Corporate Income Tax Rates and Household Consumption

Eric J. Allen[1], Henry L. Friedman[2], Yiyuan Wang[3], and Yuqing Zhou[3]

[1]UC Riverside

[2]UCLA Anderson School of Management

[3]CUHK Business School, The Chinese University of Hong Kong

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Abstract

The corporate income tax (CIT) rate is an important and frequently debated fiscal policy lever. In this paper, we provide evidence on the effects of CIT rates on household consumption, a key component of welfare. We find that a one percentage point change in the CIT rate changes household consumption by 0.4 percent and that this result is driven by tax increases rather than decreases. The consumption effects are largest for households composed of ethnic minorities, headed by parents with lower education and with income in the lowest tercile. We also provide evidence consistent with mechanisms including increases in retail prices, decreases in employee wages, and changes in household wealth contributing to the observed changes in consumption. Our paper contributes to recent literature studying the economic consequences and incidence of corporate taxes. The heterogeneous effects across households are also policy-relevant for regulators and legislators interested in how prospective CIT changes might affect constituent households.

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1 Introduction

Corporate income taxes (CIT) are an important way for governments to raise revenue. However, CITs are often criticized for discouraging corporate investment, reducing economic growth, imposing unfair double taxation on shareholders, and encouraging corporate activities that may not be socially beneficial (Lee and Gordon [2005]; Djankov et al. [2010]; Khan et al. [2020]; Chen et al. [2011]). As such, there is considerable interest from politicians, policymakers, and practitioners on the effects of changes to CIT rates at the state, federal, and even municipal levels (e.g., OECD [2007], Lautz and Fano [2024], Gale and Pomerleau [2024]). Accordingly, prior studies have examined the effects of corporate tax rates on firms' capital structure (Heider and Ljungqvist [2015]), employment and business reallocation (Giroud and Rauh [2019]), and the incidence of the corporate tax burden across workers, landowners, and firms (Suárez Serrato and Zidar [2016]). However, there is little evidence on how CIT affects household consumption. Since household spending in developed economies represents the majority of Gross Domestic Product (GDP), and captures the implications of corporate tax incidence for constituents' welfare, understanding how it is affected by the CIT is crucial to assess the overall impact of corporate tax changes on the economy.[1] To that end, we ask how changes in the corporate income tax rate affect household consumption.

To answer our research question, we use staggered changes in U.S. state-level CIT rates. Using household-year consumption data from Nielsen, we find that a one percent change in the state CIT rate is associated with a change in household consumption of approximately -0.4 percent. This elasticity suggests that a significant portion of the CIT burden falls on local (within-state) households. We also examine whether there are heterogeneous impacts of corporate tax rate increases and decreases. We predict an asymmetric response because we expect firm owners to be more likely to pass the cost of tax increases on to their employees and customers while retaining

[1] In the postwar period (1947 to now), household consumption expenditures ranged from 58% to nearly 69% of U.S. GDP (From `https://fred.stlouisfed.org/series/DPCERE1Q156NBEA`, accessed July 15, 2021).

the benefit from any decreases for themselves. We further expect that firm owners will have more wealth to facilitate consumption smoothing and so their consumption patterns should differ from those of employees and consumers. Consistent with this, we find a significantly negative effect on consumption when there is a tax increase and an insignificant response when there is a decrease (though this is partly attributable to larger standard errors).

Next, we investigate how the consumption responses vary over time. We first find that consumption patterns display similar trajectories prior to CIT rate changes, supporting the identifying assumption of (counterfactual) parallel trends absent the CIT change. In the year of a CIT change, for both increases and decreases, there is a significant change in consumption, consistent with previous literature on consumption changes around changes to realized and expected income (Jappelli and Pistaferri [2010]), and the effects of CIT rate change on product prices (Baker et al. [2023]).[2] However, the change only persists for CIT increases. This suggests that CIT increases create longer-lasting adjustments in household behavior.

We next investigate the heterogeneity of the CIT effect across different types of households. We do so for two reasons. First, prior research has shown that household characteristics such as liquidity, access to credit, and behavioral factors can affect their responses to changes in economic conditions ([Jappelli and Pistaferri, 2010]) so we would expect consumption responses to vary with those characteristics across households. Second, policymakers are often concerned with the effects of policies on potentially disadvantaged households (e.g., related to education, race, or income). Differential policy implications for these households are important, as they can ameliorate or exacerbate inequality (Lawrance [1991]; Gorbachev [2011]; Grier et al. [2024]). Income heterogeneity can also have implications for the effects of tax changes, including CIT rates, because households

[2]As we discuss further below, the sample in which we examine dynamic effects differs from our main sample because we require three lead and lag years in the dynamic effects sample, meaning this sample loses 3 years of observations at the beginning and end of the panel. The significant consumption effect of a tax decrease we find in this analysis is a consequence of the sample reduction.

often rely on mechanisms like savings or credit markets to smooth consumption over time, and these mechanisms are less available to lower-income households (Aguiar and Bils [2015]). Therefore, investigating the heterogeneous effects of CIT rate changes across different types of households can help us assess whether CIT adjustments reduce or facilitate consumption inequalities across household types.

We find that non-white households and those with lower education exhibit a greater decrease in consumption around CIT rate increases. This could be due to a lower ability to engage in consumption smoothing (e.g., due to greater liquidity needs) or a smaller potential to adjust labor provision (i.e., hours worked) to offset tax increase effects. Households with income in the lowest tercile display a marginally stronger reaction to CIT rate cuts compared to households in the top income tercile. Interestingly, this implies that tax cuts can mitigate consumption inequality related to income, though CIT rate increases may exacerbate inequality related to education level and race.

To gain a better understanding of how CIT rate changes affect consumption, we examine several potential economic mechanisms. First, changes in the CIT rate can be passed on to consumers directly via higher prices (Baker et al. [2023]; Jacob et al. [2023a]). Using US retail scanner data, we confirm that tax increases significantly increase product prices, while tax cuts have no significant association, consistent with our main finding. Second, firms can adjust labor investments and employee pay in response to corporate tax changes. As a consequence of employment and wage changes (e.g., Giroud and Rauh [2019]; Fuest et al. [2018]), households that work in affected firms are expected to modify their consumption. We use household income data and find that tax increases are associated with significantly lower employee wages. Third, CIT rates can affect household wealth via changes in the values of investments, including corporate and household assets. Consistent with this channel, we find that CIT rate changes are negatively associated with changes in household's gross and net asset values (i.e., wealth), though this evidence comes from a smaller

sample due to the limited availability of data on household asset holdings.

We also investigate the effects of tax changes on inter-state migration. Since CIT rates plausibly affect aggregate investment (e.g., Romer and Romer [2010]; Djankov et al. [2010]), CIT rates may be associated with variation in economic opportunity, as well as expectations of opportunity. These can influence households' residential location choices which can manifest in changes in household consumption within the affected jurisdictions. Consistent with this mechanism, we find that tax increases are associated with higher emigration, while tax cuts are associated with higher immigration.

Finally, we show that our main results are robust to alternative specifications that address identification concerns related to staggered difference-in-differences (DID) estimates and unobserved state-year confounds. First, we use a stacked DID to re-estimate our baseline specification. The stacked DID avoids comparing late to early CIT rate changes, which may bias two-way estimates from our two-way fixed effects staggered DID specification (Goodman-Bacon [2021]). Second, we focus on households in border counties to reduce concerns around confounding state-year variation in economic conditions that could influence our estimates and inferences related to CIT rate change effects. The results remain robust.

Our paper contributes to two streams of literature. First, we contribute to the tax literature by providing evidence of the impact of CIT rate changes on household consumption. Prior literature has examined the effects of corporate tax rates on firms' capital structure (Heider and Ljungqvist [2015]), innovation (Mukherjee et al. [2017]), investment (Romer and Romer [2010], Djankov et al. [2010]), bank transparency (Andries et al. [2017]), employment and business reallocation (Giroud and Rauh [2019]), and the distribution of the corporate tax burden among workers, landowners and firms (Suárez Serrato and Zidar [2016]). Much of this literature focuses on the incidence of corporate taxes, i.e., whether corporate taxes are borne by shareholders, employees, consumers,

or asset owners in general (Auerbach [2006, 2018]; Clausing [2011]; Dyreng et al. [2022]) without examining how this incidence maps into consumption. More related, Mertens and Ravn [2012] use federal tax changes and find national-level evidence that decreases in tax liabilities due to all types of tax cuts have expansionary effects on private sector consumption. By exploiting staggered changes in state-level CIT rates, our paper provides evidence of household consumption changes around CIT rate movements and heterogeneous effects across different types of households. As household consumption is crucial for U.S. economic performance and a key component of household welfare, our results provide further clarity on the scope of important economic consequences of CIT rates.

Second, the results contribute to our understanding of household consumption behavior. Household consumption has attracted increased attention from researchers in recent years. Ganong and Noel [2019] document sharp spending drops after the exhaustion of unemployment insurance (UI) benefits. Baker [2018] examines consumption elasticities across households with different levels and types of debt. Testing investors' and consumers' inattention, Garmaise et al. [2024] show that household consumption displays excess sensitivity to salient macro-economic news such as the local unemployment rate. Our paper provides evidence of the adjustment of household consumption around CIT rate changes, which sheds additional light on the determinants of household consumption. Furthermore, our cross-sectional results are informative about the incidence of household consumption effects of CIT rates, which depend on household characteristics that are plausibly associated with the ability to smooth income shocks or wealth-related exposure to CIT. Heterogeneous incidence across households has implications for consumption inequality, and we find that CIT rate changes can exacerbate inequality across some dimensions (education and race) while ameliorating inequality across others (income). Our mechanism tests show that product prices, employee wages, and household assets/investments are plausible channels through which CIT changes affect household consumption.

Lastly, this paper has policy implications, as it furthers our understanding of the implications of the effects of CIT rates. The CIT rate fluctuates widely both temporally and geographically. The Tax Cuts and Jobs Act, passed at the end of 2017, decreased the top U.S. federal corporate tax rate from 39% to 21%. In 2021, several countries reached an agreement for a minimum CIT rate of 15% (Alderman et al. [2021]). Although our study focuses on state-level corporate taxes, we view our estimates of the economic consequences of CIT rate changes as useful for policymakers in assessing the impact of recent and potential CIT rate adjustments.[3]

2 Prior Literature and Theoretical Development

2.1 Incidence of Corporate Taxes

Corporate taxes represent one of the prime fiscal tools available to governments. They are imposed by a variety of national and sub-national jurisdictions and can represent a significant cost for firms. Consistent with the importance of these costs, prior literature shows that firms make operational decisions in response to changes in corporate tax policies, often with the goal of mitigating the effects of increases or taking advantage of decreases. These include changes in leverage (Heider and Ljungqvist [2015]), investments, (Romer and Romer [2010], Djankov et al. [2010]), employment and business reallocation (Giroud and Rauh [2019]), and tax avoidance (Desai and Dharmapala [2009]; Garcia-Bernardo et al. [2022]).

