O'Neill School of Public and Environmental Affairs

# State Tax Reforms in a Federalist System

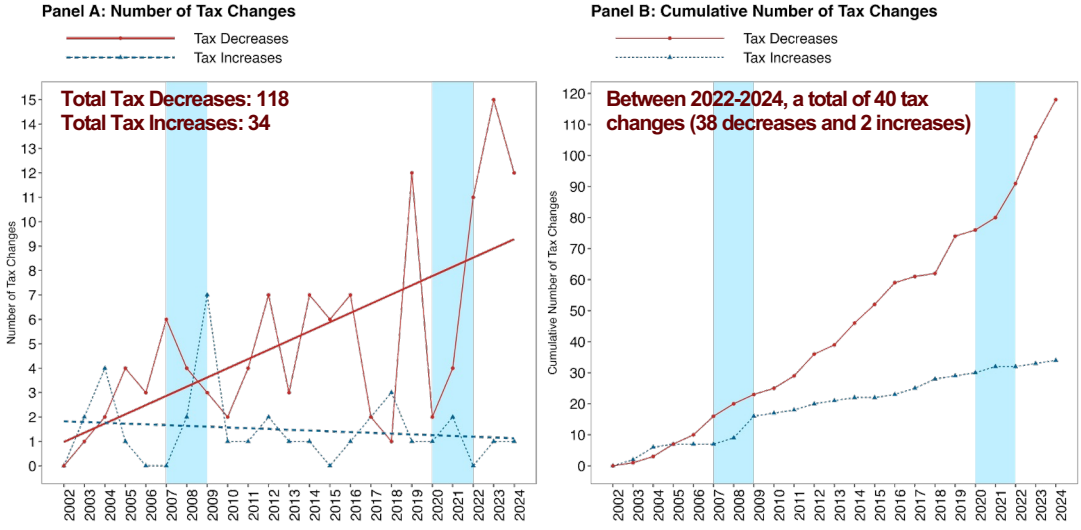
**Luis Navarro*,** Craig L. Johnson, Andrey Yushkov, Bahawal Sharyar

Presentation for the ABFM Conference

# Introduction

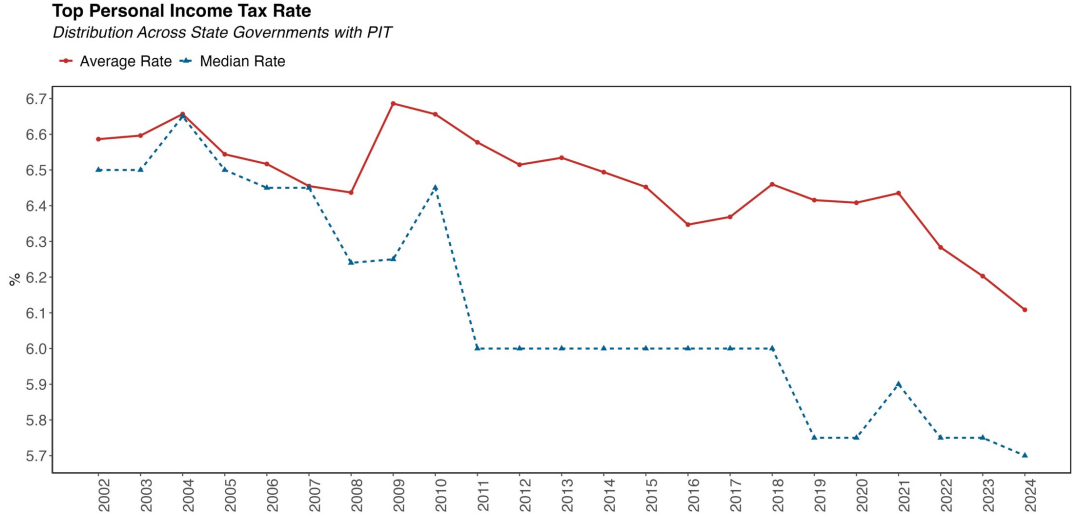
- This paper provides an exploration on the determinants of state personal income tax (PIT) reforms.
- Using data from the Tax Foundation, we provide a characterization of long-term trends on state income tax reforms.
- This talk: Income Tax Policy --> Top PIT Rates
- We examine and test a theory of fiscal space as determinant of state income tax reform.
- Findings preview: i) Federal IG revenues play a mayor role on the determination of state PIT policy; ii) an increase in federal transfers increases the probability of tax reductions.

