



Lower Immigration Means Lower Productivity Growth

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Key Takeaways

1

Even assuming a return to baseline immigration in 2029, the current slowdown in immigration will likely have long-run impacts on business formation and productivity.

2

The number of missing new firms per year peaks in the early 2030s at between 9,000 and 16,000 (a decline of between 1.7% and 3.0%).

3

In 2075, fifty years after the policy shock, annual new employer-firm entry is still about 4,000-6,500 firms smaller (0.7-1.2%), with the long-run gap driven primarily by missing native-born descendants of missing immigrants.

4

Economywide productivity is lower by between 0.25% and 0.44% in 2052, and productivity remains lower even in 2075.

Introduction

The Trump administration has implemented large reductions in immigration and a large increase in deportations since 2025. Recent work by [Edelberg, Veuger, and Watson \(2026\)](#), [Clemens \(2024\)](#), and others has examined the near-term macroeconomic effects of these policies, including their effects on labor supply, consumer demand, prices, wages, and the federal budget.

This analysis focuses on a distinct and underappreciated channel: business formation. Long-run gains in living standards come largely from productivity growth, which is driven by the discovery and implementation of new ideas ([Romer 1990](#); [Jones 1995](#)). While the importance of the discovery step is well known, the productivity gains

from new ideas are only realized when firms implement them. New businesses account for a disproportionate share of productivity growth because productive young firms implement new ideas more frequently than old ones, draw workers and capital away from less productive incumbents, and help move the economy toward more productive uses of its resources. Indeed, work has shown that the secular decline in new business formation has played a major role in the recent US productivity slowdown ([Alon, Berger, Dent, and Pugsley 2018](#)).

We find that the impacts of even temporarily lower immigration on business formation are substantial and long lasting. Lower immigration changes the size, age, and composition of the population in ways that reduce entrepreneurship. Immigrants are younger than the U.S. population on average, and younger to middle aged people are more likely to start new firms; immigrants are also more likely to start businesses than native-born Americans of the same age. Once immigrants do not arrive or are removed, the country loses not only their potential contributions as founders but also the future contributions of their descendants, turning a near-term policy change into a sustained shock. We quantify those effects using a three-stage framework that maps immigration policy to demographics, demographics to business formation, and business formation to aggregate productivity growth.

Measuring Changes in Immigration Policy

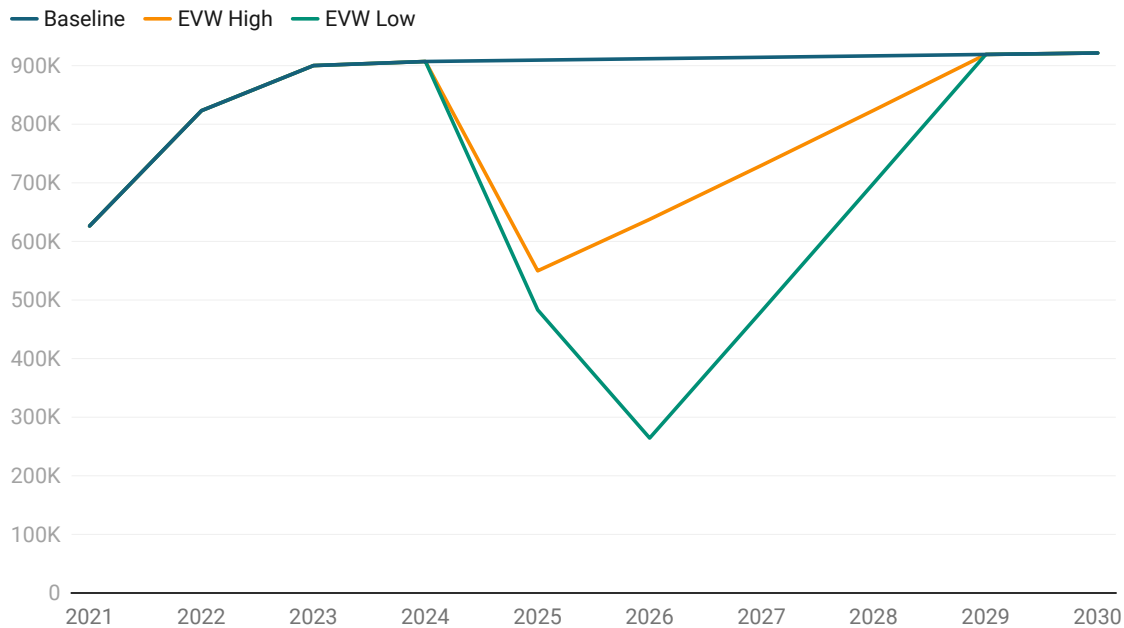
We draw on existing work from [Edelberg, Veuger, and Watson \(2026\)](#), hereafter EVW, to construct two immigration scenarios (“EVW High Immigration” and “EVW Low Immigration”) that bracket plausible implementations of current enforcement and admission policy. We construct these scenarios as deviations from a common baseline forecast: the Congressional Budget Office’s early January 2025 [demographic projection](#), which by CBO convention reflects pre-administration law and policy. We also constrain the effects of these policies to be transitory, with both scenarios matching the baseline forecast from 2029 on. Because authorized and unauthorized immigrants differ in many respects relevant to business formation, we separately model these two populations and their migration dynamics.¹ Details on scenario construction are available in the appendix.

Our two policy scenarios are displayed below in Figure 1. Both scenarios diverge from CBO’s January 2025 forecast through 2028 before returning to trend, with the largest impacts occurring in 2025 and 2026. Relative to the baseline (roughly 1-2 million in net immigration per year), EVW High implies a cumulative net-immigration shortfall of about 3.4 million people over 2025-2028, while EVW Low implies a shortfall of about 5.9 million. Under EVW Low, net migration turns negative in 2026, meaning that more people leave the country than arrive.

While much public discussion of administration policy has focused on unauthorized immigrants, both authorized and unauthorized immigration fall substantially in our two scenarios. Both EVW paths feature lower authorized inflows (less visa issuance, fewer refugee admissions, and reduced humanitarian parole) alongside lower unauthorized entries and higher enforcement-driven emigration. Authorized flows account for roughly 27% of the cumulative shortfall in EVW High and 29% in EVW Low, which matters for the productivity results in later sections because authorized and unauthorized immigrants differ in their age distributions, rates of entrepreneurship, and types of businesses they found.

Figure 1. Net Immigration Falls Under Both EVW Policy Paths

Panel A: Authorized



Annual net immigration: CBO January 2025 baseline vs. EVW policy paths

Chart: The Budget Lab • Created with [Datawrapper](#)

