Corporate Tax Cuts and Worker Earnings: Evidence from Small Businesses*

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Abstract

This paper assesses the effects of corporate tax reductions for small businesses on employee earnings. Following a 2014 reform in Quebec, Canada, workers at firms with tax cuts experience a significant increase in their earnings. We estimate that overall workers bear about three quarters of the tax burden. Additionally, the effects are larger for workers in high-growth industries, where firms invest more and experience larger increases in productivity and profitability after tax cuts. We find that the increased worker earnings are connected with firms' increased profits, and estimate that 35 percent of the extra surplus passes on to workers.

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1 Introduction

A central question in fiscal policies is how much reductions in corporate tax rates would stimulate growth in the economy. While there already exists extensive literature on how taxes affect investment and employment, surprisingly we have very limited empirical evidence on how corporate taxes affect worker earnings.[1] Understanding how changes in corporate taxes affect workers is a recurring topic in policy debates, with theoretically opposing views. On the one hand, Harberger (1962) predicts that firm owners entirely bear the corporate tax burden, assuming a closed economy with limited capital mobility. On the other hand, subsequent studies emphasize the importance of international capital mobility and predict that workers partly bear the tax burden. Therefore, it is important to accurately measure corporate tax incidence on workers across different settings using a credible empirical design and employee-level data that can track the same workers over time.

Empirically evaluating tax effects on worker earnings is challenging in part because it is difficult to find large and exogenous variations in tax rates across firms and workers. To isolate tax effects from business cycle effects, we need a control group of firms and workers not affected by the tax change. However, corporate income tax rates in most settings depend on firm sizes or profits, making it difficult to find a control group when estimating the effects of corporate taxes on firm-level or worker-level outcomes.[2] Furthermore, without employee-level data, it is difficult to conclude whether changes in firm-level average payrolls in response to a tax cut are driven by changes in existing workers' earnings or changes in worker compositions.

This paper studies the effects of reductions in corporate tax rates for small businesses on worker earnings. We exploit a tax rate cut from 8 percent to 4 percent in Quebec, Canada, for small firms operating in the manufacturing and processing (M&P hereinafter) sector, and compare their outcomes to those of small firms in other sectors in Quebec. Additionally, we make the same comparisons for small firms located in two other major provinces, British Columbia and Ontario, which experience no change in tax rates during our sample period. Our empirical design exploits this triple-differences framework, which absorbs any sector- or province-specific trends or shocks that may have coincided with the reform, in order to assess the tax effects on both worker-level and firm-level outcomes, using administrative employer-employee matched data from tax records.

[1] The estimated investment elasticity varies across different studies, including Zwick and Mahon (2017), Ohrn (2018), Liu and Mao (2019), Maffini et al. (2019), Harju et al. (2022), and Curtis et al. (2022). Furthermore, several studies find positive impacts of tax cuts on employment (Giroud and Rauh 2019, Garrett et al. 2020, and Curtis et al. 2022). While there exists a few studies on how corporate taxes affect wages, including Arulampalam et al. (2012) and Suárez Serrato and Zidar (2016), to the best of our knowledge, Fuest et al. (2018) is the only *published* paper that uses employer-employee matched data to study how corporate taxes affect wages.

[2] Prior studies exploit across-industry (Zwick and Mahon 2017, Ohrn 2018, and Curtis et al. 2022), across-state or municipality (Suárez Serrato and Zidar 2016 and Fuest et al. 2018), and across-business type variation (Giroud and Rauh 2019; Harju et al. 2022; Kennedy et al. 2022) to study tax effects on firm, establishment or worker outcomes.

Comparing workers in small M&P firms in Quebec to workers in small non-M&P firms in Quebec before and after the reform, and comparing the same differences in British Columbia and Ontario, we estimate that annual earnings of employees at treated firms increase by 1.3 percent on average. We find that workers bear about one third of the corporate tax burden, which is in line with the estimate by Suárez Serrato and Zidar (2016), but is smaller than the estimate by Fuest et al. (2018). Using the ownership data, we also estimate that workers who own shares at the companies they work bear about 40 percent of the corporate tax burden. Combining both types of workers, the tax incidence on workers (with or without ownership) is about three quarters, which is larger than the prior estimates. In contrast to a recent study that finds corporate tax incidence falling mostly on workers in the top ten percent in the within-firm income distribution among medium to large firms in the United States (Kennedy et al. 2022), we find large tax incidence on workers below the top ten percent in the within-firm earnings distribution among small businesses.

