Correlation in State and Local Tax Changes*

Scott R. Baker† Pawel Janas‡ Lorenz Kueng §

March 2023

Abstract

We develop a comprehensive dataset of state and local taxes from 2000–2015 that includes personal income taxes, property taxes, corporate income taxes, sales taxes, estate taxes and excise taxes. We illustrate how state and local taxes have changed over time, over business cycles, and to what extent different taxes co-move within a state or county. We document large differences in the mix of taxes across states and local jurisdictions and note that these differences have become more pronounced over time. Political ideology has strong predictive power over changes in tax rates, and these effects vary substantially across tax types. Moreover, we find that taxes of different types tend to co-move within a jurisdiction, highlighting the importance for researchers to take into account the entirety of the tax system, rather than just a single tax type, when examining responses to tax changes.

JEL Classification: H20, H71, H72, H77
Keywords: Local tax, state tax, income tax, corporate tax, sales tax, property tax, excise tax

*The authors wish to thank Ariza Gusti and Shreya Bhardwaj for superb assistance in collecting and assembling the data utilized in this paper.

†Northwestern University, Kellogg School of Management s-baker@kellogg.northwestern.edu.
‡Caltech, Division of Humanities and Social Sciences pawel@caltech.edu.
§University of Lugano, lorenz.kueng@usi.ch.

1 Introduction

The United States contains a wide range of tax jurisdictions at all levels of government. While national and state governments command the lion's share of attention and tax revenue, local jurisdictions also levy taxes of many types throughout the country.

For instance, sales taxes are widely applied at both state and local levels, with the number of unique taxing jurisdictions for sales taxes reaching approximately 10,000 in 2018. These include everything from city and county governments to taxing geographies defined by local school boundaries, water and fire districts, or even specially constructed business tax districts.

Moreover, there exists substantial variation in both the types of taxes levied over time and across jurisdictions. While some areas rely most on sales tax revenue, for instance, others may depend on revenue from personal income taxes. Local jurisdictions generally derive most revenue from property tax, but increasing numbers see substantial revenue coming from other types of taxes, as well.

In this paper, we assemble and aggregate state and local tax rate and revenue data across every major type of tax. We utilize sources such as NBER TaxSim, Tax Foundation, CCH CorpSystem, state and local level tax authority websites (typically the department of revenue or equivalent body), as well as data from other research. This diverse set of sources allows us to generate, to our knowledge, the most complete set of state and local tax rates that has been assembled. Additionally, we link this data to a government financial database that allows us to track revenue for counties and states for each individual type of tax and revenue source.

We then turn to constructing a balanced panel across all tax types at a county-year level from 2000 to 2015. We aggregate to the county level as this represents a stable and well-defined geographic mapping that is non-overlapping and corresponds well to other available measures of governmental oversight and economic activity. While counties themselves are non-overlapping, some of the tax jurisdictions that we study (e.g., a fire district or even a city) may partially reside within multiple counties. We use constant jurisdictional population weights to aggregate tax rates to county-year levels.

Using this comprehensive database of taxes, we analyze the distribution of state and local taxes over time and across the range of jurisdictions that we observe. We show that there is substantial variation across both geographies and over time in which types of taxes predominate. Focusing on changes within locations, we find large amounts of fluctuations in tax rates. In general, our sample period saw a trend towards greater concentration on sales taxes while reducing both personal and corporate income tax

rates. Moreover, over this period, both states and local jurisdictions tended to concentrate their revenue sources. That is, a jurisdiction that received most of its revenue from personal income taxes in 2000 tended to become even more reliant on this source by 2015.

This trend towards concentrating revenue from a single tax type can exacerbate deadweight losses from taxation. Increases in tax rates and the progressivity of taxes generally raises the deadweight loss associated with an additional dollar of tax revenue, with marginal deadweight loss driven by the square of marginal rates while revenue is dependent on the average marginal rate (Feldstein (1999); Harberger (1964)). Thus, offsetting changes in tax rates across tax types may be budget neutral but have both aggregate and distributional welfare consequences.

Leveraging the fact that we observe taxes of all types, we then examine whether and how the various tax types tend to co-move within a given state or local jurisdiction. First looking at states, we measure the extent to which taxes of one type are changed concurrently (within the same year) with taxes of another type. We find that when one type of state tax rate changes, the probability of other tax rates changing within that same state approximately doubles. This holds true for all major state tax types – personal income taxes, corporate income taxes, and sales taxes.

We find that the majority of this effect occurs within the same year, though tax rates of other types are also more likely to be adjusted in the year following the initial tax change. We also note elevated probabilities of changes in tax rates across all tax types following a contraction in economic activity in the state and also following large reductions in federal fiscal transfers.

Relative to the effects seen at a state level, these trends are also present but are less pronounced at a local level. Rather than a tax change of one type doubling the probabilities for changes in other types, we see increases in probabilities of only 20–25%. Similarly, we see somewhat elevated probabilities of tax rate changes following state recessions and substantial declines in state-level fiscal transfers. The effects are present both in the same year and the year following the original tax rate change.

While these correlated tax changes across tax types tend to be less frequent at a local level, we also see large increases in the probability of a change in tax rates among local jurisdictions following state level changes in rates. In particular, local tax rates of a given type respond strongly to changes in state level tax rate changes of the same type. For instance, following changes in state-level sales tax rates, the probability that local sales tax rates change more than doubles. We see similar effects for income tax rate changes, as well. Some of these local rate changes are in the same direction as the

state-level change, amplifying the effect, while some are in opposition to the state-level change, diminishing the state change's effect. Local sales taxes are especially prone to exhibit offsetting changes to state-level sales tax changes, corresponding well with the border tax gradient effects documented by Agrawal (2015).

Our paper is related to and builds on several strands in the public economics literature. First, there is growing interest in uncovering basic facts regarding the different avenues utilized by sub-national governments in taxing businesses and individuals, both cross-sectionally and over time (e.g., Gravelle (2007), Suárez Serrato and Zidar (2018), Robinson and Tazhitdinova (2022), Derenoncourt (2023)).

For example, Suárez Serrato and Zidar (2018) documents facts about the state corporate tax structure (tax rates, base rules, and corporate tax credits) and investigate the consequences of this structure for state tax revenue and economic activity. They find that the state corporate tax system has become more friendly to businesses over time. We conduct a similar exercise but consider a wider array of state and local taxes. In a similar vein, Gravelle (2007) documents the incidence of the property tax at the state-level and discovers large heterogeneity across households and locations. That study approximates property tax rates by using property tax revenue collected and market values of total property in each state while we collect statutory rates for an extended time period at the local level.

Second, there is a recent interest in how taxation affects the spatial allocation of businesses and households, generally utilizing state level tax changes as exogenous source of variation. With our work, we hope to enable a more comprehensive and local approach of estimating firm and worker location choices. For example, Fajgelbaum, Morales, Suárez Serrato and Zidar (2018) studies state tax systems between 1980 and 2010 and estimate a structural model and conclude that heterogeneity in state tax systems leads to aggregate welfare losses.

Likewise, Suárez Serrato and Zidar (2016) looks at corporate tax rates in particular and develops a spatial equilibrium model to study incidence on firms, workers, and landowners. They find that firms bear the most (40%) while landowners the least (25%). Finally, Becker, Egger and Merlo (2012) collects city-level tax rates in Germany and studies how corporate tax rates affect location choices of large multinational firms and finds mostly negative effects of corporate taxation on entry and employment and low gains to tax competition in the cross-section of cities.

Third, we contribute to the empirical literature on fiscal spillovers among neighboring jurisdictions. Notably, Isen (2014) isolates the effect of exogenous increases in taxation and spending of one jurisdiction on neighbors' fiscal decisions using a regres-

sion discontinuity design from Ohio referendums in 1990–2007. Unlike most of the literature that finds positive spillovers (Brülhart and Jametti (2006), Case, Rosen and Hines (1993)), the study estimates spillovers that are negligible. We also explore how tax rates co-move within and across states.

The remainder of the paper proceeds as follows. Section 2 discusses the data used to build the state and local tax database, covering the sources and sample period for data on state and local budgets, property taxes, corporate income taxes, personal income taxes, sales taxes, excise taxes, and estate taxes. Section 3 lays out the relationships between state and local level taxes and state and local budgets. Section 4 discusses the correlation in tax changes of various types at both a state and local level as well as the tendency of taxes to be changed in response to revenue or economic shocks. Finally, Section 5 concludes.

2 Data

2.1 Personal Income Taxes

2.1.1 Local Income Taxes

We hand-collect information on local personal income tax rates from state, county, and city government reports on a state-by-state basis. These rates are levied by cities, counties, and school districts. Overall, we capture between 80–99% of income tax rates across years for taxing districts inside roughly 500 counties concentrated in the Rust Belt states, Kansas, and a few large cities on the coasts.[1] Distributional data are detailed in Table I.

