Personal Taxes and Firm Skill Hiring:

Evidence from 27 Million Job Postings

Internet Appendix

A A Conceptual Framework

A.1 Setup

Consider an economy with two locations ("states"), indexed by $l \in \{1,2\}$. A representative firm produces one consumption good and sells it to the competitive (national) market with zero transportation cost. The good's price is the same in each state, normalized to 1. The firm has one establishment in each state and chooses how many workers to hire locally, treating local nominal wages as given.

Workers of mass 1 are born for each skill level, indexed by $s > 0$. We use $\Xi(s)$ to denote the cumulative distribution function of s. A worker of type s has a productivity factor α_s, where α is an increasing function of s (higher s indicates higher worker skill and productivity). Within each skill type, workers differ by their preference between State 1 and 2, indexed by η_l. For simplicity, we use $m = \eta_2 - \eta_1$ to denote the differential preference for State 2 over State 1 for each worker. In reality, m captures individuals' preferences over localities in many dimensions, such as amenities, environment, political leaning, and social norms, etc. This parameter can take both negative and positive values, and it is independent of worker skill. It follows a cumulative distribution function $\Phi(m)$, which is an increasing function of m. We assume that the two states are equally desirable for the median worker, i.e., $\Phi(0) = 0.5$. As such, each worker is characterized by skill and location preference (s, m). Once individuals settle down in a location, they work for 1 unit of time.

We use w_{ls}, $l \in \{1,2\}$, $s \in [0,1]$, to denote the local wage for worker type s. Wages are not a function of location preference. Workers' income equals after-tax wages $(1-\tau_l)w_{ls}$; where τ_1 and τ_2 are the total income tax rates in State 1 and State 2, respectively. While τ_1 and τ_2 contain a common federal income tax component, the gap $\tau_2 - \tau_1$ reflects the difference in personal income tax rates across states.[1] At time 1, the two states impose the same tax rate on workers' income. Across all skill levels, workers are then evenly distributed in both states. At time 2, State 1 cuts its income taxes, so that $\tau_1 < \tau_2$.

A.2 The Firm's Problem

The firm faces the same production function $f = \int_s \alpha_s h_{ls}^{\rho} d\Xi(s)$ in both of its establishments (state $l = 1,2$). h_{ls} is the mass of workers of skill type s employed by the firm in state l. Let $0 < \rho < 1$, so that the production function is increasing and concave with respect to $h(s)$. The firm's total profits can be written as:

$$\int_0^1 (\alpha_s h_{1s}^{\rho} - w_{1s}h_{1s})d\Xi(s) + \int_0^1 (\alpha_s h_{2s}^{\rho} - w_{2s}h_{2s})d\Xi(s). \tag{1}$$

[1] In our empirical analyses, τ is measured by the total effective income taxes faced by workers. This measure incorporates all income sources and deductions. It also accounts for all cross-deductions between federal and state taxes.

The first-order condition regarding the firm's local skill hiring, h_{ls}, is:

$$\rho\alpha_s h_{1s}^{\rho-1} = w_{1s} \quad \text{and} \quad \rho\alpha_s h_{2s}^{\rho-1} = w_{2s}. \tag{2}$$

Workers choose where to work in pursuit of maximizing after-tax income together with their idiosyncratic location preference $(1-\tau_l)\,w_{ls} + \eta_l$. Following a tax cut in State 1, workers of type (s, m) face higher after-tax wage in that state. They choose State 1 if and only if $(1-\tau_1)\,w_{1s} \geq m + (1-\tau_2)\,w_{2s}$. The marginal worker (s, m^*) is indifferent between the two states, thus satisfying $m^* = (1-\tau_1)\,w_{1s} - (1-\tau_2)\,w_{2s}$.

A.3 Equilibrium

The market clearing conditions are similar in spirit to Feldstein and Wrobel (1998). In equilibrium, the mass of workers in a location equals the mass of workers hired. The labor market clears for each worker type: $h_{1s} + h_{2s} = 1$. Combining the first-order condition for the firm and the marginal worker leads to:

$$F : (1-\tau_1)\rho\alpha_s h_{1s}^{\rho-1} - (1-\tau_2)\rho\alpha_s h_{2s}^{\rho-1} - m^* = 0. \tag{3}$$

Recall that at time 1, there is no wage differential between the two states, so the equilibrium outcome is: $m^* = 0; h_{1s} = h_{2s} = 0.5, \forall s$. Following a tax cut in State 1, workers face higher after-tax earnings in State 1 and some of the workers with relatively lower preference for State 2 (i.e., $m < m^*$), will pursue job opportunities State 1. The quantities of workers in State 1 and 2 are $h_{1s} = \Phi(m^*)$ and $h_{2s} = 1 - \Phi(m^*)$, respectively. We can then derive Lemma 1:

Lemma 1 *The equilibrium amount of workers with skill s that the firm hires in State 1, h_{1s}, decreases with State 1 tax rate τ_1; given $\tau_1 < \tau_2$, h_{1s} increases with skill type s, $\forall s > s^*$.*

The intuition behind the above lemma is as follows: A lower personal tax increases workers' net earnings, making State 1 more attractive. By reallocating vacancy positions and wage offers, the firm modulates the amount of skilled labor that work in the low-tax state. This effect is particularly strong for high-skill workers, for whom taxes create a greater earnings wedge across states. Ultimately, this leads to an increase in the proportion of skilled workers in State 1 (the low-tax state) and a "brain drain" effect in State 2 (the high-tax state). To see this, let H_l summarize the average skill of workers hired in State l as follows:

$$H_l = E\left[s\frac{h_{ls}}{E[h_{ls}]}\right] = \frac{\int_s s h_{ls} d\Xi(s)}{\int_s h_{ls} d\Xi(s)},\ l \in \{1,2\}. \tag{4}$$

H_l represents the weighted average of worker skill in State l, with the weights being the percentage of employed workers in that state that possess a given skill level. The following proposition shows how changes in personal income tax affect the level of worker skill that the firm hires locally.

Proposition *Higher (Lower) local income taxes lead to labor downskilling (upskilling):* $\tau_2 > \tau_1 \Rightarrow H_2 < H_1$.

Our empirical tests will examine the relation between the personal income tax rate in a state (τ_l) and the skill content of corporate job ads posted in that state (H_l). As firms seek to hire competitively, they gauge the availability of skilled workers relative to unskilled ones in a local labor market and adjust the scope of their job searches ("job skill requirements") accordingly. The observed job skill requirement reflected in vacancy postings will be a result of anticipated worker availability and their expected wage levels. According to our model, we expect firms' new-hire skill requirements to be negatively associated with local personal income tax rates. This effect should be particularly strong for high-skill occupations.

Proof of Lemma 1

Equation 3 implies:

$$F = (1-\tau_1)\rho\alpha_s\Phi_s(m^*)^{\rho-1} - (1-\tau_2)\rho\alpha_s(1-\Phi_s(m^*))^{\rho-1} - m^* = 0$$

Based on Envelope Theorem, $\frac{dm^*}{d\tau_1} = -\frac{\partial F}{\partial m^*} / \frac{\partial F}{\partial \tau_1}$. We derive $\frac{\partial F}{\partial m^*}$ below:

$$\frac{\partial F}{\partial m^*} = \rho(\rho-1)\alpha_s\frac{d\Phi_s(m^*)}{dm^*}((1-\tau_1)\Phi_s(m^*)^{\rho-2} + (1-\tau_2)(1-\Phi_s(m^*))^{\rho-2}) - 1$$

Given that $\rho - 1 < 0$ and that $\frac{d\Phi_s(m^*)}{dm^*} > 0$, $\frac{\partial F}{\partial m^*} < 0$. Also given that

$$\frac{\partial F}{\partial \tau_1} = -\rho\alpha_s\Phi_s(m^*)^{\rho-1} < 0$$

It follows that $\frac{dm^*}{d\tau_1} < 0$. In other words, as State 1 cuts its taxes, the threshold value m^* increases. A natural result is that $m^* > 0$. More workers will choose State 1 over State 2. This means that $h_{1s} = \Phi_s(m^*)$ also decreases with τ_1.

We next consider $\frac{dm^*}{ds} = -\frac{\partial F}{\partial m^*} / \frac{\partial F}{\partial s}$. Given that

$$\frac{\partial F}{\partial s} = (\rho(1-\tau_1)\Phi_s(m^*)^{\rho-1} + \rho(1-\tau_1)(1-\Phi_s(m^*))^{\rho-1})\frac{d\alpha_s}{ds}$$

We know that $\rho(1-\tau_1)\Phi_s(m^*)^{\rho-1} + \rho(1-\tau_1)(1-\Phi_s(m^*))^{\rho-1} = m^*/\alpha_s > 0$.

We also know that $\frac{d\alpha_s}{ds} > 0$. Thus $\frac{dm^*}{ds} > 0$ and $\frac{dh_{1s}}{ds} > 0$. In other words, more high-skill workers choose State 1 than low-skill workers.

Proof of Proposition

By definition, H_l equals $\frac{\int_s sh_{ls}d\Xi(s)}{\int_s h_{ls}d\Xi(s)} = \frac{\int_s s\Phi_s(m^*)d\Xi(s)}{\int_s \Phi_s(m^*)d\Xi(s)}$

We now focus on the average skills of workers in state 1, H_1. The numerator is the follows:

$$\begin{aligned}\int_s sh_{1s}d\Xi(s) &= cov(s,h_{1s}) + \int_s sd\Xi(s)\int_s h_{1s}d\Xi(s)\\ &= cov(s,h_{1s}) + E[s]E[h_{1s}]\end{aligned}$$

Given that h_{1s} is an increasing function of s, we have that $cov(s,h_{1s}) > 0$. This means that the numerator is greater than $E[s]E[h_{1s}]$. Thus,

$$H_1 > E[s]E[h_{1s}]/E[h_{1s}] = E[s]$$

This suggests that the average skill level in State 1 is higher than the original average skill at time 1 (i.e., $E[s]$).