At the firm-level, we find that treated firms increase employment, average payroll, and tangible assets by 1.7 percent, 2.3 percent, and 3.2 percent, respectively, on average per year after the reform. Importantly, we find that treated firms experience increases in sales, after-tax profits, and productivity. Even without a market-level shift in labor demand, worker earnings can increase in response to a tax cut through rent-sharing if firms' profitability goes up due to enhanced productivity. Following Kline et al. (2019), we estimate that an average firm passes 35 percent of the extra surplus generated from the tax cuts on to workers. Therefore, the increase in worker earnings is consistent with treated firms increasing investment and expanding after the tax cuts, which result in increases in productivity and profits that are passed on to workers through rent-sharing. This mechanism is also consistent with the key channel through which changes in personal tax rates on business owners' income are passed on to workers via rent-sharing documented by Risch (2023).

We find that the increased capital investment, especially in productive assets such as computers, can partly explain the rise in productivity after the tax cuts. As these firms are all small businesses, they likely face cash constraints and high borrowing costs, which may prevent them from reaching the optimal level of investment. If treated firms have to borrow a large part of the increased investment, then the marginal return on the additional investment without the tax benefits may be still much lower than the marginal cost of investment, making it not worthwhile to increase spending before the tax cuts. Indeed, we find that treated firms finance 38 percent of the increased operating expenditures through debt after the tax cuts. Assuming a standard risk-free rate and the average interest rate estimated from our firm balance sheet data, we estimate that the marginal cost of investment roughly equals the marginal return without the tax reduction. Once we account for the tax benefits after the reform, the marginal return on the additional spending almost doubles, making it worthwhile to increase investment. Therefore, we conclude that cash constraints, combined with

high borrowing costs, likely explain why treated firms in our setting did not invest before the tax cuts, even if the additional investment would have led them to higher profitability and productivity.

To further explore whether the increase in worker earnings is driven by increased productivity and profitability after the tax cuts, we test whether firms and workers in high-growth (based on asset size) industries respond more strongly to a tax cut relative to those in low-growth industries. Since firms operating in high-growth industries tend to have higher net present value projects, these firms may invest more in labor and productive capital after a tax cut. In turn, they may experience larger increases in productivity and profits, leading to higher salaries for workers, either in the form of rent-sharing or efficiency wage. We find that after the reform, treated firms in high-growth industries invest more in capital, hire more workers, and experience larger increases in after-tax profits and productivity. Furthermore, we find that responses in worker earnings are concentrated in high-growth industries, suggesting that the increase in wages is closely tied to increased productivity and profits in our setting.

We conduct several robustness tests to strengthen the internal validity of our results. A triple-differences design absorbs any sector-specific or province-specific trends that could have driven our results, making it difficult to tell what actually drives our findings. To account for this potential concern, we also present separate difference-in-differences results based on comparing small M&P firms and workers and small non-M&P firms and workers before and after the reform, and make the same comparisons in the control provinces. We confirm that our results were not driven by upward trends specific to the M&P sector or Quebec. Furthermore, to account for industry-specific or location-specific shocks coinciding with the reform that may drive our results, we additionally control for industry by year fixed effects and commuting zone by year fixed effects. Finally, we conduct placebo tests using non-domestic firms ineligible for the tax cuts.

This paper's main contribution to the existing literature is three-fold. First, our paper contributes to growing literature on how corporate taxes affect worker earnings. While earlier studies exploit cross-company or state-level variation in corporate tax rates to assess the tax effects on firm-level average payrolls (Arulampalam et al. 2012; Suárez Serrato and Zidar 2016), there is only one published paper (Fuest et al. 2018) that evaluates corporate tax impacts on wages using employee-level data, which allows the authors to control for changes in worker compositions in response to a tax cut. Relative to Fuest et al. (2018), our paper's unique contribution is that we additionally observe detailed firm outcomes from tax records, which give us two key advantages that lead to important contributions to this literature.[3]

The first advantage is that the firm balance sheet data allows us to measure tax incidence on

[3]To the best of our knowledge, Kennedy et al. (2022) is the only other paper that uses employer-employee matched data from tax records to assess how corporate taxes affect both firm and worker outcomes in the United States.

workers and firm owners more accurately, without having to make any assumption on how firms' after-tax profits change after a tax cut. Furthermore, with the ownership data, we can separately estimate tax incidence on workers with or without ownership, which is particularly important for small businesses where ownership rates by workers are high. Without the ownership information, we would underestimate tax incidence on workers in our setting since we cannot distinguish workers with ownership in their companies from other firm owners. Once we incorporate owner-workers, our estimate of tax incidence on workers almost doubles.