The aggregation procedure follows that utilized for property millage rates – for overlapping local tax districts, we compute the total personal local income tax rate as the median rate faced by workers within all taxing districts inside a county.

For three states (NY, CO, WV), the personal income taxes are quoted as dollars per week or per month. We annualize these dollar figures (using a work-year of 50 weeks or 12 months) and divide by the city's 2017 median income as reported by the U.S. Census Bureau to come up with an effective tax rate. Additionally, Iowa school districts levy a personal income tax rate as a surtax on the state income tax bill. Thus, we multiply the annual state income tax rate by the surtax rate to obtain our rate. To illustrate how we arrive at our rates, consider Allamakee County, Iowa in 2008: The

[1] We were unable to obtain county-level income tax rates for Kentucky for years other than 2011 and 2015. These local-level income taxes in Kentucky make up the majority of missing rates in our entire sample.

three school districts levied surtax rates of 8%, 8%, and 10%, while the state income tax rate for a median household was 7.92%. The local personal income tax rate reported in our data is thus $0.0792 \times 0.08 = 0.006336$ (0.63%).

The average local income tax in our sample for areas that have a local income tax is 1.36% with a median of 1%. In general, local income taxes are relatively rare, with fewer than 20% of counties having any local income tax levied within their jurisdiction. We also collect information whether the local income tax is a payroll tax (withheld by the employers) or an individual tax (paid at end of year). The vast majority of local income taxes are paid by the individual (84.3%).

Finally, we cross-check our data with that of two reports from the Tax Foundation and our data match theirs perfectly where they overlap.[2]

2.1.2 State Income Taxes

State income taxes are obtained by utilizing the NBER TAXSIM simulation model. This model maps inputs about household characteristics to yield marginal and average tax rates for a given tax payer. We utilize the model solely to learn about statutory state-level income tax rates and their associated income thresholds. In particular, we obtain the full schedule of rates for the taxable income distributions.

For the purposes of this paper, we focus on two dimensions of these state level taxes. The first is the average marginal rate paid by taxpayers in a given state. The second is the maximum marginal personal income tax rate in a given state.

2.2 Corporate Income Taxes

We obtain annual state level corporate income tax rates from the Tax Foundation. Specifically, we gather information on the maximum and minimum income tax rates and bracket levels for bank and non-bank corporations as well as the number of tax brackets for the time period 2000–2015. All states with the exception of Nevada, South Dakota, and Wyoming levied a corporate income tax in our sample period. The mean maximum tax rate is 7.4% with a minimum of 1.9% (Michigan) and a maximum of 12% (Iowa). Over 90% of the states have four or fewer tax brackets.

We check our data with state corporate tax rates from Suárez Serrato and Zidar (2018). In the few cases our data differed with theirs, we manually check state annual reports and report the rate disclosed there. We utilize additional years of corporate tax data to correspond to rates utilized by Baker, Sun and Yannelis (2023).

[2]See, for example, Tax Foundation reports such as Bishop-Henchman (2008), Bishop-Henchman and Sapia (2011), and Walczak (2019).

2.3 Sales Taxes

For data on state and local sales tax rates, we turn to the CCH CorpSystem sales tax service which we previously used in Baker, Kueng, Melzer and McGranahan (2018) and Baker, Johnson and Kueng (2021). This source allows us to construct a national database of ZIP code level sales tax rates at a monthly frequency from 2003 to 2015. The data contain comprehensive information on all sales taxes imposed in a given ZIP code. These include sales taxes that originate from many different geographic and administrative levels: states, counties, cities, and special tax districts like school or fire or water districts.

Moreover, there is sufficiently detailed information to disentangle the combined sales tax in a ZIP code from the sum of all local taxes. These two figures may differ due to statutory maximum sales taxes imposed at a state level (e.g., the state sales tax rate is 6% but the state also mandates a maximum combined state and local sales tax rate of 7%). In addition, occasionally the tax rate of one jurisdiction overrides the sales tax rate of a different jurisdiction. Our final sample includes over 40,000 ZIP codes from all 50 states and Washington DC.

In the United States, on average, a household is subject to about 6 separate overlapping local tax jurisdictions. For local sales taxes, we handle the aggregation of data to a county-level through the use of local population weights. That is, the county-level estimates are a weighted average of all local sales taxes across jurisdictions that lie within that county. Thus, a local jurisdiction with a 1% sales tax covering 60% of a county's population will be reported as a 0.6% sales tax within that entire county.

2.4 Property Taxes

The primary source of data for our annual property tax rates (millage rates) are comprehensive hand-collected county-level records. We transcribed and aggregated this data from annual reports provided by a state agency on a state-by-state basis (typically the department of revenue or and equivalent state-level body). Our data covers all states, except Oklahoma for which we could not find a systematic annual report, and around 2,500 counties in each year between 2003 and 2015. The level of aggregation in the data varies by state but most report millage rates by overlapping taxing districts (county, school, city, state, special infrastructure districts) and by property class when applicable (e.g., residential, commercial, industrial).

We use the value-weighted average total residential county-level rates reported in these annual reports for 26 states (method 1). For the remaining 24 states that only

report rates by taxing districts within the county, we compute the total local millage rate as the median total rate that would be faced by an urban residential property owner inside a given county (method 2):[3]

$$rate_{it} = countywide_{it} + median(schools)_{it} + median(cities)_{it}.$$

Aggregate property values per taxing district were not readily available in the documents we examined for all states. Thus, we cannot compute value weighted averages for our full sample. To understand what sort of bias we face by using medians of rates for method 2 states, we gather the necessary data and compute rates using *both methods* for one large state, Texas, between 2000–2016. In total, we have data for all 254 counties in Texas and 32 different classes of jurisdictions (schools, cities, county, fire districts) for approximately 5,000 rates and taxable values per year. The median number of jurisdictions in a county is 10. We compute both the absolute and level difference between the two methods as follows:

$$AbsError_{it} = \frac{|\text{median}_{it} - \text{average}_{it}|}{0.5(\text{median}_{it} + \text{average}_{it})},$$

$$LevelError_{it} = \frac{\text{median}_{it} - \text{average}_{it}}{0.5(\text{median} + \text{average}_{it})}.$$

The means of the absolute error and level errors in our sample is 7.1% and -0.2%, respectively, with a correlation coefficient of 0.98. Therefore, we feel confident that we are not systematically biasing our sample by combining rates computed by two distinct methods in our analysis.

The rates we collect are applied to assessed property values which is the product of estimated market value and an assessment ratio that varies by state. Thus, in order to compare the levels of millage rates across states, we collect state-level assessment ratios and transform our rates into effective rates per dollar of house value.[4]

To illustrate, consider the case of Autauga County, AL in 2003. State records show a total county-wide millage of 10.5 dollars per $1000 of assessed value (mils). The county also encompasses two school districts (District 1 and 2, both levied 7 mils), and three

[3]Method 1 was employed for the following states: AK, AZ, AR, CA, CO, FL, HI, ID, IL, KS, LA, ME, MS, MT, NE, NV, NM, NY, ND, OH, OK, OR, UT, VA, WA, and WY. Method 2 was employed for the following states: AL, CT, GA, IN, IA, KY, MD, MO, NC, PA, SC, TX, WI, DE, IN, MA, MN, NH, NJ, RI, SD, TN, VT, and WV.

[4]We manually checked a sample of data for a range of state-year observations and it did not appear that these ratios varied over our sample period.

municipalities (Prattville, Billingsley, Millbrook with levies of 7, 7, and 5, respectively). The assessment ratio was 10%. Thus, the property tax rate for Autauga County in our database shows up as: $00.1 \times ((10.5 + 7 + 7)/1000) = 0.00245$.

Property tax rates are typically set annually and change over time as property is re-assessed. The mean property tax rate in our sample is 1.45% and the median is 1.27%. Distributional data are detailed in Table I. State-level property millage rates are obtained from the same records and are similarly transformed with assessment ratios.

2.5 Excise Taxes

Excise taxes are taxes levied on a relatively small number of specific goods and activities by states and the federal government and are typically included in posted prices for goods. Some of the most common excise taxes imposed by states are included in our data: good-specific taxes on beer, wine, liquor, cigarettes, and gasoline. All states impose excise taxes of some type, though the amounts and coverage of these taxes varies widely across locations and over time, as well.

Excise taxes differ from other good-specific taxes like VATs or sales taxes in that they are not simple ad valorem taxes. That is, excise taxes are often levied on a volumetric or count basis. For instance, gasoline or wine is generally taxed by the gallon, regardless of the price of gasoline being charged by the retailer. Similarly, per-pack taxes on cigarettes are seen in all states. Ad valorem sales taxes (both state and local) are then imposed in addition to these excise taxes.

We obtain excise tax data primarily from the Tax Foundation (Tax Foundation, 2018), which assembles the relevant statistics from organizations like the Distilled Spirits Council, the American Petroleum Institute, Bloomberg, and states' own budget documents. We supplement this data with some additional years of data hand-collected from state tax websites.