The skilled hires in state 2, H_2 is a mirror image. Note that the following identity holds

$$H_1\int_s h_{1s}d\Xi(s) + H_2\int_s h_{2s}d\Xi(s) = E[s]$$

Given that $h_{2s} = 1 - h_{1s}$, we have

$$H_1\int_s (1-h_{2s})d\Xi(s) + H_2\int_s h_{2s}d\Xi(s) = E[s]$$

Thus, we have

$$(H_1 - H_2)\int_s h_{2s}ds = H_1 - E[s]$$

Given that $H_1 > E[s]$, we have $H_2 < H_1$.

B Matching Burning Glass to Compustat

We follow the process below to link BurningGlass employers to Compustat firms. First, we run a string name-matching algorithm between the names of BurningGlass employers to Compustat firms. BurningGlass standardizes employer names across job postings. For each name in BurningGlass and Compustat, we remove all punctuation marks and delete corporate designators such as "Corporation," "Company," and "INC." Next, we standardize the most common words to a consistent format. For example, "United States" is simplified to "US" and "Manufacturing" to "MFG." A string-matching command in STATA is then applied to generate similarity scores between the deduplicated BurningGlass employer names and Compustat company names. All unique matches with similarity scores equal to 100% are kept. For BurningGlass employer names without exact matches, similarity scores are generated between employer names and Compustat firm names based on the first three words, the first two words, and the first word, and matches with similarity scores above or equal to 90% are kept and appended to one dataset. We then rank all potential matches for each BurningGlass employer according to their similarity scores and manually check each of the matches to filter out incorrect ones.

In some cases, a BurningGlass employer is a subsidiary of a Compustat firm but its name is distinct from its parent. To resolve this issue, we use subsidiary information in Orbis data provided by Bureau van Dijk. Orbis traces the evolution of firms' organizational structure through time, preserving all parent-subsidiary links. We extract all subsidiaries of Compustat firms from the Orbis data and repeat the aforementioned name-matching process to link BurningGlass employers to Compustat firms through their subsidiaries. Matches generated from both rounds are kept in the final linking file.

C Descriptive Evidence of Job Posting Data

Business Development Manager
Commercial Division

Main Responsibilities:

- Develop and execute the Business Plan for the company and subsequently work on the execution of such agreed plans to align and maximize the respective marketing and sales efforts.
- Responsible for meeting business targets that are set during the development of the business and marketing plans.
- Prospect for potential new clients and turn this into increased business.
- Assist with strategic planning for product timeline and growth.
- Strategic planning: develop methods to acquire additional users.
- Monitor, analyze and evaluate the customer experience either through personal testing and/or surveying (with appropriate sample sizes) to improve the product.
- Assist in developing strategies to acquire content from local and foreign content providers with respect to the market conditions, in addition to assisting with the development and review of a revenue sharing business model with content providers.

Qualifications & Experience:

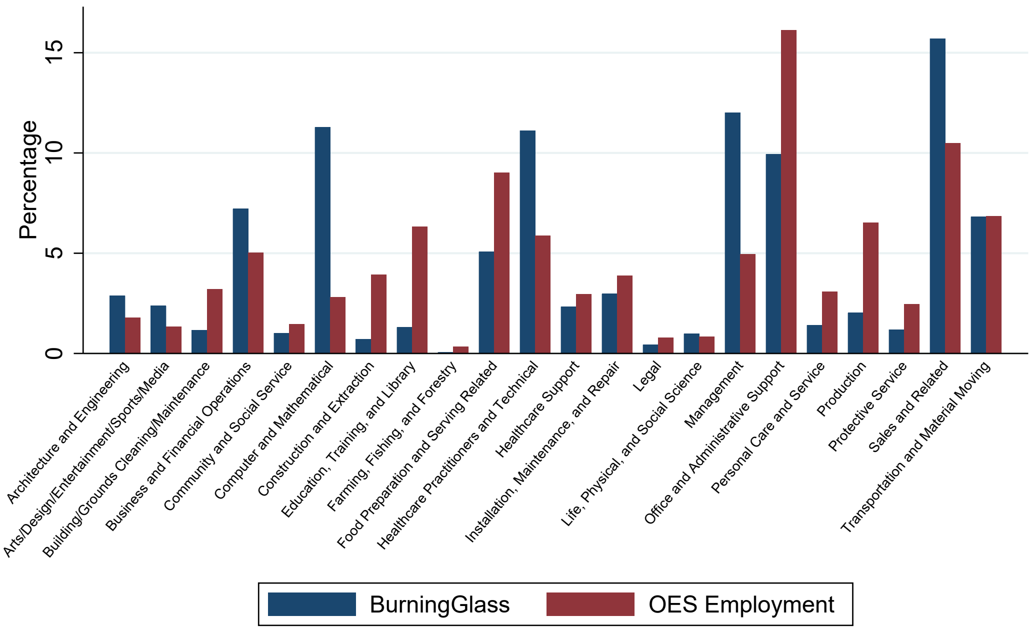
- Bachelors Degree in a related field
- Minimum two years of experience in commercial establishment

for more info call us at 3016223

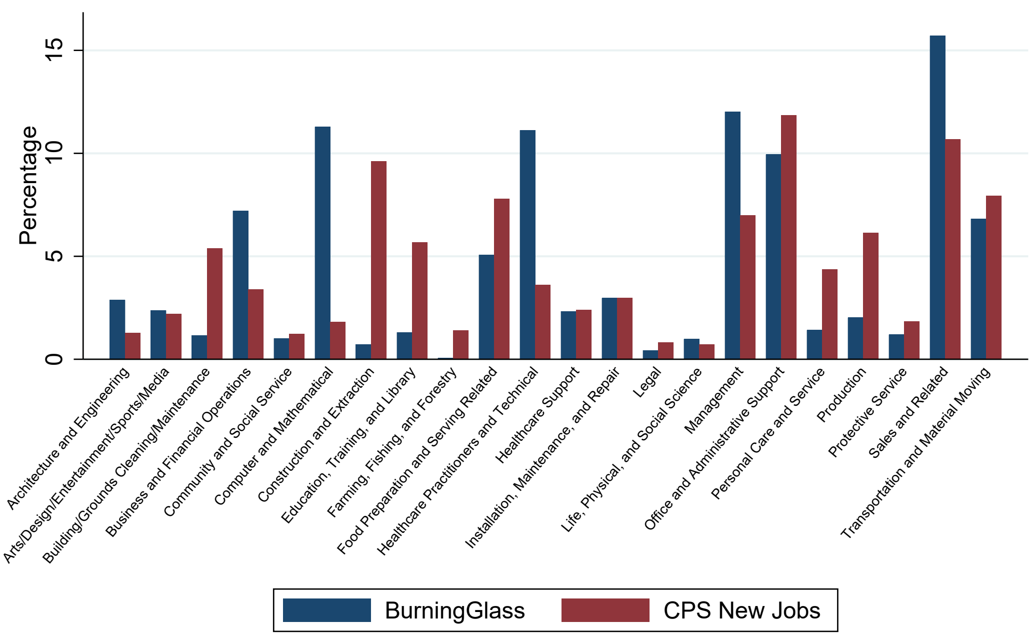
Please note that only shortlisted candidates will be contacted

medianet JOB VACANCIES

Figure C.1. Example of Job Posting. This figure illustrates an example of job posting with detailed skill requirements.

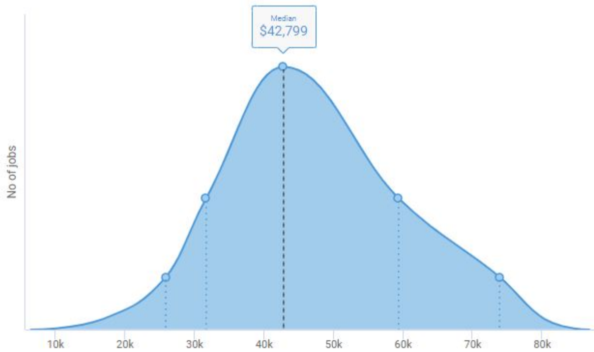


(A) BurningGlass and OES

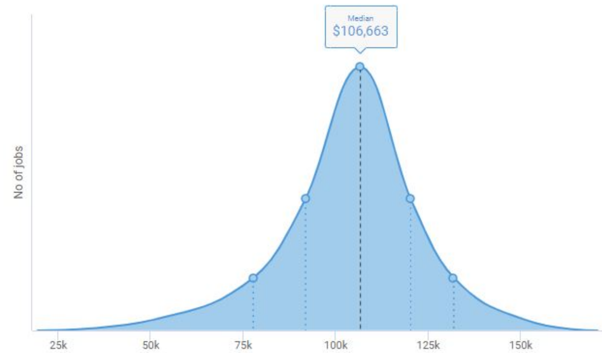


(B) BurningGlass and CPS

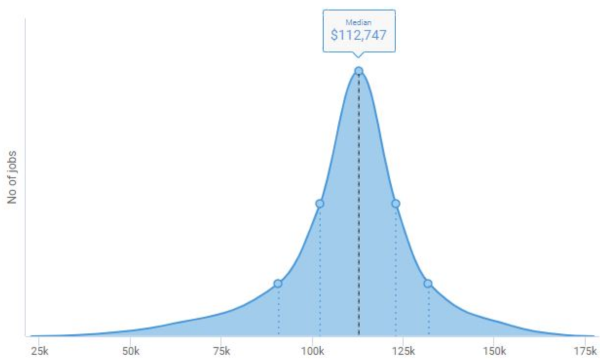
Figure C.2. Occupation Distributions. This figure illustrates the distribution of BurningGlass ads across major occupation groups. BurningGlass occupation distribution is compared with the occupation distribution of the stock of employment from the Bureau of Labor Statistics' Occupational Employment Statistics (OES) in Panel A. In Panel B, BurningGlass occupation distribution is compared with the occupation distribution of new job starts based on longitudinally linked Current Population Survey (CPS) data.