While the aforementioned literature demonstrates the importance of corporate taxes to firm decision-making, there is also a significant interest in determining its incidence. Generally speaking, the incidence of the corporate tax could fall on multiple parties including the owners of the corporation, its employees, and its customers, as well as owners of various factors of production

[3]Our study focuses on top-line CIT rates. We do not explore many other levers available to policymakers, including deductions, credits, exemptions, special opportunity zones, intellectual property (IP) boxes, etc.

whose value depends on corporate and consumer demand (Gentry [2007]).

A basic model of how these parties can experience this incidence is as follows. Corporate taxes increase the firm's tax costs. Firm owners bear the burden of the taxes if they accept the lower profitability imposed by the increased tax costs. Alternatively, capital owners could respond by shifting capital to non-corporate forms of business not subject to the tax. This would raise the cost of capital for corporations. Both of these mechanisms lower the returns of corporate owners reducing the amount they have available for saving, reinvestment in the firm, and ultimately consumption. Consistent with this, Suárez Serrato and Zidar [2023] estimate that 40 percent of the corporate tax falls on owners.

Alternatively, firm owners could choose to shift at least a portion of the tax burden to labor by reducing their compensation. This would reduce the amount labor has available for savings and consumption. Consistent with at least a portion of the corporate tax incidence falling on labor, Suárez Serrato and Zidar [2023] and Fuest et al. [2018] estimate that workers bear about 35 and 50 of the corporate tax burden, respectively.

Finally, the burden could be shifted to customers through two mechanisms. First, the firm could pass on the tax cost directly through increased prices. Second, the price increase could happen indirectly as the increased tax cost causes the firm to reduce its output. Reduced supply in turn leads to increased prices. In both cases the cost to customers increases. In line with this theory, Jacob et al. [2023b] and Baker et al. [2023] find that variation in local business taxes is associated with variation in consumer prices.

Note that households could take on multiple roles in this framework. For instance, a household member who is an employee could also own shares in their employer, or other firms. An owner of one firm will be a customer of others. However, all of the effects–on capital, wages, and prices–can flow through to affect households' consumption decisions. While the aforementioned literature

shows evidence consistent with changes in corporate taxes affecting shareholder wealth, employee income, and consumer prices, it does not examine the net effect of corporate tax rates on consequent household consumption.

Examining the effects of net household consumption is important for two reasons. First, the interactions of the different channels could result in different effects on overall consumption than would be expected by just considering the results of each of them separately. In addition, the effect of these interactions is likely to vary across households. For example, an owner who is also a consumer is more likely to have other wealth to allow them to smooth consumption over any changes in prices from corporate tax changes. These effects can only be captured by examining final consumption.

Second, consumption represents the majority of economic activity in the postwar U.S. As we discuss below, several studies have examined how various types of realized or expected changes to income, wealth, and prices affect consumption. While many of these studies have examined the effects of individual taxes, there is little evidence on the implications of corporate taxes even though, as we discuss above, the incidence of corporate taxes can flow both directly and indirectly to households. Because household consumption is a significant component of the welfare of governments' constituents, and CIT rates are an important policy tool, understanding the effects of CIT rates on household consumption is likely to be important both academically and from a policy perspective.

2.2 Determinants of Household Consumption

Prior literature has extensively examined factors that determine household consumption and documented several dynamics. First, consumption generally responds to changes in income and wealth. Studies have shown that household consumption responds to personal income tax refunds (Souleles

[1999]), dividend income (Baker et al. [2007]), stimulus payments (Johnson et al. [2013]), unexpected transitory income changes (Jappelli and Pistaferri [2014]) and unemployment insurance benefits (Ganong and Noel [2019]). Additionally, capital gains from both the stock and housing markets are known to impact household consumption (Dynan and Maki [2001]; Guiso and Visco [2006]; Carroll and Zhou [2012]).

Second, household consumption, unsurprisingly, reacts negatively to changes in product prices. Becker et al. [1991] highlight that increases in both past and future prices reduce current consumption of addictive goods. Peine et al. [2009] note that price increases lead to negative emotions and thus decrease consumers' purchase intent. Malc et al. [2016] find that price changes cause negative price fairness perceptions in customers and lead to lower consumption of price-increased products.

As discussed in Section 2.1, changes in the corporate income tax can flow through to the channels that drive household consumption: household wealth, employee income, and product prices. As such, we explore the impacts of these tax incidence channels on household consumption. This provides additional support for the importance of these factors in determining household consumption, and how fiscal policies not directly targeted at consumers can flow through to household choices.

We also examine the effects of increases and decreases in CIT rates separately. Prior literature finds that insiders use the cash savings from tax planning to accumulate private benefits at the expense of other stakeholders (e.g. Desai and Dharmapala [2006]). Similarly, there is evidence that tax avoidance is associated with increased dividend payouts (Anderson et al. [2023]), and that firms will use cash savings from taxes to purchase the stock of other companies (Von Beschwitz [2018]). All of these results suggest that at least some of the savings from tax cuts will be retained within the firm and used by the managers and other owners for their own benefit. Conversely, following tax increases, we expect that firm owners' response will be to increase prices and decrease wages,

passing a portion of the incidence of the CIT to consumers and employees (Suárez Serrato and Zidar [2023]; Baker et al. [2023]). Since the owners are, on average, likely to belong to wealthier households than their employees and customers we expect they are less likely to significantly vary consumption patterns after fluctuations in their net worth. As such, we expect there will be larger changes in consumption after tax increases than tax decreases.

Prior research documents mixed results when examining whether consumption responds asymmetrically to increases and decreases in income, wealth, and prices. For instance, Christelis et al. [2019] finds that the response of household consumption to income decreases is stronger than for income increases. In contrast, Guren et al. [2021] document that the response of consumption to changes in housing wealth does not differ significantly between periods of rising and falling house prices. Krishnamurthi et al. [1992] observe that brand-loyal consumers exhibit symmetric responses to both price increases and decreases, while brand-non-loyal consumers respond more strongly to price increases than to price decreases. Closer to our study, Mertens and Ravn [2012] use quarterly data to analyze the effects of changes in various types of federal tax liabilities on key macroeconomic aggregates such as per capita consumption. They find that reductions in tax liabilities affect nationwide per capita consumption.[4] Our research contributes to the literature by using detailed household-level consumption data to specifically investigate the asymmetric effects of state CIT increases and decreases on household consumption and mechanisms such as prices, wages, and wealth.

Additionally, the existing literature indicates that there is heterogeneity in how household consumption responds to changes in income, wealth, and prices. This heterogeneity has been linked to factors such as household liquidity, access to credit, and behavioral factors (Jappelli and Pistaferri

[4]Mertens and Ravn [2012] include all types of federal tax changes, such as adjustments in personal and corporate income taxes, payroll taxes, excise taxes, and investment incentives in their analyses. Thus, they cannot isolate the effects of CIT changes on consumption. Other types of federal tax changes especially personal income taxes and excise taxes may have more direct effects on private-sector consumption than CIT does. Moreover, the use of macroeconomic data does not allow for detailed analyses at the household level.

[2010]). Johnson et al. [2006] find that the consumption demand response to federal income tax rebates is higher in lower-income households. Alan et al. [2018] highlights that households with lower risk aversion or lower variance of income shocks react more strongly to income shocks. Christelis et al. [2019] show that households with lower levels of income, low cash-on-hand, or older members reduce consumption more in response to income decreases, while their consumption increases less in response to income increases. Aladangady [2017] find that households facing borrowing constraints show larger consumption responses to rising housing wealth. Becker et al. [1991] find that higher-income consumers are less responsive to changes in price. Consistent with this, Peersman and Wauters [2024] document that households with lower income, smaller saving buffers, and greater financial uncertainty exhibit a higher price elasticity of energy demand in response to price increases. In our analysis below, we explore similar dimensions of household heterogeneity along lines reflecting economic channels described above as well as factors related to household liquidity, education, and race.

In summary, while much of the existing literature focuses on how anticipated changes in income, wealth, and prices affect household consumption, our paper provides new insights by examining how CIT rate changes—which are imposed on firms—affect household consumption. Moreover, our cross-sectional results highlight how household consumption responses to CIT rate changes vary with household characteristics and can consequently affect consumption inequality. Furthermore, we show that factors such as product prices, employee wages, and household wealth, which are affected by CIT rates, are economic channels through which CIT changes plausibly shape household consumption behavior.

3 Data and Summary Statistics

In this section, we introduce the datasets used in our analysis, explain the sample construction, and provide summary statistics. Our main analysis focuses on a matched panel of annual household consumption data and state tax variables from the years 2004 to 2019. We begin the sample period in 2004 when household consumption data starts, and end the sample in 2019, before the onset of the COVID-19 pandemic. Below we describe the data sources and sample construction and discuss descriptive statistics. We provide additional details about the variable definitions in Appendix A.

3.1 Nielsen Household Consumption Data

The Nielsen Consumer Panel Data set provides a longitudinal panel of approximately 40,000-60,000 U.S. households distributed across all continental U.S. states and major markets. The panel is geographically dispersed and demographically balanced. The participating households are asked to use in-home scanners or a mobile app to record all of their purchases so that Nielsen can continuously collect information about products they buy, as well as when and where they make purchases. In addition to household consumption information, Nielsen also provides household characteristics including income range, labor force participation, marital status, race, and the presence of children in the household.

[Insert Table 1]

Table 1 presents summary statistics for the Nielsen data. Our final sample consists of 917,688 household-year observations.[5] In Panel A, we present summary statistics for household consumption. We winsorize total household consumption at the top and bottom 1% of the distribution to minimize the influence of outliers. On average, a household spends $7,708 in total each year on the

[5]The first-difference consumption variables are available for 723,138 household-years

consumption categories that Nielsen tracks. In Panel B, we provide summary statistics on Nielsen households' demographic characteristics. Around 82.5% of the households are white. Nielsen categorizes household heads' employment status into three categories separately for males and females: no male/female household head, employed, and not employed. We re-categorize household employment status into the following groups: both heads are employed, one of the heads is employed, neither of the heads are employed or there is no head in the household. About 29.4% of households have two employed heads and roughly 43.1% of households have one head that is employed. The household heads are married in 61.1% of households. More than three-quarters of households have at least one child. Approximately 63.2% of households have both heads with a college education or higher, while in 18.8% of households, both heads have less than a college education. On average, there are 2.4 family members in each household and the median category of reported household income is $50,000 to $59,999. Nielsen provides only ranges of household income rather than specific numbers.