2.6 Estate Taxes

We follow Moretti and Wilson (forthcoming) in the construction of our estate tax panel and expanded with hand-collected data.[5] Following their construction, we include only indicators for estate taxes as the marginal estate tax rate is uniform across most states. 9 of the 15 states with estate taxes set the marginal rate to 16%. Iowa and Pennsylvania have maximum tax rates of 15%, Nebraska has a maximum of 18%, Connecticut a maximum of 12%, Washington a maximum of 20%, and Tennessee a maximum

[5]Data originating from work by Walczak (2019), Conway and Rork (2007) and Bakija and Slemrod (2004).

of 9.5%.

2.7 State and Local Budgets

Data on state and local government expenditure and taxation come from the Government Finance Database, a publicly available source which has standardized the Census of Governments from 1967 on (Pierson, Hand and Thompson, 2015). The data include detailed breakdowns of annual expenditures, taxes, debt, and assets by type and function (e.g., education, transportation, correction) for states, counties, municipalities, townships, special districts, and school districts. For years ending in 2 or 7, the Census Bureau collects data from the universe of taxing districts but restricts the sample to just the largest sub-state districts in intervening years.

We extract data on revenue collected from sales, alcohol, corporate net income, excise, individual income, and property taxes as well as total intergovernmental transfers (grants from federal or state to local governments). On average, we capture the near universe of counties in 2002, 2007, and 2012 (3,030) and between 1,300 and 1,800 counties otherwise.

At the state level, the median shares for the different taxes are ranked as follows: personal income (median share of 0.39), sales (0.34), excise (0.18), corporate income (0.05), and property (0.002). Unlike the states, counties are predominantly financed by the property tax: the median share of revenue for counties from property taxes is 0.78, from sales taxes 0.02, and from personal income taxes 0. A detailed breakdown of our variables can be found in Table II.

3 State- and Local-Level Taxes and Revenue

Tables I and II display some summary statistics regarding the distribution of state and local taxes of various types. For state taxes, we describe sales taxes, corporate income taxes, personal income taxes, and property taxes. We note both the overall distributions of such tax rates as well as the distributions for jurisdictions that have a non-zero tax rate of a given tax type.

3.1 State-Level Taxes and Revenue

Figure I illustrates variation in average state-level tax rates in various types of taxes across states. Of note is the fact that there is generally little correlation in tax rates across tax types within a given state. Many states tend to concentrate tax collection in certain tax types rather than smoothing across all tax types. For instance, Texas has no

income taxes but high sales tax rates. In contrast, Oregon has high personal income taxes but no sales tax. Other states possess high or low tax rates across all types (e.g., California which, at a state level, has relatively high sales taxes, personal income taxes, and corporate income taxes). Across all states, the correlation between sales tax rates and average income tax rates within states – the two most common types of state-level taxes – is approximately 0.02.

While there is little systematic relationship between tax types within states, most states tend to get a disproportionate amount of revenue from a single tax type. Figure II, top panel, reports the tax type that yields the highest amount of revenue, on average, for each state. Out of the 50 states, 48 states receive the most tax revenue from either sales taxes or personal income taxes. New Hampshire receives the most revenue from state-level excise taxes, while Alaska receives the most income from corporate income taxes (possessing neither a sales tax or a personal income tax).

Figure III plots the distribution of state-level tax rates (top panel) and state revenue shares (bottom panel) by tax type. Between 2000 and 2015, both average personal income and corporate income tax rates have decreased. On the other hand, the average sales tax rate has increased in that time period. These changes in rates are not perfectly inelastic with respect to revenue collected, however. In fact, in the bottom panel, we find that greater shares of tax revenue comes from individual income taxes in 2015 relative to 2000 and a smaller share of revenue from sales taxes and corporate income taxes.

Interestingly, the fraction of revenue stemming from the most 'dominant' state tax type has been increasing during our sample period. That is, state tax revenue has become increasingly concentrated. In the top row of Figure A.1, we plot the distribution of this fraction of revenue across states in both 2000 and 2015. The left panel's distribution is weighting equally across states while the right panel weights states by total state tax revenue. In each, we can see that the share of revenue stemming from the most dominant tax type is weakly increasing throughout the distribution.

This increasing share of dominant taxes could be driven by differential trends in the income source across states. That is, states with higher levels and higher growth rates of income may be prone to charge income taxes and therefore see an increase in the share of revenue derived from that source over time, even with no change in rate. We next investigate the time-series evolution of the tax *rates* for dominant revenue sources and find that they have also increased over our sample period.

In Table III, we transform our state-year panel into a state-year-tax type panel. Each column notes results of a regression of non-zero 5-year changes in state-level tax rate

on an indicator variable taking the value of 1 if the tax constitutes the majority of tax revenue in that year (Columns 1 and 3) and on a continuous measure of share of tax as a proportion of total tax collected (Columns 2 and 4). Columns (3) and (4) additionally control for year fixed effects. Overall, dominant tax rates have increased by approximately 0.14 percentage points and have increased by substantially larger amounts for states where one tax type makes up a large majority (e.g., over 70%) of tax revenue.

Appendix Table A.1 describes the changes in state and local revenue from different tax types following changes in those tax rates. In Panel A, we estimate the relationship as an elasticity at the state-level – deriving the logged change in tax revenue as linked to the logged change in tax rates. Unsurprisingly, we find that increases in tax rates of any type drive tax revenue of that type upwards. For instance, a doubling of the mean income tax rate leads to an increase in income tax revenue of approximately 27.5%. Panel B mirrors this exercise from Panel A using county-level tax data. In contrast to local sales and income tax, property tax revenue is not sensitive to local rate changes, on average. This is driven by the fact that property tax rates tend to adjust based on revenue requirements of a local jurisdiction, rather than revenue responding directly to rates. That is, property tax rates are often set on an annual basis by working backwards from local revenue needs and current property assessments. If local properties becomes more valuable but local budgets are unchanged, rates will generally fall to compensate and yield a null relationship between rates and revenue, on average.

3.2 Local-Level Taxes and Revenue

Mirroring the examination of state-level taxes and revenue, we then turn to looking at local taxes. In Table I, panel C, we display summary statistics about local tax rates. For local jurisdictions, as with states, we describe both sales taxes and personal income taxes. Unlike states, we do not describe corporate taxes, which local jurisdictions do not impose, and we do describe property taxes, which are nearly universal at a local level.

Again, we note both the overall distributions of such tax rates as well as the distributions for jurisdictions that have a non-zero tax rate of a given tax type. Figure IV maps out average local tax rates by county across three primary local tax types: sales taxes, personal income taxes, and, most importantly, property taxes. We see wide ranges in applicable tax rates in each type, with property taxes being the most prevalent and personal income taxes being levied in comparatively few local jurisdictions.

In general, property taxes are the dominant local tax, with property taxes providing the largest share of tax revenue in over 80% of counties in our sample period.

Local sales and local income taxes represent the dominant local tax for nearly all of the remainder of the 20% of counties. Similar to effects that we saw among states, tax revenue at a local level has become more concentrated in the years from 2000 to 2015. In Figure A.1, we show that the dominant local tax type has increased its dominance over these years.

4 State and Local Tax Changes

4.1 Concurrent Tax Changes

One purpose of building this database combining state and local taxes across a number of important tax types is to enable a better understanding how taxes of different types interact with one another and how they may move in concert. Much research has analyzed responses of households and firms to changes in the state and local tax rates that they face. However, most of this research focuses on a single state or local tax type (e.g., responses of consumers to income or sales taxes or responses of firms to changes in corporate tax rates). If tax rate changes of one type occur in conjunction with those of another type, focusing only on a single tax type may produce misleading estimates of economic impact.

In Tables IV and V, we examine the correlation between tax rate changes of different types within a state or county. In these tables, each row shows the fraction of states that saw changes in the listed type of taxes when subject to the condition in the left-most column. That is, unconditionally, 14% of states changed income taxes in a given year (row 1, column 1 of Table IV). When there is a sales tax change in a state (row 3, column 1 of Table IV), 23% of states see a change in income taxes in that year. In other words, a state is about 60% more likely to legislate a change in its income tax rate when there is a concurrent change in the state's sales tax rate. Following a corporate tax rate change, we see that the probability of a personal income tax rate change is twice as high as in a random year (28% vs. 14%). For sales tax rates and corporate income tax rates, we find similar patterns. Following a change in one of the other major state tax rates, the probability of a sales or corporate income tax rate change approximately doubles.

In panel B of Table IV, we look not just at the same year but at the fraction of states changing taxes in *either* year t or year $t+1$ when a tax of a different type changes in year t. Necessarily, baseline levels of concurrent tax changes are higher with a more expansive definition of 'concurrent'. We again see often substantial increases in the probability of one tax type changing following another tax type's change, though the relative effects are generally somewhat muted when compared to the same-year effects.