Panel B: Unauthorized

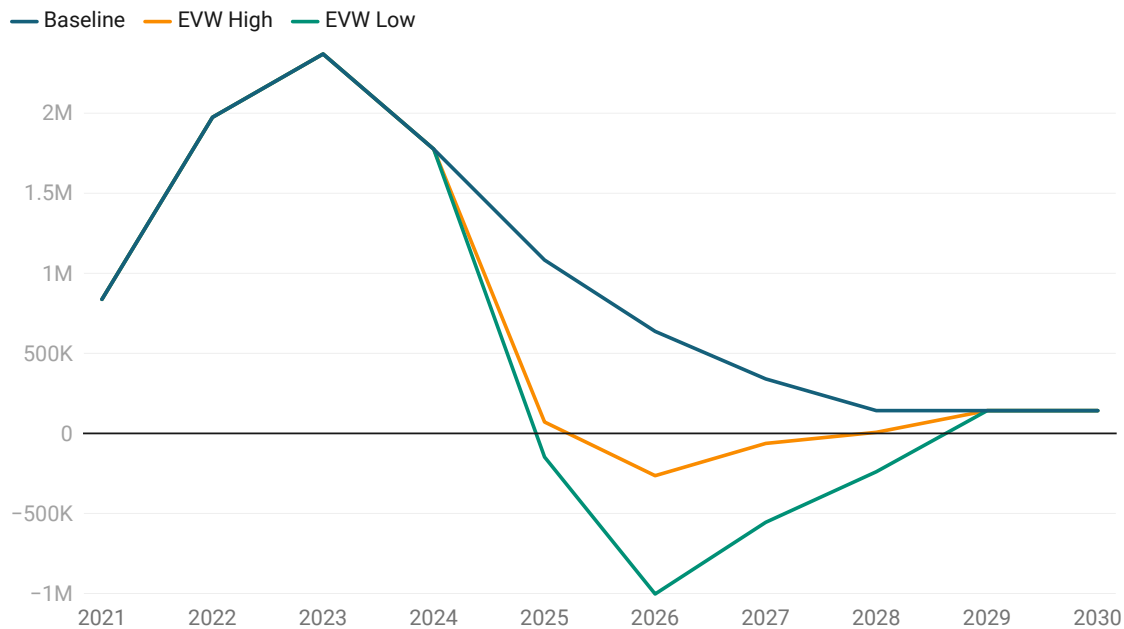


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Results

Stage 1: Immigration to Demographics

The first stage of our framework maps each immigration scenario into a population path and measures the population shortfall relative to the CBO January 2025 baseline. We focus here on the missing population between

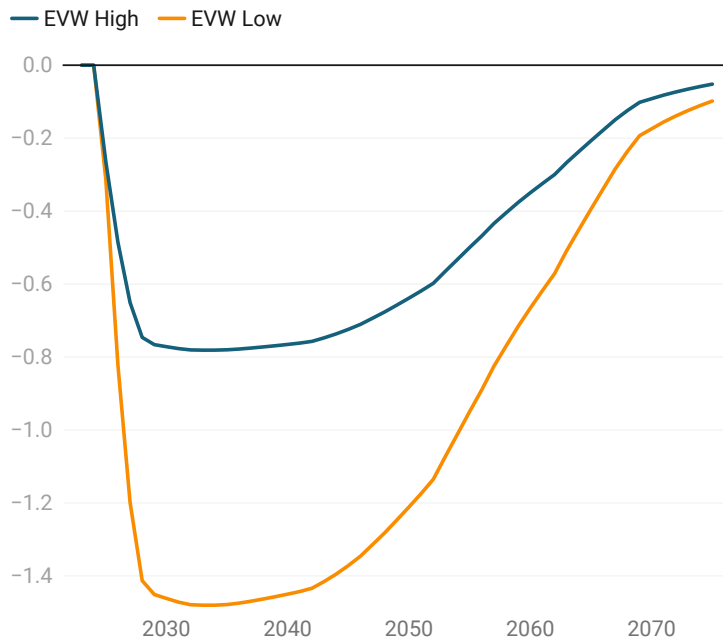
the ages of 25 and 64 because these are the prime ages for entrepreneurship ([Azoulay, Jones, Kim, and Miranda 2020](#)).

Figure 2 shows the population shortfall for ages 25-64 by immigration status. In both scenarios, the foreign-born wedge rises sharply in the late 2020s as the immigration shock accumulates, peaks in the mid-2030s, and then declines as the missing cohorts would have aged out of the working-age window. Under EVW Low, the shortfall peaks at about 4.6 million in 2033, with roughly 1.5 million of that peak attributable to missing authorized immigrants and the remainder to missing unauthorized immigrants. EVW High has the same shape at smaller scale. In this scenario, the shortfall peaks at 2.6 million in the mid-2030s, with roughly 0.8 million missing authorized immigrants. As a benchmark, normal net immigration in the CBO baseline runs at about 1 to 2 million per year; the peak shortfall roughly equals two to three years of typical net entry.

While the population of immigrants shrinks immediately, the native-born working-age population falls starting around 2050 as the children who would have been born to missing immigrant parents enter their twenties. This missing-births channel grows steadily thereafter. By 2075, the working-age shortfall is predominantly native-born (about 1.75 million under EVW Low and about 1.0 million under EVW High), even though net migration returned to baseline at the end of the 2020s. This slow-moving demographic wave is what turns a near-term policy shock into a persistent, multi-decade reduction in the working-age population.

Figure 2. Reduced Immigration Lowers the Working-Age Population for Decades

Working-Age Population Relative to Baseline, by Status
Panel A: FB Authorized



Difference from the CBO January 2025 baseline; below zero means fewer people than baseline

Chart: The Budget Lab • Created with [Datawrapper](#)

Panel B: FB Unauthorized

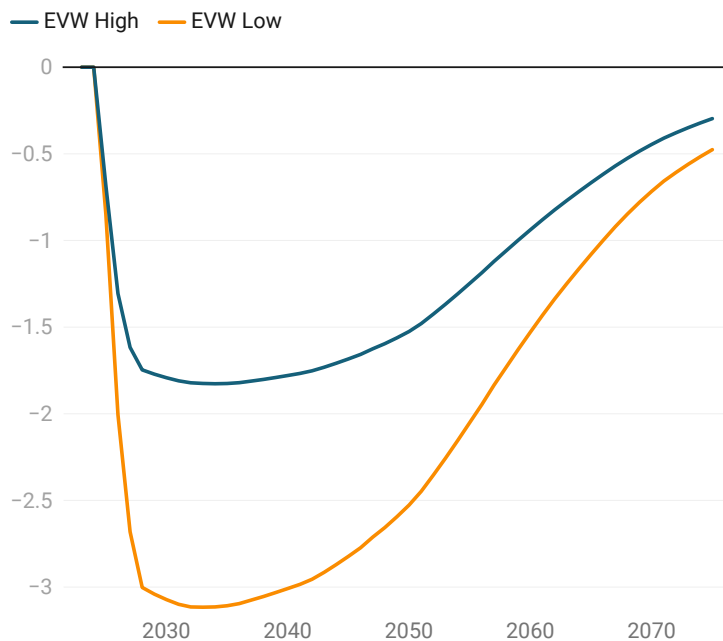


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Panel C: Native Born

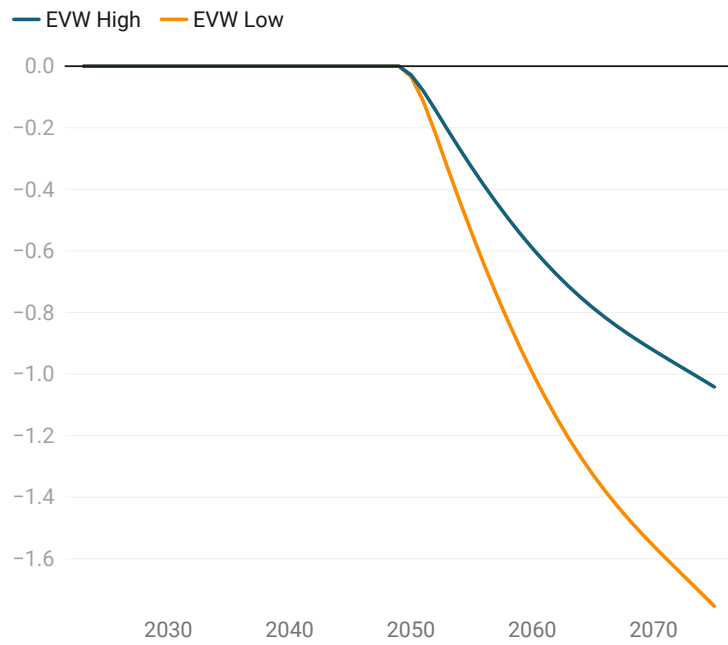


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Stage 2: Demographics to Business Formation

The second stage of our framework maps demographic changes into new business creation. We focus here on entry of businesses with at least one employee (“employer-firms”), putting aside single-person businesses or solo-entrepreneurs. Drawing on existing research that documents how startup rates and the sector of these new business vary across ages and immigrant status (Azoulay, Jones, Kim, and Miranda 2020, 2022), we map our population scenarios into year-by-year changes in new business creation by sector. The falling number of working-age immigrants and, eventually, their would-be native-born descendants reduces new-business formation.