3.2 State Tax-related Data

The corporate income tax rate, indicator for gross receipts-based taxation, personal income tax rate, sales tax rate, and unemployment insurance rate data we use come from Giroud and Rauh [2019], whose sample spans from 1997 to 2012. We follow their methods and extend the sample period to 2019. In our sample period, between 2004 and 2019, there were 70 CIT rate reductions and 8 CIT rate increases.[6] Panel A of Table 1 presents the summary statistics of state-level corporate income tax rates. The mean (median) value of the CIT rate is 6.52% (6.97%), consistent with the distribution of the CIT rate in Giroud and Rauh [2019].

[6]Consistent with much of the empirical literature, we focus on changes in state CIT rates rather than apportionment rules, deductions, or credits also relevant to the calculation of state-level corporate tax liabilities. See Suárez Serrato and Zidar [2018] for a related discussion and evidence on how tax characteristics beyond the top rate affect tax receipts and aggregate economic activity.

We also control for a variety of other changes in state corporate tax policy in order to isolate the effect of rate changes on consumption. Our starting point is the list of state tax base variables used in Suárez Serrato and Zidar [2018].[7] We start with the inclusion of the following variables from their data: sales and property apportionment weights, the number of years of loss carry back and loss carry forward, indicators of whether the state imposes a franchise tax, allows for the deduction of federal income tax, uses the federal income tax base as the starting point for the state tax base, allows for federal accelerated and or bonus depreciation, has R&D tax or investment tax credits, eliminates 'nowhere' income from physical sales, and whether it allows unitary business to submit combined reporting. To that list we add whether that state uses a factor-based nexus standard. As Suárez Serrato and Zidar [2018] end their dataset in 2010, we use the Commerce Clearing House (CCH) State tax handbooks to manually collect the information necessary to extend the data to the end of our sample period. For variables where we modify the Suárez Serrato and Zidar [2018] definition to better match our research design, we manually update the pre-2010 values in their dataset to ensure consistency. See Appendix A for detailed variable definitions.

The summary statistics of state-level tax base variables are presented in Panel A of Table 1. Consistent with Suárez Serrato and Zidar [2018], roughly half of the state-years have throwback rules (0.495) and franchise taxes (0.434), most states use federal income as the state tax base (0.843) and follow accelerated depreciation schedules (0.851), and about 40.6% of the states in the pooled sample use combined reporting rules.

3.3 Other Data

We also control for the following state-level characteristics. State unemployment insurance (UI) rates are sourced from the Department of Labor's "Significant Provisions of State UI Laws." As

[7] Available at: https://zidar.princeton.edu/publications/structure-state-corporate-taxation-and-its-impact-state-tax-revenues-and-economic.

shown in Panel A of Table 1, the mean (median) value of the UI rate is 7.20 (7.00), consistent with the UI rate distribution in Baker et al. [2023]. State-level real GDP is provided by the Bureau of Economic Analysis (BEA), and the mean (median) value of the logarithm value of GDP is 12.20 (12.21). State-level labor union coverage rates are obtained from the U.S. Bureau of Labor Statistics, the mean (median) value of which is 5.36 (5.75).

We use three additional datasets to conduct our mechanism tests discussed in Section 6. First, we use the Nielsen Retail Measurement Services (RMS) scanner dataset to get retail product price information. Next, we use the employee wage data from the Integrated Public Use Microdata Series - American Community Surveys (IPUMS-ACS) dataset. Lastly, we use household wealth data from the Survey of Income and Program Participation (SIPP). When conducting additional tests to examine CIT rate effects on migration, we use the Nielsen Consumer Panel Data to calculate the changes in household locations to measure household inter-state migration. We provide detailed introductions of each data set prior to presenting related results in Sections 6 and 7.

4 Research Design

U.S. firms bear non-negligible state CIT. On average, about 21% of total income taxes that firms pay are state CITs (Heider and Ljungqvist [2015]). Moreover, state tax rates move substantially over time. We exploit the staggered changes in state-level CIT rates to investigate the causal effects of CIT changes on household consumption.[8] The underlying assumption of our identification strategy is that, without the state CIT rate changes, the consumption of treated households (i.e., households in state-years around CIT rate changes) would evolve over time in the same way as

[8]Normally, corporate taxable income is calculated as revenues net of allowable cost deductions. The corporate tax rate is then applied to taxable income. However, Giroud and Rauh [2019] note that, during the sample period, there are four states, Michigan, Ohio, Texas and Washington, that calculate corporate tax liabilities differently, usually as a tax on gross receipts rather than taxable income. Therefore, in the regression models, we allow for states with different tax regimes (i.e., income-based versus gross receipts-based) to have different effects on household consumption. See Pogue [2007] for a discussion of gross receipts taxes.

that of control households (i.e., households in other state-years). If the state corporate income tax changes move along with the local economic conditions or other state policies that may affect household consumption at the same time, our estimates would be biased. To alleviate this concern, we control for time-varying state-level characteristics and tax base variables that may be affected by local economic conditions, elections, or other state policies.

Following Heider and Ljungqvist [2015], We implement a staggered difference-in-difference (SDD) methodology in first differences to conduct the analysis. The first difference estimation removes unobserved time-invariant factors at the household and state levels. Compared to corresponding levels estimator implementations of the SDD with fixed effects, the first-difference estimator can better address repeated treatments and sequences of treatments of heterogeneous magnitude and direction, e.g., a CIT rate increase followed several years later by a CIT rate decrease (Heider and Ljungqvist [2015]). We use the following specification:

$$\Delta Log(Total\ Consumption)_{st} = \beta \Delta TaxRate_{st} + \gamma_1 \Delta X_{st} + \gamma_2 \Delta Y_{ist} + \phi_s + \lambda_t + \epsilon_{ist} \qquad (1)$$

where $\Delta Log(Total\ Consumption)_{st}$ is the change in the logarithm of personal consumption expenditure of household i in state s from year $t-1$ to year t. $\Delta TaxRate_{st}$ is the change in the CIT rate in state s from year $t-1$ to year t.[9] ΔX_{st} are changes in state-year-level characteristics and tax base variables. Specifically, state-year-level characteristics include state-level sales tax rates, unemployment insurance rates, personal income tax rates, log real state-level GDP, and state-level labor union coverage. The state tax base variables include changes in sales and property apportionment weights, number of years of loss carry back and loss carry forward, indicators of franchise tax, federal income tax deductible, federal income used as the state tax base, federal

[9] Our tax change variables are expressed in percentage points, where a 1 percent change in the tax rate is valued as 1 for $\Delta TaxRate_{st}$, rather than 0.01.

accelerated depreciation, federal bonus depreciation, R&D tax credit, investment tax credit, state eliminates 'nowhere' income from physical sales, allowing unitary business to submit combined reporting, and factor-based nexus standard. We provide the definitions of all control variables in Appendix A. Moreover, following Giroud and Rauh [2019], we also allow for states that collect tax on gross receipts to have different effects on household consumption by adding a dummy variable, $Gross\ receipt\ tax\ flag_{st}$, that equals one if the state taxes corporations on the non-standard gross receipts basis, and an interaction term between $\Delta TaxRate_{st}$ and $Gross\ receipt\ tax\ flag_{st}$.[10] ΔY_{ist} are household-level characteristics including changes in household size, the presence of children in the household, the type of household residence, household income, marital status, and employment status of male and female heads-of-households. Since we use the first-difference estimator, time-invariant state characteristics such as location and population and household characteristics like race and education have been absorbed. We also add state fixed effects ϕ_s and year fixed effects λ_t. When using a first-difference estimator, state fixed effects capture state-level time trends in consumption. ϵ_{ist} is the error term. Standard errors are clustered at the state level. The coefficient of interest is β, which estimates the effects of CIT rates on personal consumption.

5 Results

5.1 Main Results

In this section, we use the Nielsen Consumer Panel Data to examine the effects of corporate tax rate changes on household consumption. According to Nielsen's study design, some households are more likely to be selected into the sample based on their household characteristics compared to the population. To correct the sample bias, we conduct all empirical analyses using household

[10] See Giroud and Rauh [2019] page 1268 for a further discussion of the gross receipts tax basis used by a small fraction of states.

sampling weights (i.e., projection_factor) provided by Nielsen.

[Insert Table 2]

Table 2 presents the results for total household consumption. In Column (1), we control for state-level characteristics and tax base variables, state and year fixed effects, and cluster standard errors at the state level. We estimate that a one percentage point change in the CIT rate changes total household-level consumption by about 0.4 percent.[11] In Column (2) we add household-level controls and find consistent results.

We next examine whether there is an asymmetric effect of tax increases and decreases. As discussed above, we expect that firms' owners will be more likely to pass the incidence of tax increases on to consumers and employees and retain the benefits of tax cuts for themselves. If this is the case, and corporate activities are the main channel through which CIT rate changes affect household consumption, then CIT increases would have significant negative effects on household consumption, but CIT cuts would not.

[Insert Table 3]

In Table 3, we test for different effects of tax increases and decreases. Instead of using a single variable $\Delta TaxRate_{st}$, we use two variables $Tax_increase_{st}$ and Tax_cut_{st} to measure tax increases and tax cuts separately. $Tax_increase_{st} = \Delta Tax_Rate \times \mathbb{1}_{\Delta Tax_Rate>0}$ is the level of tax increase in state s in year t, where $\mathbb{1}_X$ is the standard indicator function for condition X. $Tax_cut_{st} = \Delta Tax_Rate \times \mathbb{1}_{\Delta Tax_Rate<0}$ is the level of tax cut in state s in year t. Note that $Tax_increase_{st} \geq 0 \geq Tax_cut_{st}$. The specifications across the columns in Table 3 mirror those of Table 2, with the main effect split as described and coefficients on control variables suppressed.

