

MIGRATION SHOCKS & REVENUE FORECASTING

A REMI-Based Assessment of Massachusetts' Fiscal Exposure

Housing and Property Tax Base Implications

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DISCLAIMER

A Note on the Nature of This Work

This presentation reflects the author's own independent research and personal views.

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Table of Contents

Act 1

Why This, Why Now

Recent policy actions, and the empirical case for dynamic simulation over a static estimate

Act 2

How We Approached It

Scenario design, data sourcing, and REMI Tax-PI+ input construction

Act 3

Results

Static-vs-dynamic comparison, GDP trajectory, mechanism check, assumption check

Act 4

So What

A land-value-tax case study, and limitations

RECENT POLICY TIMELINE

What Actually Happened, 2025-2026

Date	Student Visas	Enforcement / TPS
2025 Jan-Jul		Immigrant workers down ~1.2M (Pew analysis of preliminary Census data)
2025 Feb 5		Venezuela TPS termination announced
2025 May	Nationwide Student Visa Interview Pause	
2025 Jun–Aug	Expanded Vetting & Travel Restrictions	
2026 Jul 17	DHS Final Rule: Ending "Duration of Status" (D/S)	
2026 Sep 14	Court Postpones D/S Rule and New OPT Deadlines	

RECENT POLICY TIMELINE, CONTINUED

What Actually Happened, 2025-2026

Date	Student Visas	Enforcement / TPS
2025 Oct 3		SCOTUS Allows Venezuela TPS Termination
2025 Dec 16	Travel ban expanded to 39 countries (effective Jan 1, 2026)	
2026 Feb 2		Federal Court Blocks Haiti TPS Termination
2026 Jun 8		MA Court Rules H-1B \$100K Fee Unlawful (Appeal Pending)
2026 Jun 25		SCOTUS (Mullin v. Doe) allows Haiti/Syria TPS termination
2026 Jul 27		Haiti TPS Termination Takes Effect

THE CASE FOR DYNAMIC SIMULATION

Static Estimates Miss the Native-Worker Spillover

East et al. (2023, Journal of Labor Economics): reducing immigration enforcement lowers native-born wages and employment too — evidence that immigrant and native labor are complements, not substitutes.



REMI captures the local-spending channel. In my understanding, it does not capture East's complementarity effect.

THE CASE FOR DYNAMIC SIMULATION, CONTINUED

The Mechanism, Part 1: Labor Costs

East et al. (2023) identify and empirically support two specific channels linking reduced immigrant labor supply to lower demand for NATIVE labor too:

1. Higher Labor Costs -> Less Job Creation

Low-skill (often immigrant) and higher-skill (often native) labor are COMPLEMENTS in production, not substitutes -- like a construction crew needing both laborers and a skilled supervisor. Removing low-skill labor raises the cost of assembling that full production package, so firms create fewer jobs overall -- including the higher-skill native jobs that depended on it.

THE CASE FOR DYNAMIC SIMULATION, CONTINUED (PART 2)

The Mechanism, Part 2: Local Consumption

2. Reduced Local Consumption

Workers who are deported, deterred, or work fewer hours stop spending locally -- on housing, groceries, restaurants, services. That drop in local demand supports fewer local jobs across the board, regardless of who would have held them. A standard local-demand channel, separate from the production-side effect on the previous slide.

The evidence this is complementarity, not competition:

Secure Communities enforcement hurt MID-TO-HIGH-SKILL native workers specifically -- not low-skill natives, who should have gained from less competition if this were a simple substitution story.

The Literature Disagrees on Direction

Three empirical studies of native/domestic labor-market response to an immigration shock point in three different directions:

NEGATIVE

East et al. (2023)

Uses the staggered county-by-county rollout of Secure Communities (2008-2013), a police-fingerprint-sharing enforcement program, as a natural experiment. Finds that removing low-skill immigrant workers also reduced employment and wages for U.S.-born citizens in middle-to-high-skill jobs -- evidence the two groups are complements in production, not competitors.

