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Tax Cuts vs. Public Spending in Wisconsin*

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Executive Summary

- Individual income tax rates are higher in Wisconsin than in most other states. The state's statutory rate for the bottom income bracket is the 19th highest among all states, and its statutory rate for the top income bracket is the 9th highest. The tax has also become more progressive: The difference between the top and the bottom statutory rates has more than doubled since 2000.
- We estimate the economic impact of lower income tax rates in Wisconsin using a model that accounts for behavioral responses from households and firms. In particular, we allow (1) the tax rates to affect the amount of skills accumulated by individuals, (2) the effective tax rates faced by households to be different from the statutory rates due to exemptions and deductions, and (3) the government to adjust the composition of its expenditures as well as the tax rates.
- We find that lowering income tax rates has a significantly positive impact on Wisconsin's economy.
  - Moving to a flat statutory rate of 4.25% (as in Michigan) increases output and household consumption by more than 2.4%, and the impact is greater when the rate is lower, for example, 3.05% as in Indiana or 2.50% as in Arizona.
  - Since the effective tax rate is higher than the statutory rate for most middle-income households due to the sliding scale standard deductions, moving to a flat effective rate of 4.25% requires a larger reduction in the second highest statutory rate and has a larger impact on output and household consumption.
  - When a larger share of government revenue is transferred back to households, it raises the disposable income for each dollar of gross income earned by a household. This has a positive effect on labor supply and the economy.
  - Increased economic activity leads to a larger tax base in the long run. The negative impact of lower tax rates on tax revenue in the long run is 20% smaller than in the short run.

Wisconsin's individual income tax rates are high and progressive. As shown in Table 1, there are four brackets for taxable income in 2024, where the statutory marginal tax rate (MTR) increases from 3.50% to 7.65%. The tax structure is cumulative, so that each tax rate applies only to income that falls within the corresponding bracket. A taxpayer with income exceeding the threshold for the top bracket would have income subject to each of the four tax rates. According to data from Tax Foundation (2024), Wisconsin's statutory rate for the bottom income bracket is the 19th highest among all states, and its statutory rate for the top income bracket is the 9th highest. The tax structure has also become more progressive. The difference between the top and bottom statutory rates has more than doubled from 2.03% (6.65%-4.73%) in 2000 to 4.15% (7.65%-3.50%) in 2024.

Table 1: Wisconsin's Individual Income Tax Rates and Brackets: 2024

	Taxable income brackets ($)		
Statutory MTR (%)	Single	Married jointly	Married separately
3.50	Less than 14,320	Less than 19,090	Less than 9,550
4.40	14,430 to 28,640	19,090 to 38,190	9,550 to 19,090
5.30	28,640 to 315,310	38,190 to 420,420	19,090 to 210,210
7.65	315,310 or more	420,420 or more	210,210 or more

Wisconsin's effective MTR is also one of the highest in the United States. Defined as the actual tax rate on the last dollar earned by a household, the effective MTR is different from the statutory MTR due to various exemptions, deductions and tax credits. In particular, Wisconsin has a sliding scale standard deduction that decreases at a rate of 19.778% for most middle-income households. For these households, each additional dollar of gross income reduces the standard deduction by 19.778 cents. Consequently, each additional dollar of gross income raises taxable income by 1.19778 dollars, so that the effective MTR based on gross income is 19.778% higher than the statutory MTR based on taxable income. In a previous report (Guo and Seshadri, 2024), we find that Wisconsin's effective MTR is the 15th highest among all states, and it is above the median of the 50 states for nearly all groups of tax filers. In particular, for married couples filing jointly where both spouses are above 65, Wisconsin ranks 9th highest among all states.

Wisconsin's high and progressive income taxes have a negative impact on the state's economy. There are at least four channels. First, high income tax rates cause out-migration, especially by high-skilled individuals and high-income households whose locations are more responsive to the income tax rates (Moretti and Wilson, 2017; Rauh, 2022). Due to interstate migration, Wisconsin's population dropped by 72,006 between 2010 and 2019, and it dropped again by 11,383 between 2020 and 2022. Partly because of this, Wisconsin's civilian labor force increased by less than 8,000 between July

2017 and October 2024, compared to an increase of over 7 million for the U.S. during the same period. Second, progressive taxation lowers worker productivity by reducing the incentive for human capital accumulation (Erosa and Koreshkova, 2007). Third, because most pass-through businesses are paying the individual, as opposed to corporate, income tax, and pass-through income is highly concentrated among households in the top of the income distribution, the high and progressive income tax has a negative effect on firm investment and business formation. As a result, lowering tax rates has a significantly positive effect on output (Mertens and Ravn, 2013; Zidar, 2019). Finally, high tax rates for the elderly could reduce the inflows of seniors into the state, which could have a negative effect on the local economy by reducing the working-age population, total employment, GDP, average income, fiscal revenue, and house prices (Badilla Maroto et al., 2024).