The second advantage of using both firm-level and worker-level data is that we can link worker responses with firm responses to a tax cut, allowing us to delve into potential mechanisms behind our findings. In particular, we find that firms with the tax cuts significantly increased investment in both labor and capital. This increased investment in turn leads to higher productivity and after-tax profits. In fact, we find that the responses in worker earnings and investment are concentrated in high-growth industries where we see most of the gains in productivity and profitability, suggesting that the increase in wages is closely tied to enhanced productivity after the tax cuts. Therefore, being able to observe both worker-level and firm-level outcomes helps us unlock potential mechanisms behind the changes in worker earnings previously unexplored in prior studies. Furthermore, the combined individual and corporate tax records allow us to estimate a pass-through of the extra surplus on workers, confirming significant rent-sharing between workers and firm owners. While Fuest et al. (2018) provides suggestive evidence of larger tax incidence on workers where there is a higher degree of rent-sharing, we provide concrete support for the connection between the tax incidence and rent-sharing by using detailed firm balance sheet data.

Relatedly, our paper shows in which setting we may expect to see increases in firms' profits and workers' earnings after a corporate tax reduction. As firms hire more workers and increase average payrolls, it is unclear how profit margins may change. If the additional funding raised from a tax cut leads to misallocation of capital and labor to less efficient firms and workers, we may expect that these firms may suffer losses in their profits or productivity. By contrast, hiring more productive workers at higher salaries in high-growth industries may increase firms' overall productivity, especially when combined with investment in productive capital, consistent with our overall findings. Furthermore, if the composition of workers changes after a tax cut (i.e., hiring workers from low socio-economic background), a corporate tax reduction may not actually lead to an increase in average payrolls (Curtis et al. 2022). After flexibly controlling for worker fixed effects using our employer-employee matched data, we find that not only treated workers stay at the same treated firm, relative to the control workers, after the reform, but also their annual earnings increase. Our findings are consistent with the idea that firms pay higher salaries to their workers after a tax cut to hire and retain productive workers, so that they can continue to expand.

Second, this paper contributes to the literature on how corporate taxes affect small businesses. Studying tax effects on small firms is important not only because they account for a large share of sales and employment in the economy (accounting for 60 percent of total sales and 70 percent of total employment in Canada), but also because they are more likely to be cash-constrained and have higher ownership rates by workers, resulting in potentially different responses to tax cuts compared to large firms. Thus, understanding how small firms respond to tax incentives is crucial for designing an effective corporate tax system. While governments in both developed and developing countries spend a significant portion of their budgets on providing tax incentives for small businesses, evidence on how tax reductions specifically designed for small firms affect their growth and worker earnings is scant. To our knowledge, this paper is the first to identify the effects of tax cuts targeted at small businesses on *both* firm-level and worker-level outcomes. Relative to Harju et al. (2022) that find evidence of increased investment and sales only among cash-constrained firms, we find that most of the responses are concentrated in high-growth industries in our setting. Given that both studies examine small businesses, it is possible that differences in other firm characteristics (i.e., growth potentials or productivity), institutional settings, or the nature of the reform can drive differences in results across different countries. Finally, our empirical analysis offers quantitative evidence for the benefit-cost analysis of reducing corporate tax rates for small businesses. Critics emphasize the costs in terms of increased opportunities for tax avoidance by high-income professionals (Smart 2021) and misallocation of resources from large, productive businesses to small, inefficient ones. However, we argue that the benefits of tax cuts for small firms may be larger than previously estimated, when accounting for their growth and increased welfare for workers through higher salaries.

Third, besides contributing to the literature on corporate taxation, this paper complements an extensive literature that has found large effects of fiscal policies on real outcomes; for example, temporary reforms such as accelerated depreciation (House and Shapiro 2008; Zwick and Mahon 2017) have been shown to stimulate aggregate spending. Furthermore, our results are consistent with the findings from a growing empirical literature that has documented substantial investment responses to corporate tax incentives (Ohrn 2018; Chen et al. forthcoming; Giroud and Rauh 2019; Liu and Mao 2019; Maffini et al. 2019; Curtis et al. 2022) and to payout taxes (Poterba and Summers 1983; Moon 2022), and large innovation responses to personal income taxes (Akcigit et al. 2022).

This paper is organized as follows. Section 2 provides institutional details on corporate income taxes in Canada. Section 3 describes our empirical design. Section 4 shows our main results and explores potential mechanisms. Section 5 discusses economic interpretations of our findings.