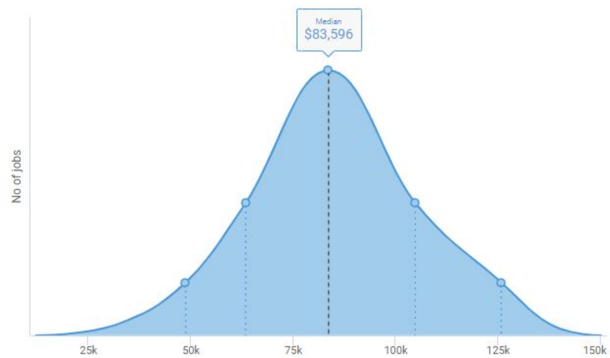
(A) Supervisor



(B) Senior Project Manager



(C) Pharmacist



(D) Marketing Consultant

Figure C.3. Examples of Wage Distribution. This figure illustrates the distribution of wages for some examples of skilled jobs computed by BurningGlass.

D Variable Definitions

Job Skill

- *Education*: Percentage of job postings that require high school or above education. Source: BurningGlass Technologies
- *Experience*:Percentage of job postings that require previous work experience. Source: BurningGlass Technologies
- *Cognitive*: Percentage of job postings that require decision-making ability and analytical skills. Source: BurningGlass Technologies
- *IT*: Percentage of job postings that recruit for computer related jobs. Source: BurningGlass
- *Programming*: Percentage of job postings that require knowledge of software programs. Source: BurningGlass Technologies
- *Log(Salary)*: Log of average salary posted by a firm in a county-year. This variable is also computed separately for job postings containing or not containing a certain type of skill requirement. Source: BurningGlass Technologies

Controls

- *Corporate Taxes*: The corporate tax rate charged by a state
- *Sales Taxes*: The sales tax rate charged by a state
- *Property Taxes*: The median real estate tax paid divided by median housing price in a county. Source: U.S. Census
- *Unemployment Insurance*: The log of unemployment insurance, which is calculated as the top tax rate (*UT_RATE*) multipled by the maximum base wage (*UI_BASE*). Source: U.S. Department of Labor
- *Tax Incentives*: The total number of financial assistance and tax incentives. Source: *Site Selection*
- *Minimum Wage*: State-level minimum wage per hour. Source: Institute for Public Policy and Social Research, Michigan State University
- *Education Spending*: State government total education direct expenditure, scaled by gross state product. Source: State Policy Database
- *Public Welfare Spending*: State government public welfare and veterans' services direct expenditure, scaled by gross state product. Source: State Policy Database
- *Infrastructure Spending*: State government expenditure in infrastructure (including air transportation, general public buildings, highways, parking, parks and recreation, sanitation, and water transportation), scaled by gross state product. Source: State Policy Database
- *Log(GDP)*: The log of gross domestic product in a state. Source: Bureau of Economic Analyses
- *Budget Surplus*: State government budget surplus, scaled by gross state product. Source: Institute for Public Policy and Social Research, Michigan State University
- *Log(HPI)*: The log of housing price index. Source: Federal Housing Finance Agency (FHFA)
- *Log(Median Income)*: The log of median household income in the area. Source: U.S. Census
- *%African American Population*: The percentage of local population that are black. Source: U.S. Census
- *%Asian Population*: The percentage of local population that are Asian. Source: U.S. Census
- *Health Spending*: State government total health and hospitals direct expenditure, scaled by gross state product. Source: State Policy Database
- *Education of New Hires*: The average education of local new hires, calculated as the average of national NAICS-3 new hire education weighted by local NAICS-3 new hire counts, i.e., $\sum_j \omega_{j,c,t-1} \times Edu_{j,t}$, where j indicates an industry, c indicates a county, and t indicates a year. $\omega_{j,c,t}$ is the share of new hires in county c that are employed by industry j in year t. $Edu_{j,t}$ is the average education level of new hires by industry j in year t. Source: QWI
- *State CPI Index*: The state-level annual consumer price index. Source: Hazell, Jonathon, et al. (2022)

Technology Investment

- *IT Budget*: The log of the budget for all IT spending per employee. Source: CiTDB
- *Hardware Budget*: The log of the budget for hardware purchases per employee. Source: CiTDB
- *Software Budget*: The log of the budget for software purchases per employee. Source: CiTDB
- *Telecomm. Budget*: The log of the budget for telecommunication services per employee. Source: CiTDB

QWI Variables

- *Avg Education*: The average years of education of employed workers in a county-year. Source: QWI
- *% Educated Worker*: The percentage of employed workers with high school education or above. Source: QWI
- *Log(Educated Worker)*: The log of the number of employed workers with high school education or above. Source: QWI
- *Log(Uneducated Worker)*: The log of the number of employed workers with no education or below high school education. Source: QWI

E Summary Statistics

Table E.1. Summary Statistics
This table reports summary statistics for variables used in our study. The sample is a firm-county-year panel.

Variable	Mean	Median	Std. Dev.	25^{th} Pct	75^{th} Pct
1−Personal Taxes	0.838	0.832	0.019	0.826	0.846
Job Skill:					
Education	0.496	0.500	0.426	0	1
Experience	0.439	0.400	0.407	0	0.875
Cognitive	0.260	0	0.353	0	0.500
IT	0.265	0	0.365	0	0.500
Programming	0.203	0	0.331	0	0.333
Technology Investment					
Log(IT Budget)	8.689	8.609	1.121	7.889	9.567
Log(Hardware Budget)	6.821	6.909	1.238	5.930	7.601
Log(Software Budget)	7.312	7.175	1.289	6.273	8.477
Log(Telecomm. Budget)	6.290	6.383	1.139	5.525	7.006
Control Variables					
1−Corporate Taxes	0.930	0.931	0.021	0.915	0.940
1−Sales Taxes	0.945	0.940	0.016	0.938	0.955
1−Property Taxes	0.989	0.990	0.006	0.986	0.993
Tax Incentives	26.061	27.000	3.844	24.000	29.000
%African American Population	14.273	8.981	14.672	3.268	20.297
%Asian Population	4.695	2.957	5.861	1.348	5.369
Education of New Hires	13.528	13.533	0.375	13.468	13.602
Minimum Wage	7.717	7.250	0.881	7.250	8.100
Log(Unemployment Insurance)	11.395	11.408	0.552	10.889	11.755
Health Spending	0.016	0.015	0.006	0.012	0.018
Education Spending	0.056	0.054	0.008	0.051	0.061
Public Welfare Spending	0.032	0.031	0.008	0.026	0.037
Infrastructure Spending	0.021	0.020	0.004	0.018	0.023
Log(State GDP)	12.743	12.717	0.925	12.159	13.289
Log(HPI)	5.889	5.915	0.490	5.515	6.264
State Budget Surplus	-0.519	-0.319	5.772	-4.378	2.692
Log(Median Household Income)	10.863	10.840	0.260	10.685	11.016
State CPI Index	1.641	1.667	1.236	0.879	2.476

F Quantity of Job Postings

Table F.1. Personal Taxes and Quantities of Skilled and Unskilled Job Postings
This table reports results regarding how the quantities of skilled and unskilled job postings change with local personal income taxes. The unit of observation is a firm-county-year. *Log(Skilled Postings)* is the log number of job postings that contain a certain skill requirement in a firm-county-year, including education requirements, experience requirements, cognitive skill requirements, IT skill requirements, and programming skill requirements. *Log(Unskilled Postings)* is the log number of job postings that do not contain a certain skill requirement. Control variables are the same as defined in column (3) of Table 4. Standard errors are double clustered by firm and county. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Panel A: Number of Skilled Job Postings

Dep. Var.: *Log(Skilled Postings)* Skill measured by:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
1−Personal Taxes	1.081	0.709	3.029*	5.792***	4.964***
	(1.461)	(1.343)	(1.275)	(1.237)	(1.033)
Controls	Yes	Yes	Yes	Yes	Yes
Firm×County FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,170,235	1,170,235	1,170,235	1,170,235	1,170,235
R^2	0.733	0.724	0.702	0.720	0.727

Panel B: Number of Unskilled Job Postings

Dep. Var.: *Log(Unskilled postings)* Skill measured by:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
1−Personal Taxes	–5.044***	–5.192***	–4.013***	–5.404***	–4.489***
	(1.531)	(1.572)	(1.451)	(1.448)	(1.454)
Controls	Yes	Yes	Yes	Yes	Yes
Firm×County FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,163,394	1,164,492	1,166,192	1,166,447	1,166,985
R^2	0.672	0.661	0.683	0.687	0.686

G Effects of Contemporaneous Tax Changes

Table G.1. Alternative Specifications: Contemporaneous and Log Tax Rates
This table reports results from using alternative specifications of tax rates. The dependent variables are the percentage of job postings requiring education (*Education*) , experience (*Experience*), cognitive skills (*Cognitive*), general IT knowledge (*IT*), and programming knowledge of specific software (*Programming*). The unit of observation is at the firm-county-year level. Panels A and B use contemporaneous tax rates (*1−Personal Taxes(t)*). Panel A follows the specification in column (3) of Table 1. In Panel B, we add firm-year fixed effects. Panel C examines the effect of log of tax rates (*Log*(1−*Personal Taxes)*). Control variables are the same as column (3) of Table 1. Standard errors are double clustered by firm and county. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Panel A: Contemporaneous Tax Rates

Dep. Var.:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
1−Personal Taxes(t)	0.886***	0.947**	0.821***	1.021***	0.619*
	(0.308)	(0.392)	(0.277)	(0.327)	(0.328)
Controls	Yes	Yes	Yes	Yes	Yes
Firm×County FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,170,235	1,170,235	1,170,235	1,170,235	1,170,235
R^2	0.652	0.594	0.577	0.611	0.605

Panel B: Firm-Year Fixed Effects

Dep. Var.:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
1−Personal Taxes(t)	0.912***	0.923***	0.872***	1.189***	0.812***
	(0.267)	(0.316)	(0.227)	(0.284)	(0.272)
Controls	Yes	Yes	Yes	Yes	Yes
Firm×County FE	Yes	Yes	Yes	Yes	Yes
Firm×Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,168,880	1,168,880	1,168,880	1,168,880	1,168,880
R^2	0.727	0.674	0.664	0.683	0.667