We estimate the economic impact of lowering income tax rates in Wisconsin. Instead of the static approach adopted by many government agencies, which ignores all behavioral responses mentioned above, we use a model to account for behavioral responses from households and firms and to evaluate the dynamic impact of lower tax rates on the state's economy. In particular, we allow tax rates to affect the amount of skills accumulated by individuals. Because a progressive tax structure discourages labor supply, previous studies have shown that moving to a flat tax rate could have a positive effect on the economy (Adhikari and Alm, 2016; Guner et al., 2023). We consider both a flat statutory rate and a flat effective rate. While the statutory rate is the focus of policymakers, the effective rate is what matters for labor supply and other household behaviors. As mentioned above, the two could be different from each other due to various exemptions, deductions and tax credits.

The economic impact of any tax cut depends on the efficacy of government spending. Tax cuts financed by immediate cuts in unproductive government spending could raise output, while tax cuts financed by debt or reductions in government investment could reduce output (Gale and Samwick, 2017). Assuming the state government has to balance its budget, the economic impact of lowering income tax rates in Wisconsin depends on how changes in government revenue affect different government expenditures. We consider two types of government expenditures: direct spending and transfers. The latter refers to the part of government revenue that is transferred back to households. In practice, this includes public welfare and income maintenance expenditures such as cash assistance through Temporary Assistance for Needy Families (TANF), Supplemental Security Income, and other payments made directly to individuals, most of which are means-tested. However, Guner et al. (2023) show that replacing the means-tested welfare system and the progressive tax system in the U.S. with a flat transfer and a flat tax rate could improve welfare and gain the majority support of newborns. We thus consider a flat transfer but allow the government to adjust the share of transfers in total government

expenditures in response to the lower income tax rates.

We find that lowering income tax rates could have a significantly positive impact on Wisconsin's economy. In particular, moving to a flat statutory rate of 4.25% (as in Michigan) could raise output and household consumption by over 2.4%. The impact is larger when the rate is lower, e.g., 3.05% as in Indiana or 2.50% as in Arizona. Because the effective MTR is larger than the statutory rate for most middle-income households due to the sliding scale standard deductions, moving to a flat effective rate of 4.25% requires a larger reduction in the second highest statutory rate, which could lead to a larger impact on output and household consumption. Moreover, when a larger share of government revenue is transferred back to households, it raises the disposal income for each dollar of gross income earned by a household. This encourages individuals to work more and has a positive effect on the economy. Together, we find that moving to a flat effective rate of 2.5% and raising the share of transfers in total government expenditures from its current value of 26% to 30% could raise output and household consumption by over 9%. Finally, because increased economic activities lead to a larger tax base, the negative impact of lower tax rates on tax revenue in the long run is over 20% smaller than the immediate impact.

Our findings are consistent with previous studies showing a positive effect of tax cuts and transfers on the economy (Mertens and Ravn, 2013; Ramey, 2019; Chodorow-Reich, 2019; Zidar, 2019). In particular, Chodorow-Reich (2019) reviews empirical studies exploiting the geographic variation in tax cuts and transfers resulting from the 2009 American Recovery and Reinvestment Act, and finds that one dollar of tax cuts and/or transfers raises output by about 1.5 dollars. After reviewing the recent literature on fiscal multipliers (defined as the ratio of the change in output to the change in government spending or tax cuts that caused it), Ramey (2019) finds that the impact of tax cuts is larger than the impact of government spending: each dollar of tax cuts raises output by 2-3 dollars, while each dollar of government spending only raises output by 0.6-1 dollar. Consistent with the positive effect of senior inflows documented by Badilla Maroto et al. (2024), Brewer et al. (2022) show that tax cuts for the elderly also have a significant impact on the economy.

1 Model

We use the model of the Wisconsin economy and tax system constructed by Guo et al. (2023), and adapt it to our purpose. In particular, we highlight the difference between the statutory and the effective tax rates, and the allocation of government expenditures between direct spending and transfers.

1.1 Household

There is a representative household who lives forever. In each period t, the household chooses $c_t, n_{1,t}, n_{2,t}, x_t, d_t$, and s_t to solve

$$\max \sum_{t=0}^{\infty} \beta^t u(c_t, c_{t-1}, G_t, n_t = n_{1,t} + n_{2,t}) \tag{1}$$

$$\text{s.t. } \rho_t(w_t h_t n_{1,t} + s_{t-1}\pi_t - r_{t-1}d_{t-1}) + T_t + d_t = \tag{2}$$
$$d_{t-1} + (1+\tau_{c,t})c_t + (1+\tau_{x,t})x_t + p_t(s_t - s_{t-1})$$

$$h_{t+1} = (1-\delta_h)h_t + z(h_t n_{2,t})^{\gamma_1} x_t^{\gamma_2}, \tag{3}$$