One might think that such clusters of tax rate changes are driven by external budgetary or economic pressure. We test this in panel C. We examine years in which there is a decline in nominal federal transfers of more than 5% or if there is a decline in business activity in the state as measured by the Philadelphia Fed Coincident Index. We find that tax changes are somewhat more likely in these periods than in a random year. However, the increase in the rate of tax changes is generally much lower than the increase seen when looking at years with concurrent tax rate changes.

We observe similar patterns among local jurisdiction tax rates in Table V, though the effect of concurrent tax rate changes is smaller. This is partly due to the fact that local tax revenue is much more highly concentrated in a single tax type than is state tax revenue. As a result, there is less ability for local jurisdictions to trade off one tax type with another while adjusting only on intensive margins (e.g., not imposing a new personal income tax when there had been none before). Of note is the fact that property tax rates are highly variable, though rate changes are often fairly small in magnitude. Overall, around half of localities have property tax rate changes in any given year and 70% see a change during any two year period.

One notable tendency among local tax rates is the extent to which local tax rates are adjusted concurrently with state tax rates, especially of the same type. For instance, while the fraction of local jurisdictions seeing a change in income tax rates is under 2%, unconditionally, the fraction increases by over 50% (to over 3%) when the state changes income tax rates in the same year. An even larger increase in the rate of changes is seen for local sales taxes. While about 8% of counties change sales taxes in a given year, almost 20% of counties change sales taxes during a year in which a state also changes sales taxes.

Figure V plots the size and direction of these local changes against changes in the same type of tax at a state level. For sales taxes, we see a strong negative relationship between these changes. That is, when a state increases the sales tax rate, we tend to be much more likely to see declines in local sales taxes, and vice versa. These changes are consistent with the effects seen in Agrawal (2015), who notes that border jurisdictions often exploit the cross-border tax gradient to raise local funds from cross-border shopping. For income taxes, while we do tend to see an increase in the frequency of local rate changes, we see no correlation in direction and size in response to state income tax rate changes.

4.2 State Politics and Tax Changes

In the previous section, we noted that rates tend to co-move within a state. Some of these changes may be driven by changes in the ideology of the majority party in a state legislature. We test whether state-level political ideology correlates with tax-rate changes across all major tax types among states. Unsurprisingly, we find that the most left-leaning state legislatures have tended to increase top income tax rates, while right-leaning ones tended to decrease both personal and corporate income rates in our sample period. We also find that alcohol and property taxes tend to increase significantly in the most right-leaning states.

Table VI reports the results of regressions of annual non-zero changes in state-level tax rate (within a given tax type) on indicators for whether a state was in the left-most or right-most quartile of political ideology of the state house of representative during the previous year. That is, the reported results are relative to moderate states, as defined by the middle two quartiles of political ideology. We use the State Legislative Aggregate Ideology Data (Shor and McCarty (2011)) to classify the ideology of state house of representatives during our sample period of 2000–2015.

Overall, we find that the most conservative legislatures tend to decrease tax rates and the most liberal legislatures increase tax rates, though the effect varies considerably across tax types. In columns (1) and (2), we find that the most liberal legislatures have increased average and top income rates by 0.3 and 0.6 percentage points, while conservative ones have tended to decrease them. For sales taxes, we do not see a substantial difference between ideological groups, perhaps in part due to the fact that left-leaning politicians tend to see income tax increases as a more progressive source of tax revenue than sales taxes (i.e., targeting higher income individuals).

Column (4) highlights significant decreases in corporate income taxes among the most right-leaning legislatures. In contrast, columns (5) and (7) show that conservative legislatures did tend to see the largest increases in taxes on alcohol (wine, beer, and spirits) and through state-level property taxes. Overall, political ideology tends to produce substantial variation in the types of taxes that see rate changes and also the direction of these rate changes.

4.3 Effect of Tax Co-Movement on Tax Elasticity Estimates

Finally, we examine how the inclusion of tax changes of all types can impact univariate estimates of tax elasticities. Given that state and local taxes tend to co-move both within and across states and counties, an analysis of a single tax type may suffer from

omitted variable bias given concurrent changes in taxes of other types within the same or neighboring jurisdiction.

In Table VII, we perform a simple test of this concept. In each panel, we first regress changes in a measure of economic activity on changes taxes of a single type. We then regress the same measure on changes in tax rates across all tax types, including controls for national time-varying trends. In panel A, the economic measure we use as a dependent variable is the change in the average annual Philadelphia Fed Coincident Indicator. For panel B, we use changes in logged state-level employment from the Bureau of Labor Statistics.

In columns (1) to (3) in both panels, we find point estimates that indicate negative effects of increases in tax rates on measures of economic activity or employment. The relationships are generally large in magnitude and statistically significant for these univariate regressions. In column (4) of each panel, we then modify the regression specifications to include tax changes of all types. While no coefficients change sign and, in general, retain their statistical significance, we find that coefficients change substantially (between 10–30%) and uniformly move closer to zero. We take this as evidence that the co-movement of taxes of different type within jurisdictions has meaningful effects on the calculated magnitudes of the impact of any given tax type on common economic outcomes.

5 Concluding Remarks

In this paper, we develop a dataset of state and local taxes from 2000–2015 that includes personal income taxes, property taxes, corporate income taxes, sales taxes, estate taxes, and a range of state level excise taxes. Given the range of overlapping local tax jurisdictions, we aggregate local tax rates to a county level using jurisdictional population weights, yielding a comprehensive view of tax rates across the country.

Using this comprehensive view, we illustrate how state and local taxes have changed over time and in response to business cycles. While it is well known that various jurisdictions vary greatly in the composition of their taxes (e.g., some states receive a majority of revenue from sales taxes where others focus on income taxes), we show that these differences have tended to become more pronounced over time at both state and local levels.

Importantly, we also demonstrate that both state and local taxes tend to exhibit correlated changes within a jurisdiction. That is, a change in tax of one type (e.g., sales tax) is often associated with changes in tax rates of other types (e.g., personal income

taxes). For researchers studying effects of tax changes on households or firms, these correlations highlight the importance of understanding the full range of tax changes a location may have experienced at a given time. While a household may have seen a reduction in one type of tax, their net tax burden may have been left unchanged given offsetting changes in other rates.

References

Agrawal, David, "The Tax Gradient: Do Local Sales Taxes Reduce Tax Differentials at State Borders?," *American Economic Journal: Economic Policy*, 2015.

Baker, Scott R., Lorenz Kueng, Brian Melzer, and Leslie McGranahan, "Do Household Finances Constrain Unconventional Fiscal Policy?," *NBER Tax Policy and the Economy*, 2018, *33* (1), 1–32.

_ , Stephanie Johnson, and Lorenz Kueng, "Shopping for Lower Sales Tax Rates," *American Economic Journal: Macroeconomics*, 2021, *13* (3), 209–250.

_ , Stephen Teng Sun, and Constantine Yannelis, "Corporate Taxes and Retail Prices," *NBER Working Paper*, 2023.

Bakija, Jon and Joel Slemrod, "Do the Rich Flee from High State Taxes? Evidence from Federal Estate Tax Returns," *NBER Working Papers 10645*, 2004.

Becker, Sascha O, Peter H Egger, and Valeria Merlo, "How low business tax rates attract MNE activity: Municipality-level evidence from Germany," *Journal of Public Economics*, 2012, *96* (9-10), 698–711.

Bishop-Henchman, Joseph, "County and City Income Taxes Clustered in States with Poor Tax Climates," *Tax Foundation Report*, 2008.

_ and Jason Sapia, "Local Income Taxes: City- and County-Level Income and Wage Taxes Continue to Wane," *Tax Foundation Report*, 2011.

Brülhart, Marius and Mario Jametti, "Vertical versus horizontal tax externalities: An empirical test," *Journal of Public Economics*, 2006, *90* (10-11), 2027–2062.

Case, Anne C., Harvey S. Rosen, and James R. Hines, "Budget spillovers and fiscal policy interdependence: Evidence from the states," *Journal of public economics*, 1993, *52* (3), 285–307.

Conway, Karen and Jonathan C. Rork, "Diagnosis Murder: The Death of State Death Taxes," *Economic Inquiry*, 2007.

Derenoncourt, Ellora, "Public Finance and Neighborhoods Database, 1920-2015," *Working Paper*, 2023.

Fajgelbaum, Pablo D, Eduardo Morales, Juan Carlos Suárez Serrato, and Owen Zidar, "State taxes and spatial misallocation," *The Review of Economic Studies*, 2018, *86* (1), 333–376.

Feldstein, Martin, "Tax avoidance and the deadweight loss of the income tax," *Review of Economics and Statistics*, 1999, *81* (4), 674–680.

Gravelle, Jennifer, "Who pays property taxes? A look at the excise tax effects of property taxes across the states," in "Proceedings of the One Hundredth Annual Conference on Taxation" 2007, pp. 94–97.