Panel C: Log of Tax Rates

Dep. Var.:	(1) Education	(2) Experience	(3) Cognitive	(4) IT	(5) Programming
Log(1−Personal Taxes)	0.981***	1.076***	1.009***	1.633***	1.164***
	(0.344)	(0.362)	(0.346)	(0.382)	(0.346)
Controls	Yes	Yes	Yes	Yes	Yes
Firm×County FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,170,235	1,170,235	1,170,235	1,170,235	1,170,235
R^2	0.652	0.594	0.577	0.611	0.605

Table G.2. Controlling for the Supply of Educated Workers

This table reports the results when we add the log number of bachelor-educated individuals and the percentage of bachelor-educated individuals relative to total population in a state-year. Standard errors are double clustered by firm and county. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Dep. Var.:	*Education*		*Experience*		*Cognitive*		*IT*		*Programming*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1–Personal Taxes	1.251***	1.272***	1.340***	1.414***	1.294***	1.295***	2.052***	2.072***	1.482***	1.489***
	(0.409)	(0.413)	(0.436)	(0.434)	(0.420)	(0.417)	(0.467)	(0.462)	(0.422)	(0.417)
Log(Bachelors)	0.009		0.036		–0.004		0.004		–0.005	
	(0.032)		(0.031)		(0.027)		(0.033)		(0.029)	
%Bachelors		–0.001		–0.002		–0.001		–0.002		–0.002
		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)
Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other State Policies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm×County FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,170,235	1,170,235	1,170,235	1,170,235	1,170,235	1,170,235	1,170,235	1,170,235	1,170,235	1,170,235
R^2	0.652	0.652	0.594	0.594	0.577	0.577	0.611	0.611	0.605	0.605

H Alternative Sampling and Clustering By State

In this section, we repeat our main analysis using alternative approaches of sampling and standard error clustering by state. In Table H.1, we repeat the results from our baseline analysis and occupation-level analysis (Table 1, Table 3, and Table 4). In these analyses, we construct a firm-state-year panel, where each cell represents the average job skill requirement by a firm in a state during a year. In all regressions, county fixed effects are replaced by state fixed effects. County-level controls are switched to state-level variables. We also double cluster standard errors by firm and state.

In Figure H.1, we repeat the narrative analysis reported in Figure 3. We construct an event-firm-state sample, which is a stacked-event sample. For each event, we consider firms' postings in states with significant tax cuts as "treated" and firms' postings in states without significant tax changes as "control." We compute the average skill requirements of each firm in the treatment or control state during each year in the event window. Standard errors are double clustered by firm and state.

In Figure H.2, we repeat the results in Figure J.1, whereby the sample is an event-firm-state-occupation panel. Standard errors are double clustered by firm and state.

Our results continue to hold across all of the above analyses.

Table H.1. Main Results in Firm-State-Year Panel

This table repeats our main results, examining the effect of personal taxes on firms' requirements for labor skill in a *state*. All regressions include the same set of continuous variable controls as Column (3) of Table 1. County-level controls are switched to state-level variables. Panel A replicates the baseline results. Panels B through D replicate Table 3 and report results for the occupation panel. Panels E and F repeat the analyses in Table 4. Standard errors are double clustered by firm and state. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Panel A: Baseline, Skill Requirements and Personal Taxes

Dep. Var.:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
1−Personal Taxes	1.317*	1.760**	1.805*	3.056***	2.490***
	(0.771)	(0.746)	(0.943)	(1.123)	(0.924)
Firm×State FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	274,919	274,919	274,919	274,919	274,919
R^2	0.584	0.532	0.550	0.590	0.591

Panel B: Occupation-Panel, Occupation FE

Dep. Var.:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
1−Personal Taxes	1.377*	1.674**	1.705**	2.623**	2.138**
	(0.695)	(0.717)	(0.833)	(1.009)	(0.826)
Firm×State FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Occupation FE	Yes	Yes	Yes	Yes	Yes
Observations	303,175	303,175	303,175	303,175	303,175
R^2	0.477	0.426	0.441	0.485	0.488

Panel C: Occupation-Panel, Occupation-Year FE

Dep. Var.:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
1−Personal Taxes	1.369*	1.649**	1.715**	2.581**	2.109**
	(0.695)	(0.733)	(0.823)	(0.995)	(0.817)
Firm×State FE	Yes	Yes	Yes	Yes	Yes
Occupation×Year FE	Yes	Yes	Yes	Yes	Yes
Observations	303,175	303,175	303,175	303,175	303,175
R^2	0.480	0.429	0.446	0.491	0.495

Panel D: Occupation-Panel, Firm-State-Occupation FE

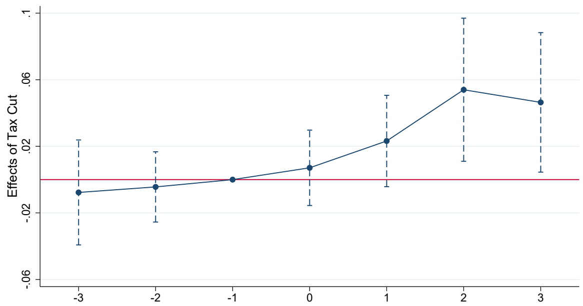
Dep. Var.:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
1−Personal Taxes	1.265*	1.344*	1.480*	2.040**	1.406
	(0.653)	(0.778)	(0.761)	(1.004)	(0.866)
Year FE	Yes	Yes	Yes	Yes	Yes
Firm×State×Occupation FE	Yes	Yes	Yes	Yes	Yes
Observations	195,549	195,549	195,549	195,549	195,549
R^2	0.690	0.642	0.657	0.698	0.704

Panel E: Effects on High-Skill Occupations

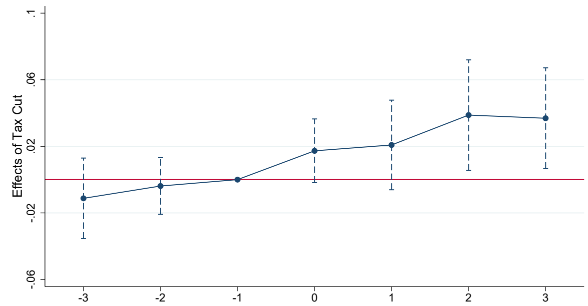
Dep. Var.:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
1−Personal Taxes	–0.121	–0.152	–0.088	0.671	–0.053
	(0.724)	(0.877)	(0.735)	(0.962)	(0.839)
(1−Personal Taxes)×Medium Skill Occupation	2.503***	2.905***	2.474***	2.319***	2.523***
	(0.756)	(0.708)	(0.642)	(0.604)	(0.552)
(1−Personal Taxes)×High Skill Occupation	3.448***	3.603***	4.128***	3.517***	3.721***
	(0.683)	(0.688)	(0.629)	(0.615)	(0.584)
Controls	Yes	Yes	Yes	Yes	Yes
Firm×State×Occupation FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	195,529	195,529	195,529	195,529	195,529
R^2	0.690	0.642	0.658	0.699	0.705

Panel F: Controlling for County-Year Fixed Effects

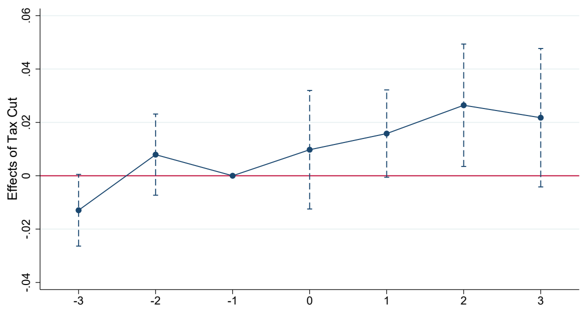
Dep. Var.:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
(1−Personal Taxes)×Medium Skill Occupation	2.352***	2.805***	2.392***	2.241***	2.427***
	(0.749)	(0.702)	(0.643)	(0.607)	(0.552)
(1−Personal Taxes)×High Skill Occupation	3.144***	3.311***	4.013***	3.315***	3.485***
	(0.674)	(0.695)	(0.628)	(0.614)	(0.587)
Controls	Yes	Yes	Yes	Yes	Yes
Firm×State×Occupation FE	Yes	Yes	Yes	Yes	Yes
State×Year FE	Yes	Yes	Yes	Yes	Yes
Observations	195,529	195,529	195,529	195,529	195,529
R^2	0.693	0.644	0.660	0.702	0.708