# Since the early 2000, we have observed a rising trend on cuts on the top PIT rate.



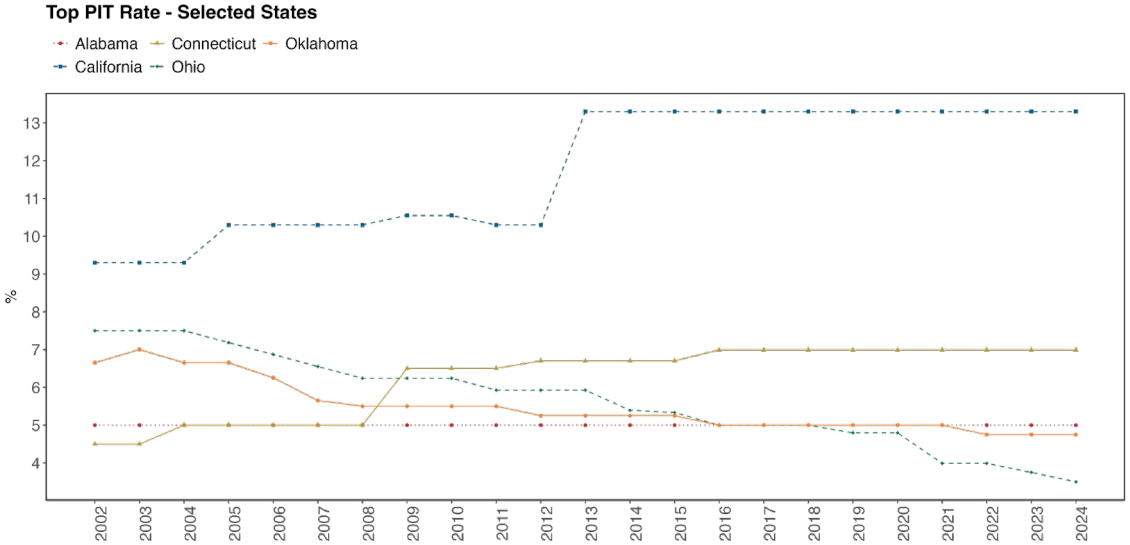

Source: Figure 1 at Johnson et al. (2024).Note: Calculations exclude states without a PIT rate. Tax changes for 2002 are not included since our analysis starts on this date. Panel A shows the number of tax changes observed in each year. Panel B shows the cumulative sum of the number of tax changes observed in each year. Both panels show individual lines according to the type of tax policy implemented (i.e., tax increase or tax decrease). Shaded areas correspond to the period of the Great Recession and the COVID-19 pandemic emergency.

# This has translated in a decrease on the average (and median) state top PIT rates.




Note: This graph shows the average (and median) top PIT rate across states that levy a personal income tax.

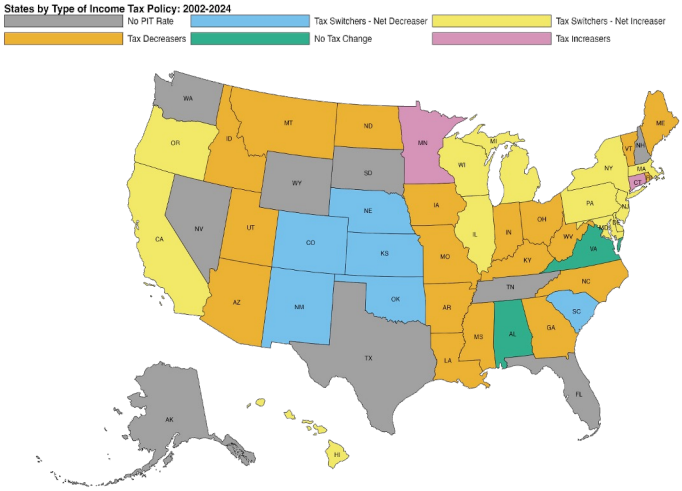
# Approach to PIT reform has been heterogenous across states.