Figure 3 shows the resulting annual shortfall in new employer-firm entry. Under EVW Low, about 4,100 fewer employer firms are founded in 2025; this shortfall grows to a peak of about 16,000 missing firms per year in 2032 and settles at about 6,500 per year by 2075. EVW High follows a similar pattern with about 3,300 fewer firms in 2025, a peak of about 8,900 missing in the early 2030s, and about 3,900 fewer per year by 2075. For context, the CBO January 2025 baseline implies roughly 530,000 new employer firms entering per year in the early 2030s and, at their peak, the EVW Low and High shortfalls are about 3.0% and 1.7%, respectively, of baseline employer-firm entry.

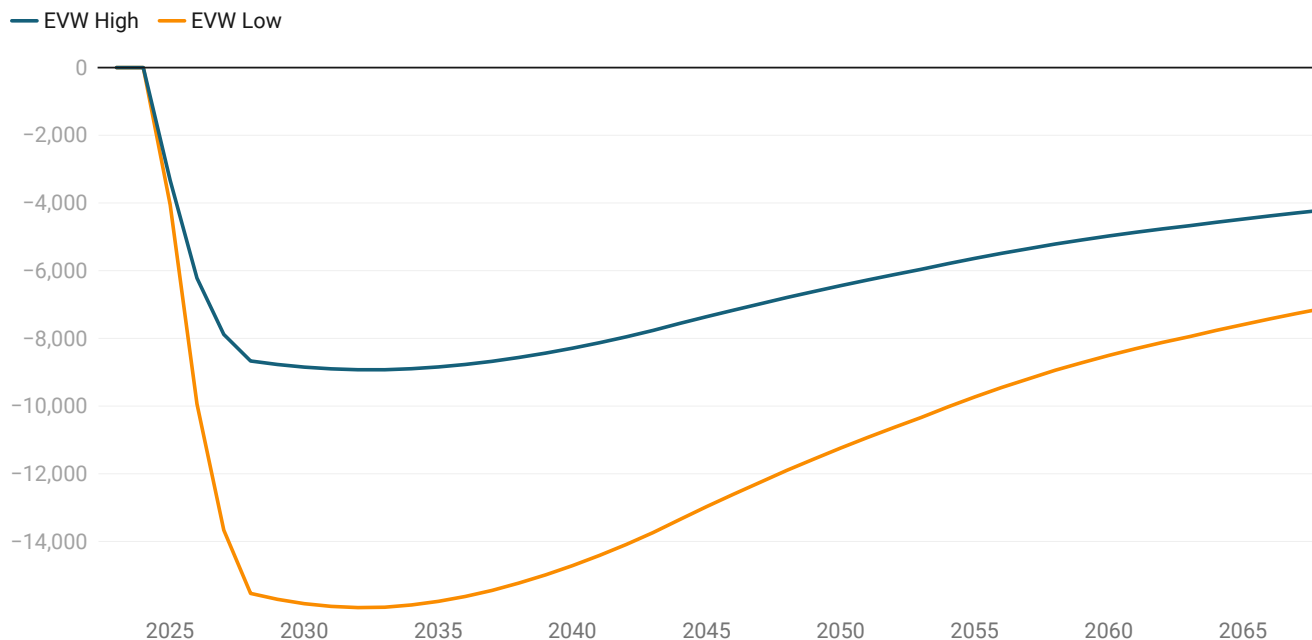
There are three main channels driving these shortfalls:

- **Fewer immigrants.** Immigrants start businesses much more often than natives, with Azoulay, Jones, Kim, and Miranda (2022) estimating that immigrants as a whole are 80% more likely to found an employer firm than native-born Americans. Their study does not estimate separate authorized and unauthorized immigrant entrepreneurship premia, so we conservatively apply their estimates only to authorized immigrants.²
- **An older age structure.** Azoulay, Jones, Kim, and Miranda (2020) show that business startup rates are highest among those in their 30s and 40s. Immigrants tend to arrive during or before these prime founding ages, so removing them shifts the working-age population older and reduces business creation.
- **Fewer U.S.-born descendants.** In the longer run, the children who were never born cannot start businesses. This missing-births channel drove the native-born wedge in Stage 1 and keeps the entry shortfall well above zero decades after net migration has returned to baseline.

These mechanisms ensure that current immigration policies will lower business creation for decades to come. Even though net migration returns to the CBO baseline by 2029, the missing younger immigrant cohorts age out of their prime founding years outside the U.S. and the never-born children of those missing immigrants cannot found firms in the mid-century. Even in 2075, fifty years after the policy shock, annual new employer-firm entry is still about 6,500 firms below baseline under EVW Low and about 3,900 under EVW High (about 1.2% and 0.7%, respectively, of the baseline startup rate), with the long-run gap driven primarily by missing native-born descendants of missing immigrants.

Figure 3. Lower Immigration Reduces New Employer-Firm Formation

New Employer-Firm Entry Relative to Baseline



Difference from baseline; below zero means fewer new firms than baseline

Chart: The Budget Lab • Created with [Datawrapper](#)

Stage 3: Business Formation to Productivity Growth

The third stage of our framework translates the Stage 2 entry shortfall into a decline in aggregate productivity growth. For ease of interpretation, Figure 4 shows the cumulative productivity shortfall under each scenario.

Under each scenario the productivity impact peaks around 2052 before slowly attenuating. Under EVW Low, the level gap grows to about 0.35% by 2040, peaks at about 0.44% around 2052, and recedes slightly to about 0.31% by 2075. EVW High follows the same pattern at smaller scale: about 0.20% by 2040, peaking at about 0.25% around 2052, and about 0.18% by 2075. In annual terms, productivity growth is lower than baseline by up to about 2.9 basis points per year under EVW Low and up to about 1.6 basis points per year under EVW High, with the largest annual gap around 2030.

Fewer new firms shift the firm age distribution (the share of employment sitting in firms of each age) toward older, slower-growing incumbents. Young firms drive disproportionate productivity growth through a mix of high-productivity entry, selective exit of low-productivity firms, and fast post-entry growth among survivors; we capture the combined effect via the age-productivity profiles estimated in [Alon, Berger, Dent, and Pugsley \(2018\)](#).

The annual drag in each scenario reflects three distinct effects:

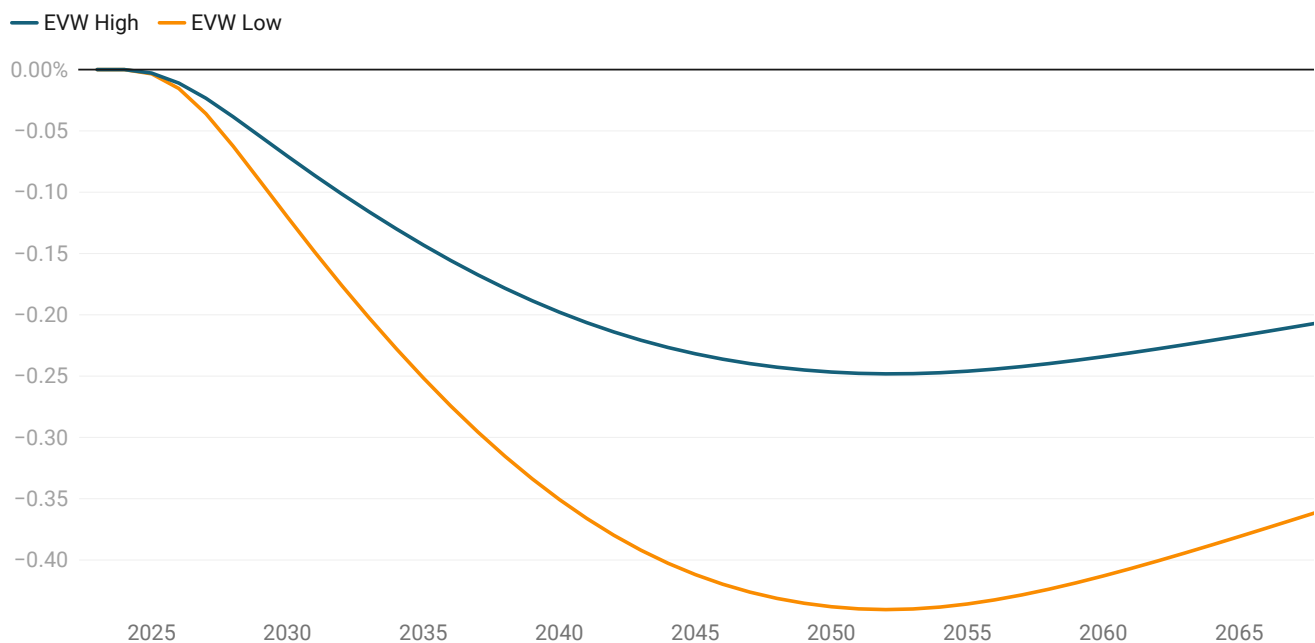
- **Direct entry effect.** The productivity cost from having fewer age-0 firms in any given year. This channel is strong in the early years of each scenario and tracks the entry wedge from Stage 2.
- **Aging effect.** The accumulating productivity cost from missing age-1, age-2, and so on firms as earlier entry cohorts propagate forward through the firm age distribution. The aging effect becomes the larger component of total drag within about a decade and accounts for the bulk of the cumulative drag at the peak. This effect grows quickly and then more slowly as the initial loss of young firms becomes an ongoing loss of both young and old firms.