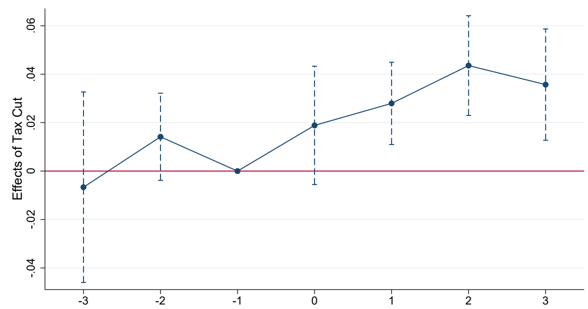
(A) Education



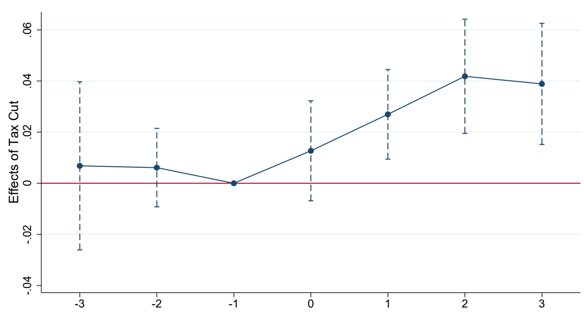
(B) Experience



(C) Cognitive Skills

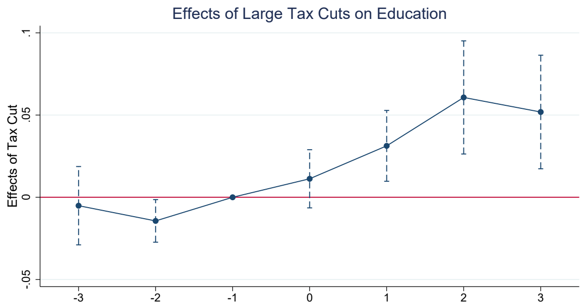


(D) IT Skills

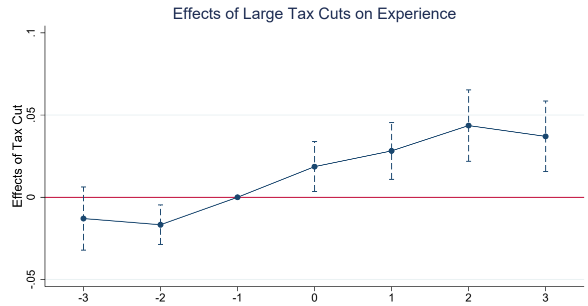


(E) Programming Skills

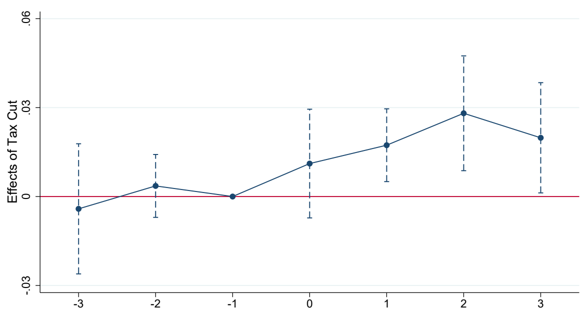
Figure H.1. Narrative Approach, Event-Firm-State Sample. This figure shows results from the narrative approach, replacing the sample with an event-firm-state sample. In each panel, the dots represent coefficient estimates of β_τ ($\tau \in [-3, 3]$) in Eq. (3) and the intervals indicate 90% confidence intervals. The horizontal axis represents years relative to the year of the tax event, and the vertical axis represents the size of the coefficient. Year -1 is the benchmark. All tests include the same control as used in column (3) of Table 1. All regressions include firm-state fixed effects, year fixed effects, and event fixed effects. Standard errors are double clustered by firm and state.



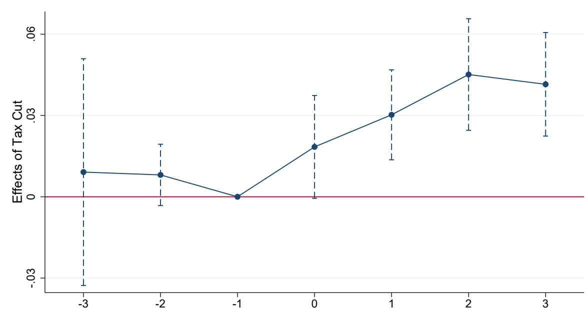
(A) Education



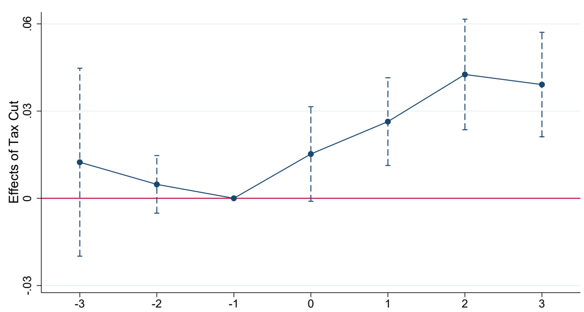
(B) Experience



(C) Cognitive Skills



(D) IT Skills



(E) Programming Skills

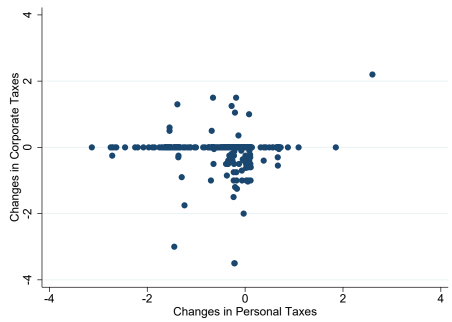
Figure H.2. Narrative Approach, Event-Firm-State-Occupation Sample. This figure shows results from the narrative approach, using an event-firm-state-occupation sample. In each panel, the dots represent coefficient estimates of β_τ ($\tau \in [-3,3]$) in Eq. (3) and the intervals indicate 90% confidence intervals. The horizontal axis represents years relative to the year of the tax event, and the vertical axis represents the size of the coefficient. Year -1 is the benchmark. All tests include the same control as used in column (3) of Table 1. All regressions include firm-state-occupation fixed effects, year fixed effects, and event fixed effects. Standard errors are double clustered by firm and state.

I The Role of Other Tax Policies

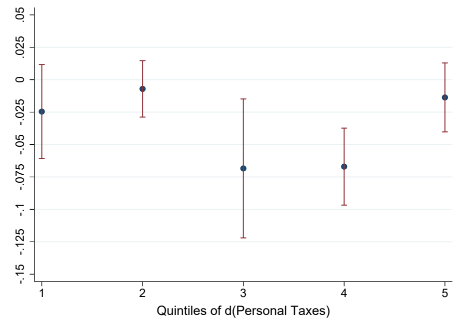
In this section, we provide additional evidence regarding the role of other tax policies. Figure I.1 reports the correlation between the year-on-year changes in personal income taxes and the changes in other tax policies in a state. The left-side panels provide scatter plots of each pair of tax policy changes. The right-side panels provide the average changes in each tax policy for each quintiles of personal tax changes. 90th percentile confidence intervals are presented. We do not spot clear correlation between personal tax changes in a state with changes in other tax policies.

In Table I.1, we examine the effect of personal income taxes and other types of taxes on firms' skill hiring decisions. To measure the tax burden related to other tax policies, including corporate taxes, sales taxes, property taxes, and the negative of tax incentives, we extract the first principal component of these variables. The first principal component is the linear combination of those four tax variables that explains the highest portion of variation of those variables. We create tercile indicators of the joint tax burden and interact *1−Personal Taxes* with these indicators. The interactive coefficients are informative of the differential impact of personal tax cuts in states that impose high tax burdens from other sources versus states that also impose low tax burdens.

Consistent with our baseline result, we find a positive coefficient on *1−Personal Taxes* across all three interactions, suggesting that a reduction in personal taxes leads to higher skill requirements by firms in the local area. However, we do not observe statistically different effects of personal taxes between states that have high and low tax burdens from other sources.

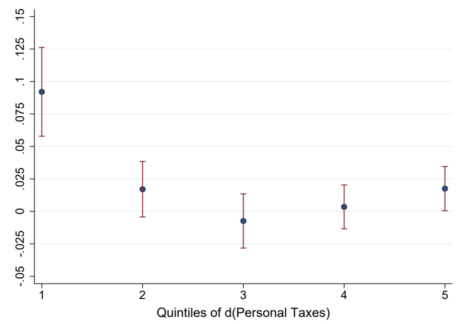


(A) d(Personal Taxes) and d(Corporate Taxes), Scatter Plot



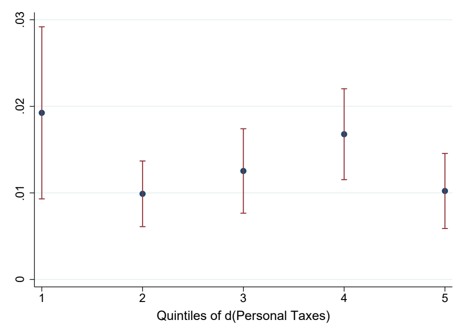
(B) d(Corporate Taxes) by Quintiles of d(Personal Tax)

(C) d(Personal Taxes) and d(Sales Taxes), Scatter Plot

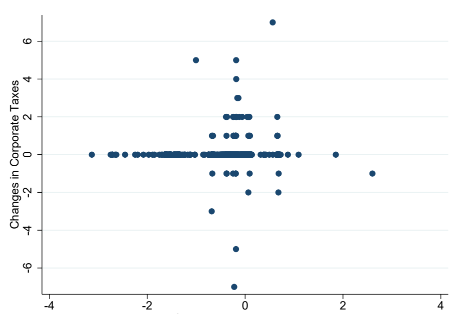


(D) d(Sales Taxes) by Quintiles of d(Personal Tax)

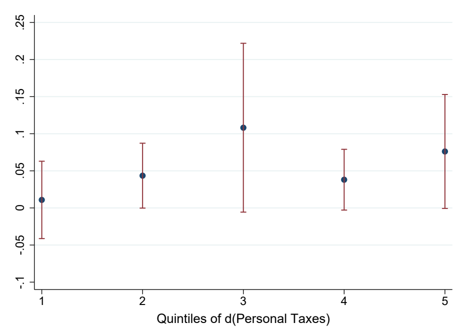
(E) d(Personal Taxes) and d(Property Taxes), Scatter Plot



(F) d(Property Taxes) by Quintiles of d(Personal Tax)



(G) d(Personal Taxes) and d(Tax Incentives), Scatter Plot



(H) d(Tax Incentives) by Quintiles of d(Personal Tax)

Figure I.1. Relation between Changes in Personal Taxes and Other Tax Policies. This figure reports the relation between the year-on-year changes in personal income taxes and the changes in other tax policies in a state. The left-side panels provide scatter plots of each pair of tax policy changes. The right-side panels provide the average changes in each tax policy for each quintiles of personal tax changes. 90th percentile confidence intervals are presented.