The Literature Disagrees on Direction

ZERO

Clemens et al. (2018)

Uses the 1964 end of the Bracero guest-worker program (which had legally brought Mexican farm laborers into the U.S.) as a natural experiment. Compares farm regions that relied heavily on Bracero workers to those that didn't, before and after termination. Native farm employment and wages did not rise as classical substitution theory predicts -- farms mechanized instead.

The Literature Disagrees on Direction

POSITIVE

Treyz & Evangelakis (2018)

REMI's own paper: sets international immigration to zero (a 100% cut) in REMI's national model, continuously from 2018 to 2060, and simulates the U.S. economy with no immigration at all for four decades. Finds GDP and labor force about 20% lower by 2060 -- but the paper itself notes per-capita income effects are minor and sensitive to labor/capital market assumptions.

Which Population Does Each Group Cover?

Three groups -- only the student group is quantified here.

F-1 / OPT International Students

84,000 baseline -- the quantified group. Lower (6.2%)/Upper (9.5%) = NAFSA/JBI's own multi-year national trajectory, applied to MA.

All Other Immigrant Workers

~840,700 MA immigrant workers (22.3% of employment)

H-1B

Ruled unlawful
June 2026

All other immigrant workers: a necessary part of a full immigration-shock assessment, but its detailed analysis is deferred to a follow-up (rough scale and key issue follow). H-1B: fee ruled unlawful by MA federal court, 2026-06-08 (appeal pending) -- I conclude there is no significant H-1B shock.

Why H-1B Has No Quantified Shock

Proposed mechanism	\$100,000 fee on new H-1B petitions + wage-weighted lottery, targeting low-wage H-1B hiring in healthcare/biotech
Legal status	MA federal court ruled the \$100,000 fee unlawful on June 8, 2026 (executive overreach), then paused its ruling pending appeal
Even before the ruling	Empirical analysis found the fee had NOT reduced the annual 85,000 H-1B cap -- it mainly shifted which applicants applied (fewer from abroad, more already in the U.S.)
Conclusion	A legally unsettled policy plus evidence it wasn't working as intended -- I conclude there is no significant H-1B shock

Source: cis.org/Miano/100K-H1B-Entry-Fee-Did-Not-Reduce-H1B-Visas

All Other Immigrant Workers: Needed, but Deferred

A complete immigration-shock assessment needs this group too: MA has ~840,700 immigrant workers (22.3% of employment), about ten times the ~84,000 international students. Its detailed analysis is deferred to a follow-up; this presentation quantifies the student group only.

Rough static scale (state taxes, per year)	Estimate
International students (Lower / Upper scenario)	\$4.1M / \$6.3M

All other immigrant workers (illustrative: national-rate decline,
~32,000 workers)

~\$54M (up to ~\$70M)

Author's rough calculation from ITEP (2024) per-worker state taxes and MPI (unauthorized employment; 22.3% immigrant share of employment); income + sales/excise taxes only, no local property tax.

Key Issue: Unauthorized vs. Authorized Workers

- **Who is affected?** About 31% of MA's immigrant workers are unauthorized (~261,000 of ~840,700; MPI, 2023).
- **They pay taxes.** ITEP estimates ~\$650M a year in MA state and local taxes (2022): income \$274M, property \$210M, sales/excise \$161M.
- **Authorized workers are at risk too.** TPS holders work legally until TPS ends (Haiti: Jul 27, 2026), and likely pay more per worker (ITEP: ~30% more taxes with work authorization).
- National data cannot separate these groups, and a net decline mixes departures with fewer new arrivals -- the split drives both the size and the timing of the loss, so it needs MA-specific data.

REMI TAX-PI+ INPUTS

Population, Industry Output & Employment Shocks

Variable	Lower	Upper
Population shock (persons, full effect)	5,208	7,980
Educational Services output	\$137.0M	\$209.9M
Real Estate & Rental output	\$31.9M	\$48.8M
Food Services output	\$30.8M	\$47.1M
Retail / Other output	\$17.6M	\$26.9M
University FTE jobs at risk	73	112

Shock entered for 2025-2027 only: one fixed window for the static-dynamic comparison, matching the NAFSA/JBI forecast and the three-year 2017-2019 decline.