Harberger, Arnold C., *The Role of Direct and Indirect Taxes in the Federal Reserve System, Chapter Taxation, Resource Allocation, and Welfare*, Princeton University Press, 1964.

Isen, Adam, "Do local government fiscal spillovers exist? Evidence from counties, municipalities, and school districts," *Journal of Public Economics*, 2014, *110*, 57–73.

Moretti, Enrico and Daniel J. Wilson, "Taxing Billionaires: Estate Taxes and the Geographical Location of the Ultra-Wealthy," *American Economic Journal: Economic Policy*, forthcoming.

Pierson, Kawika, Michael Hand, and Fred Thompson, "The Government Finance Database: A Common Resource for Quantitative Research in Public Financial Analysis," *Journal of Public Economics*, 2015, *10* (6).

Robinson, Sarah and Alisa Tazhitdinova, "What Drives Tax Policy? Political, Institutional and Economic Determinants of State Tax Policy in the Past 70 Years," *Working Paper*, 2022.

Shor, Boris and Nolan McCarty, "The ideological mapping of American legislatures," *American Political Science Review*, 2011, *105* (3), 530–551.

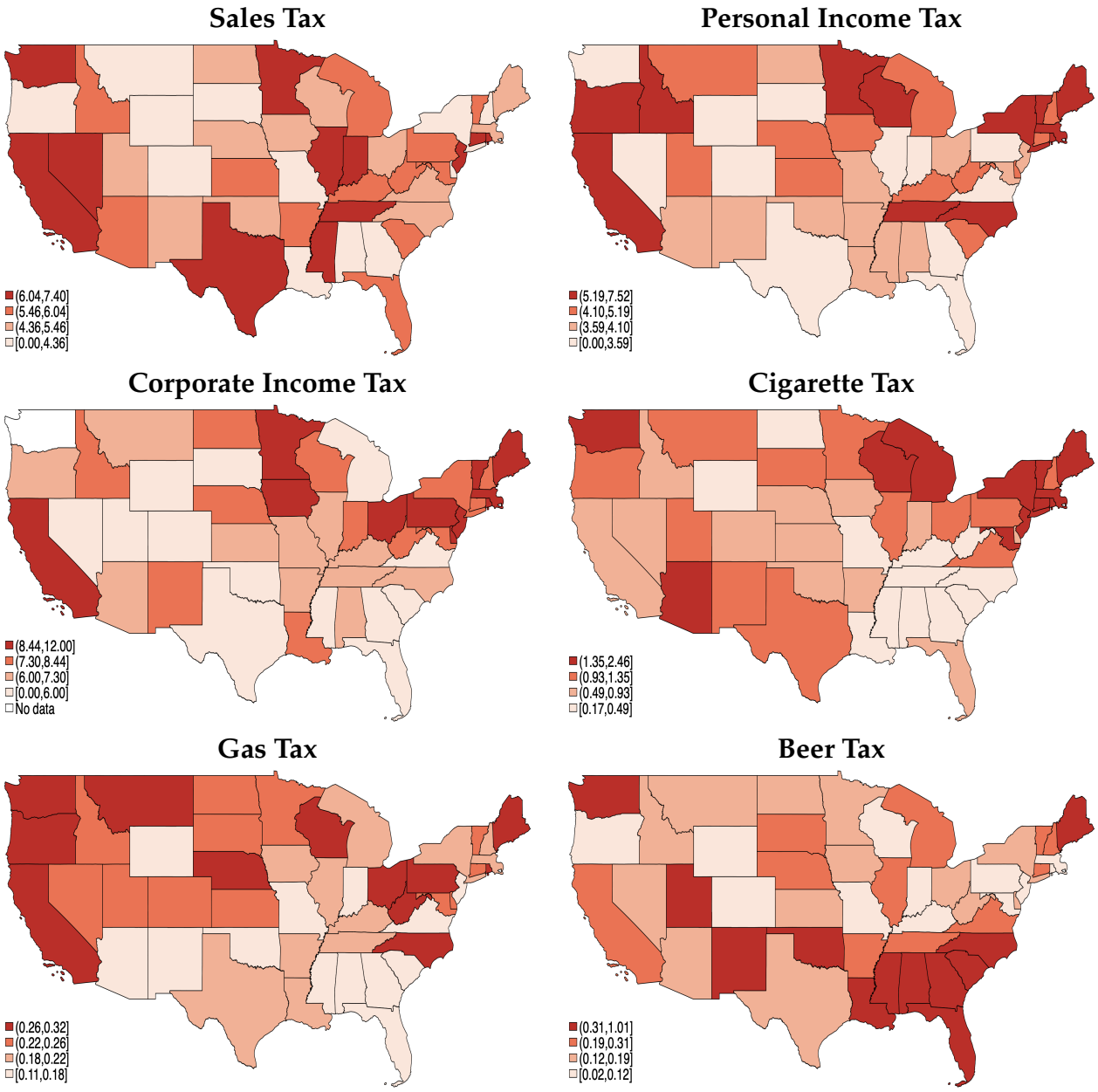
Suárez Serrato, Juan Carlos and Owen Zidar, "Who benefits from state corporate tax cuts? A local labor markets approach with heterogeneous firms," *American Economic Review*, 2016, *106* (9), 2582–2624.

_ **and** _ , "The structure of state corporate taxation and its impact on state tax revenues and economic activity," *Journal of Public Economics*, 2018, *167*, 158–176.

Tax Foundation, "State Sales, Gasoline, Cigarette, and Alcohol Tax Rates by State, 2000-2014," *https://taxfoundation.org/state-sales-gasoline-cigarette-and-alcohol-tax-rates/*, 2018.

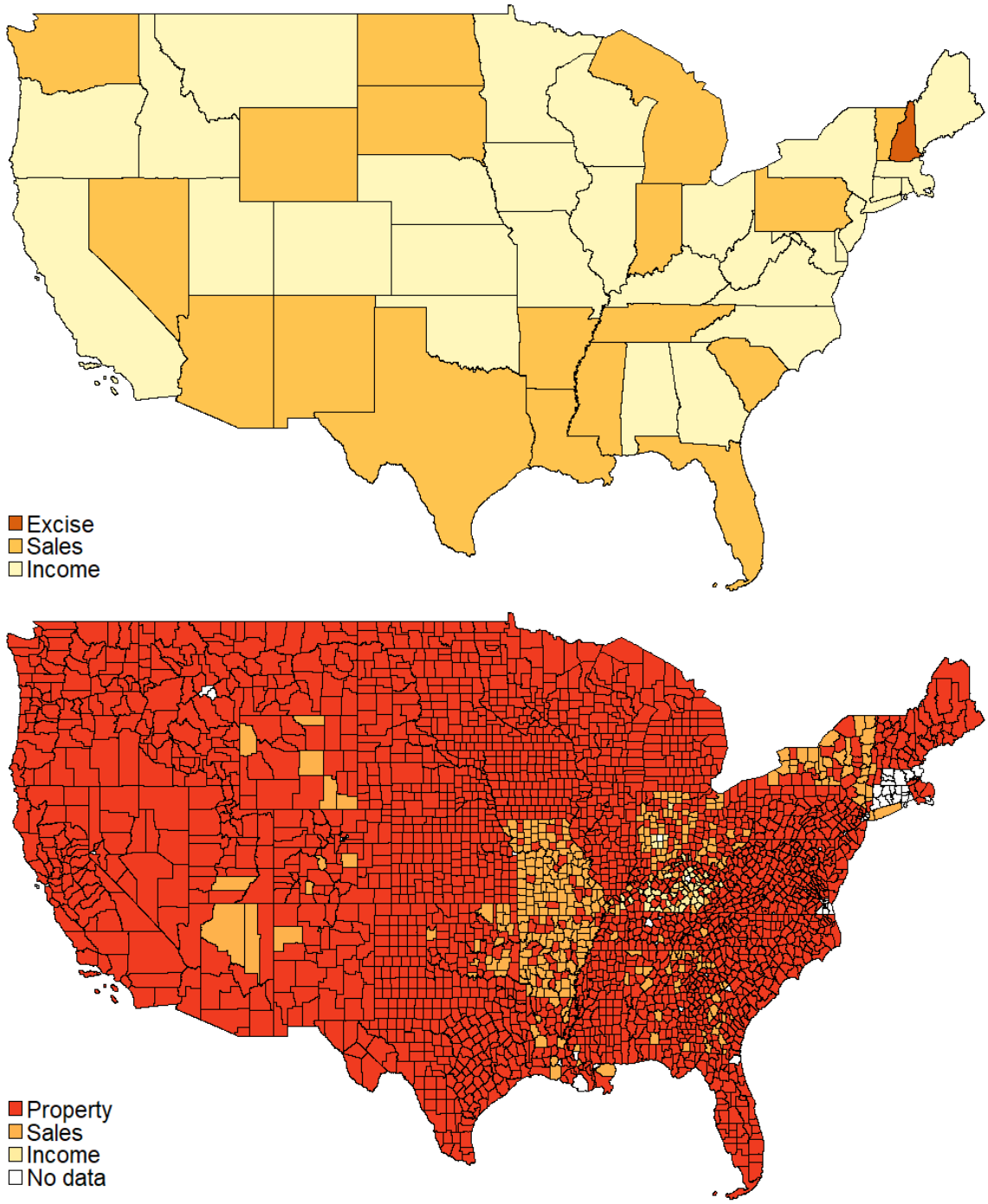
Walczak, Jared, "Local Income Taxes in 2019," *Tax Foundation Report*, 2019.

