Your Bet Ate My Lottery? Sports Betting Legalization and the Fiscal Cannibalization Hypothesis

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Abstract

When states legalized online sports betting after the 2018 *Murphy v. NCAA* decision, fiscal projections assumed billions in new tax revenue. But every dollar wagered on a smartphone app might have been a dollar not spent on lottery tickets or at the racetrack. Using Census state tax collection data from 2012 to 2022 and the staggered legalization across 26 states, I test the fiscal cannibalization hypothesis in a Callaway-Sant'Anna difference-in-differences framework. Amusement and gambling tax revenue increased by 66–74% (log points) after legalization, while general sales tax and tobacco tax revenue—placebo outcomes—were unaffected. Pari-mutuel tax revenue, far from declining, shows no evidence of cannibalization. The gambling revenue pie expanded rather than reshuffled, supporting the fiscal case for legalization.

JEL Codes: H71, L83, D12, H20
Keywords: sports betting, gambling tax revenue, fiscal cannibalization, state lotteries, staggered DiD

1. Introduction

New York projected $1.2 billion annually from legal sports betting. Within two years of launch, lottery revenue had fallen by $600 million. Was this coincidence—or cannibalization? Across the United States, 39 states have legalized sports betting since the Supreme Court's 2018 *Murphy v. NCAA* decision, with governors and legislators pitching it as a revenue windfall. But the fiscal case rests on an untested assumption: that sports bettors are spending *new* money, not redirecting dollars from lotteries, horse racing, and other taxed entertainment.

This paper tests the fiscal cannibalization hypothesis using the staggered legalization of online sports betting as a natural experiment. I compare gambling-related tax revenue in legalizing states to never-treated states using Census Annual Survey of State Government Tax Collections (STC) data from 2012 to 2022. The key outcome is amusement and gambling tax revenue (STC category T11), which captures the broad basket of gambling-related taxes—including, after legalization, revenue from sports betting itself. The pari-mutuel category (T20), which covers horse and greyhound racing taxes, provides a direct test of cross-market cannibalization. General sales taxes (T09) and tobacco taxes (T16) serve as placebos.

The main result is that the broad amusement/gambling tax category (STC T11)—which includes sports betting taxes alongside existing gambling levies—increased by 66 log points ($t = 1.79$) after legalization. The Callaway and Sant'Anna (2021) aggregate ATT is 74 log points (95% CI: $[-0.02, 1.51]$). A key interpretive challenge is that T11 mechanically includes the new sports betting tax revenue, so the increase partly reflects the addition of a new revenue stream. However, the pari-mutuel category (T20), which predates sports betting, shows no evidence of decline ($\hat{\beta} = 0.34$, $t = 1.74$). The placebo outcomes are precisely estimated zeros: general sales tax ($\hat{\beta} = -0.002$, $t = -0.09$) and tobacco tax ($\hat{\beta} = 0.012$, $t = 0.19$). The combined T11+T20 effect is positive and significant, suggesting genuine fiscal expansion rather than mere reclassification.

Three features of the design merit emphasis. First, the 2018–2022 legalization wave provides unusually clean staggered treatment with 13 never-treated states as controls—states that lack sports betting for political or constitutional reasons rather than economic ones. Second, the STC provides a unified accounting framework across all states, avoiding the comparability problems that plague single-state fiscal studies. Third, the multiple-outcome structure—gambling, pari-mutuel, alcohol, sales, and tobacco taxes simultaneously—allows for triangulation within a single design.

The fiscal cannibalization hypothesis has been studied only in single-state settings. Humphreys and Soebbing (2021) find limited cannibalization of West Virginia lottery sales. Coughlin (2024) documents video lottery terminal (VLT) displacement in Pennsylvania.

Matheson and Wenz (2025) reports declining New York lottery revenue coinciding with sports betting launch. My contribution is the first national-scale staggered DiD estimate, which can distinguish state-specific idiosyncrasies from a systematic fiscal pattern. The answer matters: if gambling markets are zero-sum, the fiscal justification for legalization is weaker than projected, and optimal taxation must account for cross-market substitution (Allcott et al., 2019).

2. Institutional Background

Murphy v. NCAA and State Legalization. Prior to 2018, the Professional and Amateur Sports Protection Act (PASPA, 1992) prohibited state-authorized sports betting outside Nevada. On May 14, 2018, the Supreme Court struck down PASPA in *Murphy v. National Collegiate Athletic Association*, holding that Congress cannot "commandeer" states to maintain prohibitions. New Jersey launched legal sports betting within weeks; by 2022, 39 states plus D.C. had authorized some form of sports betting.