SCENARIO DESIGN

Baseline and the Two Scenarios — Grounded in NAFSA/JBI's Own Methodology

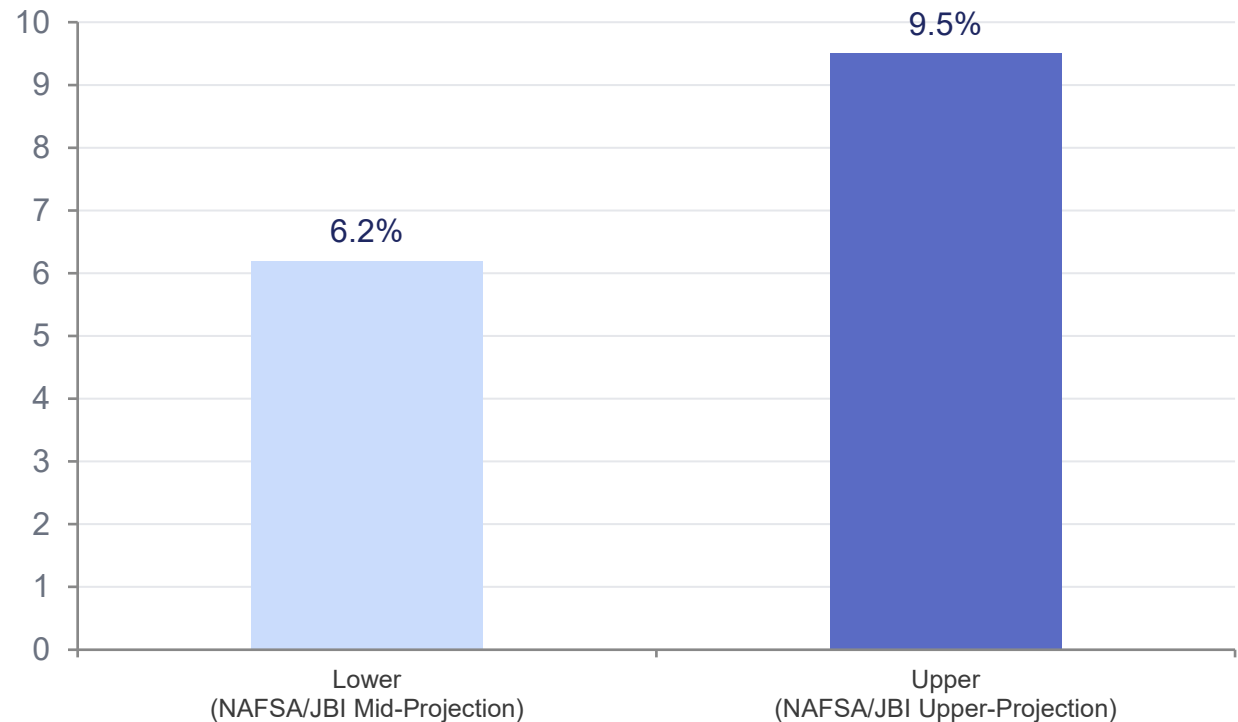
84,000

MA international students, 2024-25

\$41,700

per-capita annual spending

NOTE: Lower and Upper are NAFSA/JBI's own Mid-Projection and Upper-Projection national decline rates -- the SAME multi-year survey methodology, not two different kinds of evidence. UMass Amherst (5%) and UMass Boston (17%) individual-institution observed declines are no longer main scenarios; they serve as real-world reference points only.



How Certain Is Each Number, Ranked

MOST CERTAIN	84,000 students / \$41,700 per-capita	Officially reported statistics (NAFSA/Open Doors)
	Lower (6.2%) / Upper (9.5%)	NAFSA/JBI's own multi-year national survey trajectory -- one consistent methodology, not two kinds of evidence. Used for this study.
	UMass Amherst (5%) / UMass Boston (17%)	Real observed headcount changes -- now external reference points
Least Certain	University jobs/1,000 students = 14	Analyst judgment -- no direct source; cross-checked only (see 'Is 14 a Reasonable Guess?')