Note: This graph shows the top PIT rate for some selected states.

# Income Tax Policy Classification – Long Term (Fixed) Classification

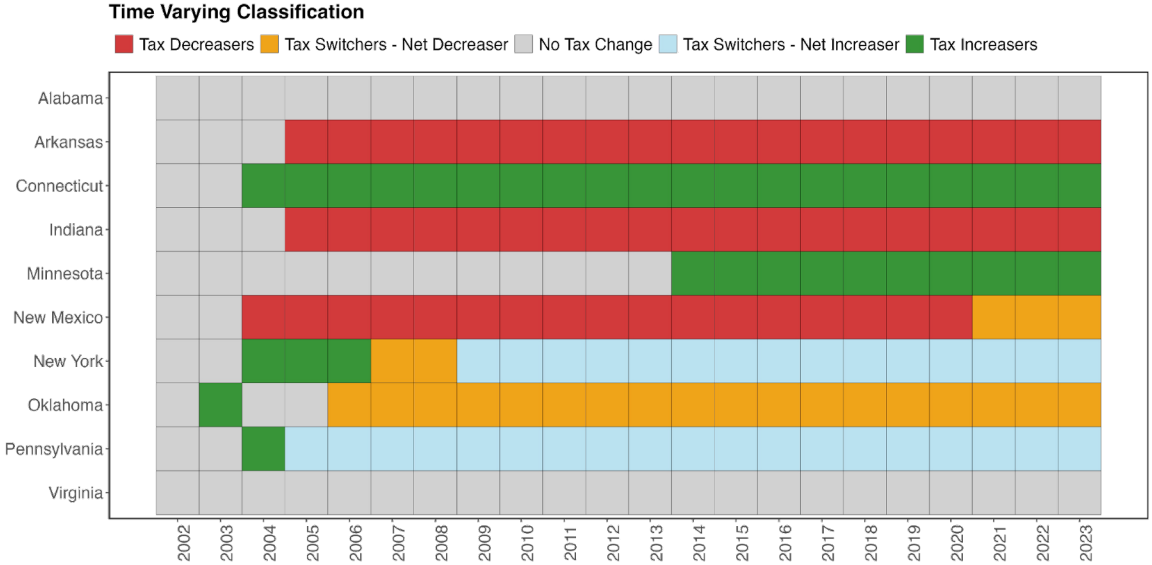
Considering the trajectory of each state top PIT rate, we assign them to one of the following categories.




- **No PIT Rate (9):** states that do not levy a personal income tax.
- **No Tax Change (2):** the PIT rate remained constant through all periods.
- **Tax Decreasers (19):** The PIT rate is monotonically ⬇️ over time. All changes on the PIT rate were negative.
- **Tax Increasers (2):** The PIT rate is monotonically ⬆️ over time. All changes on the PIT rate were positive.
- **Tax Switchers - Net Decreasers (6):** changes on the PIT rate were either positive or negative, but the net change (cumulative sum of tax changes) is negative.
- **Tax Switchers - Net Increasers (12):** changes on the PIT rate were either positive or negative, but the net change (cumulative sum of tax changes) is positive.

Note: this map shows the long-term classification of states income tax policy using the categorization algorithm described above.

# Income Tax Policy Classification – Time-Varying Classification




Note: this diagram shows how some selected states are classified into one of the categories, given their observed trajectory on PIT rates.

# Research Question and Hypotheses

**Research Question:** what are the main determinants behind state personal income tax reform?

- **Fiscal Space:** *room in a government´s budget that allows it to provide resources for a desired purpose without jeopardizing the sustainability of its financial position or the stability of the economy. (IMF)*

- **Theory:** states with more fiscal space are more likely to decrease taxes (and viceversa).

  → Political benefits without hurting fiscal sustainability or economic stability.

- **Measures of Fiscal Space:** i) Fed IG Transfers; ii) Outstanding Debt; iii) Net Operating Balance; iv) General Fund (GF) Balance. (Expressed as % of state GDP).

  → Debt-to-GDP is widely used. Budget deficits provide forward-looking information for policymakers.

