily from Asia? While India and Korea had consistently been a source of foreign students, the initial sharp increase in undergraduate students began with China in 2005. At least a few important features drove this growth. First, there are reasons related to affordability: when China allowed the yuan to appreciate in 2005, US education became increasingly more affordable for Chinese students. Second, and relatedly, the manufacturing export boom raised Chinese incomes, boosting student flows from growing cities. After China joined the World Trade Organization (WTO) in 2001, it led to an export-led boom in incomes, and a rising goods deficit for the US. This goods deficit, however, cycles back as a surplus in US exports of higher education services. Indeed, Khanna et al. (2023) show that Chinese cities that faced more preferential tariff decreases from trade liberalization, were more likely to send international students to the US, partly because of rising incomes in these cities.

Third, China’s undergraduate expansion further led to a surge in graduate students four years later. China’s 211 Project, launched in 1999, upgraded universities and colleges, and expanded undergraduate enrollment. Over the next two decades, the number of universities in the country increased from 1000 to 2900, and the number of students enrolled grew from 1.1 million to more than 7.9 million (Jia et al., 2025). This uniquely rapid expansion was reflected in increased international student flows to most countries around the world four years later. Indeed, Jia et al. (2025) show that this massive college expansion in China, drove a surge of graduate students to the US, fueling new STEM programs, university revenues, and local economic growth in US college towns.

Given the US’s advantage in higher education services, and the highest-ranked research universities, most of these students came to the US. Between 1998 and 2019, Chinese enrollment in Australia increased by a factor of 37, in the UK by a factor of 41, and in Canada by a factor of 26. But despite the massive growth to other destinations, even in 2019, there were about as many Chinese students in the US, as all the other three countries combined (UNESCO, 2025). That is, the income-induced outflows from China were disproportionately concentrated in the US. Similarly,

while there were increased flows from India and South Korea to other destinations (especially the UK), given the US’s large and high-quality college sector, most flows were concentrated in the US.

Importantly, this increased demand from Asia for a US higher education degree, happened to coincide with US colleges needing to enroll more foreign students. US public universities faced severe funding cuts from state governments after the Great Recession. This substantial decrease in state appropriations induced universities to change their enrollment mix from local, subsidized students to full-fee-paying international students (Bound et al., 2020). The corresponding growth in enrollment from Asia was concentrated in large, non-capacity-constrained public universities, which expanded their enrollment in Engineering and STEM fields, such as Purdue, Michigan State, Ohio State, Penn State, and Indiana. Around the Great Recession, between 2007 and 2012, public research universities experienced a 133% increase in foreign first-time undergraduate enrollment, while private research universities experienced a 61% increase.

The rapid growth from China halted in 2016, as new student visas fell (Figure 1), and enrollment tapered off (Figure 3a). The 2017 fall in visas followed changes to requirements for English Language Programs (ICE, 2016). But thereafter, changes in political rhetoric targeting Chinese nationals at universities and in the workplace, combined with rising tensions in the lead-up to the 2018 trade war, and the expulsion of students with ties to institutions in China that received military funding, contributed to the decline in Chinese enrollment. This decline was concentrated in public universities in red states, and particularly in sensitive fields flagged by the US government (Chang et al., 2025). The concurrent expansion of local Chinese universities, and of universities in Australia, Canada, and the UK, helped divert these potential students away from the US.

In 2014, almost a decade after the rise in enrollment from China, enrollment from India began to rise. As incomes rose in India and a large youth population completed high school, the flow of international students, particularly those pursuing STEM master’s degrees, grew rapidly. Local constraints in the Indian higher education sector led to increasing competition for limited seats at high-quality Indian universities. As a result, a burgeoning youth body that finished high school, and could afford to go abroad, looked to the US and the UK. The post-COVID-19 resurgence in international student flow has been primarily driven by Indian students, to the extent that by 2023, the number of Indian students enrolled in US universities surpassed that of students from China.

One important distinction between international student flows from India and China is reflected in their motivation for entering the US labor force. While students from India may envision a US degree as a stepping stone into the US labor market, many Chinese students do not transition to the US workforce. The Optional Practical Training (OPT) program allows students to work in the US after graduation for at least one year, and for up to three years for those with a STEM degree. Transition rates from student status to OPT status are inversely correlated with origin-country GDP per capita (Bound et al., 2021). Richer countries, such as Korea, have relatively lower transitions to OPTs, given the opportunities available back home. While the Indian economy is growing, limited opportunities induce many students to transition to the OPT – in 2015, more

than 90% of Indian Master’s students in our administrative visa data, switched to the OPT (Bound et al., 2021). Yet, the transition rates for students from China were lower, at about 70%.

As a significant proportion of students from Asia consider US higher education as a pathway to the labor force, trends in student flows may be further driven by local recessions and economic growth in the US. Consequently, as these students join the US economy, they may also contribute to its growth.

International Researchers and Faculty. International scholars at US universities are heavily represented by China, India, Japan, and South Korea. These four countries with the top four sources of scholars for the entire first decade of the 2000s, and even in 2024, the top three sources are China, India, and South Korea (Institute of International Education, 2024).² In 2024, China accounts for 21%, India 16%, and South Korea 6.6% of international scholars on temporary visas.

Many scholars first enter as students and transition to the US higher education sector after completing their graduate degrees, and down the line, contribute to high-quality research and publications in the US. Stuen et al. (2012) finds that increases in foreign PhD students lead to higher publication and patent counts in science and engineering departments in the US. The internationalization of the student body increases both the demand for international scholars, and the supply. Universities are exempt from the H-1B cap, and many scholars first begin as an OPT before transitioning to an H-1B.