where β is the discount factor, and $u(c_t, c_{t-1}, G_t, n_{1,t} + n_{2,t})$ is the flow utility in period t that depends on (private) consumption in the current period c_t, consumption in the previous period c_{t-1}, government expenditures G_t, and labor supply $n_t = n_{1,t} + n_{2,t}$. $n_{1,t}$ is the work time that results in labor income $w_t h_t n_{1,t}$, where h_t is the household's productivity or human capital, and w_t is the wage rate per unit of human capital. The household also receives dividend income $s_{t-1}\pi_t$, where π_t is firm profits and s_{t-1} is the household's share of the firm determined in the previous period. Both types of income are taxable. Given the interest rate r_{t-1} and debt level d_{t-1} determined in the previous period, the household makes an interest payment of $r_{t-1}d_{t-1}$, and receives a deduction in the same amount when filing for the income tax. After-tax income, $\rho_t(w_t h_t n_{1,t} + s_{t-1}\pi_t - r_{t-1}d_{t-1})$, is

$$\begin{aligned}\rho_t(w_t h_t n_{1,t} + s_{t-1}\pi_t - r_{t-1}d_{t-1}) = {} & w_t h_t n_{1,t} + s_{t-1}\pi_t - r_{t-1}d_{t-1} \\ & - \tau^f_{y,t}(w_t h_t n_{1,t} + \theta_c s_{t-1}\pi_t - r_{t-1}d_{t-1} - \gamma^f_t) \\ & - \tau^s_{y,t}(w_t h_t n_{1,t} + \theta_c s_{t-1}\pi_t - r_{t-1}d_{t-1} - \gamma^s_t)\end{aligned} \tag{4}$$

where $\tau^f_{y,t}$ and γ^f_t are the federal individual income tax rate and deductions/exemptions, and $\tau^s_{y,t}$ and γ^s_t are the state individual income tax rate and deductions. Both $\tau^f_{y,t}$ and $\tau^s_{y,t}$ are the effective tax rates that could be different from the statutory rates.

T_t is the amount of government transfers, which is independent of household income rather than means-tested, d_t is the debt level chosen in the current period, $\tau_{c,t}$ is the tax rate on consumption goods, $\tau_{x,t}$ is the tax rate on goods x_t used to produce the household's human capital in the next period h_{t+1}. Following Ben-Porath (1967), we assume h_{t+1}

depends on the current level of human capital h_t, a depreciation rate δ_h, learning ability z, learning time $n_{2,t}$ and goods input x_t. Finally, p_t is the price of one share of the firm, s_t.

1.2 Firms

Following Williams (2021), we assume there are three types of firms: a fraction θ_c are C-corporations, θ_p are pass-throughs, and θ_g are non-profits and government. All types produce with a common production function $F(k, l) = Ak^{\alpha}l^{1-\alpha}$, where k is (physical) capital and l is labor input measured in efficiency units. Each type $o \in \{c, p, g\}$ faces a different tax $\tau_{o,t}$ on its net income in period t, which is taken to be output minus the wage bill and a depreciation allowance with rate δ. Let $i_{o,t}$ be the investment of a type-o firm in period t. The after-tax profit $\pi_{o,t}$ of the firm is

$$\pi_{o,t} = F(k_{o,t}, l_{o,t}) - w_t l_{o,t} - i_{o,t} - \tau_{o,t}(F(k_{o,t}, l_{o,t}) - w_t l_{o,t} - \delta k_{o,t}). \tag{5}$$

C-corporations face the combined federal and state corporate tax denoted as $\tau_{c,t} = \tau^f_{c,t} + \tau^s_{c,t}$, pass-throughs face the combined federal and state personal income tax rate $\tau_{p,t} = \tau^f_{p,t} + \tau^s_{p,t}$, and non-profits are not taxed. Because the ownership of pass-through businesses is particularly concentrated among high-income earners, the tax rate on pass-through income is allowed to differ from the tax rate on other sources of income, e.g., $\tau^f_{y,t}$ and $\tau^s_{y,t}$.

In general, firms of different types facing different tax rates will choose different levels of capital and labor. In order to preserve simple aggregation, following Williams (2021), we assume firms hire from a common labor market, and the shares of the different types are fixed over time, such that, for any $o \in \{c, p, g\}$, $k_{o,t} = \theta_o k_t$, $l_{o,t} = \theta_o l_t$ and $i_{o,t} = \theta_o i_t$, where k_t, l_t and i_t are aggregate capital, labor and investment at time t, and the total profit π_t of all firms at time t is

$$\pi_t = \sum_o \pi_{o,t} = F(k_t, l_t) - w_t l_t - i_t - \tau_{f,t}(F(k_t, l_t) - w_t l_t - \delta k_t), \tag{6}$$

where

$$\tau_{f,t} = \sum_{o \in \{c,p,g\}} \theta_o \tau_{o,t} \tag{7}$$

is the average tax rate for firms at time t.

The firms are owned by the household, and they maximize the present discounted value of profits, $\sum_t \beta^t \lambda_t \pi_t$, by choosing labor, l_t, and investment, i_t. The first-order condition for labor is

$$F_l(k_t, l_t) = w_t. \tag{8}$$

and the law of motion for capital is $k_{t+1} = k_t(1-\delta) + i_t$.