Table I.1. Interactive Effects of Personal Taxes and Other Tax Burden

This table reports results from interacting personal tax rates with tercile indicators of other tax burdens. Overall tax burdens are measured by the first principal component of corporate taxes, sales taxes, property taxes, and the negative of the number of tax incentives. The dependent variables are the percentage of job postings requiring education (*Education*), experience (*Experience*), cognitive skills (*Cognitive*), general IT knowledge (*IT*), and programming knowledge of specific software (*Programming*). The unit of observation is at the firm-county-year level. Control variables include local demographics and other state and local policies. Standard errors are double clustered by firm and county. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Dep. Var.:	*Education*	*Experience*	*Cognitive*	*IT*	*Programming*
(1−Personal Taxes)×High Other Tax Burden	0.514*	0.700**	0.278	0.659**	0.489*
	(0.279)	(0.286)	(0.255)	(0.311)	(0.286)
(1−Personal Taxes)×Medium Other Tax Burden	0.525*	0.711**	0.279	0.666**	0.494*
	(0.279)	(0.287)	(0.255)	(0.312)	(0.286)
(1−Personal Taxes)×Low Other Tax Burden	0.534*	0.711**	0.300	0.680**	0.502*
	(0.281)	(0.288)	(0.257)	(0.309)	(0.283)
Firm×County FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	1,170,235	1,170,235	1,170,235	1,170,235	1,170,235
R^2	0.652	0.594	0.577	0.610	0.605

J Narrative Approach

Table J.1. Narrative Events: This table presents the tax policy shocks included in our event-study analysis in Section 4.4.

Tax Cuts

State	Year	Narrative Category	Before	After
ND	2011	4	$0-57,700: 1.84% $57,701-139,350: 3.44% $139,351-212,300: 3.81% $212,301-379,150: 4.42% >$379,150: 4.86%	$0-59,100: 1.51% $59,101-142,700: 2.82% $142,701-217,450: 3.13% $217,451-388,350: 3.63% >$388,350: 3.99%
OH	2011	4	$0-5,050: 0.618% $5,051-10,100: 1.236% $10,101-15,150: 2.473% $15,151-20,200: 3.091% $20,201-40,350: 3.708% $40,351-80,700: 4.327% $80,701-100,900: 4.945% $100,901-201,800: 5.741% >$201,801: 6.24%	$0-5,050: 0.587% $5,051-10,100: 1.174% $10,101-15,150: 2.348% $15,151-20,200: 2.935% $20,201-40,350: 3.521% $40,351-80,700: 4.1097% $80,701-100,900: 4.695% $100,901-201,800: 5.451% >$201,801: 5.925%
RI	2011	4	$0-56,800: 3.75% $56,800-137,300: 7% $137,300-209,250: 7.750% $209,250-373,650: 9% >$373,650:9.9%	$0-55,000: 3.75% $55,001-125,000: 4.75% >$125,001: 5.99%
ID	2012	4	$0-2,675: 1.6% $2,675-5,351: 3.6% $5,352-8,027: 4.1% $8,028-10,703: 5.1% $10,704-13,379: 6.1% $13,380-20,069: 7.1% $20,070-53,519: 7.4% >$53,520: 7.8%	$0-2,759: 1.6% $2,760-5,519: 3.6% $5,520-8,279: 4.1% $8,280-11,039: 5.1% $11,040-13,799: 6.1% $13,800-20,699: 7.1% >$20,700: 7.4%
OK	2012	4	$0-2,000: 0.5% $2,001-5,000: 1% $5,001-7,500: 2% $7,501-9,800: 3% $9,801-12,200: 4% $12,201-15,000: 5% >$15,001: 5.5%	$0-2,000: 0.5% $2,001-5,000: 1% $5,001-7,500: 2% $7,501-9,800: 3% $9,801-12,200: 4% $12,201-15,000: 5% >$15,001: 5.25%
KS	2013	4	$0-30,000: 3.5% $30,001-60,000: 6.25% >$60,001: 6.45%	$0-30,000: 3% >$30,001: 4.9%
ME	2013	4	$0-10,199: 2% $10,200-20,349: 4.5% $20,350-40,699: 7% >$40,700: 8.5%	$0-10,499: 0% $10,450-41,849: 6.5% >$41,850: 7.95%
NC	2014	4	$0-21,250: 6% $21,251-100,000: 7% >$100,001: 7.750%	flat tax of 5.8% tax years 2015 and later: flat tax of 5.75%

Tax Increases

State	Year	Narrative Category	Before	After
IL	2011	3	flat rate: 3%	flat rate: 5%
CT	2011	3	$0-$10,000: 3% $10,001-$500,000: 5% >$500,000: 6.5%	$0-$10,000: 3% $10,001-$50,000: 5% $50,001-$100,000: 5.5% $100,001-$200,000: 6.5% >$250,001: 6.7%
MD	2012	4	$100,000-$150,000: 4.75% $150,001-$300,000: 5% $300,001-$500,000: 5.25% >$500,000: 5.5%	$100,000-125,000: 5% $125,001-$150,000: 5.25% $150,001-$250,000: 5.5% >$250,001: 5.75%

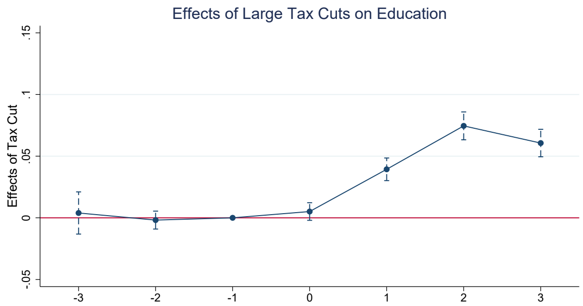
Narrative Categories

1	Offsetting a change in government spending	Endogenous
2	Offsetting some factor other than spending likely to affect output in the near future	Endogenous
3	Dealing with an inherited budget deficit	Exogenous
4	Achieving some long-run goal, such as higher normal growth, increased fairness, or a smaller role for government	Exogenous

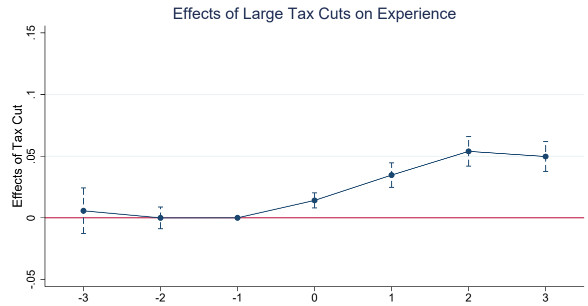
Table J.2. Removing Narrative States from Baseline

This table examines effects of personal tax changes on firms' requirement for skill in a specific occupation. The sample excludes the eight states that have experienced an exogenous tax cuts in our narrative analysis. The dependent variables include the percentage of job postings requiring education (*Education*), experience (*Experience*), cognitive skills (*Cognitive*), general IT knowledge (*IT*), and programming knowledge of specific software (*Programming*). The unit of observation is at the firm-county-year level. Control variables are the same as column (3) of Table 1. Standard errors are double clustered by firm and county. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

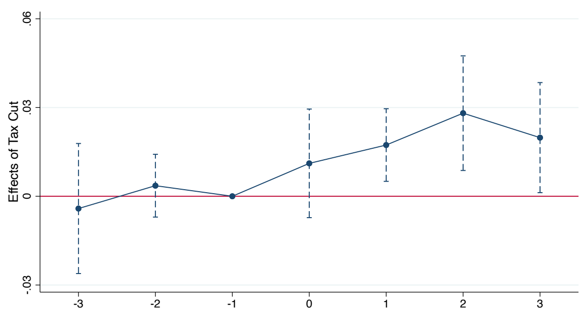
Dep. Var.:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
1−Personal Taxes	1.231**	1.279**	1.095**	1.932***	1.284**
	(0.540)	(0.530)	(0.552)	(0.610)	(0.573)
Other Tax Policies	Yes	Yes	Yes	Yes	Yes
Demographics	Yes	Yes	Yes	Yes	Yes
Other Policies	Yes	Yes	Yes	Yes	Yes
Firm×County FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,055,824	1,055,824	1,055,824	1,055,824	1,055,824
R^2	0.650	0.593	0.577	0.610	0.605



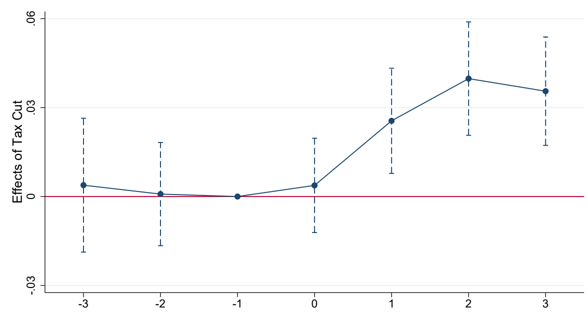
(A) Education



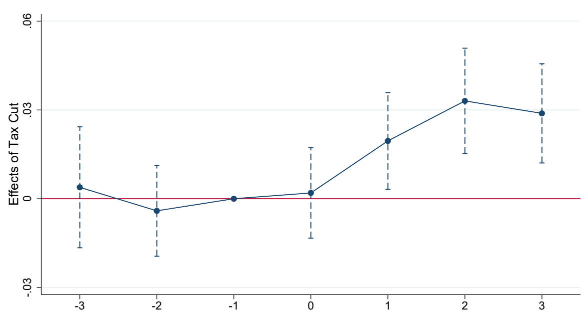
(B) Experience



(C) Cognitive Skills



(D) IT Skills



(E) Programming Skills

Figure J.1. Narrative Approach: An Occupation Panel. This figure shows the skill requirements contained in local job postings for each firm-county-occupation-year surrounding statutory changes affecting workers at the 90^{th} income percentile. In each panel, the dots represent coefficient estimates of β_τ ($\tau \in [-3,3]$) in Eq. (3) and the intervals indicate 90% confidence intervals. The horizontal axis represents years relative to the year of the tax event, and the vertical axis represent the size of the coefficient. Year -1 is the benchmark. All tests include the same control as used in column (3) of Table 2, as well as firm-county-occupation fixed effects. Standard errors are double clustered by firm and county.