Impacts on the US Economy. Perhaps the most significant impact of student migration has been on US universities. Public universities, facing state funding cuts, offset revenue losses by enrolling full-fee-paying international students. This strategy allowed them to maintain quality, focus on research, and keep in-state tuition low by cross-subsidizing local students (Bound et al., 2020).³ Between 2010 and 2016, only 6.6% of Chinese undergraduates at US research universities received funding from the university, with most students paying themselves and providing much-needed revenue for the universities.

Many students from Asia are particularly enrolled in revenue-generating master’s programs, and contribute substantially to overall university revenues. These master’s programs are concentrated in STEM fields, with students from India particularly concentrated in Computer Science master’s programs. In 2023, among full-time students in science, engineering, and health master’s programs, there were more temporary visa holders than US citizens (Smith et al., 2024). Cross-subsidization of US students works both through revenue sharing, and a graduate student workforce engaged in teaching and research, which allows the university to enroll more local undergraduates while

²Institute of International Education data defines international scholars as scholars on non-immigrant visas engaged in academic activities and not enrolled as students at a US college or university. As many scholars may have transitioned to a permanent resident status, the numbers here are likely an undercount.

³Bound et al. (2020) combine individual-level international student data obtained through FOIA requests with university-level enrollment data from IPEDS. They exploit state budgets shocks to show that cuts to higher education funding led universities to offset revenue losses by enrolling more international students, especially from China.

maintaining research quality (Shih, 2017).

This cross-subsidization of the local students was made explicit in a 2016 public letter from University of California president Janet Napolitano, which states: “*California’s situation is not unique. Nearly every state in the nation has faced this Hobson’s choice, and they have all reached the same decision: open doors to out-of-state students in order to keep the doors open for in-state.*”

The impacts of enrolled students are not merely concentrated in the universities themselves, but also in the local economies surrounding colleges, and broader college towns, through tuition revenues, and spending on various activities in areas surrounding universities. Indeed, the US’s comparative advantage in higher education services has led to higher education service exports adding \$56 billion to the US current account in 2024 (Bureau of Economic Analysis, 2025).

Indeed, Jia et al. (2025) show that the influx of Chinese students following China’s college expansion reshaped US higher education and local economies. Universities responded by creating new STEM master’s programs and expanding enrollment, and college towns experiencing larger inflows saw stronger job creation, highlighting the broad economic spillovers of international education.

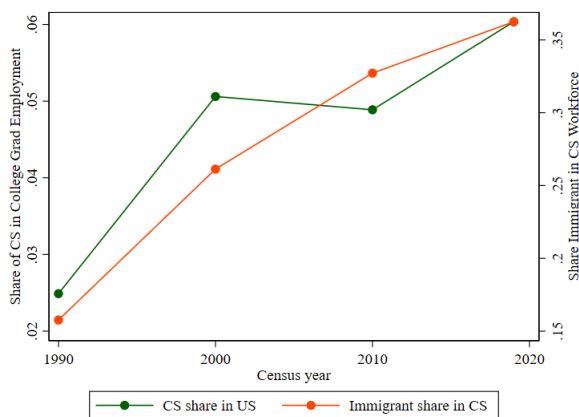
In the long run, as Asian-born students join the US labor force, their impact is felt more broadly in the US economy. Many international graduate students eventually become faculty, contributing to research production, patenting, and teaching at US universities. This is particularly true for PhDs, where approximately 85% of US PhD graduates from India and China remain for at least 10 years (Finn and Pennington, 2018). Yet, there is heterogeneity by Asian country of origin in such stay rates. Looking at just Science & Engineering US PhDs that graduated between 2017 and 2019, 83% of Chinese, 86% of Indian, but only 50% of South Korean graduates were in the US in 2023 (NCSES, 2025).

Many Asian-born graduates transition to high-skill sectors in information technology and health-care (Bound et al., 2015b), which are examined below. The H-1B has a separate allocation of 20,000 visas for individuals with a US graduate degree. The first step in transitioning is through an OPT, and transition rates vary by country due to differing home opportunities: over 60% of undergraduate and 90% of master’s students from India move to work under Optional Practical Training (OPT), while this proportion is significantly lower for students from other Asian countries. This pipeline from student visas to the skilled workforce has crucial implications for innovation and the growth of high-skill sectors (Kerr, 2008).

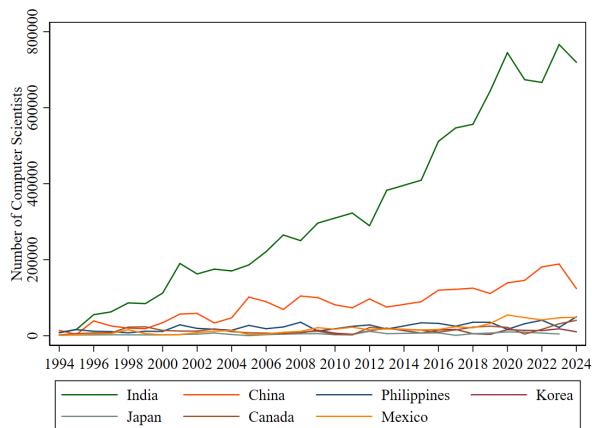
4 Computer Scientists and the IT Boom

While higher education serves as the gateway, the influence of Asian migrants extends into several industries. One major industry for Asian migrants is the Information Technology (IT) sector.