2 Institutional Background

This section describes the institutional details on the Canadian corporate income tax system and policy changes in Quebec relevant for our empirical design.

2.1 Corporate Income Taxes in Canada

In Canada, businesses can be organized as corporations or unincorporated forms, such as sole proprietorships. Unincorporated businesses' income flows through to owners as personal income and is fully taxed on accrual as ordinary income. On the other hand, corporations' income is subject to corporate taxation, and distributions to owners are taxed as ordinary income.[4]

Corporate income taxes in Canada are levied at both federal and provincial levels. From 2011 to 2017, the baseline federal tax rate, after a general tax reduction, was 16.5 percent in 2011 and was reduced to 15 percent after 2012. Additionally, Canadian-Controlled Private Corporations (hereinafter, CCPC) are eligible for small business deductions (hereinafter, SBD), which lower their corporate income tax rate by 4 percentage points from the baseline rate for the first 500,000 CAD of their taxable income. To qualify for the SBD, a CCPC has to have taxable capital below 10 million CAD.[5] The eligible taxable income for the SBD is reduced by ten cents for every dollar increase in taxable capital exceeding 10 million CAD and completely phases out above 15 million CAD. For example, a firm that has taxable capital of 12.5 million CAD and taxable income of 500,000 CAD can only qualify for the first half of the taxable income (250,000 CAD) for the SBD. Panel (a) of Figure 1 describes the phase-out schedule for small business deductions as a function of taxable capital. Note that this phase-out schedule also applies to provincial corporate income tax rates, which we describe in the following subsection.

2.2 Policy Changes in Quebec

Each province in Canada sets its own corporate income tax rates. During our sample period (2011 to 2017), in Ontario, which is the largest province in Canada in terms of shares on the number of firms, aggregate revenue, assets, and employment, the general tax rate is fixed at 11.5 percent,

[4]While corporate income is taxed both at the corporate and personal level, there exists corporate-personal tax integration. For example, a dividend tax credit offsets corporate taxes for dividends from Canadian corporations paid to domestic shareholders (Smart 2021). There was no change in dividend tax credits in Quebec, British Columbia, or Ontario during our sample period.

[5]Taxable capital is the sum of a business' capital, such as capital stock and retained earnings, net of investment allowance. The full definition of taxable capital is available here: https://www.canada.ca/content/dam/cra-arc/formspubs/pbg/t2sch33/t2sch33-15e.pdf

whereas the tax rate for small businesses is fixed at 4.5 percent. Similarly, in British Columbia, the third largest province (tied with Alberta), the general tax rate is between 10 to 11 percent, whereas the small business tax rate is fixed at 2.5 percent and is reduced to 2 percent in 2017.

By contrast, in Quebec, the second largest province, the general tax rate is fixed at 11.9 percent and is reduced to 11.8 percent in 2017, while the small business tax rate is 8 percent until 2013. In 2014, the Quebec government announced and implemented a tax rate reduction for small firms operating in the manufacturing and processing (M&P hereinafter) sector, which further lowers the tax rate by 2 percentage points in 2014 and by additional 2 percentage points in 2015. On the other hand, the tax rate for small businesses operating in non-M&P sectors in Quebec remains unchanged. Figure 2 describes corporate income tax rates for small businesses across three major provinces during our sample period. In Section 3, we describe how we use this set of treated firms (in the M&P sector and Quebec) and control firms (in non-M&P sectors and Quebec, or in British Columbia and Ontario) for our empirical strategy. According to budget plans introduced in or around 2014, there are three additional tax benefits specific to small M&P firms in Quebec: since 2014, small M&P firms in Quebec are eligible for (1) additional tax deductions for transportation costs if they are located far away from major urban centers, (2) refundable tax credits for investment in a building, and (3) refundable tax credits for integrating information technologies in their business processes. In Appendix A, we show additional tests to confirm that our findings are not driven by these extraneous tax benefits. We also show our results scaled by changes in average effective tax rates, which account for these extraneous tax benefits. There was no other policy change (i.e., trade or licensing) in or around 2014 specific to small M&P firms in Quebec.