FIGURE I
AVERAGE TAX RATES BY STATE



Notes: Maps note heterogeneity in tax rates of the stated types. 'Personal Income Tax' represents the mean income tax rate while the corporate income tax given is the maximum rate (due to the fact that most corporate rates have very low baselines and very few brackets). Tax rates are taken as averages, by state, across all years in our sample, 2000–2015. Alaska and Hawaii are represented in the data but not in the maps to save space.

FIGURE II
TYPE OF TAX WITH HIGHEST REVENUE SHARE

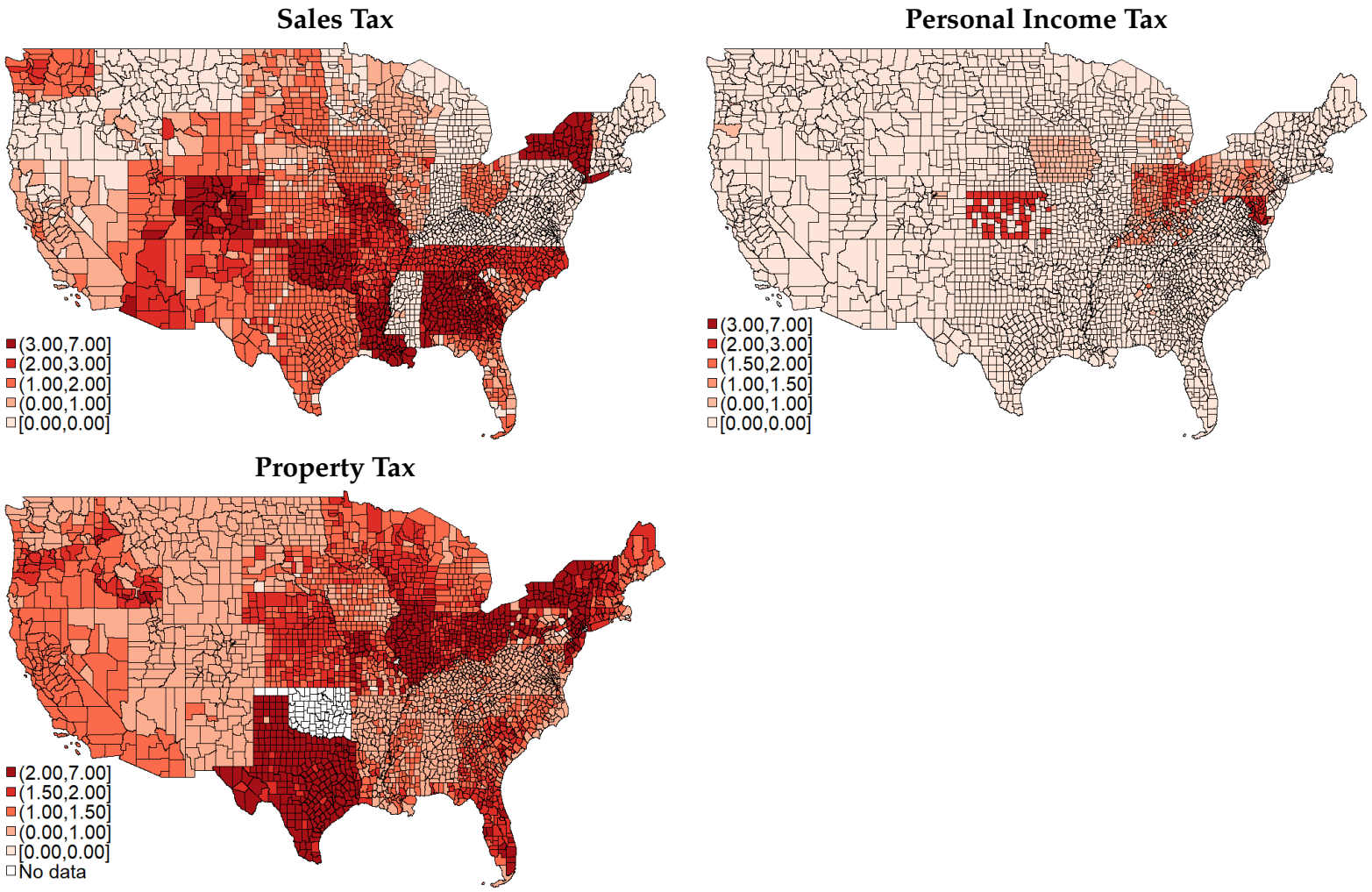


Notes: Top panel denotes data for states while the bottom panel examines data for counties. Shading denotes the tax that provides the highest amount of revenue for a given location. Alaska and Hawaii are represented in the data but not in the maps to save space. Alaska is the only state in which corporate income taxes provide the most revenue. Property taxes do not provide the most state-level tax revenue in any state.

FIGURE III
DISTRIBUTION OF STATE-LEVEL RATES AND REVENUE SHARES, BY TAX TYPE

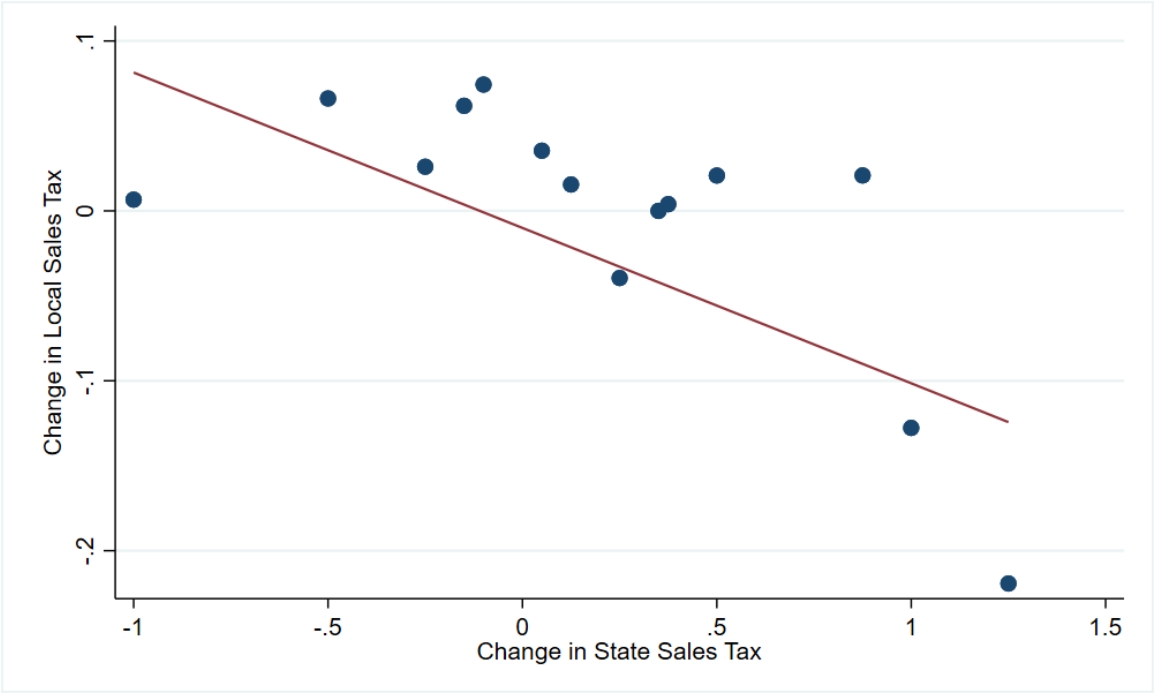
Notes: This figure plots kernel densities of the tax rates (top row) and the fraction of total revenue shares (bottom row) that are generated by each tax type, by state. Distributions are plotted for both 2000 and 2015.