Trends. The rise of Internet commerce made IT occupations—computer scientists, software developers, programmers—the fastest-growing occupation in the 1990s, increasing by 112% between



(a) CS Growth and Immigrant Share



(b) CS Workers by Origin Country (1994-2024)

Figure 4: The Growth in Computer Science Employment, and Immigration. Left Panel: Computer scientists as a share of all college-graduate workers in the US (left axis) and Foreign-born CS as a share of all CS in the US (right axis). Authors’ calculations using the US Census 1990-2019. Right Panel: Computer Scientists and Software Developers in the US, by country of birth (1994-2024). Author’s calculations based on Current Population Survey (CPS) ASEC data. Computer scientists are defined as having occ90 codes 64 and 229. Includes naturalized citizens.

1993 and 2010. This growth was particularly fueled by Asian-born immigrants. By 2010, one-third of US IT workers were foreign-born, predominantly from India. By 2019, Indian-born individuals were 29% of all STEM workers in the US (AIC, 2022).

Figure 4a shows that even though college graduate employment was growing rapidly in the US, CS employment was growing even faster. The share of CS as a fraction of all college graduates in the US more than doubled between 1990 and 2020 (left axis). Concurrently, the share of foreign-born workers in CS occupations also more than doubled, from about 17% to 36%. As Figure 4b shows, this growth in foreign-born representation came particularly from India: CS growth from India far outpaced those from China and other countries.

This boom coincided with the H-1B visa program, which targets “specialty occupations.” The Immigration Act of 1990, which established the visa required “*theoretical and practical application of a body of highly specialized knowledge in a field of human endeavor.*” US Congress did raise, and subsequently lower the cap based on lobbying from various groups. By 2014, 86% of all H-1B computer scientists were from India (5% from China), and in 2023, the latest data show that 78% of H-1B visas went to Indians (Department of State, 2025). As the cap was binding in most years, the growth was constrained by the cap. However, the H-1B program has recently faced scrutiny for exploitation by large Indian outsourcing firms, that may pay lower wages than more traditional US IT firms.

Why India? Figure 4b shows that the major growth in the immigrant computer science workforce was driven by India. Other Asian countries lagged far behind, and even neighboring nations

like Canada and Mexico sent relatively fewer workers. While the reasons for the relatively lower immigration from other countries vary (Canada has good options at home, and Mexico’s STEM education sector is only recently growing), India’s edge comes from a few distinct factors.

India had some top engineering schools founded in the 1960s-70s. [Martellini and Sockin \(2024\)](#) estimates college quality by measuring labor market earnings of graduates, and finds that out of the top 18 colleges around the world, only 1 (rank 12) was not in India. The other 17 were Engineering colleges in India. Relatedly, proficiency with the English language gave India an edge over its other Asian counterparts.

Second, the hardware boom of the 1980s established a diaspora, and alumni networks that facilitated the flow of IT-related migration in the 1990s ([Saxenian, 1999](#)). During the Y2K crisis, US firms outsourced work to India, and vetted their coding skills. The 12-hour time lag allowed US companies to send work at the end of the US workday and pick it up as the workday ended in India. Afterward, a strong reputation was established, and US firms increasingly hired Indian workers. [Bhatnagar \(2006b\)](#) notes that Indians in Silicon Valley “*built personal networks and valuable reputations and used their growing influence within US companies to help Indian companies get a foot in the door*” in the expanding IT sector.

Finally, while the Department of Labor sets wage floors for H-1B workers, Indian workers do offer a wage advantage over their counterparts from Canada and Germany. A large number of young individuals in the right tail of the talent distribution enabled HR teams at companies to invest in the fixed costs associated with targeting recruitment from India.

In all, US employers may have found a perfect storm in India’s talent pool: a huge cohort of young, tech-trained workers, willing to work for lower (but life-changing) wages. Other Asian counterparts did not have similar advantages, including English proficiency, diaspora networks, and (compared to Japan and Korea), a wage advantage.

Brain Drain, Brain Gain and Brain Circulation. A meaningful fraction of high-skill Indian-born computer scientists reside in the US. One obvious question is whether this leads to brain drain to the detriment of India? In contrast, it may well be that the prospect of migrating to the US and earning wages that were 4-6 times higher ([Clemens, 2013](#)), induced many Indians to accumulate skills and human capital valued abroad. [Khanna and Morales \(2025\)](#) show that students and workers in India acquired computer science skills to join the rapidly growing US IT industry, encouraging a ‘brain gain.’ But as the number of US visas was capped, many remained in India. Furthermore, H-1B visas expire after six years, and the wait for a US green card is both costly and lengthy for Indian nationals. As a result, about 24% of Indians leave the US after 6 years, and many return to India with skills acquired abroad. This ‘brain circulation’ complements the initial brain gain and builds a large IT workforce in India, enabling the growth of Indian IT firms. Indian firms eventually surpassed the US in IT exports, often as more work is offshored to India.

This shift in IT production from the US to the other side of the world in India, was partially

facilitated by quirks of US immigration policy: specifically, the binding H-1B caps, and the costly green card process.