Where Each Rate in the Chain Comes From

Value	What It Is	Source / Certainty
28%	Share of spending that is sales-taxable	UMass Amherst official cost breakdown -- tuition/rent are exempt
6.25%	MA sales tax rate	Massachusetts statutory rate -- exact, not an estimate
14	University jobs lost per 1,000 students	My judgment; Delta Cost Project shows 5-10 per 1,000
\$79,331	Average wage per job lost	BLS series, MA "Education & Health Services" (broader than higher-ed alone)
5%	MA income tax rate	Massachusetts statutory rate -- exact, not an estimate

Two are exact law, two are real-but-imperfect data, one has no direct source (cross-checked only) -- worth naming which is which if asked.

ASSUMPTION CHECK

Is 14 a Reasonable Guess? Three Reference Points

No direct source establishes 14 university jobs per 1,000 students lost specifically -- it remains an analyst assumption. Three comparison points exist:

NAFSA's own ratio (1 job per 3 students, ~333-360/1,000)

NOT comparable directly -- this counts jobs across the WHOLE economy (dining, housing, retail, transportation), not university employment alone.

DePaul University (real, observed): 755 fewer international students, 114 staff cut

-> ~151 university jobs per 1,000 students. A real data point, but conflates international-student decline with federal funding cuts and a broader budget crisis at that school.

Delta Cost Project / IPEDS national panel (1987-2012, research universities)

-> 5-10 jobs per 1,000 students (private research universities; public research universities like UMass saw staff-per-student ratios **DECLINE** over this period).

Two Inputs That Looked Reasonable, But Weren't

Tax-PI+ (REMI's PI+ engine paired with a government-budget module) was used for this run. Two intuitive-seeming inputs both produced suspiciously small dynamic results -- for two different, instructive reasons, covered on the next two slides.

Attempt 1: Static Tax Revenue Effect

What we did:

Entered the static first-round tax-revenue-loss figure (\$4-6M) directly as the model input.

Why it failed:

Tax-PI+ reads a revenue input as a **GOVERNMENT BUDGET shock** -- it models the consequences of the state having less money (e.g., reduced spending), **not the consequences of the underlying population/spending contraction that actually caused the revenue loss.** This captures only the small government-spending multiplier -- the large direct private-sector/consumer-spending channel is never entered at all.

Attempt 2: "College Population" Variable

What we did:

Entered the headcount decline directly into REMI's "College Population" policy variable.

Why it failed:

REMI appears to treat college students as a "special population" -- held out of the standard age-cohort equations and (per Census Group Quarters data) largely outside the labor force. It does not flow through the same labor-force-participation and consumption equations that drive REMI's large multiplier effects.

The Fix

Enter the INDUSTRY OUTPUT (spending) variables instead -- they model the actual reduced spending directly, bypassing both pitfalls.

From Enrollment Decline to Tax Revenue Loss

	Lower	Upper
Students lost (gross)	5,208	7,980
Net spending loss	\$217.2M	\$332.8M
Sales + income tax revenue loss	\$4.09M	\$6.27M

First-round only -- no multiplier effects. All rates traced to named sources in the underlying workbook.

HOUSING IMPLICATIONS

Short-Term Rental Market vs. Long-Term Property Tax

ACTIVE — Short-Term Rental Market

Lower **\$31.9M**

Upper **\$48.8M**

Net spending loss x 14.7% housing share (UMass Amherst official Cost of Attendance). First-round, no multiplier.

INACTIVE — Long-Term Property Tax Base

MA has a structural housing shortage (~220,000+ unit deficit projected by 2030; ~1-2 months of supply vs. a 4-6 month balanced market). Reduced student rental demand is unlikely to depress purchase prices/assessed values under these conditions.

I conclude there is no long-run property tax effect from this shock.