K Local Personal Taxes and Wages

We study how wages offered by firms vary as a function of local personal tax rates. According to our theoretical framework, lower personal taxes reduce the labor costs faced by firms, and such an effect should be more pronounced for high-skill positions than low-skill ones. We follow Cohen et al. (2021) and use the wages listed in job postings to verify this mechanism. While sparsely populated, these wage figures reveal the level of compensation needed to attract local workers.

We partition job ads posted by firms based on the skill content of their occupation, and examine how the wages posted for high-skill and low-skill jobs posted vary with personal state taxes. Figure K.1 plots the wage–tax relation. The left (right) panel represents wages listed in job postings for high (low)-skill occupations. Definitions of high- and low-skill occupations are the same as described in Section 4.5. The dots represent the average salary level for each decile of personal net-of-tax rate. The solid line represents the fitted regression line between the log of salaries for an occupation listed by firms and the personal net-of-tax rates. For ease of comparison, the two panels use the same range of log scales (0.6).

The plots highlight three patterns. First, for a given tax level, firms list higher salaries for high-skill positions than for low-skill positions. Second, salary increases with personal tax rates (or decrease with net-of-tax rates). Third, the slope of the salary–tax relation is steeper for high-skill positions than low-skill ones.

Table K.1 tests this relationship formally. We regress the log of salary listed on a posting on the interaction between indicators of high-skill and medium-skill occupations and local personal net-of-tax rates. The unit of observation is a job posting. The coefficient estimates on the interaction terms demonstrate the differential effect of personal tax rates on salaries listed for low-skill and high-skill occupations. The results confirm that listed salaries generally increase with personal tax rates. More importantly, wages for more skilled occupations are significantly more responsive to personal taxes than those for unskilled positions. These results help validate the mechanism that firms adjust job skill requirements in response to changes in labor costs following personal tax innovations.

Using estimates from the wage regression, we can make a back-of-the-envelope calculation regarding how much costs firms can save by hiring workers in a low tax state. To start, we compute the change in a firm's labor costs associated with a change in personal taxes ($\Delta\tau_{p,s}$) as follows:

$$\Delta LaborCost = \Delta\tau_{p,s} \times \hat{\beta}_\tau \times \overline{Wage_s} \times Workers_s \times (1 - \tau_{Federal} - \tau_{c,s}) \tag{5}$$

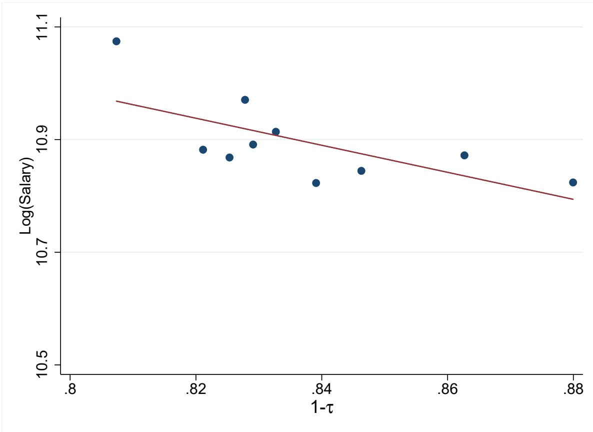
where s indicates a state, and $\Delta\tau_{p,s}$ indicates differences in personal tax rates, either across states or over time. $\hat{\beta}_\tau$ is the estimated coefficient of wage on personal taxes, $\overline{Wage_s}$ represents the average wage level of educated workers in state s, and $Workers_s$ represents the number of workers employed by a firm in state s. $\Delta\tau_{p,s} \times \hat{\beta}_\tau \times \overline{Wage_s}$ thus indicates the change in wage levels for one worker that is induced by a marginal change in personal taxes. When we multiply this quantity with the total number of workers, $\Delta\tau_{p,s} \times \hat{\beta}_\tau \times \overline{Wage_s} \times Workers_s$ tells us how much the total wage bill would change for a firm in state s. Finally, we multiply this cost differential using $1 - \tau_{Federal} - \tau_{c,s}$, the net of corporate tax rate in state s, where $\tau_{Federal}$ indicates federal corporate income tax rates, and $\tau_{c,s}$ indicates state corporate taxes (state s).

In a steady state, firms are indifferent between hiring in state s and state s'. Now let us consider a change in state s' personal taxes by 1 percentage points. We will compute the benefit for the firms to shift skill hiring from state s to state s'. The estimated β_τ comes from Appendix Table K.1, where we find that $(1-\tau) \times$ *High Skill Occupation* generates a coefficient of -0.7 for log of salary advertised on job postings (column (1)). Adding this coefficient to the coefficient on the base group (-0.1), we make the inference that a 1 percentage point gap in personal taxes is associated with an 0.8% difference in high-skill workers' wages ($\Delta\tau_{p,s} \times \hat{\beta}_\tau$).

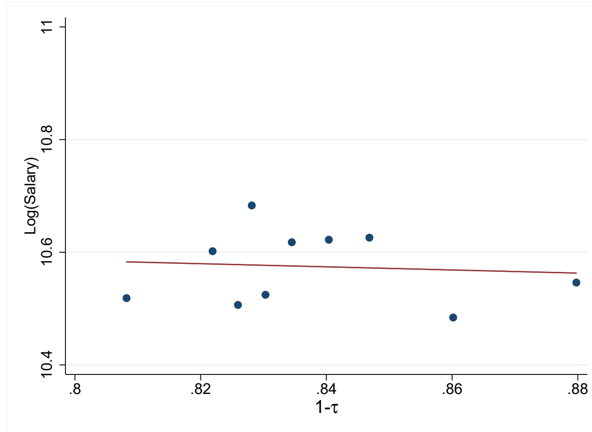
To infer $\overline{Wage_s}$, we collect wage information from the Bureau of Labor Statistics (BLS). It shows that the average worker with college degree has a weekly salary of $1,202 over our sample period, and the average worker with a high school degree has a weekly salary of $665. Since we are interested in all skilled workers, we use the average of the two, which is $933 per week, or $48,529 per year for this calculation ($\overline{Wage}$). Our estimates suggest a wage differential of $388 per person per year that is associated with a 1 percentage point gap in personal income taxes ($\Delta\tau_{p,s} \times \hat{\beta}_\tau \times \overline{Wage}$). The average public firm in our sample has 2,302 employees in a state. While we do not know the number of skilled workers, we rely on the QWI data to infer that workers with at least a high school (bachelor) degree accounts for around 74% (50%) of the total workforce during our sample years. Again, we use the average of the two, 62%, which suggests that the average firm employs 1,427 skilled workers in a state. This is associated with $554,100 differential salary expenses for the firm between two states with a one-percentage-point personal tax gap ($\Delta\tau_{p,s} \times \hat{\beta}_\tau \times \overline{Wage_s} \times Workers_s$).

We next compute the net-of-corporate tax gains from reallocating workers between states. We measure the net gain using $\$484{,}756 \times (1 - \tau_{federal} - \tau_{c,s})$, where $\tau_{federal}$ indicates the federal corporate tax rate, which is 35% over our sample period, and τ_c represents the average state corporate tax rate, which is 7% in our sample. This leads to a net gain of $321,378 per year.

Finally, we note that firms' decision to reallocate workers is likely to be based on the cost-saving generated for all the years forward. The present value of an annuity of $321,378 for a firm with a WACC of 10% is around $3.2 million. In other words, an average firm expect to save $3.2 million in labor cost by relocating from one state to another where there is a 1 percentage point differential in personal taxes.



(A) Posted Salaries for High-Skill Occupations



(B) Posted Salaries for Low-Skill Occupations

Figure K.1. Personal Taxes, Salary, and Occupation Skill Requirements. This binned scatterplot presents the relation between salaries listed on job postings and local personal taxes, conditional on the skill category of the occupation. Panel A shows the relation for high-skill occupations, while Panel B shows the pattern for low-skill occupations. High (low)-skill occupations are defined as two-digit SOC codes whose average job zone value ranks at the top (bottom) tercile of the sample. In each panel, the horizontal axis shows personal net-of-tax rates, and the vertical axis indicates the log of salary across postings. The dots indicate the average of log salaries in a tax rate decile. The solid line indicates the fitted regression line between salary and net-of-tax rates.

Table K.1. Personal Taxes and Wages

This table reports results regarding how wages for high- and low-skill jobs posted by firms vary as a function of local personal income taxes. The unit of observation is a job posting. *Log(Salary)* is the log of salary posted. *Medium Skill Occupation* and *High Skill Occupation* are the same as defined in column (3) of Table 4. Standard errors are double clustered by firm and county. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Dep. Var.: *Log(Salary)*	(1)	(2)
1−Personal Taxes	−0.104	−0.179
	(1.207)	(1.672))
(1−Personal Taxes) × *Medium Skill Occupation*	−0.032	−0.361
	(0.213)	(0.246)
(1−Personal Taxes) × *High Skill Occupation*	−0.704***	−0.809*
	(0.304)	(0.430)
Controls	Yes	Yes
Firm FE	Yes	
County FE	Yes	
Firm×County FE		Yes
Occupation FE	Yes	Yes
Year FE	Yes	Yes
Observations	530,098	489,883
R^2	0.446	0.655

L Technology Investment and Personal Taxes

In this section, we present and discuss the complementarity between firms' IT investment and skilled hiring and the coefficient estimates of other tax variables on firm's IT investment.

In Table L.1, we examine the correlation between firms' IT investment and BurningGlass skill content by regressing each of the skill variables on IT budget with a firm-county-year panel. We observe a significant, positive relationship between IT-relevant (cognitive, IT, and programming) skill requirements in firms' job ads and their IT budgets. Take the overall IT budget as an example, a one-standard-deviation increase in *Cognitive* (0.353), *IT* (0.365), and *Programming* (0.331) corresponds to a dollar amount increase in IT budget per employee by approximately $104, $70, and $85, respectively.