[11] The coefficients of $\Delta TaxRate_{st}$ in the first and second columns are both -0.004, indicating that the expected household-level consumption changes by about $e^{-0.004} - 1 = -0.004$

Column (1) controls for state and year fixed effects without controlling for household-level or state-level characteristics, or state tax base variables. The effect of one percent CIT rate increase on household consumption is -0.3 percent and significant at $p < 0.1$ level. Column (2) incorporates state-level characteristics and state tax base variables based on Column (1) in Table 2, and column (3) further controls for household-level characteristics. In both columns, the regression estimates imply that a one percentage point increase in the CIT rate reduces household consumption by about 0.5 percent (statistically significant at the 1% level). Across columns (1)-(3), the coefficient on CIT rate cuts is negative (implying positive consumptions effects) but not statistically significant. In summary, the empirical results show that while CIT rate increases seem to depress consumption, we cannot reject the null that CIT rate decreases do not have a significant impact on household consumption.

5.2 Dynamic Effects

In this section, we estimate a dynamic effects model, allowing for leading and lag relations between CIT rate changes and household consumption. This serves three functions. First, it allows us to examine pre-CIT rate change consumption trends. To the extent that these are parallel for "treated" households in states with CIT rate changes and "control" households in states without, we have suggestive evidence of the important parallel trend assumption underlying our SDD estimation. Second, and related, the dynamic effects model addresses potential concerns around reverse causality, which would be reflected in consumption patterns that diverge prior to a CIT rate change passed in response to consumption dynamics. Third, the estimates in this section allow us to check whether consumption effects persist or reverse. This is important, as the policy implications of a persistent consumption effect are much greater than those for a reversing consumption effect.

We generate interactions of tax increase and decrease variables with indicator variables for two

years before the tax change, the tax change year, and four years after the tax change, respectively. These are $Tax_cut_{s,f_0} \times \mathbb{1}_{t=n}$, and $Tax_increase_{s,f_0} \times \mathbb{1}_{t=n}$, where f_0 indicates the tax change year. The counter n ranges between -2 and $+4$ and indicates the years between 2 years before and 4 years after the CIT rate change. Tax_cut_{s,f_0} and $Tax_increase_{s,f_0}$ are set to 0 if no tax change takes place in the 7-year window.

[Insert Figure 1]

Figure 1 shows the dynamic effects of CIT rate changes on households. Figure 1.1 presents estimated coefficients related to CIT rate increases, while Figure 1.2 presents coefficients for CIT rate cuts. The vertical bars denote 90% confidence intervals around each coefficient estimate. We find that the timing of observed effects lines up with the timing of tax changes. Specifically, we see insignificant effects in the years before the tax changes but substantial duration effects in the tax change year. This provides suggestive evidence against either reverse causality or a common driver whose impact would be in effect before the CIT rate changes.

Note that the regression is estimated in first differences, so the coefficients capture changes in expected consumption. Focusing on Figure 1.1, we see a negative and significant coefficient in year 0, as well as marginally significant coefficients in 2 of the 4 subsequent years. This implies a concurrent negative consumption reaction to CIT rate increases as well as a modicum of downward drift in subsequent years. This is consistent with our main result of a negative effect of CIT rate increases on consumption. In Figure 1.2, we find that household consumption exhibits a concurrent reaction to a CIT rate cut. The CIT decrease effect appears to be concurrent, with no significant changes in subsequent years. This implies that the level of consumption rises in the face of a CIT rate cut, then levels off, on average.

Recall that, in the main analyses, we find negative but statistically insignificant effects of tax cuts on household consumption. An important difference between the main analyses and the

dynamic tests presented in this subsection is sample composition. When estimating dynamic effects, observations from 2004–2007 and 2018–2019 are excluded to allow for leads and lags constrained by availability of the tax data. In untabulated results, we find that observations in these years drive the insignificance of the tax cut effect presented in Table 3. Given that in the main analysis we have no reason to drop these years, we continue to infer that there is insufficient evidence to conclude that there are positive effects of CIT rate cuts on household consumption.

5.3 Heterogeneous Effects

In this section we estimate heterogeneous effects by household characteristics. Changes in CIT rates plausibly have disparate impacts on different types of households. Understanding these disparate impacts is important for evaluating the effects of changes in CIT rates. Specifically, we examine whether the effects vary by race, education, and income. Table 4 presents these results. We use the specification from Column (2) of Table 2. $HHCharact_{ist}$ in Columns (1) to (3) are indicators for non-white households, low-education household heads, and household income tercile groups, respectively.

[Insert Table 4]

In Column (1), we interact tax change variables with $Non\text{-}White_{ist}$, which equals one if not all members in the household are Caucasian, and zero otherwise. The coefficients show that increases in the CIT rate more strongly reduce household consumption for non-white households than for white households. This pattern implies that the potential decrease in firm investments, hiring, and wages have an incremental effect on job opportunities for non-white households, which may negatively contribute to racial consumption inequality.

In Column (2), we interact tax change variables with $Low_Education_{ist}$, which equals one if the highest education level for household head(s) is lower than college, and zero otherwise. Compared

to high-education household heads, low-education heads might have less bargaining power and job opportunities and thus be more exposed to corporate policies affecting employees driven by CIT rate changes. Low-education is also plausibly related to household wealth, such that lower-educated households may have less ability to consumption-smooth. Consistent with this, we find that the impact of a CIT rate increase on consumption is stronger for low-education households than for high-education households. Tax cuts do not have a significant impact for either household type.

Lastly, in Column (3), we interact the tax change variables with indicators for household income terciles, with high income as the omitted category. Specifically, we include $Bottom_Income_{ist}$, which equals 1 if a household's income falls within the lowest tercile of the income distribution (and 0 otherwise), and Mid_Income_{ist}, which equals 1 if the household's income is in the middle tercile (and 0 otherwise), and interact these with the tax increase and decrease variables. The results indicate that CIT rate cuts have the strongest positive effect on consumption for households in the lowest income tercile, while CIT rate increases show no significant differential impact across income levels. This is consistent with prior literature findings that the consumption demand response to federal income tax rebates is higher in lower-income households (Johnson et al. [2006]). The heightened responsiveness of lower-income households to tax cuts can likely be attributed to their liquidity constraints, as these households are more reliant on immediate increases in disposable income to smooth consumption. Conversely, the absence of significant effects from tax increases across income groups may indicate that factors such as government subsidies or other forms of assistance might be more heavily allocated to lower-income households, and thus help mitigate the impact of tax increases on lower-income households.[12] Additionally, lower-income households might have lower baseline consumption and fewer discretionary expenditures when tax increases, offsetting potential adverse effects.

[12]In untabulated state-year level tests, we find a significant positive association between changes in CIT rates and changes in government subsidies. This suggests that local governments allocate more funds to assistance and subsidies as corporate income tax revenue increases.

6 Economic Mechanisms

In this section, we explore the potential economic mechanisms through which CIT rate changes affect household consumption. Specifically, we explore three possible mechanisms: (1) changes in product prices; (2) changes in employee wages; and (3) changes in household wealth.

6.1 Product Prices

Changes in the corporate income tax burden on producers may influence the final retail prices of their products, thereby affecting consumption behavior. Baker et al. [2023] document a negative effect of CIT rates on product prices, with a net-of-tax elasticity of 0.24. However, Baker et al. [2023] focused only on products provided by C-corporations and did not separately examine CIT rate increases and cuts. In this section, we use products from the Nielsen Retail Measurement Services (RMS) scanner dataset to examine the CIT rate effects on retail product price regardless of producer corporate form. The RMS data consists of weekly pricing and store merchandising conditions generated by participating retail store point-of-sale systems in all US markets. We use samples from 2009 to 2019 aggregated to product-state-year level.[13] Following Redding and Weinstein [2020], Ehrlich et al. [2024], and Baker et al. [2023], we exclude extreme price observations by dropping those with prices above 3 times or below one-third of the product module median for each UPC in a given year. We control for state-UPC fixed effects to exclude the impact of time-invariant state-product level factors following Baker et al. [2023], and cluster standard errors at the product level.[14]

[Insert Table 5]

[13] RMS assigns a unique UPC code (Universal Product Code, a product identifier) for each product and categorizes UPC codes into 1,075 Product Modules, 125 Product Groups, and 10 Departments, hierarchically. We use UPC to identify each product for aggregation.

[14] The results are robust to clustering standard errors at the state-product level.

Table 5 presents the results. Column (1) employs the first-difference of the logarithm of the product's average price as the dependent variable and controls for state tax base variables. The coefficient on $Tax_increase$ is significantly positive at the 1% level, indicating that product prices rise following tax increases. The coefficient on Tax_cut is positive but insignificant, suggesting little change in product prices when the CIT burden decreases. In column (2), we additionally control for time-varying state characteristics. Consistent with our main results, the coefficient on $Tax_increase$ is significantly positive at the 5% level, with the coefficient magnitude indicating an 5 basis point increase in product prices following a 1% tax increase. We find no significant change in price following tax cuts. In summary, the results shown in Table 5 imply that retail product prices increase following CIT rate increases. This is consistent with product prices serving as an economic mechanisms through which CIT rate increases affect household consumption.

6.2 Employee Wage

Our results in Section 5.1 establish that CIT increases have negative impacts on household consumption. In this Section we examine whether changes in employee wages help explain this effect. Prior studies document a substantial pass-through of corporate taxes to worker wages using German data (Fuest et al. [2018]). We directly examine whether CIT rate increases and cuts affect employee wage in the US using the IPUMS-ACS dataset, which collects and harmonizes US Census and American Community Survey (ACS) data. IPUMS-ACS provides personal wage and salary income, working industry, location, and related household characteristics data. To correct potential sample bias and make our results more representative of the US population, we conduct empirical analyses with person sampling weights (perwt) provided by IPUMS-ACS. The regression specification we use in this section is the same as Equation 4, but with changes in logarithm value of employee's wage and salary income as the dependent variable.

[Insert Table 6]

Table 6 presents the results. Column (1) includes controls from our main specification in Table 3, Column (3). Because employee wage and salary income varies substantially across industries (Bayard and Troske. [1999]), we additionally control for employer industry fixed effects in Column (2). The coefficients on $Tax_increase$ in Columns (1) and (2) are both significantly negative, suggesting a 0.8% decrease in employee wage and salary income when the CIT rate increases by 1%. Tax_cut coefficients are positive but insignificant. In summary, CIT increases have negative effects on employee wage and salary income while tax cuts do not have a significant impact.