A Live Signal: September 2026 Vacancy Data

Boston Pads (real-time rental data provider, cited by NBC10 Boston, Aug 31) reports a sharp vacancy jump this move-in season -- consistent with this workbook's ACTIVE short-term rental channel:

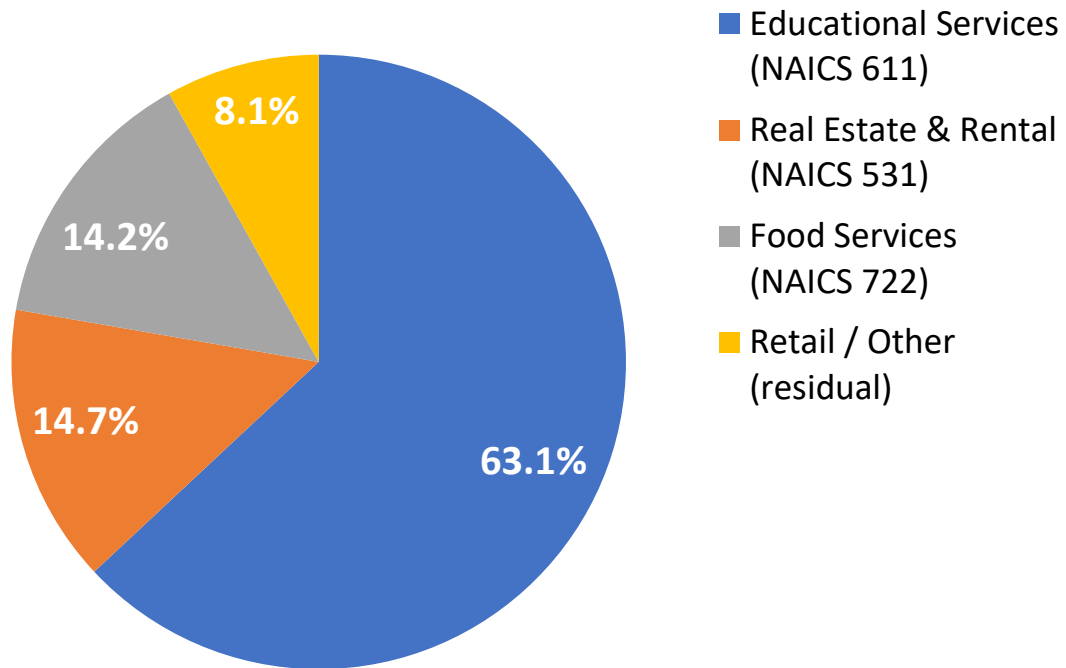
Boston apartment vacancy rate (Sept 10)	4.54%, vs. 1.72% a year ago -- about 2.6x
Rentable rate (incl. soon-available units)	4.90%, vs. 2.06% a year ago
Right after Sept 1 move day (Sept 4 snapshot)	1.67%, vs. 0.47% a year ago -- about 4x
Greater Boston vacancy rate (Sept 10)	4.23%, vs. 1.73% a year ago -- about 2.45x

Boston Pads' CEO attributes this specifically to fewer incoming international students -- who disproportionately co-lease larger, multi-bedroom units near campus.

Rents have NOT fallen outright (+3.3% year-over-year) but are down 1.6% from 90 days ago -- read this as an early, real-time signal consistent with the modeled channel, not as proof of the modeled dollar amounts.

How the Spending Loss Splits Across Industries

Every dollar of net spending loss is allocated using UMass Amherst's official international-student cost-of-attendance breakdown -- the same 4 categories map directly onto standard NAICS industry codes:



Tuition/education

63.1% -- the largest single channel

Housing

14.7% -- feeds the rental-market channel

Food

14.2%

Retail / Other

8.1% -- books, travel, insurance, misc.