# Testable Hypotheses

| | Fiscal Space | Pr(Tax Decrease) | Pr(Tax Increase) |
|---|---|---|---|
| Fed IG Transfers | + | + | - |
| Outstanding Debt | - | - | + |
| Fiscal Balance | + | + | - |
| GF Balance | + | + | - |

# Empirical Model

## Multinomial Logit Model

We estimate the probability of state i being assigned into tax policy category k, relative to being assigned to the ”No Tax Change” category.

$$\log\left(\frac{\Pr(TaxClass_{it+1}=k)}{\Pr(TaxClass_{it+1}=NoTaxChange)}\right)=\beta X_{it}+\gamma Z_{it}+b_t+e_{it}$$

## Econometric Specification

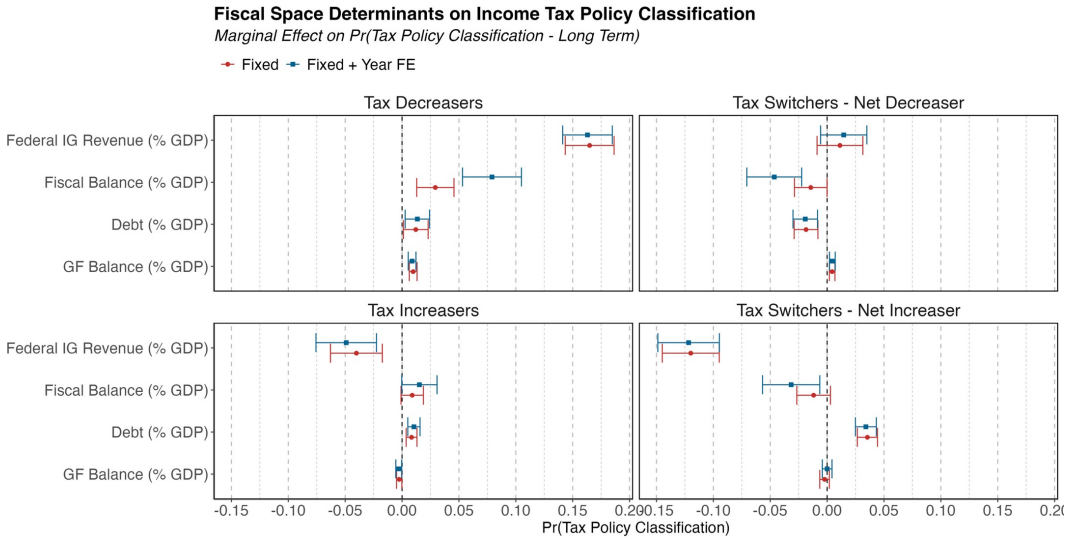
- Dep var: i) fixed (long-term) classification; ii) time-varying (dynamic) classification.
- Indep vars (X): vector of fiscal space variables, % state GDP.
- Controls (Z): political affiliation of state governor and house, % sales tax revenue to total revenue, unemployment rate. Models with and without year fixed effects.
- **We report marginal effects, with robust standard errors.**

# Results – Fixed (Long Term) Classification

**Marg. Eff. | Eff. Size**

| Tax Decreasers | |
|---|---|
| 0.163*** | 35.2% |
| 0.079*** | 17.0% |
| 0.0134** | 2.9% |
| 0.008*** | 1.9% |

| Tax Switchers - Net Increaser | |
|---|---|
| -0.1217*** | -41.6% |
| -0.0316*** | -10.8% |
| 0.0341*** | 11.7% |
| 0.0001 | 0.03% |