We drop pre-2011 years mainly because there are non-trivial changes in the general and small business tax rates in Ontario in 2010 and in British Columbia in 2008 and 2010.[6] Table A.1 in Appendix A describes both federal and provincial corporate income tax rates in Canada from 2009 to 2017. Table A.2 describes shares based on the number of firms, assets, revenue, and employment across all provinces. Quebec, British Columbia, and Ontario make up about 75 percent of all firms in Canada, in terms of shares based on the number of firms, total revenue, assets, and employment. We do not include firms in Alberta, New Brunswick, Nova Scotia, Newfoundland and Labrador, Prince Edward Island, and Yukon because they experience non-trivial changes in the general or small business tax rates between 2011 and 2017. Furthermore, Manitoba, Northwest Territories, Nunavut, and Saskatchewan account for about 5.6 percent of firms in our sample, so including them does not qualitatively change our main results (see Appendix B.1).

[6] In 2010, Ontario's general tax rate and tax rate for M&P dropped from 14 percent to 12 percent and 12 percent to 10 percent, respectively, while the small business tax rate dropped from 5.5 percent to 4.5 percent. British Columbia's general tax rate dropped from 12 percent to 11 percent in 2008, and to 10.5 percent in 2010, while the small business tax rate dropped from 4.5 percent to 2.5 percent in 2008.

3 Empirical Strategy

This section describes our empirical strategy and data to identify the effects of changes in small business tax rates on both firm-level and worker-level outcomes.

3.1 Estimating Tax Effects on Corporate Outcomes

To identify the tax effects on corporate outcomes, we compare the outcomes of firms in the M&P sector in Quebec, relative to the outcomes of firms in non-M&P sectors in Quebec, before and after the policy change in 2014. Additionally, we compare the outcomes of firms in the M&P sector in control provinces (British Columbia and Ontario, which did not experience any change in tax rates for small businesses during our sample period), relative to the outcomes of firms in non-M&P sectors in control provinces, before and after 2014. Then we compare the former difference-in-differences with the latter difference-in-differences to absorb any sector-specific and province-specific trends or shocks that may have coincided with the reform. For simplicity, we explain our triple-differences results as comparing treated firms and control firms before and after the reform, without repeatedly mentioning that we additionally compare these differences to the same differences in British Columbia and Ontario. To validate our empirical design and graphically show the reform's effects on firm outcomes, we estimate the following model:

$$Y_{jt} = \sum_{\tau=2011}^{2017} \theta_\tau \cdot \mathbb{1}_{\{t=\tau\}} \cdot MP_j \cdot QC_j + \sum_{\tau=2011}^{2017} \beta_\tau \cdot \mathbb{1}_{\{t=\tau\}} \cdot MP_j + \sum_{\tau=2011}^{2017} \gamma_\tau \cdot \mathbb{1}_{\{t=\tau\}} \cdot QC_j + \alpha_j + \alpha_t + u_{jt}, \quad (1)$$

where Y_{jt} is an outcome variable for firm j in year t, MP_j is an indicator for a firm in the M&P sector, QC_j is an indicator for a firm located in Quebec, α_j are firm fixed effects, and α_t are year fixed effects. Each coefficient θ_τ measures the change in the outcome variable Y_{jt} for treated firms relative to control firms in the τ-th year before or after the reform became effective in 2014. θ_{2013} is normalized to be zero. We cluster standard errors at the firm-level.[7] To account for potential concerns regarding industry-specific or location-specific shocks coinciding with the reform, we present results in Appendix B.1 based on controlling for industry by year fixed effects and commuting zone by year fixed effects, which would absorb shocks at finer levels than sectors and provinces.

We compute and summarize the main estimates of the average tax effects on firm outcomes by

[7] In Appendix B.1, we show that our main results are robust to clustering standard errors at the industry by commuting zone level.

estimating the following triple-differences model:

$$Y_{jt} = \theta \cdot Post_t \cdot MP_j \cdot QC_j + \beta \cdot Post_t \cdot MP_j + \gamma \cdot Post_t \cdot QC_j + \alpha_j + \alpha_t + u_{jt}, \tag{2}$$

where $Post_t$ is a dummy equal to 1 if it is after the reform year of 2014 and all the other variables are defined in equation (1). We report the estimates from this equation (2), as well as those from equation (1) in Section 4.

In Appendix B.1, we also show separate difference-in-differences results based on comparing small M&P firms and small non-M&P in Quebec before and after the reform, and making the same comparisons in British Columbia and Ontario. Additionally, Table B.1 shows that coefficient estimates on $Post_t \cdot MP_j$ and $Post_t \cdot QC_j$ are either non-positive or much smaller than our triple-differences estimates, confirming that our results were not driven by upward trends specific to Quebec or the M&P sector.