- **Reallocation offset.** When fewer immigrant-founded firms are formed, the surviving (predominantly native-founded) firms account for a larger share of total employment, and their contribution to aggregate productivity growth carries more weight in the aggregate measure. This partially offsets the first two effects and grows over time as missing small, young firms would have aged into larger, older firms and the missing descendants channel keeps the population of businesses permanently smaller.

The hump shape arises from the interaction of these three channels. In the short run, the population of missing firms is dominated by the young, whose contributions to productivity growth are the largest. Over time, the incremental impacts of these direct and aging effects begin to stabilize as the firm age distribution drifts towards its new long-run shape.³

Figure 4. Productivity Level Shortfall Relative to Baseline

Cumulative productivity-level effect (policy minus baseline)



Overlay of policy scenarios; below zero means lower productivity

Chart: The Budget Lab • Created with [Datawrapper](#)

Conclusion

Reduced immigration can have productivity effects long after the initial immigration shock ends because population dynamics and firm demographics are slow moving. Fewer immigrants today means fewer potential founders now, fewer young firms over the next several decades, and fewer native-born descendants founding startups later in the century.

Our results imply that the current administration's immigration policies will reduce U.S. productivity growth meaningfully over the next several decades through this channel alone, with a cumulative shortfall of about 0.44% (EVW Low) and 0.25% (EVW High) in the level of aggregate productivity by 2055. This slow-building loss compounds with the more immediate effects of reduced immigration on labor supply, consumer demand, and output documented in [EVW's broader macroeconomic analysis](#).

As a rough illustration, applying the peak productivity-level shortfall to CBO's most recent projection of 2055 per-capita income implies an annual loss of about \$600 per person under EVW Low and about \$350 per person under EVW High, in 2025 dollars. Across each scenario's projected 2055 population (about 375 million under EVW Low and 378 million under EVW High), that aggregates to about \$225 billion a year under EVW Low and \$125 billion under EVW High.

These estimates are likely a lower bound on the full long-run productivity cost of reduced immigration. The framework captures the supply-of-entrepreneurs channel, but it omits an additional major channel identified by [Karahan, Pugsley, and Sahin \(2024\)](#): slower labor force growth reduces the demand for new firms, which in turn shifts the firms distribution towards older, slower-growing incumbents. It also does not quantify the impact of fewer immigrants on the generation of ideas themselves ([Jones 1995](#)), which of course must be discovered first in order for a new firm to implement them.

Appendix A: The Roles of Immigrant Status and Firm Sectors

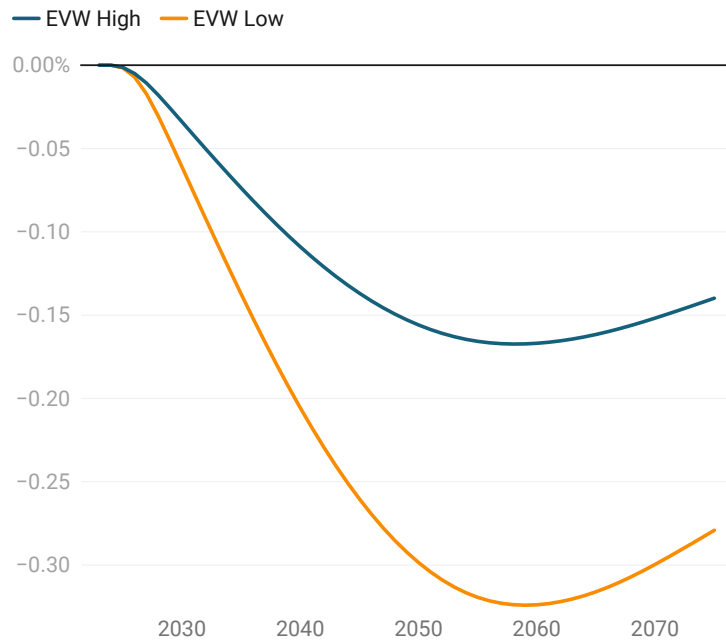
To better understand what is driving the headline results in stage 3, we decompose the productivity drag by founder status (authorized immigrants, unauthorized immigrants, native-born) and by sector.

Founder Status

Figure 5 and the accompanying table report the cumulative productivity drag in 2055 decomposed by founder status. Under EVW Low, the missing-authorized channel becomes nearly as important as the missing-unauthorized channel (-0.32% vs. -0.43%), reflecting the substantially reduced rates of authorized immigration in that scenario. In comparison, under EVW High the authorized channel is about two-thirds the size of the unauthorized channel (-0.17% vs. -0.26%). This matters because public discussion of the administration's immigration policy has focused mostly on the unauthorized and deportation channels, but the productivity cost of reduced authorized inflows is substantial in its own right.

Figure 5. Both Authorized and Unauthorized Immigration Contribute to the Productivity Effect

Productivity-level effect by founder-status channel
Panel A: FB Authorized



Decomposition into native/authorized/unauthorized channels; below zero means lower productivity

Chart: The Budget Lab • Created with [Datawrapper](#)