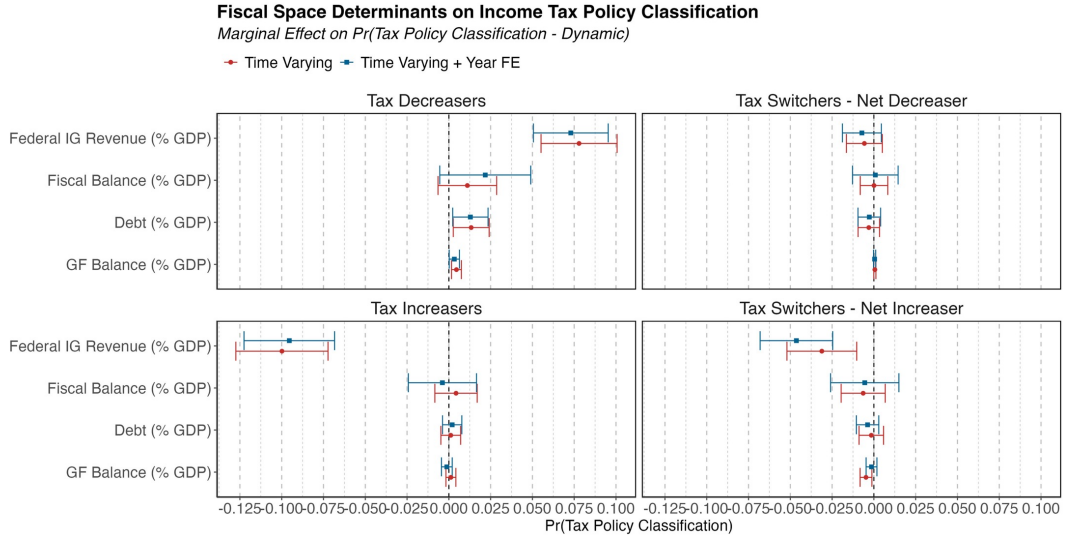

Note: this graph show the marginal effects of the determinants of fiscal space on the probability of being assigned into one of the income tax categories, relative to the probability of being assigned to No Tax Change. Robust standard errors used to compute confidence intervals.

# Results – Time Varying (Dynamic) Classification

**Marg. Eff. | Eff. Size**

| Tax Decreasers | |
|---|---|
| 0.073*** | 25.2% |
| 0.0218 | 7.52% |
| 0.0129** | 4.45% |
| 0.0033** | 1.14% |

| Tax Switchers - Net Increaser | |
|---|---|
| -0.0464*** | -32.3% |
| -0.0055 | -3.83% |
| -0.0038 | -2.65% |
| -0.0014 | -0.975% |



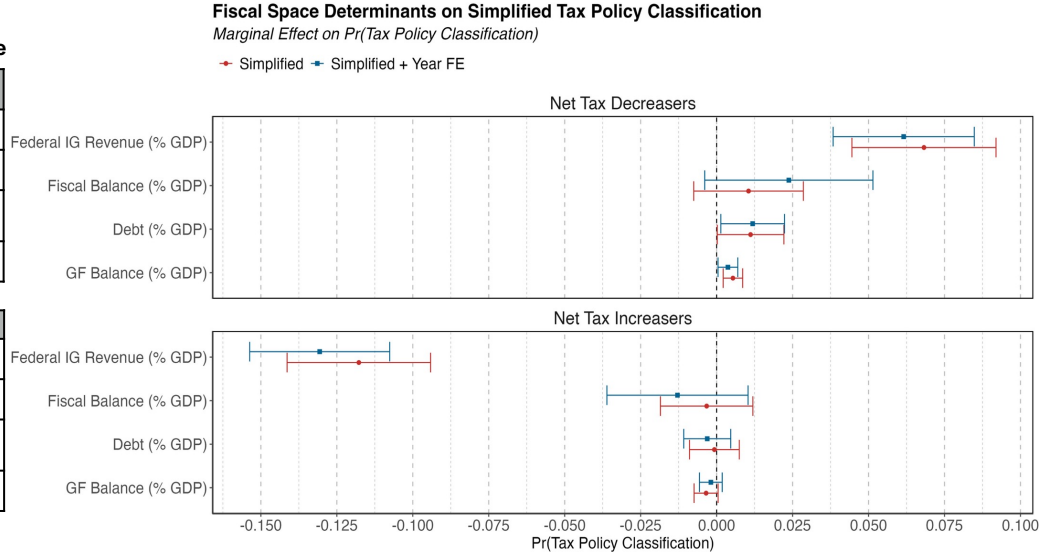

Note: this graph show the marginal effects of the determinants of fiscal space on the probability of being assigned into one of the income tax categories, relative to the probability of being assigned to No Tax Change. Robust standard errors used to compute confidence intervals.