A few criteria facilitated brain gain in India. First, there was a substantial wage difference between India and the US, which encouraged students in India to vie for the limited spots. Second, there is uncertainty about the likelihood of migration when investments in education are made, particularly as the cap is oversubscribed. Third, the probability of migrating was not negligible, and nor was it too high (which would drive brain drain). Fourth, the Indian higher education sector responded quickly, expanding computer science (CS) education in top schools. Fifth, the skills required were in a highly productive sector, with possibilities for innovation spillovers. In the absence of innovation, India may be saddled with ‘too many’ computer scientists, all simply waiting to go abroad. Sixth, diaspora links and return migration may facilitate the flow of ideas (brain circulation), and remittances in these sectors may encourage more business investment in the home country. Together, these factors helped facilitate a brain gain in India, and a subsequent IT boom.

Impacts of Tech Sector Migration. The influx of Indian tech workers impacts not just the US tech sector but the broader US economy. First, Indian tech workers help expand IT sector production in the US. Yet, they also facilitate offshoring certain aspects of production to India over time. In some firms, this may entail specialization in new product development at US headquarters, but software coding in their India offices. This rapid expansion in production in both the US and India, however, deteriorated the US’s terms of trade.

Second, the impacts of US-born workers are a much-studied topic. A large body of research uses matched administrative data on H-1B petitions, worker earnings, and firm employment to estimate the effects of high-skilled immigration on US labor markets (Peri et al., 2015; Ottaviano and Peri, 2012; Bound et al., 2015a; Mahajan et al., 2024; Glennon, 2024; Doran et al., 2022; Kerr and Lincoln, 2010). These studies exploit variation generated by H-1B visa-cap, H-1B lotteries, other policy changes, and differences across firms and regions in H-1B dependence to identify causal impacts on wages, employment, and innovation.

Indian-born CS may lower wages for US-born computer scientists, but more computer scientists raise wages for complementary jobs where natives are concentrated. As IT firms hire more Asian-born programmers, the demand for managers, HR workers, and complementary occupations increases. As a result, wages for these complementary professions may rise, and US-born workers may switch into these positions, potentially away from programming tasks. The impact on computer science (CS) workers themselves may be ambiguous if immigrant CS workers are particularly involved in innovation and raise wages broadly across the firm, but still face meaningful competition from more programmers (Bound et al., 2015a). Furthermore, over time, outsourcing companies started winning almost 20% of H-1B visas, and may be paying relatively lower wages than other tech firms. Indeed, Turner (2022) leverages changes to the H-1B cap to show that a 10 percentage

point increase in immigrant STEM workforce lowers wages by 1 percent.

Yet, some of the largest gains from tech sector immigration may actually be to workers outside the tech sector, as consumers use better software, and firms utilizing more IT inputs see productivity gains (Khanna and Morales, 2025). Prices of software, internet publishing, data processing, programming services, and computer systems design fell rapidly in the 1990s and 2000s, while the quantity index of these products saw a massive surge (BLS, 2025). These reflect how consumers in the US now have access to better software, and applications, partly as a result of Asian-immigrant innovation and participation in the US IT sector. Furthermore, as Jorgenson et al. (2016) argue, many sectors of the US economy (e.g., auto manufacturing and banking) now rely on IT products as inputs into production or as part of the products they sell. As a result of the growth in the IT sector led by Asian immigrants, these downstream sectors experienced significant productivity gains, far outpacing those in non-IT sectors. The gains from the Asian-driven boom were felt widely across the entire US economy.

While political and media attention often focuses on whether Asian immigrant IT workers displace natives, the benefits to consumers and the broader economy have been relatively understudied. At the same time, the dynamics of offshoring to India contribute to the nuanced debate between brain drain and brain gain from Asian countries. Ultimately, the positive impact of tech workers in both the US and India is driven by their high propensity to innovate and create new products, which is discussed in more detail below.

5 Entrepreneurship and Innovation

Asian-born immigrants play an outsized role in the US’s capacity to innovate, create new products, and establish new enterprises.

Innovation. In science and engineering, many studies highlight these roles, including participation in the National Academy of Science, Nobel Prize recipients, and high-quality publications (Chellaraj et al., 2008; Black and Stephan, 2010; Gaulé and Piacentini, 2013). More broadly, immigrants are also more likely to innovate (Bernstein et al., 2022), and drive more innovation of native workers (Burchardi et al., 2025). Many IT workers who may first enter on an H-1B visa transition from technical roles to become entrepreneurs and innovators, highlighting a broader pattern of migrants contributing to technological advancements and economic growth.

Many studies draw on patent-level data, inventor name matching, and firm-level administrative records, exploiting temporal and geographic variation in H-1B admissions and foreign-student inflows to isolate how skilled immigration drives innovation, patenting, and firm growth. High-quality innovation in industry is often measured by patenting behavior. The US Patent and Trademark Office (USPTO) maintains records of names, and researchers have documented sharp increases in the use of ethnically Chinese and Indian names in US patents (Kerr, 2008). Skilled immigrants

(in this period, mostly from Asia) also appear to have an advantage over natives in patenting and publishing (Hunt, 2011), and boost innovation more broadly (Hunt and Gauthier-Loiselle, 2010; Kerr and Lincoln, 2010).

Yet, these gains go beyond patenting behavior. Kerr et al. (2015) show that firms employing skilled H-1B immigrants tend to expand their skill-intensive activities, hire more overall, and innovate more. A recent paper by Mahajan et al. (2024) using US Census data, finds that hiring H-1B workers increases employment, revenues, and the survival of firms without significantly crowding out native college graduates. Lottery-winning firms even expand their hiring of native college graduates, the group that is the most substitutable to H-1B immigrants. Doran et al. (2022), on the other hand, leverage a similar lottery, but find crowd out, and argue that H-1Bs do not significantly affect firms’ patenting activities or innovation outcomes.