STATIC VS. DYNAMIC COMPARISON

Static vs. Dynamic: About 3.5x

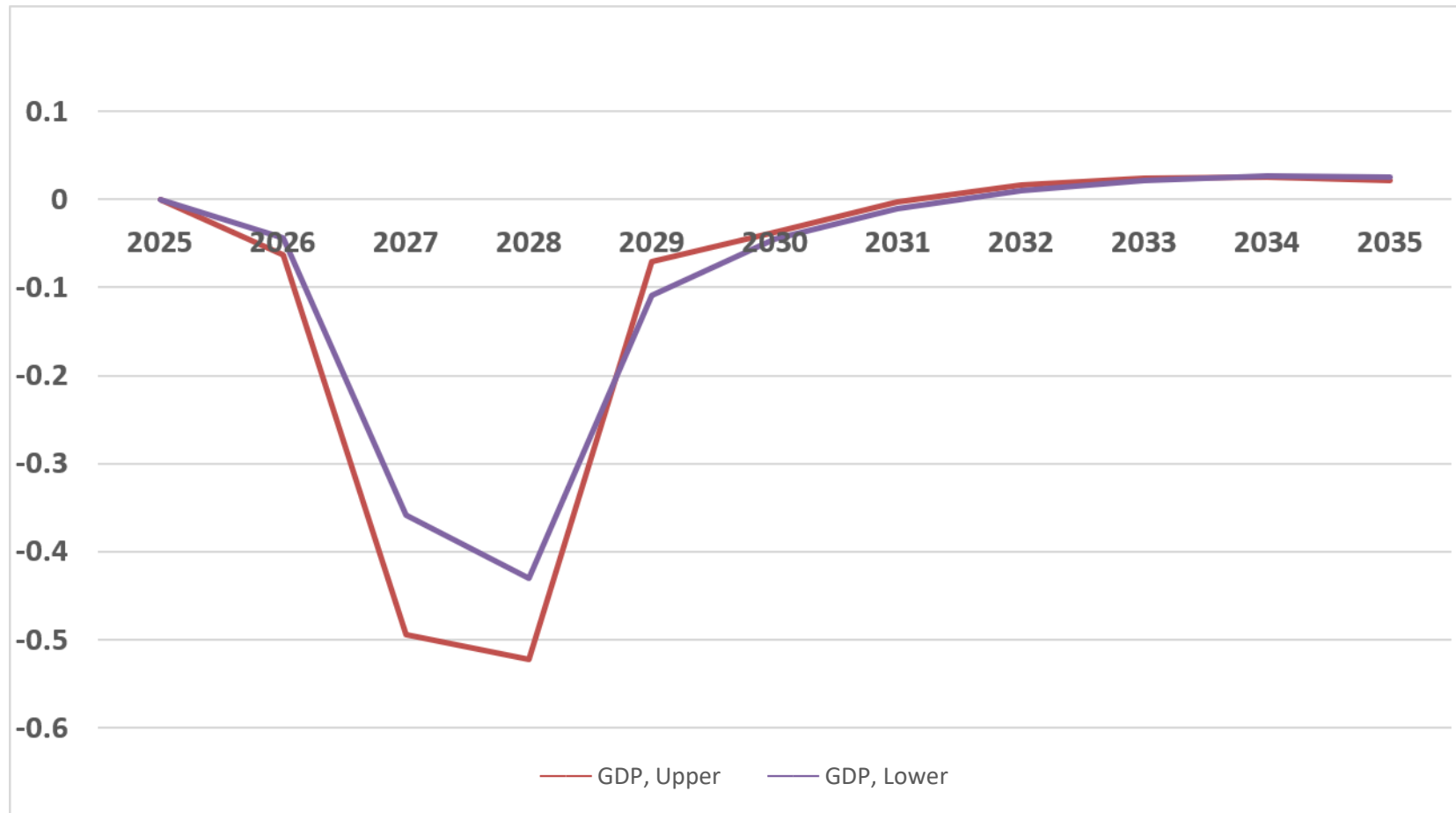
Static = annual first-round loss x 3 shock years. Dynamic = full effect over time, including the recovery. The gap reflects standard indirect and induced effects -- not proof of the East et al. spillover.