# Robustness Check – Simplified Model

**Marg. Eff. | Eff. Size**

| Net Tax Decreasers | |
|---|---|
| 0.0616*** | 19.2% |
| 0.0238* | 7.42% |
| 0.0119** | 3.72% |
| 0.0037** | 1.15% |

| Net Tax Increaser | |
|---|---|
| -0.1306*** | -49.7% |
| -0.0129 | -4.83% |
| -0.0031 | -1.17% |
| -0.0019 | -0.72% |

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## **Summary:** an increase in Federal IG Revenues equivalent to 1% of GDP:

| Dep Var | Tax Policy | Hyp | Marginal Effect | Effect Size (% Mean Dep Var) |
|---|---|---|---|---|
| Fixed (Long-Term) Classification | Decreaser | + | 0.1630*** | 35.2% |
| | Net Decreaser | + | 0.0146 | 9.98% |
| | Net Increaser | - | -0.1217*** | -41.6% |
| | Increaser | - | -0.0491*** | -101% |
| Time-Varying (Dynamic) Classification | Decreaser | + | 0.073*** | 25.2% |
| | Net Decreaser | + | -0.0072 | -24.2% |
| | Net Increaser | - | -0.0464*** | -32.3% |
| | Increaser | - | -0.0955*** | -80.1% |
| Simplified Classification | Net Decreaser | + | 0.0616*** | 19.26% |
| | Net Increaser | - | -0.1306*** | -49.67% |

# Discussion and Next Steps

- There is a long-term trend on decreasing PIT rates among state governments.
- Empirical results suggest that Federal IG transfers play a significant role in the determination of state income tax policy.
- Larger reliance on federal IG revenues reduces the likelihood of net tax increases and viceversa. Finding consistent with fiscal replacement literature (Gramlich, 1987).
- Next steps: address potential endogeneity between Fed IG revenues and Income Tax Policy. IV residual inclusion approach.

Thanks for your attention!

Scan to learn more about this project.

I am in the Job Market!

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# Appendix

# Income Tax Policy Classification

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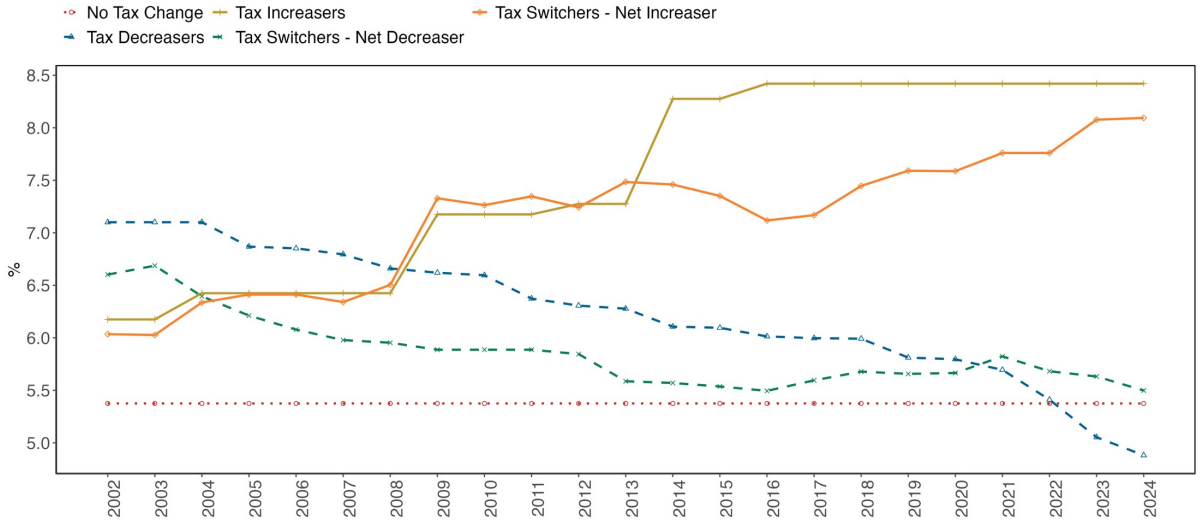
## Income Tax Rate by Tax Policy Group

*Average Top PIT Rate across groups*

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