1.3 Government

There are two levels of government. The federal government imposes three types of taxes: the individual income tax (with tax rate $\tau^f_{y,t}$ and exemptions γ^f_t), the corporate tax (with tax rate $\tau^f_{c,t}$), and the tax on pass-through businesses (with tax rate $\tau^f_{p,t}$).

The federal government does not have to balance its budget in the state. Let REV^f_t be the federal tax revenue from the state, G^f_t be federal (consumption) expenditures in the state, and T^f_t be the federal transfers to the household in the state. We assume

$$G^f_t + T^f_t = (1 + m^f_t) REV^f_t, \tag{9}$$

with m^f_t being a measure of the net transfers from the federal government to the state in period t. Let $s^f_{G,t} = \frac{G^f_t}{G^f_t + T^f_t}$ be the consumption share of federal expenditures in the state. We assume $s^f_{G,t}$ is time-invariant.

The state government imposes four types of taxes: the individual income tax (with tax rate $\tau^s_{y,t}$ and exemptions γ^s_t), the corporate tax (with tax rate $\tau^s_{c,t}$), the tax on pass-through businesses (with tax rate $\tau^s_{p,t}$), and sales taxes on consumption (with tax rate $\tau_{c,t}$) and goods input for skill production (with tax rate $\tau_{x,t}$).

Let REV^s_t be the state tax revenue in period t, G^s_t be state government expenditures, and T^s_t be the transfers from the state government to the household. We assume the state government must balance its budget in each period, so that

$$G^s_t + T^s_t = REV^s_t \tag{10}$$

for each t. Let $s^s_{G,t} = \frac{G^s_t}{G^s_t + T^s_t}$ be the consumption share of state government expenditures. Differnet from Guo et al. (2023), we allow $s^s_{G,t}$ to respond to changes in the tax rates.

The combined federal and state government expenditures in period t is $G_t = G^f_t + G^s_t$. The combined federal and state transfers to the household in period t is $T_t = T^f_t + T^s_t$.

1.4 Equilibrium

In equilibrium, both the household and the firms' decisions must be optimal, and they must be consistent with each other and the government's policies. In particular, the government expenditures G_t and transfers T_t taken as given by the household must be consistent with those determined by the federal and state governments.

Assuming workers cannot move across the state border, labor demand l_t must equal labor supply $h_t n_{1,t}$. Since capital can move freely across the state border, capital demand k_t does not have to equal its supply in the state, $-d_t$. Instead, we assume the interest rate r_t faced by the household and firms in the state is given by

$$(1 - \tau^f_{y,t} - \tau^s_{y,t}) r_t = (1 - \tau^f_{y,t}) r^*_t, \tag{11}$$

where r^*_t is determined outside the state and could be viewed as the interest rate faced by households and firms in states with no individual income tax ($\tau^s_{y,t} = 0$).

1.5 Calibration

We focus on the steady state, where all variables are time invariant, and calibrate the model to match the Wisconsin economy and its current tax system.

We assume the flow utility in period t is

$$u(c_t, c_{t-1}, G_t, n_t) = \log(\hat{c}_t - \kappa \frac{n_t^{1+\omega}}{1+\omega}) \tag{12}$$

$$\hat{c}_t = \{\phi(c_t - b c_{t-1})^{\frac{\nu-1}{\nu}} + (1-\phi) G_t^{\frac{\nu-1}{\nu}}\}^{\frac{\nu}{\nu-1}} \tag{13}$$

Following Sims and Wolff (2018), we assume the relative importance of private consumption is $\phi = 0.8$, the degree of consumption habit is $b = 0.722$, and the elasticity of substitution between private and government consumption is $\nu = 0.285$. With $\nu < 1$, consumption c and government spending G are complements. Other things equal, a reduction in G resulting from lower tax revenue would reduce the marginal utility of consumption and, in turn, labor supply n. As a result, lowering the tax rate does not necessarily lead to economic growth or improve welfare.

Following Williams (2021), we set

- $\omega = 1$. This is the elasticity of labor supply in the special case where households do not value government expenditures ($\phi = 1$) and have no consumption habit ($b = 0$). Unit aggregate labor supply elasticities are common in the macroeconomics literature (e.g., Prescott, 2004), although most microeconomic studies estimate lower labor supply elasticities. Chetty et al. (2011) and Keane and Rogerson (2012) discuss how aggregate elasticities capture different adjustment margins, and so small micro elasticities are consistent with large aggregate elasticities.
- the labor share to $1 - \alpha = 0.599$. This is the average of the total labor share from 2010 to 2020, where the total labor share in each year is the sum of the payroll labor share (which accounts for wages and salaries) and the proprietor's labor share. The

payroll labor share is estimated using state-level data from the Bureau of Economic Analysis (BEA), while the proprietor's labor share is estimated using national data on Major Sector Productivity and Costs from the BEA.