The H-1B program has been shown to play an important role in increasing city-level productivity (Peri et al., 2015), and new product development (Khanna and Lee, 2018). For instance, Peri et al. (2015) show that H-1B migration (primarily from India), explained 30–50% of aggregate productivity growth in US cities from 1990–2010, with modest positive wage effects for natives. And as this innovation boost can translate into economy-wide gains, it may help explain why these studies generally do not find large negative wage impacts on natives from H-1B inflows. Indeed, innovation and endogenous skill-biased technical change may increase demand for high-tech workers even as more arrive from Asia.

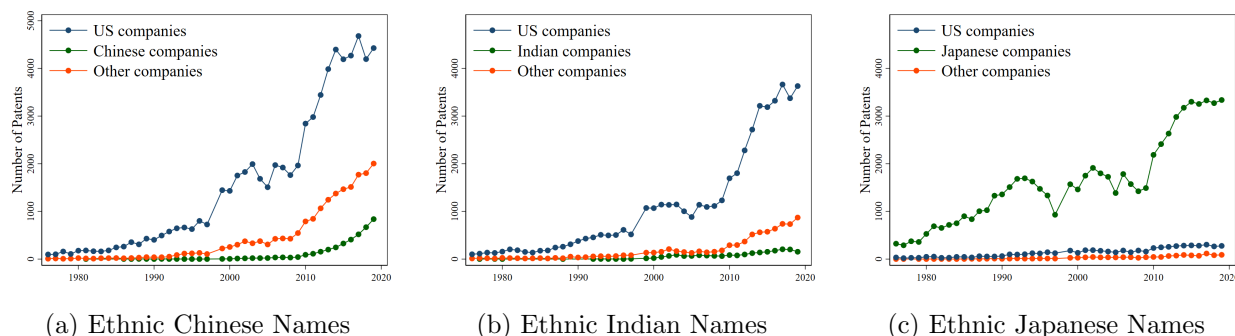


Figure 5: Number of Biotech Patents filed by ethnic origin of name, and company ownership (1976-2019). Author’s reproduction using data and analysis from China Data Lab (2024).

Figure 5 plots biotech patenting activity by ethnicity of the names of the individuals filing patents over time.⁴ Over time, biotech patents have seen a sharp increase in ethnically Chinese names, followed by those of Indians and Japanese. While inventors with Chinese and Indian names are far more likely to be represented by a US-owned firm, innovators with Japanese names work for Japanese companies. Patenting activity for those with Indian and Chinese names disproportionately benefits US-owned companies. When examining cross-border collaborations with US inventors for

⁴Since the patenting data do not mention the country of birth, some individuals with Asian names could have been born outside Asia, including the US.

patents filed by multiple inventors from different countries, partnerships with China, Japan, and India slightly lag behind those with Germany, Canada, and the UK ([China Data Lab, 2024](#)).

Entrepreneurship. Asian-born immigrants have also played prominent roles in entrepreneurship, particularly Chinese and Indian immigrations in the tech sector. By the late 1990s, Chinese and Indian-born engineers were running 1 in 4 tech startups ([Saxenian, 1999](#)), and a similar fraction had at least one immigrant founder ([Wadhwa et al., 2007](#)). More generally, immigrants are twice as likely to start new businesses as natives ([Fairlie and Lofstrom, 2015](#)). In 2023, 44.8% of US Fortune 500 companies were founded by immigrants (from anywhere in the world) or their children ([American Immigration Council, 2023](#)), and in 2022, 55% of America’s ‘unicorn’ startups (privately held startups valued over \$1bn) had an immigrant founder ([Kapur and Vaishnav, 2024](#)). As of 2024, CEOs of giants like Google, Microsoft, Adobe, Cognizant, and IBM were born and educated in India. Indian-born CEOs of Fortune 500 companies are also found in other sectors of the economy, including technology (Micron Technology, Microchip Technology), consumer goods and retail (Starbucks, Chewy, Albertsons), technical services (FedEx, Cognizant, Honeywell, Jacobs Solutions), and pharmaceuticals (Vertex). Asian-born managers in tech companies often began their careers as programmers or scientists, then transitioned into managerial roles.

Looking ahead at the race for top Artificial Intelligence (AI) startups, a recent analysis found that nearly two-thirds of the Forbes top 50 AI startups had an immigrant founder, with Indian entrepreneurs leading the pack with 10 startups ([Anderson, 2023](#)).

Over time, immigrant innovation and entrepreneurship have also impacted Asia through knowledge transfers from abroad back to the continent ([Kerr, 2008](#)). These can be particularly pronounced within multinational enterprises that facilitate diffusion of R&D to India ([Choudhury, 2016](#)), business practices to China ([Giannetti et al., 2015](#)), and trade links to Vietnam ([Parsons and Vézina, 2018](#)).⁵

Yet, there remains substantial scope for policy reform. Canada has a “Startup Visa” that attracts talent, particularly Asian migrants who were previously based in the US ([Lee and Glennon, 2023](#)). Similarly, countries like Australia have also introduced founder-friendly visas to attract entrepreneurial talent. Not having an explicit startup visa implies that many immigrant founders first come to the US on a student or H-1B visa ([Hunt, 2011](#)).

Why Asia? Why are immigrants from Asia disproportionately involved in innovation? Although Section 2.3 explores possible explanations, the reasons remain an open question. One possibility is that the cost of entry is lower for Asian-born immigrants, or the education systems in Asian countries might shift the distribution of innovative ability among migrants ([Martellini and Sockin, 2024](#)). Emigration self-selection on risk-taking, may correlate with high entrepreneurial ambitions.