Scenario	Static Tax Revenue Loss	REMI Dynamic Tax Revenue Effect	Multiplier (Dynamic/Static)
Lower	\$4.09M x 3 yrs	<i>\$43.0M</i>	<i>3.5</i>
Upper	\$6.27M x 3 yrs	<i>\$65.8M</i>	<i>3.5</i>

Dynamic effect is about 3.5x the static estimate in both scenarios (static = 3-year total; dynamic = full effect over time).

GDP trajectory by scenario due to international college student shock (\$Billion)

Tax-PI+ GDP effect, phased in over 2025-2027: about \$0.4-0.5B lower at the worst point (around 2028), back near zero by about 2031.



Nontradable Sectors: A Mechanism Check

East et al. (2023) find larger negative effects concentrated in nontradable sectors — retail, food service, construction — consistent with a local-demand-contraction channel.

If REMI's own simulation shows a similar concentration of impact in nontradable sectors, it would be consistent with the mechanism — not just a modeling artifact of REMI's input-output structure.

This sector-by-sector check is not shown in this deck's current results slides -- state the verdict live if sector-level REMI output is reviewed separately.

Housing Market Implications

Earlier, we noted that Massachusetts' structural housing deficit—projected at over 220,000 units—effectively prevents student departures from dampening property tax assessments in the short term.

How can local jurisdictions build fiscal resilience against dynamic revenue shocks? As a methodological case study, it may be worth examining Land Value Taxation (LVT) based on recent research by Murphy and Seegert (2026).

“Murphy, D., & Seegert, N. (2026). Implicit land taxes and their effect on the real economy. *Journal of Public Economics*, 261, Article 105735.”

Murphy & Seegert (2026): Published Findings

Outcome (per 1-point higher implicit land tax)	OLS (20-yr, 2000-2020)	IV (2010-2020)
Population density growth	1.48% - 1.92%	7.03%
Business-establishment formation	2.073%	6.913%
Wage earnings growth	1.932%	5.979%

Real, empirical, county-level data (2000-2020). The results are for 1 percentage point higher in the tax on land.

LAND VALUE TAX PROXY, CONTINUED

How This Was Actually Measured

No new law or explicit land tax is needed to measure this -- the study exploits a gap that already exists inside ordinary property tax systems.

1 Two valuations of the same land

For each county, compare what the MARKET says a property's land is worth (from actual sale prices) against what the county tax ASSESSOR's own formula implicitly assigns to the land portion of assessed value.

2 The gap is an implicit tax (or subsidy)

If assessors weight land more heavily than the market does, land faces a higher effective marginal tax burden than intended -- an 'implicit land tax' -- even though no explicit land tax exists and the statutory rate is the same for everyone.

LAND VALUE TAX PROXY, CONTINUED (PART 2)

How This Was Actually Measured

3 Real data, 2000-2020, across the U.S.

Using actual county-level assessment and sale-price records, the authors find this implicit land tax varies widely across counties -- purely from idiosyncratic differences in how assessors do their job, not from any deliberate policy.

4 Higher implicit land tax -> faster growth

Counties with a one-point-higher implicit land tax saw measurably faster growth in business formation (2.073%) and population density (1.48-1.92%) over the following two decades -- these are the paper's own real-world findings, presented directly.

Limitations

- In my understanding, REMI's baseline labor-market clearing does not capture the complementarity effect East et al. (2023) document empirically.
- Most reference studies use national, historical, or single-sector data — treated as reference points, not direct read-throughs for MA.
- The other immigrant workers group is not quantified here (detailed analysis deferred) -- the student-group results therefore cover only part of MA's total exposure to an immigration shock.

Limitations (Continued)

- **Spring 2026 data (bachelor's -20%, master's -24% YoY) suggests the decline may be accelerating beyond what Lower/Upper capture -- these scenarios could understate the Fall 2026 reality.**

Per-student spending comes from NAFSA, which nets out U.S.-based funding (scholarships, assistantships). But it is allocated to industries using

- **undergraduate cost shares, so graduate tuition waivers, stipends, and stipend income tax are not modeled separately -- the education share is likely overstated.**

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Thank You

Questions & Discussion

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