- the physical capital depreciation rate to $\delta = 0.075$. This is based on the BEA's national data in the Fixed Assets Tables.
- the share of C-corporations to $\theta_c = 0.431$, and the share of pass-through businesses to $\theta_p = 0.424$. These are the payroll shares estimated from the County Business Patterns and the Nonemployer Statistics.
- the net transfers from the federal government to the state to $m_f = 0.13$, and the consumption share of federal expenditures in the state to $s_G^f = 0.538$. These are calibrated using data on federal spending in Wisconsin from the Rockefeller Institute of Government (2021), data on Personal Income by State from the BEA, and the IRS Statistics of Income data on federal tax revenue raised within Wisconsin. Net transfers are defined as personal current transfer receipts minus contributions for government social insurance. Federal government consumption G_t^f is the difference between federal expenditures in Wisconsin and net transfers.
- the national interest rate to $r^* = 0.04$ and the discount factor to $\beta = 1/(1+(1-\tau_y^f)r^*) = 0.97$.

Because pass-through income is highly concentrated among households in the top of the income distribution, we set the state tax rate for pass-through businesses to $\tau_p^s = 0.0765$, the top marginal rate for the individual income tax in Wisconsin, and set the federal tax rate for pass-through businesses to $\tau_p^f = 0.37$, the top marginal rate for the federal individual income tax.

Williams (2021) uses a lower federal rate $\tau_p^f = 0.28$ to account for the 20% deductions created by the Tax Cuts and Jobs Act of 2017. However, not all households are eligible for the deductions. For example, in 2021, married couples with taxable income above $329,800 and single filers with taxable income above $164,900 are not eligible. The results reported below are similar when we use either the lower value $\tau_p^f = 0.28$ or some value in between.

We set the effective state individual income tax rate to $\tau_y^s = 0.0635$, which is higher than the statutory rate of 5.30% for most middle-income households. The difference is due to the standard deduction, which phases out with income at a rate of 19.778% for most middle-income households. We set the effective federal individual income tax rate to $\tau_y^f = 0.1965$, which is the sum of the statutory marginal rate of 12% for middle-income households and the payroll/FICA rate of 7.65%.

We normalize total factor productivity to $A = 1$, and set $\tau_x = 0$ so that educational expenditures are not taxed. We set the human capital depreciation rate to $\delta_h = 0.035$. This is in the middle of the estimates used in the literature. For example, Heckman et al. (1998) assume human capital does not depreciate ($\delta_h = 0$), while Fan et al. (2022) find the depreciation rate is over 8%.

According to the Annual Fiscal Report of the State of Wisconsin (2022), 24.2% of its General Purpose Revenue (GPR) was budgeted for aids to individuals. Guo et al. (2023) take this as a measure of the state transfers to households and set $s_G^s = 1 - 0.242 = 0.758$.

The solid line in figure 1 plots aids to individuals as a share of Wisconsin's GPR expenditures in each fiscal year since 2012. The measure increased from slightly over 22% in 2012 to slightly over 24% in 2015, fluctuated between 24% and 26% in 2015–2023, and then increased to over 29% in 2024. The value of 24.2% in 2022 is one of the lowest values since 2015. Moreover, using data from the Annual Survey of State and Local Government Finances conducted by the U.S. Census Bureau, the dashed line plots public welfare as a share of total state expenditures in Wisconsin in each year between 2012 and 2022, the last year when the data are available. This alternative measure of state government transfers increased from below 20% in 2012 to over 30% in 2022. Because both measures are around 26% in the few years before the COVID pandemic, we set $s_G^s = 1 - 0.26 = 0.74$ for the baseline economy, and will allow it to increase when we change the tax rate in the next section.

The remaining parameters are chosen so that some steady-state statistics in the model match their values in the data. There are 9 parameters and 9 moments. The first two moments are (1) work time as a share of total discretionary time and (2) learning time as a share of total discretionary time. Assuming an individual has 14 hours of discretionary time per day, and they spend 8 hours on either work or training, we set $n_1 + n_2 = 0.571$. In the 60 years between age 6 and age 65, individuals in the U.S. spend about 14 years on education on average. Adding the training time after individuals leave school, we set $\frac{n_2}{n_1+n_2} = 0.25$. These two moments imply $n_1 = 0.428$ and $n_2 = 0.143$. These values are comparable with those used by Badel et al. (2020). They calculate the average work hours among individuals surveyed by the Panel Study of Income Dynamics, and find it accounts for about 40% of their discretionary time.