Panel B: FB Unauthorized

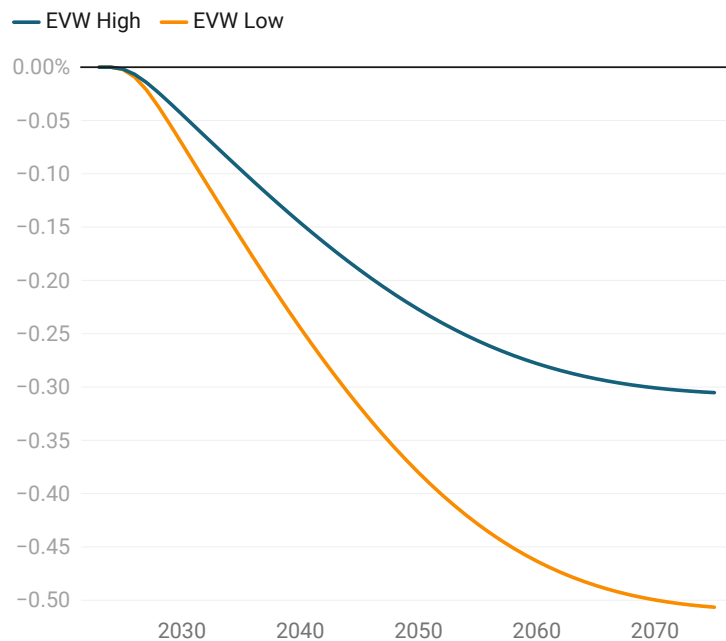


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Panel C: Native Born

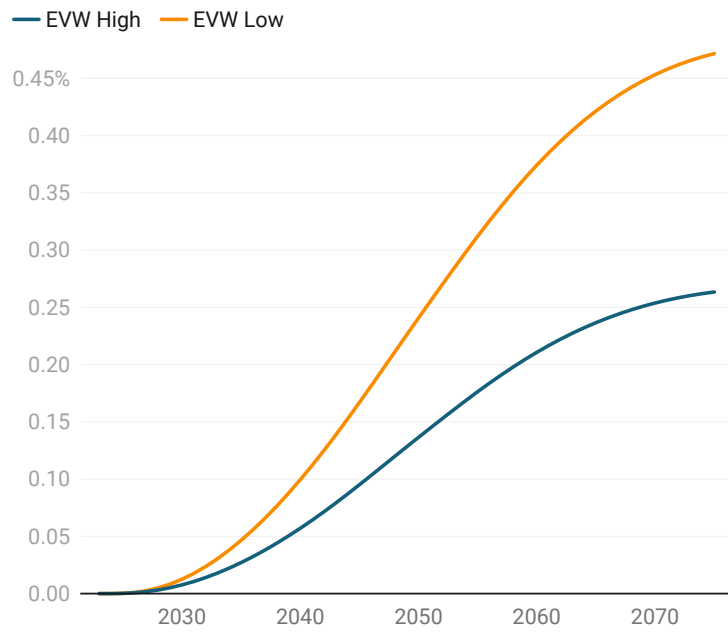


Chart: The Budget Lab • Created with [Datawrapper](#)

Table 1. Cumulative Productivity-Level Effect by Founder-Status Channel, 2055

Scenario	Authorized Channel	Unauthorized Channel	Native Offset	Net Effect
EVW High	-0.17%	-0.26%	0.18%	-0.25%
EVW Low	-0.32%	-0.34%	0.31%	-0.44%

Table: The Budget Lab • Created with [Datawrapper](#)

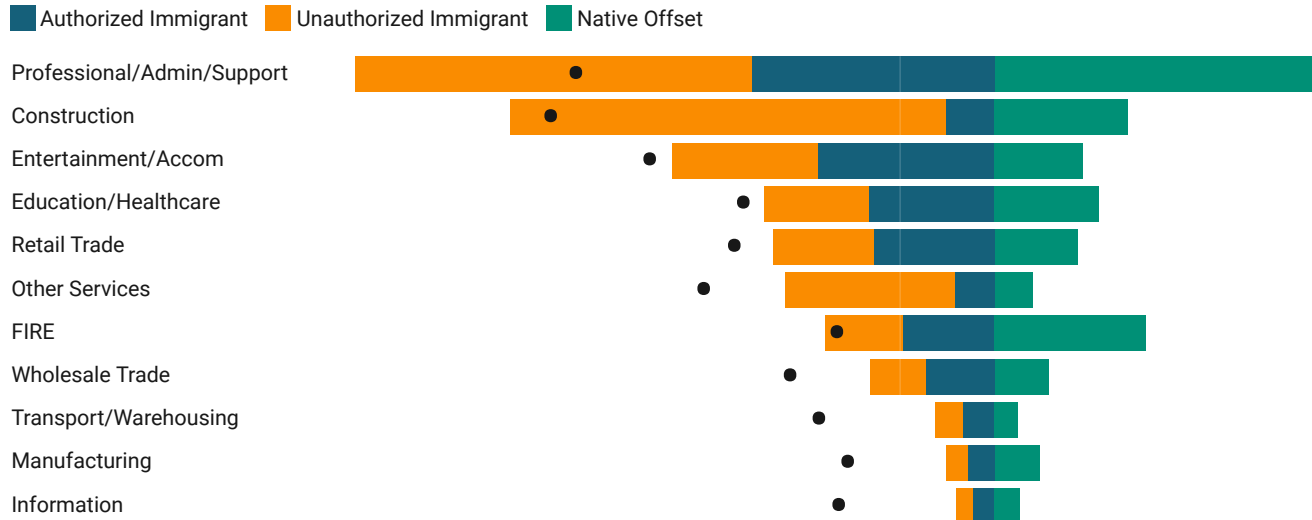
The positive entry under the “native offset” column is a reallocation effect.⁴ When fewer immigrant-founded firms enter the economy, the employment share of surviving (predominantly native-founded) firms rises mechanically. This channel does not imply that native-founded firms are becoming more productive, but that their contribution to aggregate productivity growth simply carries more weight because they are a larger share of employment. The gross loss from missing immigrant-founded firms minus this offset equals the net headline drag. To make this concrete: under EVW Low in 2055 the gross drag from missing immigrant-founded firms (authorized plus unauthorized) is about 0.75 percentage point, the reallocation offset is about 0.31 percentage point, and the net headline drag is about 0.44 percentage point. The same structure holds in EVW High.

Sectors

Sector matters for this exercise because the age-productivity relationships estimated by ABDP vary substantially across sectors and because the sectoral footprint of immigrant-founded firms differs from the economy as a whole. To model the role of sectors we use sector-specific age-productivity profiles from ABDP, estimated separately for eleven 2-digit NAICS sectors, and we allow each of the three founder-status groups in our model (native-born, authorized foreign-born, unauthorized foreign-born) to have its own sector mix at entry. Figure 6 shows the resulting EVW Low and High cumulative drag in 2055 decomposed by founder status and sector.

Figure 6. Unauthorized-Channel Drag Is Concentrated in Construction and Services

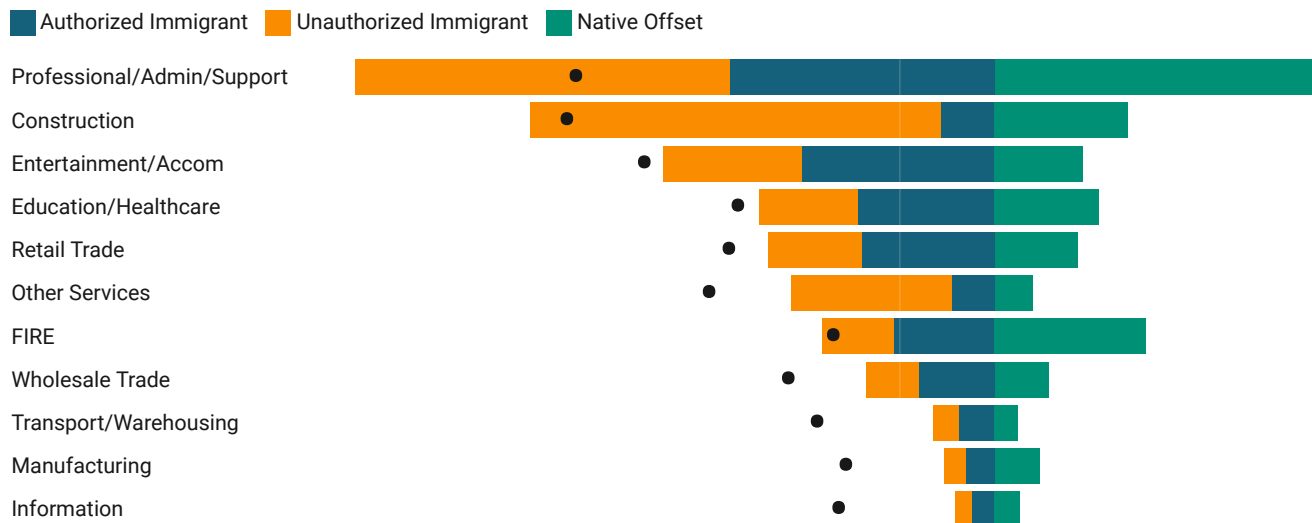
2055 Productivity-Level Effect by Sector and Founder Status
Panel A: EVW High



*Below zero means lower productivity; immigrant channels are losses, native channel is the reallocation offset.
Black dot = net sector contribution*

Created with [Datawrapper](#)

Panel B: EVW Low



Created with [Datawrapper](#)

Two patterns stand out in the EVW Low results. First, the unauthorized-channel drag is highly concentrated. Construction accounts for about 28% of the unauthorized channel and professional and administrative services (which includes landscaping, custodial services, etc.) for another 26%, with the two sectors together accounting for roughly 54% of the total (see table below). Second, the authorized channel is much more dispersed across sectors than the unauthorized channel, with appreciable contributions from professional services, entertainment and accommodations, education and healthcare, and retail trade.