6.3 Household Wealth

Wealthier households are likely to consume more, since wealth can finance current and future consumption. Therefore, CIT rate changes may affect household consumption via their impact on household wealth, separately from effects on contemporaneous earnings and product prices. On the one hand, wealth can facilitate consumption smoothing that spreads the consumption effects of CIT rate changes over time, and can make them difficult to detect. On the other hand, changes in tax burdens may influence investment asset values, which depend on after-tax returns. Tax rates can also affect migration patterns (examined below) and thereby influence housing demand and land value (Suárez Serrato and Zidar [2016]).

In this section, we explore how changes in CIT rates affect household wealth by affecting the value of household assets. We employ data from the Survey of Income and Program Participation (SIPP), which is a nationally representative annual or panel survey administered by the U.S. Census Bureau that collects information on the short-term dynamics of household wealth and related characteristics.[15] The first-difference household asset value variables are available between 2014

[15]More details about the SIPP dataset can be found at: https://www.census.gov/sipp/

and 2016, during which period no tax increases occurred.[16] Therefore, we can only examine the effects of tax cuts on household wealth. To conduct the analyses, we replace the dependent variable in Equation 4 with the first-difference of the log of the total or net value of household assets. We conduct empirical analyses with household sampling weights by aggregating personal weight residing in each household (wpfinwgt) provided by SIPP to correct potential sample bias and make our results more representative of the US households. Regressions with total and net assets are shown in columns (1) and (2) of Table 7, respectively.

[Insert Table 7]

The coefficients on Tax_cut are both significantly negative, suggesting that tax decreases are associated with increases in household wealth. Although much of our significant evidence above relates to tax increases, our evidence regarding the relation between tax cuts and household wealth is suggestive of a negative effect of CIT rate changes on household wealth, providing a mechanism for a negative effect on consumption. Of course, linking the two requires an estimate of the consumption-wealth elasticity, which is beyond the scope of our analysis.

In summary, our findings are consistent with the effects of CIT changes on total household consumption being attributable to three mechanisms: rising product prices after tax increases, decreasing wages following tax increases, and a negative relation between household wealth and CIT rates.

[16] In each SIPP panel, a group of households is selected by a two-step sampling to be interviewed periodically in the panel duration. SIPP assigns a unique and random identifier for each household in each Panel dataset, and provides panel survey data covering household wealth from 2013 to 2016, when dynamic household wealth can be tracked within the 4-year panel periods; and annual survey data on household wealth from 2017 to 2022, where changes in household wealth can only be tracked within the same year due to the yearly changing sample. Household asset value information is not available before 2013 in our sample period.

7 Additional Tests

7.1 Migration

In this section, we investigate whether CIT rate changes have an impact on households' migration decisions, which are indirectly related to household consumption. Individuals' cross-state migration decisions may be associated with state-level CIT rate changes due to variations in job opportunities and local government assistance (e.g., Kaestner et al. [2003]). Household members might leave states with CIT increases or move into states with CIT cuts to take advantage of the economic effects documented above, i.e., related to consumption, wages, asset values, and prices. As a result, total household consumption in a state will likely shift in response to migration patterns. Furthermore, cross-state migration could alter the composition of households in a given state, ultimately impacting the average household consumption.

We use Nielsen household location information to measure interstate household migration decisions and separately examine state immigration and state emigration. Since it takes time for people to move to other states, we examine the effects of CIT rate changes in a certain year on interstate migration in the next year. We generate dummy variables $MoveOUT_{ist}$ and $MoveIN_{ist}$, where $MoveOUT_{ist}$ is an indicator for the household moving from the focal state in year t to another state in year $t+1$, and $MoveIN_{ist}$ is an indicator for the household moving from another state in year t to the focal state in year $t+1$. In the $MoveOUT$ tests, tax change variables capture tax changes in the state s the household moved out of in year t, with state-level characteristics and tax base variables serving as proxies for the moved-out state s. In the $MoveIN$ tests, tax change variables reflect tax changes in the state s the household moved into in year t, with the same set of controls for the moved-in state. If the household does not move in year t, the state s refers to the household's current state of residence. The regression specification we use is the same as

Equation 4, but with the dependent variable replaced by interstate migration indicators.

[Insert Table 8]

Table 8 presents the results. Column (1) shows that CIT rate increases are marginally associated with emigration ($p < 0.10$), i.e., households moving out of the current state following a local CIT rate increase. The coefficient of Tax_cut is insignificant and effectively zero. In Column (2), we find that CIT rate cuts are associated with greater immigration ($p < 0.05$), indicating an increased likelihood of households moving into states after they cut CIT rates.[17] The coefficient on $Tax_increase$ is insignificant and effectively zero, providing no evidence that tax increases deter interstate immigration.

7.2 Stacked DID Estimation

Recent research has highlighted potential biases introduced by time-varying effects in Staggered DID regressions (Goodman-Bacon [2021], Baker et al. [2022]). To address this concern, we estimate a stacked difference-in-differences model that alleviates these concerns, following Wing et al. [2024]. This approach requires that earlier treated units are not used as controls for later treated units in ways that could bias our estimations. Specifically, for each tax change year in our sample, we identify (1) the set of focal households that experienced a tax change in that year t, and (2) the set of control households that did not experience any tax change between three years before and three years after t. This yields separate "stacks" for each year, which include all treated households that experience a tax change and a set of control households that are never treated in that stack's window. Thus, each ever-treated observation is included in a treatment set in only one stack. Control households can serve for multiple stacks if they are never treated in that stack's time

[17] The coefficient on Tax_cut is negative, but recall that the Tax_cut variable is weakly negative, such that the implied effect of larger tax cuts in Column (2) of Table 8 is more immigration.

window. We include state-stack and year-stack fixed effects to ensure our analysis is within a given stack. The results are shown in table 9.

[Insert Table 9]

The coefficients on $Tax_increase$ in Table 9 across columns (1) to (3) are all significantly negative, while the coefficients on Tax_cut are negative but insignificant. These results are consistent with our main findings. CIT rate increases depress consumption, while CIT rate decreases do not have a significant impact on household consumption.

7.3 Border County Tests

A potential concern impeding a causal interpretation of the relationship between CIT rate changes and household consumption is that state governments may adjust tax rates in anticipation of economic condition changes (Giroud and Rauh [2019]). Our research design already accounts for the first-difference values of key state-level economic characteristics, such as state sales tax, personal income tax, unemployment insurance rates, labor union coverage, GDP, and various state tax base variables. However, states may adjust CIT rates due to local economic factors that are not captured by these controls. To address this potential confounding issue, prior literature focuses on comparisons between counties along state borders to study how state taxation affects business activity in states that change policies compared to those that do not (e.g., Holcombe and Lacombe [2004]; Ljungqvist and Smolyansky [2016]). The underlying idea is that economic conditions are similar for counties on either side of the border, though state policies may vary across the border. Accordingly, we use treated households' cross-border neighbors to establish a counterfactual household consumption response, which allows us to isolate the effect of local economic variation that would occur in the absence of a tax change. Specifically, we re-estimate equation 4 on a subsample consisting of 1,222 county-pair-year groups involving households in

contiguous counties on either side of a state border, such that in year t, households in one county experience a CIT rate change while households in the contiguous county do not. We additionally control for County-Pair $\times$ Year fixed effects to account for time-varying unobserved economic conditions shared by each pair of contiguous counties.

[Insert Table 10]

Table 10 shows the results. Following the layout of Table 3, we start from a specification with no control variables in Column (1), and add State-level control variables and household-level control variables progressively from Column (2) to Column (3). Narrowing the sample of control households to those sharing arguably similar local economic conditions increases the economic magnitude of the sensitivity of household consumption to CIT rate increases from the baseline. In Column (3), the coefficient on $Tax_increase$ is -0.022 and significant at 5% level, while the coefficients on Tax_cut are insignificant, consistent with our prior findings that CIT rate increases depress consumption, while CIT rate decreases do not have a significant impact on household consumption.

8 Conclusion

In the study, we investigate whether state-level CIT rate changes affect household consumption. Using household-level data from Nielsen, we find that CIT rate increases tend to reduce household consumption, while CIT rate reductions do not have a significant effect. Dynamic effects analyses show that household consumption adjustments occur in the same year as the CIT rate change, and compared to CIT decrease, CIT increases are associated with a downward drift in consumption for multiple years after the rate change. We find no evidence of pre-trends in consumption prior to CIT rate cuts or increases. This finding helps alleviate concerns for reverse causality, or that unobserved state-level economic conditions change household consumption and, at the same time,

drive political pressure that causes state governments to change CIT rates. Our results are robust to alternative specifications addressing time-varying effect bias, via stacked regressions, and state-year confounds, via regressions focusing on state-border regions.

Using data on household characteristics, we further document that the effects of CIT rate changes on consumption are stronger in households with non-white members, below-college education, and in the bottom tercile of the income distribution. The stronger negative impacts on non-white and low-education households imply that CIT rate increases may amplify racial and education-level inequality in the U.S., particularly related to the household consumption that we study. Effects on consumption inequality across these dimensions may be relevant to policymakers considering changing CIT rates.

We examine three potential mechanisms through which CIT rate changes affect total household consumption: product prices, employee wages, and asset values (i.e., wealth). We find evidence consistent with each of these mechanisms. We also find that CIT rate changes are associated with interstate migration, which can also be driven by direct effects on cost of living (i.e., prices), job opportunities, and investment opportunities.

Overall, our paper sheds light on the impact of corporate tax rates on household consumption. The former is an important policy lever, while the latter is a key component of both household welfare and gross domestic product. We provide detailed evidence of the heterogeneous effects across different types of household characteristics and document potential mechanisms driving the effects. Given the importance of household consumption for the U.S. and global economies, the findings in this paper can help policy-makers better understand the economic consequences of changes to corporate tax policies.

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Appendix A Variable Definitions

Dependent variables:

Total Consumption: the total consumption expenditure (total_spent) for household i in year t. Data source: Nielsen Consumer Panel Data.

Price: average price of product u (unique UPC code) sold in state s in year t. Data source: Nielsen Retail Measurement Services Scanner Data.

Employee wage: Wage and Salary Income (INCWAGE) for employee i in state s in year t. Data source: Integrated Public Use Microdata Series - American Community Surveys (IPUMS-ACS) dataset.

Total Assets: total value of assets (THVAL_AST) owned by household i in state s in year t. Data source: Survey of Income and Program Participation (SIPP) dataset.

Net Assets: Sum of Assets minus Sum of Liabilities (THNETWORTH) of household i in state s in year t. Data source: Survey of Income and Program Participation (SIPP) dataset.