The third moment is educational expenditures as a share of the state's GDP. According to the Organisation for Economic Co-operation and Development (2022), private spending on education in the U.S. accounts for 1.89% of GDP in 2019, including 0.29% on primary and secondary education and 1.6% on tertiary education. This ignores other expenditures, such as early childhood education and on-the-job training. Gould and Blair (2020) estimate that U.S. parents spend about $42 billion each year on early childhood care and

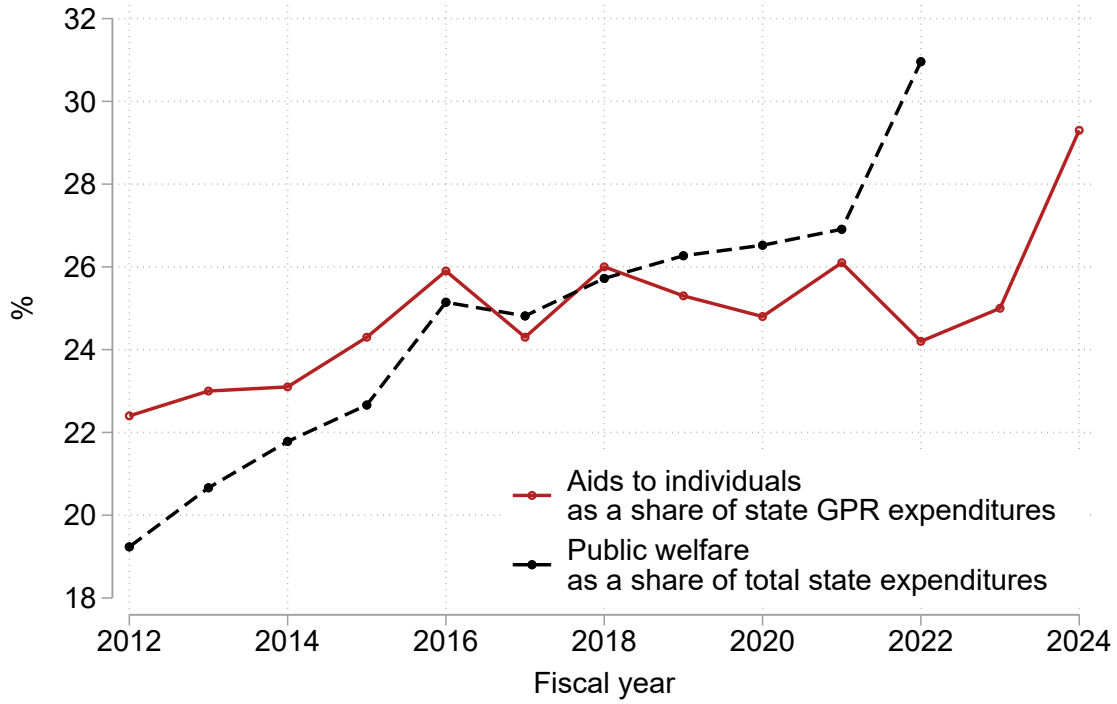

Figure 1: Transfers as A Share of State Government Expenditures in Wisconsin

education, Additionally, they forgo roughly $30–35 billion in income because the high cost leads many parents to leave the paid labor force, or reduce their paid work hours, to care for their children. The direct cost and forgone income account for about 0.38% of U.S. GDP. Adding all of these together, we assume educational expenditures account for 7.2% of GDP.

The last six moments (and their values in the data) are: federal corporate income tax revenue in Wisconsin as a share of the state's GDP (1.02%), state corporate income tax revenue as a share of state GDP (0.47%), federal individual income tax revenue (including FICA) in Wisconsin as a share of the state's GDP (13.8%), state individual income tax revenue as a share of the state's GDP (2.53%), personal consumption expenditures as a share of the state's GDP (70.7%), and sales taxes as a share of the state's GDP (2.08%). We obtain the state GDP and personal consumption expenditures from the Bureau of Economic Analysis, obtain the state tax revenues from the Wisconsin Department of Revenue, and obtain the federal tax revenues in Wisconsin from the IRS. We use the data in 2019 to avoid the impact of the COVID-19 pandemic. The numbers are similar in other years. For example, state individual income tax revenue as a share of the state's GDP is 2.5% in 2021, only slightly smaller than the value of 2.53% in 2019.

Given these statistics, we find the effective consumption tax rate is $\tau_c = 3.39\%$, the ef-

fective federal corporate tax rate is $\tau_c^f = 15.7\%$, the effective state corporate tax rate is $\tau_c^s = 7.24\%$, the deductions for the federal individual income tax is $\gamma^f = 0.062$, the deductions for the state individual income tax is $\gamma^s = 0.211$, the steady-state debt level is $d = -0.591$, which implies a positive level of savings and is slightly different from the value of -0.603 in Guo et al. (2023), and the three parameters in the human capital production function are $(z, \gamma_1, \gamma_2) = (0.143, 0.518, 0.252)$, which are within the range of values used in the literature (Browning et al., 1999).

2 Effects of Lower Individual Income Tax Rates

With the calibrated model, we show what happens when the high and progressive individual income tax rates in Wisconsin are lowered to a flat rate. The related parameters are τ_y^s and τ_p^s, where τ_p^s is the effective top income tax rate that affects pass-through income, and τ_y^s is the effective marginal income tax rate for the representative household. As mentioned above, due to the sliding scale standard deductions faced by most middle-income households, the effective rate τ_y^s is 1.19778 times the second highest statutory rate, which is 5.30% under the current tax code (see table 1).