⁵This body of work combines worker or firm-affiliate data with regional migration records to study knowledge diffusion. By leveraging shocks to return migration, multinational expansion, and diaspora linkages, these studies identify how immigrant scientists and entrepreneurs transmit know-how and business practices back to Asia.

Relatedly, the system may train Asian-born students and workers in skills that complement those of their US-educated counterparts, and working in teams with complementary skills facilitates innovative activity.

Another possibility is that, although talent distributions are similar to those in the US, the sheer size of Asian populations provides a larger mass in the right tail of the talent distribution. Combined with an education sector that boasts excellent technical universities, these factors enable the development of many high-performing innovators. Since innovators and entrepreneurs are drawn from extremes of the talent distribution, sufficient mass in the tail helps generate a meaningful number of Asian-born innovators.

Furthermore, while the H-1B visa is not specifically designed for entrepreneurs, it does prioritize high-skill specialty occupations that may lead to increased product innovation and technological application (Hunt, 2011). Given the large representation of Indians in the H-1B visa, many transition to managerial positions or start new companies.

These theories, however, do not explain why such innovation is concentrated in the US, rather than back home in Asia. Therefore, it is likely that certain barriers to entrepreneurship and innovation exist in countries like India and China, which make it difficult for entrepreneurial talent to engage in similar activities back home. These ‘push factors’ may include bureaucratic hurdles in starting a business, complex labor laws, inadequate contract enforcement, and land acquisition restrictions. Indeed, Kapur and McHale (2005) argue that Indian talent emigrates not just for the economic opportunities and research infrastructure in the US, but also bureaucratic and domestic constraints at home. Given the US’s advantages in attracting innovators and the institutional constraints in Asian countries, the US can select and attract highly skilled innovators from Asia.

Links with diaspora, combined with return migration and remittances, also help facilitate the growth of an entrepreneurial tech sector in countries of Asian origin (Khanna and Morales, 2025; Giannetti et al., 2015; Saxenian, 1999). As such, the migration of entrepreneurs may also eventually lead to business opportunities in Asia, in the form of business offshoring and supply-chain linkages (Parsons and Vézina, 2018).

As discussed in Section 3, return migration rates are higher for Chinese, Korean, and Japanese migrants, than they are for migrants from India. This may reflect several factors, including the relatively more attractive income levels and opportunities available back home in China, Korea, and Japan. But also comfort with the English language, and the Indian diaspora within firms that allow Indians to stay in the US. Finally, demographic pressures in Japan and Korea, as well as the fact that many Chinese migrants may be the only child, may also influence return rates, which could reflect family obligations and the need for old-age support for parents.

6 Medical Professionals: Nurses and Physicians

Asian-born immigrants are also highly represented in the US labor market as nurses and physicians (Figure 6), partially addressing critical healthcare shortages. In 2023, according to the ([Association of American Medical Colleges, 2024](#)), one in four active physicians were international medical graduates (IMGs). In 2016, Migrants from Asia made up 17.7% of all physicians and surgeons in the US ([Patel et al., 2018](#)). Physicians are more likely to be from India, with recent growth in the number of physicians from China. The Philippines, on the other hand, is an important source of the nursing workforce in the US. Just before the COVID-19 pandemic, there were 136 thousand Filipino nurses and 78 thousand Indian-born physicians in the US.

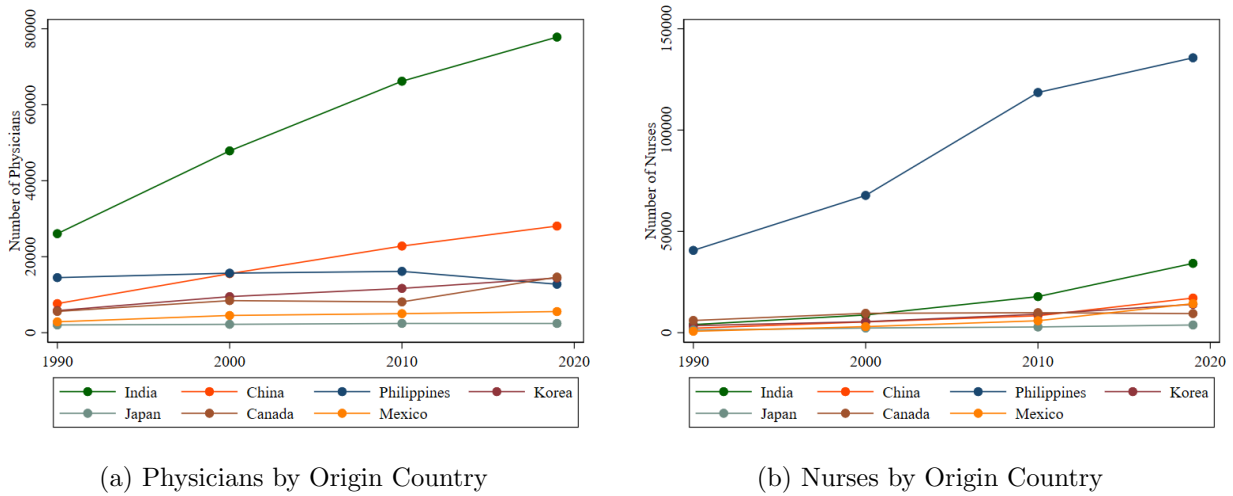


Figure 6: Physicians and Nurses in the US, 1990-2019. Author’s calculations using data from the US Census Bureau.