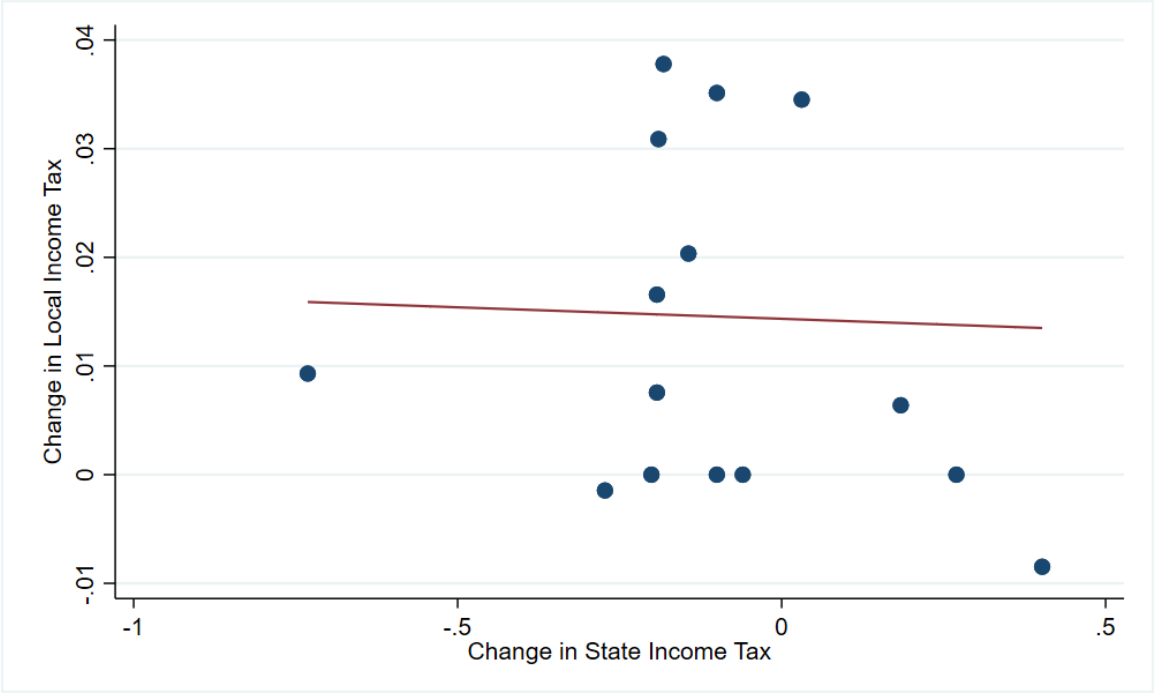
FIGURE IV
AVERAGE LOCAL TAX RATES, BY COUNTY



Notes: Maps note heterogeneity in tax rates of the stated types. 'Personal Income Tax' represents the mean local income tax rate in the county. Tax rates are taken as averages, by county, across all localities and years in our sample, 2000–2015. Counties in Alaska and Hawaii are represented in the data but not in the maps to save space.

FIGURE V
CORRELATION OF CHANGES IN STATE AND LOCAL TAXES, BY TAX TYPE





Notes: These figures show the correlation between contemporaneous changes in state and local taxes of the same type. The top panel displays data for sales taxes and the bottom panel displays data for income taxes.

TABLE I
SUMMARY STATISTICS – STATE AND LOCAL TAX RATES

Tax Type	# Obs.	Mean	1st	10th	25th	50th	75th	90th	99th
Panel A: State Taxes									
Sales Tax	800	4.9	0.0	1.5	4.0	5.1	6.0	6.9	7.3
Corporate Income Tax	800	6.7	0.0	4.0	6.0	7.0	8.5	9.4	12.0
Property Tax	800	0.04	0.0	0.0	0.0	0.0	0.0	0.07	1.2
Income Tax: Mean Rate	800	4.0	0.0	0.0	3.4	4.1	5.3	6.8	7.7
Income Tax: Top Rate	800	5.5	0.0	0.0	4.5	6.0	7.0	9.0	11.0
Panel B: State Taxes – Non-zero Rates									
Sales Tax	720	5.4	2.9	4.0	4.7	5.5	6.0	7.0	7.3
Corporate Income Tax	716	7.4	2.2	5.0	6.25	7.4	8.5	9.4	12.0
Property Tax	139	0.25	0.002	0.01	0.06	0.11	0.29	1.22	1.36
Income Tax: Mean Rate	672	4.7	2.8	3.4	3.8	4.4	5.4	6.9	7.7
Income Tax: Top Rate	672	6.6	3.0	4.5	5.0	6.3	7.8	9.0	11.0
Panel C: Local Taxes									
Sales Tax	40,474	1.4	0.0	0.0	0.0	1.1	2.3	3.6	5.1
Property Tax	35,298	1.5	0.1	0.5	0.9	1.27	1.9	2.6	4.0
Income Tax: Mean Rate	6,723	1.4	0.0	0.5	0.9	1.0	2.0	2.4	3.2

Notes: Summary statistics span 2000–2015.

TABLE II
SUMMARY STATISTICS – STATE AND LOCAL TAX REVENUE SHARES

Tax Type	# Obs.	Mean	1st	10th	25th	50th	75th	90th	99th
Panel A: State Tax Revenue Shares									
Sales Tax	800	0.31	0.00	0.06	0.25	0.30	0.38	0.51	0.61
Corporate Inc. Tax	800	0.06	0.00	0.02	0.04	0.05	0.06	0.09	0.26
Income Tax	800	0.31	0.00	0.00	0.24	0.34	0.42	0.49	0.70
Property Tax	800	0.03	0.00	0.00	0.00	0.00	0.03	0.10	0.33
Excise Tax	800	0.17	0.06	0.11	0.13	0.16	0.20	0.25	0.35
Panel B: Local Tax Revenue Shares									
Sales Tax	31,611	0.15	0.00	0.00	0.00	0.02	0.27	0.48	0.77
Property Tax	31,611	0.74	0.17	0.40	0.58	0.78	0.95	0.99	1.00
Income Tax	31,611	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.59

Notes: Summary statistics span 2000–2015. Both panels exclude 'other' taxes such as severance taxes, transfer taxes, inheritance taxes and some license fee revenue which account for 0–15% of tax revenue.

TABLE III
CHANGES IN TAX RATES BY DOMINANT TAX TYPE

	(1)	(2)	(3)	(4)
Dominant Tax Type	0.134*		0.146*	
	(0.080)		(0.080)	
Tax Revenue Share		1.785***		1.792***
		(0.478)		(0.469)
Observations	346	346	346	346
R^2	0.154	0.188	0.178	0.211
Year FE	NO	NO	YES	YES

Notes: Each column notes results of a regression of non-zero changes in state-level tax rate on an indicator variable taking the value of 1 if the tax constitutes the majority of tax revenue in that year (columns 1 and 3) and on a continuous measure of share of tax as a proportion of total tax collected (columns 2 and 4), controlling for the dominant-tax type (either income or sales). Columns (3) and (4) additionally control for year fixed effects. Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IV
CONCURRENT TAX CHANGES – STATE LEVEL

	Fraction of Taxes that Changed:		
	Income Tax	Sales Tax	Corp. Inc. Tax
	(1)	(2)	(3)
Panel A: Fraction of States Changing Taxes in Same Year			
Unconditional Fraction of Tax Changes	0.14	0.06	0.05
Concurrent with Income Tax Change	1	0.10	0.11
Concurrent with Sales Tax Change	0.23	1	0.13
Concurrent with Corporate Tax Change	0.28	0.13	1
Panel B: Fraction of States Changing Taxes in Same or Next Year			
Unconditional Fraction of Tax Changes	0.23	0.11	0.10
Concurrent with Income Tax Change	1	0.18	0.16
Concurrent with Sales Tax Change	0.27	1	0.13
Concurrent with Corporate Tax Change	0.41	0.15	1
Panel C: Budget Pressure			
State Recession	0.17	0.08	0.08
Federal Budgetary Shock	0.18	0.07	0.08

Notes: Each row shows the fraction of states that saw changes in the listed type of taxes when subject to the condition in the left-most column. That is, unconditionally, 14% of states changed income taxes in a given year (row 1). When there is a sales tax change in a state in a given year (row 3), 23% of states see an increase in income taxes in that year. Panel B reports the fraction of states changing taxes in *either* year t or year $t+1$ when a tax of a different type changes in year t. Panel C looks at years in which there is a decline in nominal federal transfers of more than 5% or if there is a decline in business activity in the state as measured by the Philadelphia Fed Coincident Index.

TABLE V
CONCURRENT TAX CHANGES – LOCAL LEVEL

	Fraction of Taxes that Changed:		
	Income Tax (1)	Prop. Tax (2)	Sales Tax (3)
Panel A: Fraction of Counties Changing Taxes in Same Year			
Unconditional Fraction of Tax Changes	0.019	0.45	0.08
Concurrent Income Tax Change	1	0.58	0.10
Concurrent Property Tax Change	0.025	1	0.10
Concurrent Sales Tax Change	0.021	0.55	1
Panel B: Fraction of Counties Changing Taxes in Same or Next Year			
Unconditional Fraction of Tax Changes	0.32	0.70	0.18
Concurrent Income Tax Change	1	0.82	0.22
Concurrent Property Tax Change	0.04	1	0.22
Concurrent Sales Tax Change	0.03	0.82	1
Panel C: Budget Pressure			
State Recession	0.025	0.44	0.10
Federal Budgetary Shock	0.021	0.47	0.11
Panel D: Relation with State-level Tax Changes			
Change in State-level Income Tax Rate	0.032	0.46	0.10
Change in State-level Sales Tax Rate	0.043	0.47	0.19
Change in State-level Corporate Tax Rate	0.026	0.48	0.06

Notes: Each row shows the fraction of counties that saw changes in the listed type of taxes when subject to the condition in the left-most column. That is, unconditionally, 1.9% of counties changed income taxes in a given year. When there is a sales tax change in a county in a given year (row 4), 2.1% of states see an change in income taxes in that year. Panel B reports the fraction of counties changing taxes in *either* year t or year $t+1$ when a tax of a different type changes in year t. Panel C looks at years in which there is a decline in nominal state transfers of more than 5% or if there is a decline in business activity in the county's state as measured by the Philadelphia Fed Coincident Index.