We consider four values for the new flat rate: 4.95%, 4.25%, 3.05% and 2.50%, which are the flat rates in Illinois, Michigan, Indiana and Arizona, respectively (Tax Foundation, 2024). The first three are in the Midwest, and Arizona has the lowest flat rate except for the seven states with no income tax (Alaska, Florida, Neveda, South Dakota, Tennessee, Texas and Wyoming). Excluding New Hampshire and Washington, neither of which taxes labor income, there are 8 other states with a flat income tax rate: Pennsylvania (3.07%), Kentucky (4.00%), Colorado (4.40%), North Carolina (4.50%), Utah (4.65%), Mississippi (4.70%), Georgia (5.49%) and Idaho (5.80%).

For each of the four flat rates, we consider 4 cases:

1. lowering the statutory tax rates to the new value, and keeping the transfer share of government expenditures intact at its baseline value of 26%
2. lowering the statutory tax rates to the new value, and raising the transfer share of government expenditures from its baseline value of 26% to 30%
3. lowering the effective tax rates to the new value, and keeping the transfer share of government expenditures intact at its baseline value of 26%
4. lowering the effective tax rates to the new value, and raising the transfer share of government expenditures from its baseline value of 26% to 30%

Because the effective tax rate τ_y^s for the representative household is 1.19778 times the second highest statutory rate, a flat statutory rate does not imply a flat effective rate, and a flat effective rate requires a larger reduction in the second highest statutory rate.

Tables 2, 3, 4 and 5 report the results for a flat rate of 4.95%, 4.25%, 3.05% and 2.50% respectively. The four columns in each table correspond to the four cases mentioned above. In each case, we measure the impact by comparing the steady state of the economy under the proposed changes with the steady state under the current tax code. Measured in percentages, the first two rows report the immediate impact on tax revenue in the absence of any behavioral responses from households and firms, and the remaining rows report the long-run effects accounting for behavioral responses.

Table 2: Economic Impacts of Moving to A Flat Income Tax Rate of 4.95%

	Flat statutory rate		Flat effective rate	
	Transfer share=0.26	0.26 to 0.30	Transfer share=0.26	0.26 to 0.30
		Static Impact		
Total tax	-6.05	-6.05	-12.25	-12.25
Income tax	-12.15	-12.15	-24.59	-24.59
		Dynamic Impact		
Total tax	-4.31	-0.73	-9.76	-6.51
Income tax	-9.86	-5.44	-21.67	-17.91
Corporate tax	0.46	3.14	1.25	3.94
Sales tax	1.37	4.12	2.24	5.00
Output	1.47	4.17	2.27	4.99
Capital	2.08	4.80	2.88	5.62
Labor	1.07	3.76	1.86	4.57
After-tax income	1.57	3.95	2.74	5.16
Consumption	1.37	4.12	2.24	5.00
Utility	0.42	1.41	0.56	1.55

Notes: The numbers represent percentage differences between the steady state of the economy under each option and the steady state under the current tax rates. Dynamic impacts account for behavioral responses while static impacts do not. Transfer share is the share of transfers in state government expenditures. The effective rate is higher than the statutory rate due to the sliding scale standard deductions.

In all cases, lowering the tax rates would reduce the tax revenue both immediately and in the long run. The revenue impact is significantly smaller in the long run, because lowering the tax rates has a significantly positive impact on economic activities, which raises the tax base and leads to a smaller decrease in tax revenue. Moreover, lowering the tax rates leads to a significant increase in after-tax income, consumption and utility of the representative household.

Quantitatively, the differences between the four tables suggest that lower tax rates lead to larger impacts. Within each table, the impacts in the third and fourth columns are larger

Table 3: Economic Impacts of Moving to A Flat Income Tax Rate of 4.25%

	Flat statutory rate		Flat effective rate	
	Transfer share=0.26	0.26 to 0.30	Transfer share=0.26	0.26 to 0.30
		Static Impact		
Total tax	-12.24	-12.24	-17.56	-17.56
Income tax	-24.57	-24.57	-35.25	-35.25
		Dynamic Impact		
Total tax	-9.49	-6.22	-14.14	-11.14
Income tax	-21.28	-17.46	-31.53	-28.28
Corporate tax	1.22	3.90	2.08	4.77
Sales tax	2.42	5.18	3.35	6.11
Output	2.50	5.21	3.37	6.10
Capital	3.27	6.00	4.15	6.89
Labor	1.98	4.69	2.85	5.57
After-tax income	2.90	5.31	4.08	6.53
Consumption	2.42	5.18	3.35	6.11
Utility	0.65	1.63	0.83	1.80

Notes: The numbers represent percentage differences between the steady state of the economy under each option and the steady state under the current tax rates. Dynamic impacts account for behavioral responses while static impacts do not. Transfer share is the share of transfers in state government expenditures. The effective rate is higher than the statutory rate due to the sliding scale standard deductions.