Shortages and Policies. Nursing is designated a Schedule A occupation by the US Department of Labor, signaling a worker shortage, and streamlining the immigration process. The Philippines, in particular, has been training a surplus of nurses for export, and has been sending nurses to the US since the 1960s. Filipino nurses help the US meet nursing demand, and have comparable performance to US-trained nurses ([Aiken, 2007](#); [Cortés and Pan, 2015](#)).

The shortage of physicians and nurses reflects how US medical schools and residency programs have not expanded quickly enough to meet the rising patient demand, partly due to funding caps and constraints imposed by medical schools. As a result, the [AAMC \(2021\)](#) expects a shortfall of 124,000 physicians by 2034, particularly as the US-born population ages rapidly. These limited medical school slots have led to a physician shortfall, boosting demand for International Medical Graduates (IMGs). Medical residents arrive on short-term J-1 visas but must return home unless they work in medically underserved or health professional shortage areas (HPSAs).

The Conrad-30 visa program helps locate immigrants to HPSAs, often in rural counties, where

there are shortages of both primary care and specialty care physicians. The visa waivers under the Conrad-30 are concentrated among those from Asia, with the majority of participants coming from the Philippines, India, Nigeria, and Pakistan (Ranasinghe, 2015; Crouse and Munson, 2006). Even over the long run, immigrants are more likely to stay in rural areas (Goodfellow et al., 2016), and provide relatively high-quality care (Tsugawa et al., 2017). (Cortés and Pan, 2015) examine the performance of foreign-educated nurses in the US, using administrative data on licensing exams, hospital employment, and patient outcomes. They find that foreign-educated nurses (mostly from the Philippines) are positively selected, and so play an important role in alleviating nurse shortages without substantially reducing care quality.

Impacts on US Healthcare. Migrants from the five Asian countries under study represent 20% of the growth in the physician population, and 11% of the increase in the nurse population between 1990 and 2019. As a result, physicians from South Asia and nurses from the Philippines have played a vital role in meeting healthcare needs, particularly in rural areas. In rural areas with the lowest income and education levels, IMGs often comprise more than 30% of the physician workforce (American Immigration Council, 2018).

Given the shortage of US-born workers in HPSAs, Asian immigrants likely improve health outcomes without “crowding out” natives (Braga et al., 2024). The limited supply of US-born providers points to severe workforce shortages, making it unlikely that international healthcare professionals displace native-born doctors. Braga et al. (2024) leverage changes to the Conrad-30 program state-level cap, to show how Asian-born physicians located in shortage areas. They highlight the critical role Asian-born physicians played during the Covid-19 pandemic, particularly in medically under-served areas (MUAs). Patients treated by foreign-trained doctors in US hospitals had similar or slightly lower mortality than those treated by US-trained doctors, suggesting high quality of care (Tsugawa et al., 2017). A recent analysis finds that 17% of US healthcare professionals are foreign-born; these workers are more likely to work longer hours, cover night shifts, and serve in nursing homes and under-served areas than their US-born counterparts (Commodore-Mensah et al., 2021).

The Asian Advantage and Impacts at Home. The representation of the Philippines in nursing and India in physician labor supply reflects the potential for training at home. Each of these countries has high-quality nursing and medical schools that select and train a large number of physicians and nurses. The Philippines has a US-modeled nursing education system, and both countries use English-language instruction, facilitating easy transitions into American healthcare. Indeed, physicians and nurses from these countries are also likely to migrate to other parts of the world, including the UK, and parts of East Asia. The Philippines offers a striking example: it has become the world’s largest exporter of nurses, accounting for roughly 25% of all overseas nurses globally. India, by contrast, hosts the largest number of medical schools globally and is the

leading source of internationally trained physicians, sending doctors to the US, the UK, Canada, and Australia. This expansion continues to occur in India, with a near doubling in both the number of new medical colleges and enrollment between 2013 and 2024.

India also ranks second only to the Philippines in training nurses, with nearly 56,000 Indian-trained nurses employed in those same four countries (Caselli et al., 2019). This is equivalent to around 3% of all registered nurses in India. Given low wages at home, and high burnout rates in origin country healthcare sectors (Alibudbud, 2023), many choose to migrate abroad.

It is reasonable to worry that sending nurses or doctors abroad might leave countries like India or the Philippines with fewer healthcare workers for their own populations. More than half of Filipino nurses work overseas, and the WHO actually predicts a shortfall of nurses within the Philippines (Elmaco, 2022). Yet, evidence on this is more nuanced. In the Philippines, the “nurse export” phenomenon has become self-sustaining: young people enter nursing programs specifically aiming to work overseas (often encouraged by their families and government policy). Abarcar and Theoharides (2024) exploit changes in US visa quotas to show that as the prospects for nurse migration to the United States improved, Filipino students increasingly acquired skills valued abroad. Filipino nurses often train to migrate to the US, and remittances from these nurses bolster their economies. Many of those who do not ultimately emigrate still contribute locally, and those who do often send back substantial remittances that fund healthcare and education for their communities. Khanna et al. (2022) exploit exchange-rate shocks to show that remittance inflows to the Philippines spurred additional skill accumulation and human-capital investment.

Similarly, thousands of doctors have left India, which is the largest source of foreign doctors in the US. Yet, the country has simultaneously expanded its medical college capacity dramatically over the last few decades – in part due to the prestige and opportunities associated with the global medical labor market. Thus, the narrative is more complex than simple brain drain. It involves possible trade-offs and feedback loops: the US receives an infusion of experienced healthcare providers, while origin countries benefit from remittances and the incentive for more medical training; however, they also lose practitioners to migration.