MoveOUT: dummy variable equal to one if the household resides in the focal state in year t and relocates to a different state in year $t+1$; 0 otherwise. Data source: Nielsen Consumer Panel Data.

MoveIN: dummy variable equal to one if a household resides in a different state in year t and relocates to the focal state in year $t+1$; 0 otherwise. Data source: Nielsen Consumer Panel Data.

Independent variables of interest:

ΔTaxRate: the change in the CIT rate in state s from year $t-1$ to year t. $\Delta TaxRate_{st} = CIT_{st} - CIT_{st-1}$. Data source: Giroud and Rauh [2019], and the CCH State Tax Smart Charts (In section "Business Income Tax - Tax Rates and AMT - Corporation Income Tax").

Tax_increase: CIT rate increase in state s from year $t-1$ to year t. $Tax_increase_{st} = \Delta TaxRate \times \mathbb{1}_{\Delta TaxRate \geq 0}$, where $\mathbb{1}_X$ is the standard indicator function for condition X. Data source: Giroud and Rauh [2019], and the CCH State Tax Smart Charts (In section "Business Income Tax - Tax

Rates and AMT - Corporation Income Tax").

Tax_cut: CIT rate cut in state s from year $t-1$ to year t. $Tax_cut_{st} = \Delta TaxRate \times \mathbb{1}_{\Delta TaxRate \leq 0}$, where $\mathbb{1}_X$ is the standard indicator function for condition X. Data source: Giroud and Rauh [2019], and the CCH State Tax Smart Charts (In section "Business Income Tax - Tax Rates and AMT - Corporation Income Tax").

Control variables:

Household_Size: the number of individuals residing in household i in year t. Data source: Nielsen Consumer Panel Data.

Children: dummy variable for the presence of children in household i in year t, where a child is defined as a household member under 18 years old. Data source: Nielsen Consumer Panel Data.

Resid_House: dummy variable that equals one if the household i in year t lives in a single-family house. Data source: Nielsen Consumer Panel Data.

HH_Income: categorical variable capturing ranges of recent household nominal income for year $t-2$. The categories are: under $5000; $5000-$7999; $8000-$9999; $10,000-$11,999; $12,000-$14,999; $15,000-$19,999; $20,000-$24,999; $25,000-$29,999; $30,000-$34,999; $35,000-$39,999; $40,000 - $44,999; $45,000-$49,999; $50,000-$59,999; $60,000-$69,999; $70,000-$99,999;$100,000-$124,999; $125,000-$149,999;$150,000-$199,999;$200,000+. Data source: Nielsen Consumer Panel Data.

Married: dummy variable equal to one if household i's marital status is married in year t . Data source: Nielsen Consumer Panel Data.

Head_Emp: categorical variable equal to zero if none of the household heads is employed or there is no head in household i in year t; equals one if one of the head(s) in a household is employed; and equals 2 if two heads of household are employed. Data source: Nielsen Consumer Panel Data.

Gross receipt tax flag: dummy variable equal to one for the periods where Ohio (2006-2019), Michigan (2004-2011), Texas (2004-2019), and Washington (2004-2019) establishments were subject

to the non-standard forms of corporate taxation. Data source: Giroud and Rauh [2019], and the CCH State Tax Smart Charts (In section "Business Income Tax - Tax Rates and AMT - Corporation Income Tax").

Sales tax: sales tax rate in state s in year t. Data source: Giroud and Rauh [2019], and the CCH State Tax Smart Charts (Sales and Personal rates panel).

Unemp. insurance rate: top unemployment insurance tax rate of state s in year t. Data source: Department of Labor's "Significant Provisions of State UI Law".

Personal income tax: top personal income tax rate of state s in year t. Data source: Giroud and Rauh [2019], and the CCH State Tax Smart Charts (Sales and Personal rates panel).

Labor union coverage: labor union coverage rate for state s in year t. Data source: U.S. Bureau of Labor Statistics.

Log of real GDP: logarithm of real GDP of state s in year t. Data source: Bureau of Economic Analysis.

PayrollApportionmentWeight: continuous variable reflecting the payroll apportionment weight applied in calculating income tax of state s in year t. Data source: Suárez Serrato and Zidar [2018], and Commerce Clearing House (CCH) State tax handbooks.

SalesApportionmentWeight: is a continuous variable reflecting the sales apportionment weight applied in calculating income tax of state s in year t. Data source: Suárez Serrato and Zidar [2018] and Commerce Clearing House (CCH) State tax handbooks.

PropertyApportionmentWeight: continuous variable reflecting the property apportionment weight applied in calculating income tax of state s in year t. Data source: Suárez Serrato and Zidar [2018] and Commerce Clearing House (CCH) State tax handbooks.

LossCarryback: the number of years before the loss year that a corporation may carry back an NOL in state s in year t. Data source: Suárez Serrato and Zidar [2018] and Commerce Clearing

House (CCH) State tax handbooks.

LossCarryforward: the number of years a corporation may carry forward any excess loss following the loss year t in state s. Data source: Suárez Serrato and Zidar [2018] and Commerce Clearing House (CCH) State tax handbooks.

FranchiseTax: indicator that equals 1 if a franchise tax is levied on corporations in state s in year t. Data source: Suárez Serrato and Zidar [2018] and Commerce Clearing House (CCH) State tax handbooks.

FedIncomeTaxDeductible: is an indicator that equals 1 if federal income tax is deductible of state s in year t, and 0 otherwise. Data source: Suárez Serrato and Zidar [2018], and Commerce Clearing House (CCH) State tax handbooks.

FederalIncomeasStateTaxBase: indicator that equals 1 if federal income is used as the state tax base in state s in year t. Data source: Suárez Serrato and Zidar [2018] and Commerce Clearing House (CCH) State tax handbooks.

AllowFedAccDep: indicator that equals 1 if federal accelerated depreciation is allowed in state s in year t. Data source: Suárez Serrato and Zidar [2018] and Commerce Clearing House (CCH) State tax handbooks.

FederalBonusDepreciation: is an indicator that equals 1 if federal bonus depreciation is allowed in state s in year t, and 0 otherwise. Data source: Suárez Serrato and Zidar [2018], and Commerce Clearing House (CCH) State tax handbooks.

RDTaxCredit: indicator that equals 1 if the state s offers an R&D tax credit in year t. Data source: Suárez Serrato and Zidar [2018] and Commerce Clearing House (CCH) State tax handbooks.

Pscappthrowback: indicator that equals 1 if a state s in year t eliminates 'nowhere' income from physical sales that would be untaxed by either state with the corporation's nexus or the state in which the relevant sales were made. Data source: Suárez Serrato and Zidar [2018] and Commerce

Clearing House (CCH) State tax handbooks.

Appcombrpt: is an indicator that equals 1 if the state s in year t requires a unitary business to submit combined reporting, and 0 otherwise. Data source: Suárez Serrato and Zidar [2018], and Commerce Clearing House (CCH) State tax handbooks.

Investmenttaxcredit: indicator that equals 1 if the state s offers an investment tax credit in year t. Data source: Suárez Serrato and Zidar [2018] and Commerce Clearing House (CCH) State tax handbooks.

FactorNexus: indicator equals 1 if state s uses a factor-based nexus standard in year t. A factor-based nexus standard means that the state has bright line rules about certain factors (e.g. sales) that if a firm exceeds them they are automatically determined to have a nexus in that state. Data source: Suárez Serrato and Zidar [2018] and Commerce Clearing House (CCH) State tax handbooks.

Figure 1: Consumption around CIT Increases and Cuts

This Figure presents regression coefficients, δ_n and β_n estimated from the following specification:

$$\Delta Log(Total\ Consumption)_{st} = \sum_{n=-2}^{4} \delta_n Tax_increase_{s,f_0} \times \mathbb{1}_{t=n} + \sum_{n=-2}^{4} \beta_n Tax_cut_{s,f_0} \times \mathbb{1}_{t=n} + \gamma_1 \Delta X_{st} + \gamma_2 \Delta Y_{ist} + \phi_s + \lambda_t + \epsilon_{ist} \quad (2)$$

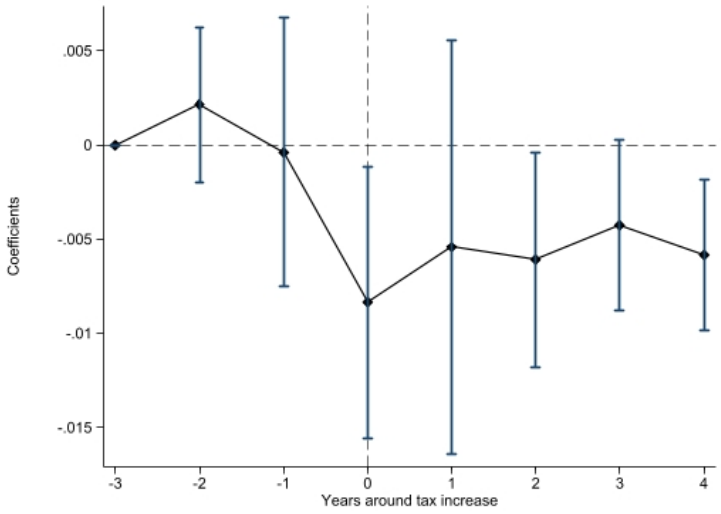


Fig. 1.1: Consumption Changes Around CIT Increases

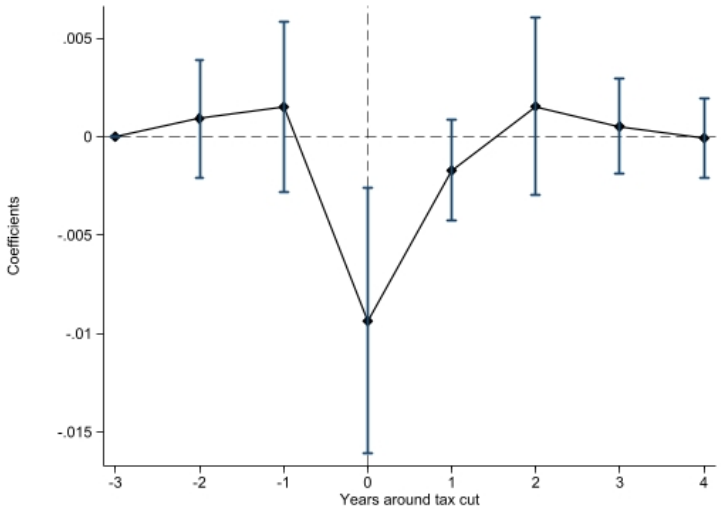


Fig. 1.2: Consumption Changes Around CIT Cuts

Table 1: Nielsen Data Summary Statistics

This table presents summary statistics. Panel A shows descriptive statistics of household and state variables used in our main estimation. Panel B shows demographic characteristics. Variable definitions can be found in Appendix A.