In Table L.2, we report the coefficients of all control variables for the IT investment regressions. In it, we show that corporate taxes generate weakly negative coefficients for IT investment in general, with the coefficient being statistically significant for the overall IT budget and hardware budget, and statistically insignificant for software and telecommunication budgets. The net effect of lower corporate income tax on firms' IT investment appears to reduce firms' IT investment, but only weakly. This effect could be explained by the complementarity between IT investments and high-skill human capital. Recall that our baseline analysis shows a negative relationship between net of corporate tax rates and skill hiring, suggesting that corporate tax cuts will reduce firm skill requirements. To the extent that IT spending complements worker skills, corporate tax cuts should also be associated with IT spending.

Table L.3 reports how firms change their IT investment following exogenous tax cuts using the narrative approach. The same set of events are used in this analysis as in Figure 3. To maintain parallel with the skill hiring analysis, we aggregate IT spending to the firm-county level for this test. We find that firms' IT investment do not change prior to exogenous tax cuts, but significantly increase in the year following those events.

Table L.1. Skilled hiring and IT investment

This table examines the complementarity between firms' job skill requirements and IT investment. The unit of observation is at the firm-county-year level. The dependent variables include firms' budget items (in logarithm) for overall IT spending (*IT Budget*), hardware devices (*Hardware Budget*), computer software (*Software Budget*), and telecommunication services(*Telecomm. Budget*). All dependent variables are reported on a per-employee basis. The independent variables are the percentage of job postings requiring cognitive skills (*Cognitive*), general IT knowledge (*IT*), and programming knowledge of specific software (*Programming*). Control variables are the same as those used in column (3) of Table 1. We run regressions for each dependent variable separately and then pull regression estimates in one table. Standard errors are double clustered by firm and county. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Dep. Var.:	*IT Budget*	*Hardware Budget*	*Software Budget*	*Telecomm. Budget*
Cognitive	293.549***	26.452**	114.790***	14.860*
	(67.588)	(10.841)	(22.945)	(7.687)
IT	192.529***	14.983	83.554***	5.982
	(61.381)	(10.333)	(19.985)	(7.310)
Programming	256.160***	26.244**	100.559***	14.857**
	(70.157)	(11.051)	(23.691)	(7.512)
Controls	Yes	Yes	Yes	Yes
Firm×year FE	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes
Observations	276,961	276,961	276,961	276,961

Table L.2. Technology Investment and Personal Taxes

This table examines the effect of personal tax changes on IT investment. The dependent variables include firms' budget items (in logarithm) for overall IT spending, hardware devices, computer software,and telecommunication services. All dependent variables are reported on a per-employee basis. Control variables are the same as those used in column (3) of Table 1. Standard errors are double clustered by firm and county. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Panel A: Personal Taxes and IT Budget: Baseline

Dep. Var.: Log of	(1) *IT Budget*	(2) *Hardware Budget*	(3) *Software Budget*	(4) *Telecomm. Budget*
1−Personal Taxes	2.698**	2.295*	2.338*	2.385**
	(1.215)	(1.245)	(1.269)	(1.186)
1−Corporate Taxes	–1.269**	–1.132*	–0.966	–0.587
	(0.640)	(0.654)	(0.694)	(0.600)
1−Sales Tax	−0.776	0.647	−0.355	−1.303*
	(0.704)	(0.806)	(0.812)	(0.679)
1−Property Taxes	−7.281***	−7.623***	−8.828***	−7.383***
	(2.480)	(2.447)	(2.311)	(2.096)
# Tax Incentive	−0.004***	−0.003**	−0.005***	−0.005***
	(0.001)	(0.002)	(0.002)	(0.002)
% African American	−0.000	−0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)
% Asian	0.005	0.004	0.007*	0.005
	(0.004)	(0.004)	(0.004)	(0.004)
Industry Skill Demand	−0.114	−0.066	−0.146	−0.037
	(0.109)	(0.119)	(0.114)	(0.118)
Minimum Wage	0.043***	0.044***	0.053***	0.049***
	(0.009)	(0.009)	(0.009)	(0.010)
Log(Unemployment Insurance)	−0.007	0.002	−0.011	−0.001
	(0.009)	(0.010)	(0.010)	(0.011)
Health Spending/GSP	−0.046***	−0.039**	−0.046**	−0.006
	(0.017)	(0.017)	(0.019)	(0.019)
Education Spending/GSP	0.036***	0.040***	0.053***	0.053***
	(0.011)	(0.012)	(0.012)	(0.012)
Welfare Spending/GSP	−0.026***	−0.031***	−0.037***	−0.038***
	(0.008)	(0.008)	(0.008)	(0.009)
Infrastructure Spending/GSP	−0.013	−0.004	−0.017	−0.023
	(0.015)	(0.014)	(0.015)	(0.016)
Establishment FE	Yes	Yes	Yes	Yes
Firm×Year FE	Yes	Yes	Yes	Yes
Observations	2,303,631	2,303,631	2,303,631	2,303,631
R^2	0.875	0.884	0.891	0.858
Magnitudes from One Standard Deviation				
1−Personal Taxes	0.053	0.045	0.046	0.047
1−Corporate Taxes	−0.027	−0.024	−0.021	−0.013

Table L.3. Technology Investment and Personal Taxes: Narrative Approach

This table reports the results from the narrative approach regarding how firms' IT investment changes after large, exogenous tax cuts. the effect of personal tax changes on IT investment. The dependent variables include firms' budget items (in logarithm) for overall IT spending, hardware devices, computer software,and telecommunication services. All dependent variables are reported on a per-employee basis. The unit of observation is a tax event-firm-county-year. Control variables are the same as those used in column (3) of Table 1. Standard errors are double clustered by firm and county. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Dep. Var.: Log of per employee budget	*IT Budget*	*Hardward Budget*	*Software Budget*	*Telecomm. Budget*
$1_{t-3} \times$ *Tax Cut*	0.040	0.072	0.049	−0.062
	(0.054)	(0.048)	(0.062)	(0.050)
$1_{t-2} \times$ *Tax Cut*	0.013	−0.007	0.024	0.025
	(0.023)	(0.020)	(0.026)	(0.022)
$1_{t} \times$ *Tax Cut*	−0.018	−0.014	−0.001	−0.012
	(0.014)	(0.015)	(0.019)	(0.020)
$1_{t+1} \times$ *Tax Cut*	0.047**	0.044*	0.076***	0.040*
	(0.021)	(0.023)	(0.024)	(0.024)
$1_{t+2} \times$ *Tax Cut*	0.022	0.028	0.063**	0.034
	(0.026)	(0.028)	(0.028)	(0.028)
$1_{t+3} \times$ *Tax Cut*	−0.017	−0.017	0.003	−0.011
	(0.028)	(0.031)	(0.029)	(0.032)
Tax Cut	Yes	Yes	Yes	Yes
Other taxes	Yes	Yes	Yes	Yes
Demographics	Yes	Yes	Yes	Yes
Other Policies	Yes	Yes	Yes	Yes
Firm×County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Event FE	Yes	Yes	Yes	Yes
Observations	1,552,163	1,552,087	1,552,139	1,551,695
R^2	0.728	0.740	0.755	0.710

M Border-County Tests

To sharpen the comparison, we exploit variation in tax rates and labor market conditions in counties located alongside, but across, state borders (see also Dube et al. (2010)). In particular, we sample counties whose centroids are within an 80-mile bandwidth on each side of a border, whereby one side experiences a change in personal taxes while the other does not.[2] By limiting the sample to counties located in close proximity, we contrast areas with similar underlying demographics and economic conditions.

$$Y_{c,b,t} = \beta(1-\tau)_{c,t-1} + Controls_{c,t-1} + \gamma_c + \lambda_b + \eta_{b,s_1,t} + \eta_{b,s_2,t} + \epsilon_{c,b,t}. \tag{6}$$

In Eq. (6), c represents a county, b represents a border between two states, s_1 and s_2, and t is the year of observation. The specification features controls for county (γ_c), border (λ_b), and border-state×year fixed effects ($\eta_{b,s_1,t}$ and $\eta_{b,s_2,t}$). Border-state refers to all counties alongside a border of a given state (both in the state of interest and the neighboring states). Border-state×year interactive effects account for time-varying local conditions that are shared by counties along a state border.[3] $\epsilon_{c,b,t}$ represents standard errors clustered by county.

Table M.1 presents the results for the state-border design. Coefficients suggest that a 1-percentage-point increase in personal net-of-tax rates is associated with a 1.4-percentage-point increase in the jobs postings listing education requirements in a county, and around 2-percentage-point increase in job postings listing experience, cognitive, IT, and programming requirement.

[2] In defining "close proximity" to a state border, we experiment with various choices, balancing the standard trade-off between bias and precision. 80 miles is the cutoff for the bottom quartile of the distance of U.S. counties' centroids to state borders. Our results remain robust if we narrow the bandwidth to 60 miles or expand it to 100 miles or even further.

[3] Each border b aligns two states s_1 and s_2, so we include separate dummies for each state. Our approach follows that of prior studies that use various combinations of geography×time fixed effects to absorb local dynamics, including interactions between specific location pairs (e.g., Ljungqvist and Smolyansky (2016) and Moretti and Wilson (2017)).

Table M.1. County-level Results: Robustness
This table presents robustness checks for our county-level BurningGlass results using boarder-counties right next to state-borders. It shows results when we compare counties within 80 miles from a state border. The unit of observation is at the state border-county-year level. Control variables are the same as those used in column (3) of Table 1. Standard errors are clustered by county. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Dep. Var.:	(1) *Education*	(2) *Experience*	(3) *Cognitive*	(4) *IT*	(5) *Programming*
1−Personal Taxes	1.411**	2.240***	1.621***	2.425***	2.009***
	(0.664)	(0.574)	(0.421)	(0.455)	(0.393)
1−Corporate Taxes	−0.184	−1.314***	−0.589**	−1.018***	−0.870***
	(0.382)	(0.300)	(0.244)	(0.252)	(0.212)
Controls	Yes	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes	Yes
Border FE	Yes	Yes	Yes	Yes	Yes
Border-State×Year FE	Yes	Yes	Yes	Yes	Yes
Observations	36,553	36,553	36,553	36,553	36,553
R^2	0.568	0.534	0.621	0.673	0.686