TABLE VI
CHANGES IN STATE TAX RATES BY POLITICAL IDEOLOGY

Tax Rate:	Income		Sales	Corp. Inc.	Alcohol	Gas	Property
	Mean	Top					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Left-most Quartile	0.292*	0.581**	-0.0237	-0.252	-0.258	0.00195	0.00362
	(0.156)	(0.286)	(0.233)	(0.357)	(0.364)	(0.00960)	(0.00820)
Right-most Quartile	-0.123	-0.261	-0.157	-0.763**	0.680*	-0.00753	0.00877*
	(0.155)	(0.298)	(0.258)	(0.368)	(0.339)	(0.00551)	(0.00442)
Observations	101	85	43	41	22	130	36
R^2	0.063	0.090	0.011	0.101	0.035	0.006	0.043

Notes: Each column notes results of a regression of annual non-zero changes in state-level tax rate (from a given tax type) on indicators for whether a state was in the left-most or right-most quartile of political ideology of the state house of representative during the previous year. For instance, column (1) reports the relative change in income tax rate in left-leaning vs. right-leaning states compared to moderate states. Sample is limited to tax rate changes in states with non-zero tax rates during the year prior to the change. Heteroskedasticity-robust standard errors in parentheses: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

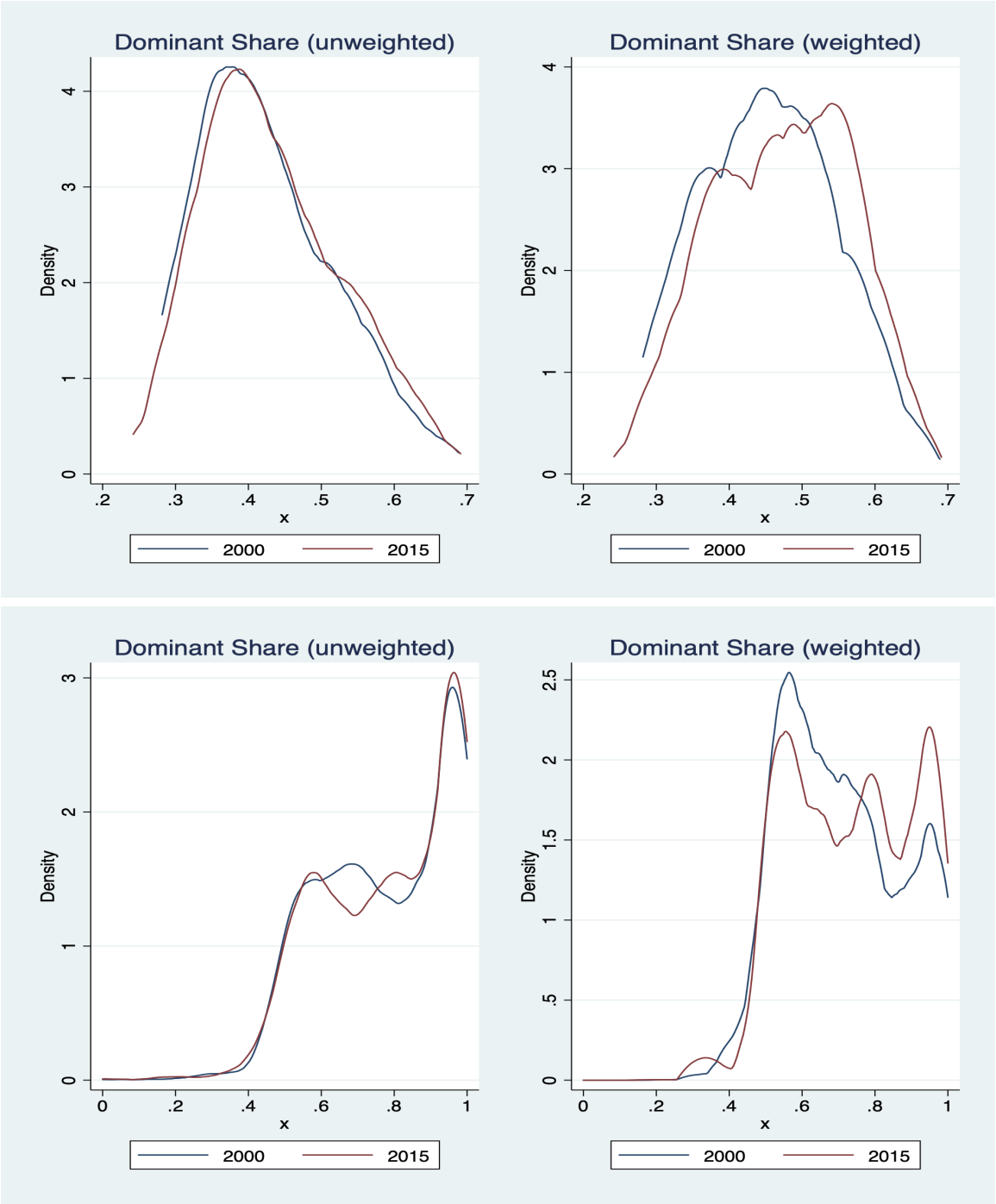
TABLE VII
ECONOMIC ACTIVITY AND EMPLOYMENT FOLLOWING STATE TAX CHANGES

	(1)	(2)	(3)	(4)
Panel A: Changes in State-Level Coincident Indicators				
Income Tax Rate Change	-0.760**			-0.607*
	(0.327)			(0.357)
Corp. Inc. Tax Rate Change		-1.500***		-1.144***
		(0.308)		(0.341)
Sales Tax Rate Change			-0.267	-0.0947
			(0.573)	(0.614)
R^2	0.679	0.690	0.676	0.629
Panel B: Changes in State-Level Employment				
Income Tax Rate Change	-1.318***			-1.006***
	(0.332)			(0.336)
Corp. Inc. Tax Rate Change		-2.014***		-1.675***
		(0.311)		(0.321)
Sales Tax Rate Change			-2.056***	-1.858***
			(0.580)	(0.578)
R^2	0.549	0.570	0.547	0.552
Observations	534	534	534	534
Year FE	YES	YES	YES	YES

Notes: Dependent variable in panel A is the average annual Philadelphia Fed Coincident Index which measures state-level economic activity. The dependent variable in panel B is average annual logged state-level employment obtained from the BLS. Income taxes denote mean income taxes, while corporate income and sales taxes denote the highest bracket of those taxes. All variables are differenced at a 5 year level. Heteroskedasticity-robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

A Appendix Figures and Tables

FIGURE A.1
FRACTION OF STATE AND LOCAL REVENUE FROM PRIMARY TAX



Notes: This graph plots the share of revenue generated by the dominant tax type across states (top row) and counties (bottom row). That is, a value of 0.6 means that 60% of state or local tax revenue was generated from the tax type (e.g., sales tax) with the most revenue in that state or county. Distributions for both 2000 and 2015 are plotted. The left panel's distribution is weighting equally across states or counties, the right panel weights states or counties by total tax revenue.

TABLE A.1
CHANGES IN STATE AND LOCAL TAX REVENUE FOLLOWING STATE TAX CHANGES

	(1)	(2)	(3)	(4)	(5)
Panel A: Changes in State-Level Tax Revenue					
Tax:	Income		Corp. Inc.	Sales	Excise
	Mean	Top			
Tax Rate Change	0.275***	0.333***	0.690**	0.614***	0.118***
	(0.0481)	(0.0459)	(0.332)	(0.0556)	(0.0230)
State FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	675	675	675	675	750
R^2	0.600	0.613	0.343	0.420	0.171
Panel B: Changes in County-Level Tax Revenue					
Tax:	Income (Mean)	Sales	Property		
Tax Rate Change	0.598***	0.203***	0.00649		
	(0.167)	(0.0411)	(0.0261)		
County FE	YES	YES	YES		
Year FE	YES	YES	YES		
Observations	915	14,019	16,597		
R^2	0.225	0.087	0.082		

Notes: In panel A, each column notes results of a regression of changes in state-level tax revenues (from a given tax type) on changes in that tax type. For instance, column (1) reports the logged change in income tax revenue following a change in the income tax rate across states and years. In panel B, we run the same regressions at a county level using county taxes and county revenue.