Table 2. Sector Decomposition of the Unauthorized Channel, EVW Low, 2055

Sector	Drag	Share
Construction	0.12%	28%
Professional & Admin Services	0.11%	26%
Other Services	0.05%	11%
Entertainment & Accommodations	0.04%	9%
Education & Healthcare	0.03%	7%
Retail Trade	0.03%	6%
Finance, Insurance, Real Estate	0.02%	5%
Wholesale Trade	0.02%	4%
Transport & Warehousing	0.01%	2%
Manufacturing	0.01%	1%
Information	0.01%	1%
Total	0.43%	100%

Table: The Budget Lab • Created with [Datawrapper](#)

The per-status sector mixes are constructed from two public datasets. The Census Bureau's [Annual Business Survey Characteristics of Business Owners](#) (2023 vintage) reports the sector composition of employer-firm owners separately for the native-born and foreign-born. ABS does not record legal status, however, so we cannot use it to estimate separate authorized and unauthorized sectoral distributions. To identify these two distributions we use the American Immigration Council's [Mass Deportation](#) report (Hubbard et al., 2024), which estimates the sector mix of undocumented entrepreneurs' businesses via Borjas-style legal-status imputation on the American Community Survey. They find unauthorized startups are roughly 30% in construction, 19% in professional and administrative services, and 17% in general services. We assume that 10% of foreign-born employer-firm owners are unauthorized and derive the authorized-immigrant sector mix as the residual of the foreign-born mix net of the AIC unauthorized mix.

The cumulative drag in 2055 changes by about 0.003 percentage points as the unauthorized-owner fraction is varied between 0.05 and 0.20, so the sector results are robust to this assumption.

Appendix B: Channels Decomposition and the Long-Run Shape of Productivity Losses

The cumulative productivity drag traces a hump shape (Figure 4): it grows steadily through the late 2020s and 2030s, peaks at about 0.44% under EVW Low and 0.25% under EVW High around 2052, and recedes modestly thereafter. The shape reflects the interaction of three distinct channels in the model — direct entry, aging, and reallocation — that move on different time scales. This appendix sets out the formal three-way decomposition that separates the three, presents the cumulative contributions at 2055 and 2075, and shows what happens further out using a long-horizon extension of the model through 2098.

Decomposing the annual drag. Index a cell by firm age j , founder status s , and sector k . Define the unnormalized employer-firm employment mass in each cell as

$$x_{j,s,k,t} = F_{j,s,k,t} \bar{h}_j,$$

where $F_{j,s,k,t}$ is the count of age- j employer firms in calendar year t founded by status- s entrepreneurs in sector k , and $\bar{h}_j$ is the average employment of an age- j firm. Both are built up in Appendix C from Stage 2's entry and survival schedules. The total employment mass is $X_t = \sum_{j,s,k} x_{j,s,k,t}$, the normalized employment weight is $\omega_{j,s,k,t} = x_{j,s,k,t} / X_t$, and the headline specification uses sector-specific profiles $g_{j,k}$, so aggregate productivity growth and the annual drag, written cell-by-cell, are

$$\Delta\Phi_t = \sum_{j,s,k} \omega_{j,s,k,t} g_{j,k}, \quad \delta_t = \sum_{j,s,k} g_{j,k} (\omega_{j,s,k,t}^{\text{baseline}} - \omega_{j,s,k,t}^{\text{policy}}).$$

Let $m_{j,s,k,t} = x_{j,s,k,t}^{\text{baseline}} - x_{j,s,k,t}^{\text{policy}}$ denote the missing employer-firm employment mass per cell. This mass splits mechanically into contemporaneous missing entry ($j = 0$) and propagated missing cohorts ($j \geq 1$):

$$m_{j,s,k,t}^{\text{direct}} = \mathbf{1}\{j = 0\} (E_{s,k,t}^{\text{baseline}} - E_{s,k,t}^{\text{policy}}) \bar{h}_0$$

$$m_{j,s,k,t}^{\text{aging}} = \mathbf{1}\{j \geq 1\} (E_{s,k,t-j}^{\text{baseline}} - E_{s,k,t-j}^{\text{policy}}) \left(\prod_{\ell=0}^{j-1} s_\ell \right) \bar{h}_j,$$

where $E_{s,k,t}$ is the annual entry of new (age-0) firms in cell (s, k) and year t , and s_ℓ is the empirical survival rate from firm age ℓ to $\ell + 1$ (always carrying a subscript, to distinguish it from the founder-status index s). With these, $m_{j,s,k,t} = m_{j,s,k,t}^{\text{direct}} + m_{j,s,k,t}^{\text{aging}}$. The gross direct and gross aging effects measure the productivity contribution of these missing masses, evaluated at the baseline employment denominator:

$$\delta_t^{\text{direct}} = \sum_{j,s,k} g_{j,k} \frac{m_{j,s,k,t}^{\text{direct}}}{X_t^{\text{baseline}}}, \quad \delta_t^{\text{aging}} = \sum_{j,s,k} g_{j,k} \frac{m_{j,s,k,t}^{\text{aging}}}{X_t^{\text{baseline}}}.$$

The reallocation offset is the residual induced by renormalizing employment shares to sum to one in the policy scenario; equivalently, because $X_t^{\text{baseline}} - X_t^{\text{policy}} = \sum_{j,s,k} m_{j,s,k,t}$, it can be written as

$$\delta_t^{\text{reallocation}} = \delta_t - \delta_t^{\text{direct}} - \delta_t^{\text{aging}} = -\frac{X_t^{\text{baseline}} - X_t^{\text{policy}}}{X_t^{\text{baseline}}} \sum_{j,s,k} \omega_{j,s,k,t}^{\text{policy}} g_{j,k}.$$

The three terms sum to the net annual drag identically:

$$\delta_t = \delta_t^{\text{direct}} + \delta_t^{\text{aging}} + \delta_t^{\text{reallocation}}.$$

The first two terms are positive whenever the policy scenario has fewer firms — they are the gross productivity-growth contribution of the missing employment mass. The reallocation term carries the opposite sign and partially offsets the gross drag, reflecting the mechanical renormalization of employment shares toward the firms that remain in the policy scenario. “Reallocation” here rescales *all* surviving policy-scenario firms (native, authorized, and unauthorized; young and old; across all sectors) but in practice it mostly lands on native-founded firms only because they form the bulk of the surviving population. The cumulative contribution of each channel through year T is the running sum of its annual contribution.

Cumulative productivity-level effect at peak and at 2075 (reported as $-\delta_t$ for consistency with the sign convention used elsewhere: negative entries mean a channel lowers productivity; positive entries mean it raises productivity):

Table 3. Cumulative Productivity-Level Effect

Scenario	Year	Gross Direct	Gross Aging	Reallocation Offset	Net Effect
EVW Low	2055	-0.36%	-0.51%	0.44%	-0.44%
EVW Low	2075	-0.49%	-0.71%	0.88%	-0.31%
EVW High	2055	-0.2%	-0.29%	0.25%	-0.25%
EVW High	2075	-0.28%	-0.41%	0.5%	-0.18%

Table: The Budget Lab • Created with [Datawrapper](#)

Two patterns are worth highlighting. First, the gross aging effect overtakes the gross direct effect within the first decade under both scenarios: as the missing cohorts from the 2020s propagate through the firm age distribution, their accumulated absence dominates the contribution of current-year missing entry. Second, the reallocation offset grows faster than either gross effect after 2052 — the incremental annual direct and gross aging effects begin to stabilize as the firm age distribution converges toward its new long-run shape, but the reallocation offset keeps expanding because the total employment-mass shortfall keeps growing through the descendants channel (fewer children of immigrants means smaller population means a permanent fall in the number of businesses and therefore more reallocation to existing ones; this effect has not yet peaked by 2055) and missing smaller young firms turning into missing larger old firms. This widening reallocation offset and slowing direct/aging effects are what mechanically drives the post-2052 decline in the cumulative net drag.