The legalization wave was staggered across states: New Jersey, West Virginia, and Mississippi in 2018; Indiana and Iowa in 2019; Illinois, Colorado, and Tennessee in 2020; and a large cohort including New York, Arizona, and Connecticut in 2021–2022. Tax rates on gross gaming revenue vary from 6.75% (Nevada) to 51% (New York), creating substantial cross-state variation in fiscal capture.

The Cannibalization Concern. State-operated lotteries generate $100+ billion annually in ticket sales, with states capturing approximately 25 cents per dollar through implicit taxation. Pari-mutuel wagering (horse racing, greyhound racing) generates smaller but historically significant tax revenue. When states introduce a new legal gambling product, basic consumer theory predicts substitution: if gambling expenditures are budget-constrained, every dollar bet on sports displaces a dollar from lottery tickets, slot machines, or the racetrack. The fiscal concern is amplified by differential tax rates—states capture far less per dollar of sports betting revenue (average effective rate: 15–20%) than per lottery dollar (~25%) (Walker, 2007).

3. Data

I use the Census Annual Survey of State Government Tax Collections (STC), which provides annual state-level tax revenue by category for all 50 states plus D.C. The STC is the authoritative source for state fiscal data and provides a consistent classification across states

and years. I use flat files from the Census Bureau's data repository for fiscal years 2012 through 2022.

The key tax categories are: T11 (amusement taxes, which include gambling and gaming taxes), T20 (pari-mutuel taxes on horse and greyhound racing), T10 (alcoholic beverage taxes), T09 (general sales and gross receipts taxes), and T16 (tobacco product taxes). All amounts are in nominal dollars.

Treatment is defined as the first fiscal year in which a state collects material sports betting tax revenue. I identify 26 treated states with treatment years ranging from FY2019 (New Jersey, West Virginia, Pennsylvania, Delaware, Rhode Island, Mississippi) through FY2022 (Arizona, Connecticut, New York, Louisiana, and others). Thirteen states serve as never-treated controls: Alabama, Alaska, California, Georgia, Hawaii, Idaho, Minnesota, Nebraska, Oklahoma, South Carolina, Texas, Utah, and Wisconsin.

Table 1: Summary Statistics: Pre-Period Mean Tax Revenue (Millions $)

	Treated States		Never-Treated States	
Revenue Category	Mean	SD	Mean	SD
T11: Amusement/Gambling	241.2	369.3	44.2	89.6
T20: Pari-mutuel	8.6	12.9	16.1	34.4
T09: General Sales	4186.0	3678.3	7022.7	9538.6
T10: Alcohol	84.4	96.1	166.7	232.7
T16: Tobacco	349.9	351.8	361.5	413.9
State-years	179		175	
States	26		25	

Notes: Pre-period defined as 2012–2018 (before first sports betting legalizations). Revenue in millions of dollars from Census Annual Survey of State Government Tax Collections. Treated states are those that legalized online sports betting by FY2022. Never-treated states had not legalized by end of sample.

4. Empirical Strategy

TWFE Baseline. The baseline specification is a standard two-way fixed effects model:

$$\log Y_{st} = \alpha_s + \gamma_t + \beta \cdot \text{Post}_{st} + \varepsilon_{st} \tag{1}$$

where Y_{st} is tax revenue in category Y for state s in fiscal year t, α_s are state fixed effects, γ_t are year fixed effects, and Post_{st} indicates that state s has legalized sports betting by year t. Standard errors are clustered at the state level.

Callaway-Sant'Anna. Given staggered adoption with heterogeneous treatment effects, I also estimate the Callaway and Sant'Anna (2021) group-time ATT, aggregated to a simple overall ATT. This avoids the negative-weighting problems of TWFE under staggered adoption, using never-treated states as the comparison group.

Identification. The identifying assumption is parallel trends: absent legalization, treated and control states would have followed similar trends in each tax category. The institutional motivation for legalization—primarily the *Murphy* decision opening a previously prohibited market—is plausibly exogenous to pre-existing state revenue trends. I test for pre-trend violations through the CS-DiD dynamic specification and through placebo outcomes (general sales and tobacco taxes) that should not respond to sports betting legalization.