Table 4: Economic Impacts of Moving to A Flat Income Tax Rate of 3.05%

	Flat statutory rate		Flat effective rate	
	Transfer share=0.26	0.26 to 0.30	Transfer share=0.26	0.26 to 0.30
		Static Impact		
Total tax	-22.84	-22.84	-26.66	-26.66
Income tax	-45.87	-45.87	-53.53	-53.53
		Dynamic Impact		
Total tax	-18.34	-15.59	-21.68	-19.14
Income tax	-41.30	-38.55	-48.95	-46.61
Corporate tax	3.06	5.74	3.95	6.64
Sales tax	4.76	7.52	5.70	8.46
Output	4.82	7.55	5.72	8.46
Capital	5.88	8.64	6.79	9.56
Labor	4.11	6.83	5.01	7.73
After-tax income	5.72	8.19	6.85	9.34
Consumption	4.76	7.52	5.70	8.46
Utility	1.22	2.18	1.44	2.39

Notes: The numbers represent percentage differences between the steady state of the economy under each option and the steady state under the current tax rates. Dynamic impacts account for behavioral responses while static impacts do not. Transfer share is the share of transfers in state government expenditures. The effective rate is higher than the statutory rate due to the sliding scale standard deductions.

Table 5: Economic Impacts of Moving to A Flat Income Tax Rate of 2.50%

	Flat statutory rate		Flat effective rate	
	Transfer share=0.26	0.26 to 0.30	Transfer share=0.26	0.26 to 0.30
		Static Impact		
Total tax	-27.71	-27.71	-30.83	-30.83
Income tax	-55.63	-55.63	-61.91	-61.91
		Dynamic Impact		
Total tax	-22.42	-19.92	-25.19	-22.86
Income tax	-50.82	-48.56	-57.27	-55.36
Corporate tax	4.17	6.86	5.03	7.71
Sales tax	6.11	8.87	7.00	9.76
Output	6.17	8.90	7.04	9.77
Capital	7.37	10.13	8.25	11.02
Labor	5.37	8.08	6.23	8.95
After-tax income	7.30	9.79	8.35	10.86
Consumption	6.11	8.87	7.00	9.76
Utility	1.57	2.51	1.79	2.72

Notes: The numbers represent percentage differences between the steady state of the economy under each option and the steady state under the current tax rates. Dynamic impacts account for behavioral responses while static impacts do not. Transfer share is the share of transfers in state government expenditures. The effective rate is higher than the statutory rate due to the sliding scale standard deductions.

than the corresponding impacts in the first and second columns, respectively. This is because the effective income tax rate is larger than the statutory rate for the representative household, so that a larger reduction in the statutory rate is required for the effective rate to reach the given target. Moreover, within each table, the dynamic impacts in the second and fourth columns are larger than the corresponding impacts in the first and third columns, respectively, while the static impacts on tax revenue are the same. Intuitively, because the transfer share is about the allocation of a given amount of revenue into different expenditures, it has no immediate effect on tax revenue without any behavioral responses. On the other hand, for a given tax rate, an increase in the transfer share raises the disposal income for each dollar of gross income earned by the household. This has a positive impact on labor supply and the economy in the long run.

Numerically, the model implies that moving to a flat statutory rate of 4.95% without raising the transfer share (first column in table 2) would reduce total tax revenue by 6.05% immediately and 4.31% in the long run, and the reform would raise output and household consumption by about 1.4%. On the other hand, moving to a flat effective rate of 2.50% and raising the transfer share from 0.26 to 0.3 (last column in table 5) would reduce total tax revenue by 30.83% immediately and 22.86% in the long run, and the reform would raise output and household consumption by over 9%. The impacts of other options are between these two extremes.

The first column of table 6 shows that eliminating the income tax would reduce total tax revenue by 49.8% immediately and 42.32% in the long run, and it would raise output and household consumption by about 15.5%. The second column shows that raising the transfer share from its current value of 0.26 to 0.3 has no impact on tax revenue immediately but would raise it by 3.82% in the long run, and the reform would raise output and consumption by about 2.7%.

Table 6: Economic Impacts of Eliminating the Income Tax and Raising the Transfer Share

	Eliminating Income Tax	Transfer share: 0.26 to 0.30
	Static Impact	
Total tax	-49.80	0.00
Income tax	-100.00	0.00
	Dynamic Impact	
Total tax	-42.32	3.82
Income tax	-100.00	4.90
Corporate tax	12.42	2.70
Sales tax	15.47	2.75
Output	15.62	2.70
Capital	17.54	2.70
Labor	14.34	2.70
After-tax income	17.83	2.36
Consumption	15.47	2.75
Utility	4.11	1.01

Notes: The numbers represent percentage differences between the steady state of the economy under each option and the steady state under the current tax rates. Dynamic impacts account for behavioral responses while static impacts do not. Transfer share is the share of transfers in state government expenditures.

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