Figure 7. Cumulative Productivity-Level Effect Through 2098

Cumulative productivity-level effect (policy minus baseline)
Overlay of policy scenarios; below zero means lower productivity

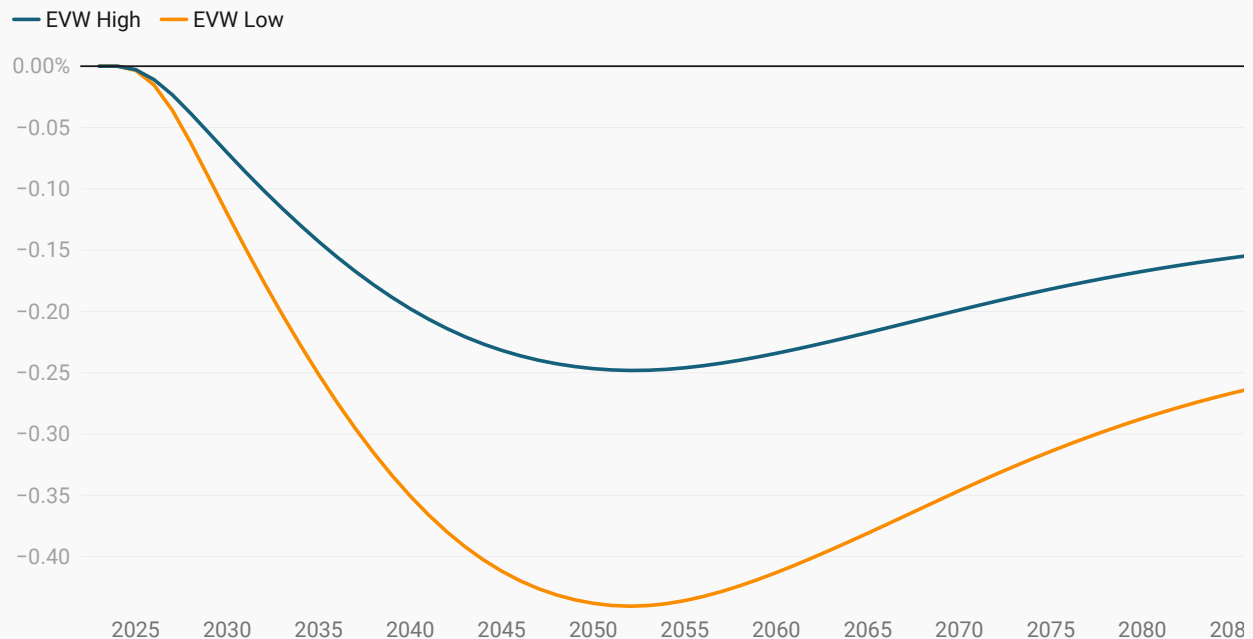


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Cumulative Productivity-Level Effect Through 2098

Past 2075 the cumulative drag continues to decline, but the rate of decline slows. Between 2075 and 2098 (the upper end of the data range in CBO's January 2025 demographic projection) the EVW Low curve falls from about 0.31% to about 0.23%, and the EVW High curve falls from about 0.18% to about 0.14%. Without further assumptions on the long-run demographic outlook we cannot definitively show whether this wedge will stabilize or converge back to 0. Intuitively, the effect will fully disappear if the policy and baseline population distributions converge in the long run; if the policy and baseline population distributions differ permanently (e.g., if the population is permanently smaller due to policy), then the wedge will stabilize to a finite value.

Appendix C: Methodology

The Model

The framework is a three-stage accounting exercise that maps an immigration scenario into a path for aggregate productivity. Each stage draws on existing data and published research; no parameters are newly estimated. The exercise is partial equilibrium (productivity does not feed back into prices, wages, fertility, or migration) and the headline results capture solely the business-formation channel of immigration policy.

The three stages chain as follows. Stage 1 evolves the U.S. population forward using a cohort-component demographic model with three population groups (native-born, authorized foreign-born, and unauthorized foreign-born); net migration is the policy lever, and the EVW scenarios differ from the CBO January 2025 baseline through their projected immigration and emigration flows. Stage 2 combines each year's

population with age- and status-specific founding rates to produce new-employer-firm entry, then propagates entry cohorts through fixed survival and employment profiles taken from the Census Bureau's Business Dynamics Statistics (BDS) to yield an employment-weighted firm age distribution. Stage 3 maps the firm age distribution into aggregate productivity growth using sector-specific age-productivity profiles estimated by [Alon, Berger, Dent, and Pugsley \(2018\)](#), and reports the baseline-minus-policy gap.

The unit of analysis throughout is the U.S. employer firm: a business with at least one paid employee, as defined in the BDS. This dataset excludes single-person businesses, proprietorships without paid employees, and the informal sector. This is the same population on which the [Azoulay, Jones, Kim, and Miranda \(2020\)](#) founder-age density and the ABDP (2018) age-productivity profiles are estimated.

Notation. Index age by a , calendar year by t , and firm age by j . The population is tracked in three groups by immigration status: native-born, authorized foreign-born (auth), and unauthorized foreign-born (unauth). A “baseline” superscript denotes the CBO January 2025 path and a “policy” superscript denotes an EVW scenario. The object of interest at each stage is the difference between the two paths.

Stage 1: Population Dynamics

We evolve each status population forward with a cohort-component model. For ages $a \geq 1$, next year's population $N_{a,t+1}$ is this year's cohort, one year older and net of mortality, plus net migration:

$$N_{a,t+1}^{\text{native}} = N_{a-1,t}^{\text{native}} (1 - d_{a-1,t})$$

$$N_{a,t+1}^{\text{auth}} = N_{a-1,t}^{\text{auth}} (1 - d_{a-1,t}) + M_{a,t+1}^{\text{auth}}$$

$$N_{a,t+1}^{\text{unauth}} = N_{a-1,t}^{\text{unauth}} (1 - d_{a-1,t}) + M_{a,t+1}^{\text{unauth}}$$

where $d_{a,t}$ is the age-specific mortality rate and $M_{a,t}^{\text{auth}}$ and $M_{a,t}^{\text{unauth}}$ are net migration flows. Net migration is the policy lever; the EVW scenarios differ from baseline through these two terms.

Births enter at age 0, and every newborn is native-born:

$$N_{0,t+1}^{\text{native}} = \sum_a (f_a^{\text{native}} N_{a,t}^{\text{native},F} + f_a^{\text{auth}} N_{a,t}^{\text{auth},F} + f_a^{\text{unauth}} N_{a,t}^{\text{unauth},F})$$

$$N_{0,t+1}^{\text{auth}} = N_{0,t+1}^{\text{unauth}} = 0$$

where f_a^s is the age-specific fertility rate of status- s women and $N_{a,t}^{s,F}$ is the corresponding female population. The missing population is the baseline-minus-policy difference, $\Delta N_{a,t} = N_{a,t}^{\text{baseline}} - N_{a,t}^{\text{policy}}$. Because some missing people are women of childbearing age, the population wedge continues to evolve even after net migration returns to baseline.

Initial conditions N_{a,t_0}^s are taken from the CBO January 2025 Demographic Outlook combined with Migration Policy Institute estimates of the authorized-vs-unauthorized split within the foreign-born population. Mortality rates $d_{a,t}$ also come from CBO; fertility rates f_a^s are based on CBO projections with status-specific differentials estimated from MPI and ACS microdata. All three rates are held identical across scenarios; the only object that differs between baseline and policy is net migration.