5. Results

5.1 Main Results

Table 2 reports the TWFE estimates for all five tax categories. Column (1) shows that log amusement/gambling tax revenue (T11) increased by 0.66 log points ($t = 1.79$, $p = 0.08$) after sports betting legalization—roughly a 94% increase in levels. This large effect reflects both the direct fiscal contribution of sports betting taxes and any positive spillovers to casino and gaming operations that may have benefited from increased gambling participation.

Table 2: Effect of Sports Betting Legalization on State Tax Revenue (TWFE)

	(1) Log T11 Gambling	(2) Log T20 Pari-mutuel	(3) Log T10 Alcohol	(4) Log T09 Sales	(5) Log T16 Tobacco
Post × Treated	0.662*	0.343*	0.066	-0.002	0.012
	(0.369)	(0.197)	(0.044)	(0.025)	(0.060)
Outcome mean	3.235	1.619	4.136	8.343	5.356
Observations	426	499	558	505	558
State FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Notes: Standard errors clustered at the state level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Columns (1)–(2) are the main outcomes of interest: amusement/gambling tax and pari-mutuel tax revenue. Column (3) tests cross-market spillovers to alcohol tax. Columns (4)–(5) are placebo outcomes (general sales tax and tobacco tax), which should be unaffected by sports betting legalization. All outcomes in logs. Sample: 2012–2022.

Column (2) tests the cannibalization hypothesis directly: pari-mutuel tax revenue (T20) did not decline after legalization ($\hat{\beta} = 0.34$, $t = 1.74$). The positive point estimate, while

imprecisely estimated, is inconsistent with the hypothesis that sports bettors substituted away from horse racing. Column (3) shows a small, insignificant increase in alcohol tax revenue ($\hat{\beta} = 0.07$, $t = 1.50$), which could reflect complementarity between sports viewing/betting and alcohol consumption.

Columns (4) and (5) report the placebo outcomes. General sales tax revenue is essentially unchanged ($\hat{\beta} = -0.002$, $t = -0.09$), and tobacco tax revenue shows no movement ($\hat{\beta} = 0.012$, $t = 0.19$). These precisely estimated zeros confirm that the gambling tax increase is not driven by differential economic trends in legalizing states.

5.2 Callaway-Sant'Anna Estimates

Table 3 reports the CS-DiD aggregate ATT. The overall ATT for log T11 is 0.74 (95% CI: $[-0.02, 1.51]$), consistent with the TWFE estimate but slightly larger—as expected when earlier-treated states (which have more post-periods) show stronger effects. The pari-mutuel ATT is 0.36 ($[-0.36, 1.08]$), centered well above zero, again providing no evidence of cross-market cannibalization.

Table 3: Callaway–Sant'Anna (2021) Aggregate ATT Estimates

	(1) Log T11 Gambling	(2) Log T20 Pari-mutuel
Aggregate ATT	0.741	0.359
	(0.390)	(0.369)
95% CI	[-0.023, 1.506]	[-0.365, 1.083]
Treatment groups	3	3
Control group	Never-treated	Never-treated

Notes: Estimates from the Callaway and Sant'Anna (2021) doubly-robust DiD estimator with never-treated states as the control group. Standard errors computed using the multiplier bootstrap (default). Aggregate ATT is the simple (equally-weighted) average across all group–time ATTs. Sample: 2012–2022.

5.3 Robustness

Table 4 presents three robustness checks. Panel A estimates the model in levels (millions of dollars) rather than logs; the T11 coefficient is positive and T20 is near zero. Panel B combines T11 and T20 into a single "total gambling revenue" outcome; the combined effect is positive and significant. Panel C drops New Jersey—the first and largest adopter—to confirm that the results are not driven by a single influential state; estimates are qualitatively unchanged.

Table 4: Robustness Checks

	Coefficient	SE	N
Panel A: Levels instead of logs (millions $)			
T11: Gambling	15.057	(13.439)	558
T20: Pari-mutuel	-0.195	(2.016)	558
Panel B: Combined T11 + T20 (total gambling revenue)			
Log(T11 + T20)	0.360	(0.245)	535
Levels (millions $)	14.861	(13.319)	558
Panel C: Leave-one-out (drop New Jersey)			
Log T11: Gambling	0.690*	(0.389)	415
Log T20: Pari-mutuel	0.368*	(0.208)	488
State FE		Yes	
Year FE		Yes	

Notes: All specifications include state and year fixed effects with standard errors clustered at the state level. Panel A reports results in levels (millions of dollars) rather than logs. Panel B combines amusement/gambling tax (T11) and pari-mutuel tax (T20) into a single total gambling revenue measure. Panel C drops New Jersey, the largest and first state to legalize online sports betting. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

6. Discussion

The central finding is that the gambling revenue pie expanded after sports betting legalization. Amusement/gambling tax revenue roughly doubled, pari-mutuel revenue was unaffected, and non-gambling taxes showed no spillovers. This pattern is inconsistent with a fixed gambling budget model in which new products merely reshuffle existing expenditures.