Looking ahead, population aging and persistent domestic training bottlenecks (e.g., capped medical school and residency slots) mean that the US will continue to rely on foreign-educated health workers. Asian-born nurses and physicians, in particular, are poised to remain vital in meeting America’s healthcare needs, helping to alleviate staffing shortfalls that would be far more severe in their absence.

At the end of the day, migration to the US across various sectors, including higher education, tech, and healthcare, occurs through different pathways. These include student visas, H-1 B visas for tech workers, and J-1 visas for medical residents. Yet, these are all responses to talent scarcity and the US’s needs.

7 Looking Ahead

The increase in high-skilled Asian migration since 1990 has become a notable and undeniable feature of the US economy. It has addressed critical skill shortages and driven innovation across multiple sectors, from technology to healthcare. From international students bolstering higher education and contributing to the tech industry to medical professionals filling essential roles in underserved areas, Asian migrants have played significant roles in the economy. This phenomenon results from a combination of US demand for specialized talent, immigration policies, and Asia’s abundant supply of highly skilled individuals seeking opportunities.

Yet, a few questions remained unresolved. This paper posits various hypotheses for why Asian countries were uniquely positioned to supply talent (e.g., lower entry costs, diaspora networks, and differences in education systems) that need further exploration. Another open question surrounds the long-term impacts on Asia, on whether brain drain from Asia will outweigh the effects of brain gain (accumulating skills with the prospect of migrating) and brain circulation (return migration). As [Batista et al. \(2025\)](#) argue, such high-skill immigration can have beneficial impacts in Asian-origin countries, including via remittances to the Philippines, return migration to China, and outsourcing production to India. However, moving forward, new research agendas are likely to emerge on how remote work and digital connectivity impact offshoring to Asia, potentially limiting the need for immigration. Research already shows the important role H-1B migrants from Asia play in the location of production of multi-national companies ([Morales, 2023](#)), and restricting H-1B migration may shift more production abroad ([Glennon, 2024](#)).

While the US has consistently attracted talent from Asia, other countries have recognized the possible value in attracting such students and workers. Looking ahead, competition from Canada, the UK, Europe, Australia, and, more recently, Asia, is likely to play a significant role. Policy makers in other countries recognize this, and try to attract high-skill talent from Asia. For instance, Canada offers work permits and paths to residency for foreign graduates, and the UK recently reinstated a two-year post-study work visa. Canada’s Global Talent Stream has successfully attracted tens of thousands of tech workers, aiming to lead the AI boom. China, itself, has heavily invested in its own higher education sector, building on return migrants from the US. According to the Shanghai Rankings of world universities, between 2003 and 2024, the number of Chinese universities in the top 100 rose from 0 to 14, and in the top 500 went from 19 to 103 ([Shanghai Rankings, 2025](#)).

As the US debates immigration restrictions internally due to domestic politics, rising uncertainty in US policy may lead to talent flows shifting elsewhere. Yet competitor countries face their own political headwinds, and the US still enjoys an unmatched dominance in technology and higher education, attracting talent from Asia. For instance, the largest competitor countries have all discussed restrictions to student visas in 2024. While the Australian government is still debating caps ([The Guardian, 2024b](#)), the UK universities have agreed to restrict foreign students if they

can raise tuition rates ([The Guardian, 2024a](#)), and Canada has uniquely started explicitly capping international student permits ([Reuters, 2025](#)). Future flows will depend on US policy, including visa restrictions and post-study opportunities, as well as policies in competitor countries. As of today, the US is part of a larger global competition for talent, with India and China playing a pivotal role in international STEM migration ([Kerr et al., 2016](#)).

Recent discussions for policymakers center around the US’s trade deficit in goods. Yet, the US has a meaningful trade surplus in the export of high-skill services, such as higher education and information technology. In 2024, computer and information services saw an export of \$79.2 billion, and higher education an export of \$56 billion ([Bureau of Economic Analysis, 2025](#)). Furthermore, looking ahead to the coming AI boom, one-fifth of the top AI startups were started by Indian migrants in the US ([Anderson, 2023](#)). Encouraging immigration from Asia may be key to maintaining this primacy in high-skill exports.

How can the US remain a magnet for Asian-born talent? Immigration policy will play an important role. Indians and Chinese immigrants face long wait times (sometimes more than a decade) for permanent residency status because of country-specific quotas for green cards.⁶ Expanding country quotas may allow the US to hold on to top talent from India and China. The H-1B visa is consistently oversubscribed, and the US Congress has the ability to raise the H-1B cap. H-1B reform, specifically addressing how to select the most productive workers (as opposed to a lottery), is a much-discussed issue among policymakers. Whereas high fees may make it challenging for smaller, innovative startups to sponsor the visa.

How the US navigates these issues will shape not only its own economic future, but also the trajectory of innovation globally and the development paths of Asian countries. Sustaining the virtuous cycle of skill flows from Asia will require adaptive policies, and the coming years will reveal whether the US continues to lead in attracting Asian-born talent, or if new hubs emerge elsewhere.

⁶Employment based (EB) green cards have 5 categories. In 2025, EB-5 cases are being processed for Indians who applied in 2019, and Chinese nationals who applied in 2014. EB-2 and EB-3 cases are currently under consideration for Indian applicants who submitted their applications in 2013 and Chinese nationals who submitted their applications in 2020.

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