Panel A: Household Consumption

	Obs.	Mean	SD	25th Pctl	50 Pctl	75 Pctl
Household-Year Level Dependent Variables						
Total Consumption ($)	917,688	7707.970	4555.790	4396.790	6654.110	9860.520
Household-Year Level Control Variables						
Household_Size	917,688	2.383	1.298	1.000	2.000	3.000
Resid_House	917,681	0.779	0.415	1.000	1.000	1.000
Children	917,688	0.230	0.421	0.000	0.000	0.000
HH_Income	917,688	20.121	6.025	16.000	21.000	26.000
Head_Emp	917,688	1.019	0.754	0.000	1.000	2.000
Married	917,688	0.610	0.488	0.000	1.000	1.000
State-Year Level Variables						
Corporate Income Tax rate (%)	784	6.518	2.772	5.500	6.968	8.500
$\Delta TaxRate$ (%)	784	-0.046	0.334	0.000	0.000	0.000
Tax_increase (%)	784	0.016	0.174	0.000	0.000	0.000
Tax_cut (%)	784	-0.062	0.282	0.000	0.000	0.000
Gross receipt tax flag	784	0.069	0.253	0.000	0.000	0.000
Sales tax (%)	784	5.120	1.825	4.450	5.750	6.250
Unemp. Insurance rate (%)	784	7.199	2.196	5.430	7.000	8.900
Personal income tax (%)	784	5.357	2.819	4.250	5.750	7.000
Labor union coverage (%)	784	11.495	4.874	7.200	11.250	15.050
Log of real GDP	784	12.193	1.019	11.447	12.212	12.960
PayrollApportionmentWeight	784	15.747	13.880	0.000	25.000	25.000
SalesApportionmentWeight	784	68.307	28.034	50.000	50.000	100.000
PropertyApportionmentWeight	784	15.747	13.880	0.000	25.000	25.000
LossCarryback	784	0.645	1.101	0.000	0.000	2.000
LossCarryforward	784	17.313	17.501	10.000	20.000	20.000
FranchiseTax	784	0.434	0.496	0.000	0.000	1.000
FedIncomeTaxDeductible	784	0.085	0.280	0.000	0.000	0.000
FederalIncomeasStateTaxBase	784	0.843	0.364	1.000	1.000	1.000
AllowFedAccDep	784	0.851	0.357	1.000	1.000	1.000
FederalBonusDepreciation	784	0.264	0.441	0.000	0.000	1.000
RDTaxCredit	781	0.673	0.469	0.000	1.000	1.000
Pscappthrowback	784	0.495	0.500	0.000	0.000	1.000
Appcombrpt	784	0.406	0.491	0.000	0.000	1.000
Investmenttaxcredit	784	0.460	0.499	0.000	0.000	1.000
FactorNexus	784	0.085	0.280	0.000	0.000	0.000

Panel B: Household Background

	# of Obs.	Pct
Race		
White	756,679	82.45
Non-white	161,009	17.55
Employment Status		
Both heads are employed	270,044	29.43
One of the heads is employed	395,245	43.07
Both heads are unemployed or no head	252,399	27.5
Marital Status		
Married	560,221	61.05
Not married	357,467	38.95
Children		
Have children	210,954	22.99
No children	706,734	77.01
Education		
Both heads' highest education is college or higher	579,524	63.15
One of the heads' highest education is college or higher	165,718	18.06
Both of the heads' highest education are lower than college	172,446	18.79
	Mean	Median
Household Income	-	$50,000-$59,999
Household Size	2.38	2

Table 2: Effects of CIT Rates on Household Consumption

This table presents regression outputs using the following specification:

$$\Delta Log(Total\ Consumption)_{ist} = \beta \Delta TaxRate_{st} + \gamma_1 \Delta X_{st} + \gamma_2 \Delta Y_{ist} + \phi_s + \lambda_t + \epsilon_{ist} \quad (3)$$

where $Log(Total\ Consumption)_{st}$ is the logarithm of personal consumption expenditure of household i in state s in year t. $\Delta TaxRate_{st}$ is the change in the corporate income tax rate in state s in year t. We include the gross receipt tax flag, and an interaction term between $\Delta TaxRate_{st}$ and $Gross\ receipt\ tax\ flag_{st}$ to allow for states that collect tax on gross receipts to have different effects on household consumption. X_{st} are state-level characteristics and tax base control variables, where state-level characteristics include sales tax rate, unemployment insurance rate, personal income tax rate, logarithm of real GDP, and labor union coverage, and state-level tax base variables include sales and property apportionment weights, number of years of loss carry back and loss carry forward, indicators of franchise tax, federal income tax deductible, federal income used as state tax base, federal accelerated depreciation, federal bonus depreciation, R&D tax credit, investment tax credit, state eliminates 'nowhere' income from physical sales, allowing unitary business to submit combined reporting, and factor-based nexus standard. Y_{st} are household-level characteristics including household size, the type of household residence, the presence of children in the household, household income, marital status, and employment status of household heads. λ_t and ϕ_s are year and state fixed effects, respectively. Standard errors, clustered at the state level, are shown in parentheses below the coefficient estimates. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)
VARIABLES	Δ Log (Total Consumption)	
$\Delta TaxRate$	-0.004*	-0.004*
	(0.002)	(0.002)
$\Delta TaxRate \times Gross\ receipt\ tax\ flag$	0.002	0.002
	(0.003)	(0.003)
Gross receipt tax flag	0.007**	0.007*
	(0.003)	(0.004)
$\Delta Sales\ tax$	0.003	0.003
	(0.004)	(0.004)
$\Delta Unemp.\ Insurance\ rate$	0.000	0.000
	(0.000)	(0.000)
$\Delta Personal\ income\ tax$	0.003***	0.003***
	(0.001)	(0.001)
$\Delta Log\ of\ real\ GDP$	0.139***	0.140***
	(0.047)	(0.047)
$\Delta Labor\ union\ coverage$	-0.001	-0.001
	(0.001)	(0.001)
$\Delta Household_Size$		0.013***
		(0.001)
$\Delta Resid_House$		-0.000
		(0.003)
$\Delta Children$		0.002
		(0.003)
ΔHH_Income		0.001*
		(0.000)
$\Delta Married$		0.033***
		(0.004)
$\Delta Head_Emp$		-0.003
		(0.002)
State Tax Base Controls	Yes	Yes
State FE	Yes	Yes
Year FE	Yes	Yes
Cluster(state)	Yes	Yes
Observations	719,766	719,756
R-squared	0.008	0.010

Table 3: Effects of Corporate Tax Rate Increases and Decreases on Household Consumption

This table presents regression outputs using the following specification.

$$\Delta Log(Total\ Consumption)_{st} = \beta_1 Tax_increase_{st} + \beta_2 Tax_cut_{st} + \gamma_1 \Delta X_{st} + \gamma_2 \Delta Y_{ist} + \phi_s + \lambda_t + \epsilon_{ist} \quad (4)$$

where $Log(Total\ Consumption)_{st}$ is the logarithm of personal consumption expenditure of household i in state s in year t. $Tax_increase_{st}$ is the level of tax increase in state s in year t, and it equals zero if there is no tax rate change or there is a tax reduction in state s in year t. Tax_cut_{st} is the level of tax cut in state s in year t, and it equals zero if there is no tax rate change or there is a tax increase in state s in year t. We control for the gross receipt tax flag, and interaction terms of $Tax_increase_{st} \times Gross\ receipt\ tax\ flag_{st}$, and $Tax_cut_{st} \times Gross\ receipt\ tax\ flag_{st}$ to allow for states that collect tax on gross receipts to have different effects on household consumption. X_{ist} are state-level characteristics and tax-related variables, where state-level characteristics include sales tax rate, unemployment insurance rate, personal income tax rate, logarithm of real GDP, and labor union coverage, and state-level tax-related variables include sales and property apportionment weights, number of years of loss carry back and loss carry forward, indicators of franchise tax, federal income tax deductible, federal income used as state tax base, federal accelerated depreciation, federal bonus depreciation, R&D tax credit, investment tax credit, state eliminates 'nowhere' income from physical sales, allowing unitary business to submit combined reporting, and factor-based nexus standard. Y_{ist} are household-level characteristics include household size, the type of household residence, the presence of children in the household, household income, marital status, and employment status of household heads. The reported results are augmented with year and state fixed effects. Standard errors clustered at the state level are shown in parentheses below the coefficients. All variables are defined in the Appendix. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
VARIABLES	Δ Log (Total Consumption)		
Tax_increase	-0.003*	-0.005***	-0.005***
	(0.002)	(0.002)	(0.002)
Tax_cut	-0.003	-0.004	-0.004
	(0.004)	(0.004)	(0.004)
State-level Controls	No	Yes	Yes
Household-level Controls	No	No	Yes
State FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Cluster(State)	Yes	Yes	Yes
Observations	723,138	719,766	719,756
R-squared	0.008	0.008	0.010

Table 4: Heterogeneous Effects of CIT Rates on Consumption by Household Demographics

This table presents regression outputs using the following specification.