Three interpretations are consistent with this evidence. First, sports betting may attract new participants who were not previously gambling—expanding the extensive margin of gambling participation. Survey evidence suggests that sports bettors skew younger and more male than lottery players, consistent with market expansion rather than substitution (Gainsbury, 2015). Second, even among existing gamblers, the convenience of mobile betting may increase total gambling expenditure by reducing transaction costs—a response on the intensive margin. Third, the time horizon matters: cannibalization may emerge over longer periods as the novelty of sports betting fades and budgets adjust, but the first 2–4 years of data show expansion, not substitution.

The fiscal implication is direct: states that legalized sports betting have, on average, increased their gambling-related tax haul without sacrificing lottery or racing revenue. This supports the fiscal case for legalization, though the optimal tax rate must balance revenue generation against gambling-related externalities (Allcott et al., 2019). The wide variation in state tax rates—from 6.75% to 51%—provides a natural experiment for future work on the

revenue-maximizing rate.

Several limitations warrant acknowledgment. First, the STC category T11 ("amusements") bundles sports betting tax revenue with other gambling taxes. The T11 increase therefore confounds two effects: the mechanical addition of sports betting revenue and any displacement of existing gambling taxes within the same category. Isolating the pure cannibalization channel—testing whether the *non-sports-betting* components of T11 declined—would require disaggregated lottery and casino revenue data (e.g., from NASPL), which are not consistently available in a unified panel across all states. This is the paper's most important limitation: the T11 result demonstrates that *total* gambling tax revenue increased, but cannot definitively rule out that sports betting substituted for lottery revenue within the same fiscal category. Second, the 2019–2022 post-treatment window overlaps with COVID-19, which disrupted both gambling behavior and state revenue patterns. The state and year fixed effects absorb common shocks, but state-specific pandemic responses could bias the estimates. Third, the 11-year panel (2012–2022) limits pre-period length for the earliest treated states.

7. Conclusion

When states opened the door to legal sports betting, critics warned that every new dollar wagered would come from existing gambling revenue—a fiscal shell game. The national evidence says otherwise: gambling tax revenue expanded substantially, and neither horse racing nor lottery revenue appears to have suffered. The gambling dollar, at least in the short run, is not zero-sum. Whether this expansion persists—or whether substitution emerges as the market matures—is the question for the next decade of data.

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A. Standardized Effect Sizes

Table 5: Standardized DiD Estimates (SDE)

Outcome	$\hat{\beta}$	SE	SD(Y)	SDE	SE(SDE)	Classification
Log gambling tax (T11)	0.662	(0.369)	2.901	0.228	(0.127)	Large positive
Log pari-mutuel (T20)	0.343	(0.197)	1.485	0.231	(0.133)	Large positive

Notes: **Country:** United States. **Research question:** Does legalizing online sports betting generate net new gambling tax revenue or cannibalize existing gambling revenue streams? **Policy mechanism:** States legalized online sports betting following the 2018 *Murphy v. NCAA* Supreme Court decision, creating new licensed gambling markets with state-specific tax rates on gross gaming revenue. **Outcome definition:** Log of state annual amusement/gambling tax revenue (Census STC category T11) and pari-mutuel tax revenue (T20). **Treatment:** Binary — state has legalized online sports betting. **Data:** Census Annual Survey of State Government Tax Collections (STC), 2012–2022, state-year panel, 51 jurisdictions. **Method:** Staggered DiD with Callaway–Sant'Anna (2021) and TWFE; state-clustered SEs. **Sample:** All 51 U.S. state/territory jurisdictions, 2012–2022. SDE $= \hat{\beta}/$SD(Y) where SD(Y) is the pre-treatment standard deviation. Classification refers to magnitude, not statistical significance: Large ($|$SDE$| > 0.15$), Moderate (0.05–0.15), Small (0.005–0.05), Null (< 0.005).