Stage 2: Firm Entry and the Firm Age Distribution

New employer-firm entry in year t is the population weighted by age- and status-specific startup rates:

$$E_t = \sum_a (\varepsilon_a^{\text{native}} N_{a,t}^{\text{native}} + \varepsilon_a^{\text{auth}} N_{a,t}^{\text{auth}} + \varepsilon_a^{\text{unauth}} N_{a,t}^{\text{unauth}})$$

The status-specific rates are tied to the native rate by entrepreneurship premiums:

$$\varepsilon_a^{\text{auth}} = \pi^{\text{auth}} \varepsilon_a^{\text{native}}, \quad \varepsilon_a^{\text{unauth}} = \pi^{\text{unauth}} \varepsilon_a^{\text{native}}$$

The shape of the native age profile is taken from [Azoulay, Jones, Kim, and Miranda \(2020\)](#). Its level is set by a scaling constant α so that total modeled entry matches Business Dynamics Statistics employer-firm entry in the base year t_0 :

$$\sum_a (\varepsilon_a^{\text{native}} N_{a,t_0}^{\text{native}} + \varepsilon_a^{\text{auth}} N_{a,t_0}^{\text{auth}} + \varepsilon_a^{\text{unauth}} N_{a,t_0}^{\text{unauth}}) = E_{t_0}^{\text{BDS}}$$

Entry cohorts age into a firm age distribution through fixed survival rates. With s_j the probability that an employer firm survives from age j to age $j + 1$, the number of age- j firms in year t is:

$$F_{j,t} = E_{t-j} \prod_{k=0}^{j-1} s_k$$

What matters for productivity is the employment-weighted age distribution. With $\bar{h}_j$ the average employment of an age- j firm:

$$\omega_{j,t} = \frac{F_{j,t} \bar{h}_j}{\sum_{j'} F_{j',t} \bar{h}_{j'}}$$

Survival rates s_j and average employment by firm age $\bar{h}_j$ are both taken from Business Dynamics Statistics empirical profiles and held time-invariant across years and scenarios. In the headline specification, each entry cohort is also split into founder-status $\times$ sector cells at birth, using the per-status sector mixes documented in Appendix A. Each firm carries its founder status and birth-cohort sector through its lifecycle, so the firm count and employment weights are tracked as $F_{j,t,s,k}$ and $\omega_{j,t,s,k}$ over firm-age, founder-status, and sector cells rather than firm age alone.

Stage 3: Productivity

Aggregate productivity growth in year t is the employment-weighted average of age-specific productivity-growth rates g_j from [Alon, Berger, Dent, and Pugsley \(2018\)](#):

$$\Delta\Phi_t = \sum_j \omega_{j,t} g_j$$

The annual productivity drag is the gap between baseline and policy:

$$\delta_t = \Delta\Phi_t^{\text{baseline}} - \Delta\Phi_t^{\text{policy}} = \sum_j g_j (\omega_{j,t}^{\text{baseline}} - \omega_{j,t}^{\text{policy}})$$

The cumulative shortfall reported in Figure 4 is the running sum of annual drag:

$$\Delta\Phi_T = \sum_{t=t_0}^T \delta_t \approx 1 - \frac{\Phi_T^{\text{policy}}}{\Phi_T^{\text{baseline}}}$$

The annual drag admits an exact three-way decomposition into a gross direct entry effect, a gross aging effect, and a reallocation offset; see Appendix B for the formal decomposition and a table of cumulative contributions at 2055 and 2075.

Two transportability assumptions underlie the Stage 3 calculation. First, we take ABDP’s age-productivity profile g_j as a structural feature of the firm lifecycle: the same g_j schedule applies to baseline and policy scenarios, and to all calendar years over our horizon. ABDP estimate g_j from historical U.S. variation in startup rates and report substantial robustness of the profile’s shape across CBSAs, across pre- and post-2005 subperiods, and under a demographic instrument; we view this as supporting the use of g_j in our counterfactual. Second, by holding s_j and $\bar{h}_j$ time- and scenario-invariant, we treat the relationship between firm-aging and size as an invariant as well. Both choices isolate the immigration shock to entry only, so that it operates by changing how many young firms are born but not by changing how young firms grow or survive.

The cumulative shortfall is reported as a *level* gap in productivity, not a permanent reduction in the growth rate. Annual growth $\Delta\Phi_t$ is lower than baseline during the ramp-up phase but returns to baseline once the firm age distribution stabilizes at its new long-run composition; the cumulative $\sum \delta_t$ measures the permanent level gap that accumulates while growth is depressed. The approximation $\sum \delta_t \approx 1 - \Phi_T^{\text{policy}} / \Phi_T^{\text{baseline}}$ holds for small per-year drags; in our scenarios the per-year drag is at most about 3 basis points and the approximation is accurate to within 0.001 percentage point through 2075.

Constructing the EVW Scenarios

EVW project two near-term policy paths (Trump Low/Extreme and Trump High) for 2025 and 2026, alongside a Long Run normal-policy column. We use the Trump Low/Extreme path to construct “EVW Low” and the Trump High path to construct “EVW High.”

Because EVW’s projections cover only 2025–2026, we proceed as follows. For each migration component, we take the difference between the EVW path and EVW’s own Long Run column to calculate a policy wedge, and apply that wedge to the CBO January 2025 baseline:

$$\text{wedge} = (\text{EVW scenario}) - (\text{EVW Long Run})$$

$$\text{policy path} = (\text{CBO January 2025 baseline}) + \text{wedge}$$

The wedges apply directly in 2025 and 2026, then fade linearly to zero across 2027–2028 so that this scenario’s immigration projections track the CBO baseline path from 2029 onward. Temporary visas and ordinary outmigration are netted against each other before they affect authorized flows.

Entrepreneurship Premiums

The headline calibration sets the relative-to-natives rate of authorized-immigrant entrepreneurship $\pi^{\text{auth}} = 1.8$ and the unauthorized-immigrant rate $\pi^{\text{unauth}} = 1.0$.

The authorized premium matches the aggregate immigrant entrepreneurship premium estimated by [Azoulay, Jones, Kim, and Miranda \(2022\)](#), under the interpretation that employer firms observed in the Longitudinal Business Database primarily reflect authorized founders. The unauthorized ratio of 1 assumes no per-capita employer-firm startup advantage for unauthorized immigrants relative to native-born Americans. Under this calibration, reduced unauthorized immigration affects business formation through fewer people and an older age structure rather than through a per-capita premium. The implied population-weighted aggregate immigrant entrepreneurship premium is about 1.6.

Footnotes

- 1 Our notion of unauthorized immigrants follows the [Migration Policy Institute's](#) definition. Unauthorized includes both those who have entered illegally or overstayed and some individuals with liminal or temporary protections. Authorized is shorthand for the residual foreign-born group, including naturalized citizens, lawful permanent residents, and many temporary-status holders. See the appendix for more details.
- 2 There are reasons to expect that unauthorized immigrants have lower employer-firm startup rates than authorized immigrants: structural barriers such as EIN requirements, banking access, and licensing; legal exposure; educational differences; and the empirical observation that unauthorized self-employment is concentrated in unincorporated, often necessity-driven activity that lies outside our employer-firm universe. Our baseline calibration accordingly sets the authorized-immigrant premium to 1.8 (matching the Azoulay et al. aggregate under the interpretation that their dataset, the Longitudinal Business Database, predominantly captures authorized founders) and the unauthorized-immigrant premium to 1.0; details and sensitivities are in Appendix A.
- 3 A second major factor is the continued growth of the reallocation effect over time. For more discussion of this interplay and of the long run behavior of the productivity shortfall, see the appendix.
- 4 This native reallocation effect is a subset of the full reallocation effect calculated in Appendix B.