$$\begin{aligned}\Delta Log(Total\ Consumption)_{st} = &\beta_1 Tax_increase_{st} \times HHCharact_{ist} + \beta_2 Tax_cut_{st} \times HHCharact_{ist} \\ &+\beta_3 Tax_increase_{st} + \beta_4 Tax_cut_{st} + \gamma_1 \Delta X_{st} + \gamma_2 \Delta Y_{ist} + \phi_s + \lambda_t + \epsilon_{ist}\end{aligned} \tag{5}$$

where $Log(Total\ Consumption)_{st}$ is the logarithm of total personal consumption expenditure in state s in year t. $Tax_increase_{st}$ is the level of tax increase in state s in year t, and it equals zero if there is no tax rate change or there is a tax reduction in state s in year t. Tax_cut_{st} is the level of tax cut in state s in year t, and it equals zero if there is no tax rate change or there is a tax increase in state s in year t. We control for the gross receipt tax flag, and interaction terms of $Tax_increase_{st} \times Gross\ receipt\ tax\ flag_{st}$, and $Tax_cut_{st} \times Gross\ receipt\ tax\ flag_{st}$ to allow for states that collect tax on gross receipts to have different effects on household consumption. $HHCharact_{ist}$ in Columns (1) to (2) are indicators equal to 1 (and 0 otherwise) if the household includes non-white members, and both household heads' highest education is lower than college, respectively. In column (3), $Bottom_Income$ equals 1 (and 0 otherwise) if household income falls within the lowest tercile of the income distribution. Mid_Income equals 1 (and 0 otherwise) if household income is in the middle tercile. Other variables and fixed effects are the same as those in Equation 4. Standard errors clustered at the state level are shown in parentheses below the coefficients. All variables are defined in the Appendix. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
VARIABLES	Δ Log (Total Consumption)		
Tax_increase × Non-White	-0.011***		
	(0.003)		
Tax_cut × Non-White	-0.002		
	(0.004)		
Tax_increase × Low_Education		-0.008***	
		(0.002)	
Tax_cut × Low_Education		-0.002	
		(0.002)	
Tax_increase × Bottom_Income			0.003
			(0.006)
Tax_increase × Mid_Income			-0.001
			(0.007)
Tax_cut × Bottom_Income			-0.008*
			(0.004)
Tax_cut × Mid_Income			-0.005
			(0.007)
Tax_increase	-0.003	-0.003	-0.004
	(0.002)	(0.002)	(0.005)
Tax_cut	-0.003	-0.003	0.002
	(0.004)	(0.004)	(0.006)
State-level Controls	Yes	Yes	Yes
Household-level Controls	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Cluster(State)	Yes	Yes	Yes
Observations	719,756	719,756	719,756
R-squared	0.010	0.010	0.010

Table 5: Effects of CIT Rates on Product Prices

This table presents regression outputs using the following specification.

$$\Delta Log(Price)_{ust} = \beta_1 Tax_increase_{st} + \beta_2 Tax_cut_{st} + \gamma_1 \Delta X_{st} + \gamma_2 \Delta Y_{ist} + \phi_{us} + \lambda_t + \epsilon_{ist} \quad (6)$$

where $Log(Price)_{ust}$ in columns (1) and (2) is the logarithm of the average price of product u (unique UPC code) in state s in year t. $Tax_increase_{st}$ is the level of tax increase in state s in year t, and it equals zero if there is no tax rate change or there is tax reduction in state s in year t. Tax_cut_{st} is the level of tax cut in state s in year t, and it equals zero if there is no tax rate change or there is tax increase in state s in year t. We control for the gross receipt tax flag, and interaction terms of $Tax_increase_{st} \times Gross\ receipt\ tax\ flag_{st}$, and $Tax_cut_{st} \times Gross\ receipt\ tax\ flag_{st}$ to allow for states that collect tax on gross receipts to have different effects on household consumption. We also add state-product fixed effects ϕ_{us} and year fixed effects λ_t. ϵ_{st} is the error term. In all columns we cluster standard errors at the product level. Other variables are the same as those in Equation 4. All variables are defined in the Appendix. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Δ Log (Price)	
Tax_increase	0.0008***	0.0005**
	(0.0002)	(0.0002)
Tax_cut	0.0002	0.0002
	(0.0002)	(0.0002)
State Characteristics Ctl	No	Yes
State Tax Base Ctl	Yes	Yes
State-UPC FE	Yes	Yes
Year FE	Yes	Yes
Cluster(UPC)	Yes	Yes
Observations	81,898,836	81,898,836
R-squared	0.225	0.225

Table 6: Effects of CIT Rates on Wages

This table presents regression outputs using the following specification.

$$\Delta Log(Employee\ wage)_{ust} = \beta_1 Tax_increase_{st} + \beta_2 Tax_cut_{st} + \gamma_1 \Delta X_{st} + \gamma_2 \Delta Y_{ist} + \phi_s + \lambda_t + \epsilon_{ist} \quad (7)$$

where $Log(Employee\ wage)_{ust}$ is the logarithm of employee i's wage and salary income in state s in year t. $Tax_increase_{st}$ is the level of tax increase in state s in year t, and it equals zero if there is no tax rate change or there is a tax reduction in state s in year t. Tax_cut_{st} is the level of tax cut in state s in year t, and it equals zero if there is no tax rate change or there is a tax increase in state s in year t. We control for the gross receipt tax flag, and interaction terms of $Tax_increase_{st} \times Gross\ receipt\ tax\ flag_{st}$, and $Tax_cut_{st} \times Gross\ receipt\ tax\ flag_{st}$ to allow for states that collect tax on gross receipts to have different effects on household consumption. Other variables and fixed effects are the same as those in Equation 4. Standard errors clustered at the state level are shown in parentheses below the coefficients. All variables are defined in the Appendix. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
VARIABLES	Δ Log (Employee wage)	
Tax_increase	-0.008***	-0.008***
	(0.003)	(0.003)
Tax_cut	0.007	0.009
	(0.005)	(0.006)
State-level Controls	Yes	Yes
Household-level Controls	Yes	Yes
Industry FE	No	Yes
State FE	Yes	Yes
Year FE	Yes	Yes
Cluster(State)	Yes	Yes
Observations	13,638,263	13,638,263
R-squared	0.233	0.264

Table 7: Effects of CIT Rates on Household Wealth

This table presents regression outputs using the following specification.

$$\Delta log(Wealth)_{ist} = \beta Tax_cut_{st} + \gamma_1 \Delta X_{st} + \gamma_2 \Delta Y_{ist} + \phi_s + \lambda_t + \epsilon_{ist} \quad (8)$$

where $log(Wealth)_{ist}$ is the logarithm of total or net value of assets for household i in state s in year t. Tax_cut_{st} is the level of tax cut in state s in year t. It equals zero if there is no tax rate change or there is a tax increase in state s in year t. We control for the gross receipt tax flag, and the interaction term of $Tax_cut_{st} \times Gross\ receipt\ tax\ flag_{st}$ to allow for states that collect tax on gross receipts to have different effects on household consumption. Other variables and fixed effects are the same as those in Equation 4. Standard errors clustered at the state level are shown in parentheses below the coefficients. All variables are defined in the Appendix. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	(1) Δ Log (Total Assets)	(2) Δ Log (Net Assets)
Tax_cut	-0.110**	-0.104***
	(0.055)	(0.037)
State-level Controls	Yes	Yes
Household-level Controls	Yes	Yes
State FE	Yes	Yes
Year FE	Yes	Yes
Cluster(State)	Yes	Yes
Observations	51,776	42,243
R-squared	0.027	0.018

Table 8: Effects of CIT Rates on Interstate Migration

This table presents regression outputs using the following specification.

$$Move_{ist} = \beta_1 Tax_increase_{st} + \beta_2 Tax_cut_{st} + \gamma_1 \Delta X_{st} + \gamma_2 \Delta Y_{ist} + \phi_s + \lambda_t + \epsilon_{ist} \quad (9)$$

where $Move_{ist}$ is either MoveOUT or MoveIN. MoveOUT is an indicator for the household moving from the focal state in year t to another state in year $t+1$. MoveIN is an indicator for the household moving from another state in year t to the focal state in year $t+1$. $Tax_increase_{st}$ is the level of tax increase in state s in year t, and it equals zero if there is no tax rate change or there is a tax reduction in state s in year t. Tax_cut_{st} is the level of tax cut in state s in year t, and it equals zero if there is no tax rate change or there is a tax increase in state s in year t. We control for the gross receipt tax flag, and interaction terms of $Tax_increase_{st} \times Gross\ receipt\ tax\ flag_{st}$, and $Tax_cut_{st} \times Gross\ receipt\ tax\ flag_{st}$ to allow for states that collect tax on gross receipts to have different effects on household consumption. Other variables and fixed effects are the same as those in Equation 4. Standard errors clustered at the state level are shown in parentheses below the coefficients. All variables are defined in the Appendix. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	(1) MoveOUT	(2) MoveIN
Tax_increase	0.001*	-0.000
	(0.001)	(0.001)
Tax_cut	-0.000	-0.004**
	(0.001)	(0.002)
State-level Controls	Yes	Yes
Household-level Controls	Yes	Yes
State FE	Yes	Yes
Year FE	Yes	Yes
Cluster(State)	Yes	Yes
Observations	585,341	585,338
R-squared	0.001	0.004

Table 9: Stacked DID Specification

This table presents the results using the stacked DID method to re-estimate our baseline results from Table 3. Regression equation and variables are defined as in Table 3. For each tax change year in our sample, we identify the set of the focal households that experienced a tax change in that year t, and the set of control households that did not experience any tax change between three years before and three years after t, yielding separate "stacks" for each year, which include all treated households that experience a tax change and a set of control households that are never treated in that stack's window. We include state-stack and year-stack fixed effects to ensure our analysis is within a given stack. Other specifications are the same as those in Equation 4. Variable definitions can be found in Appendix A. Standard errors clustered at the state level are shown in parentheses below the coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
VARIABLES	Δ Log (Total Consumption)		
Tax_increase	-0.005**	-0.007***	-0.007***
	(0.002)	(0.002)	(0.002)
Tax_cut	-0.003	-0.003	-0.003
	(0.003)	(0.003)	(0.003)
State-level Controls	No	Yes	Yes
Household-level Controls	No	No	Yes
State-Stack FE	Yes	Yes	Yes
Year-Stack FE	Yes	Yes	Yes
Cluster(State)	Yes	Yes	Yes
Observations	4,731,536	4,692,730	4,692,664
R-squared	0.006	0.006	0.008

Table 10: Effects of CIT Rates on Consumption for Border-County Households

This table presents results from re-estimating our baseline results from Table 3 on a sample limited to households in contiguous counties on either side of a state border, such that in year t, households in one county experience a tax shock while households in the neighboring county do not. We control for County-Pair $\times$ Year fixed effects to account for common local economic shocks. Regression equation and variables are defined as in Table 3. Variable definitions can be found in Appendix A. Standard errors clustered at the state level are shown in parentheses below the coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
VARIABLES	Δ Log (Total Consumption)		
Tax_increase	-0.006	-0.022**	-0.022**
	(0.007)	(0.010)	(0.010)
Tax_cut	0.006	0.004	0.003
	(0.008)	(0.007)	(0.007)
State-level Controls	No	Yes	Yes
Household-level Controls	No	No	Yes
State FE	Yes	Yes	Yes
County-Pair $\times$ Year FE	Yes	Yes	Yes
Cluster(State)	Yes	Yes	Yes
Observations	50,952	48,864	48,864
R-squared	0.052	0.055	0.058