For our analysis sample, we impose the following restrictions. First, we focus on CCPCs, which account for roughly 98 percent of all firms in our dataset, and use non-CCPCs only as a placebo group in our robustness check. Second, we focus on firms with total assets below 10 million CAD and therefore qualify for small business deductions. As described in Section 2, small business deductions start phasing out 10 cents for every dollar increase in taxable capital above 10 million in CAD, and completely phase out above 15 million CAD. While firms are legally required to report their taxable capital if it is above 10 million CAD, only about one percent of firms reported taxable capital above 10 million CAD during our sample period. To avoid misclassifying firms that misreport their taxable capital as being eligible for small business deductions, we use total assets as a proxy to define small firms. Because total assets are larger than taxable capital, it is unlikely that we include ineligible firms in our analysis sample. Moreover, panel (b) of Figure 1 shows that the cumulative share of small business deduction claimants is about 99 percent by 10 million CAD in total assets. If anything, we will omit only a small share of eligible firms above the total assets threshold. We also do a robustness check by defining small firms as those with missing (or below 10 million CAD) taxable capital. Third, we drop firms that move across provinces (0.84 percent), switch industries (4.42 percent), or have establishments in difference provinces (1.6 percent). Finally, we exclude firms in agriculture (1.6 percent), finance and real estate (7.1 percent), healthcare (7.8 percent), and professional services (14.7 percent) sectors, mainly because these sectors appear least comparable to the manufacturing sector. In Appendix B.1, we show that our main results are robust to including firms in these excluded sectors as part of the control group.

The main identifying assumption behind our empirical design is not the random assignment of firms into treated or control groups. Instead, it is that the affected and unaffected firms' outcomes

would have trended similarly in the absence of the policy change. The key threat to this design is that time-varying shocks may coincide with the reform. While our triple-differences design would absorb any sector-specific or province-specific shocks that may have coincided with the reform, we present two pieces of evidence that this threat is minimal. First, affected and unaffected firms exhibit parallel trends for the key outcomes prior to the reform. Second, we conduct placebo tests using non-CCPCs that are ineligible for small business deductions and therefore unaffected by the reform in 2014. We fail to reject the null hypothesis that the effects are not statistically different from zero in each of these tests (see Appendix B.2).

3.2 Estimating Tax Effects on Worker Outcomes

To assess the effects of tax cuts on worker outcomes, we estimate a similar model of the following form:

$$Y_{ijt} = \sum_{\tau=2011}^{2017} \theta_\tau \cdot \mathbb{1}_{\{t=\tau\}} \cdot MP_{ij} \cdot QC_{ij} + \sum_{\tau=2011}^{2017} \beta_\tau \cdot \mathbb{1}_{\{t=\tau\}} \cdot MP_{ij} + \sum_{\tau=2011}^{2017} \gamma_\tau \cdot \mathbb{1}_{\{t=\tau\}} \cdot QC_{ij} + \alpha_i + \alpha_t + u_{ijt}, \quad (3)$$

where Y_{ijt} is an outcome variable for an employee i at firm j in year t, MP_{ij} is an indicator for an employee i working at a firm j in the M&P sector, QC_{ij} is an indicator for an employee i working at a firm j located in Quebec, α_i are worker fixed effects, and α_t are year fixed effects. Each coefficient θ_τ measures the change in the outcome variable Y_{ijt} for treated workers relative to control workers in the τ-th year before or after the reform became effective in 2014. θ_{2013} is normalized to be zero. Standard errors are two-way clustered at both firm and worker levels. Again for simplicity, we explain our triple-differences results as comparing treated workers and control workers before and after the reform, without repeatedly mentioning that we additionally compare these differences to the same differences in British Columbia and Ontario.

We compute and summarize the main estimates of the average tax effects on workers' outcomes by estimating the following triple-differences model:

$$Y_{ijt} = \theta \cdot Post_t \cdot MP_{ij} \cdot QC_{ij} + \beta \cdot Post_t \cdot MP_{ij} + \gamma \cdot Post_t \cdot QC_{ij} + \alpha_i + \alpha_t + u_{ijt}, \quad (4)$$

where $Post_t$ is a dummy equal to 1 if it is after the reform year of 2014 and all the other variables are defined in equation (3). We report the estimates from this equation (4), as well as those from equation (3) in Section 4.

For our analysis sample, we impose the following restrictions after assigning workers into the treatment group or control group based on whether they worked at treated firms or control firms

in 2013 (one year before the reform). First, we drop workers with multiple jobs in a given year ("multiple-job holders") so that we focus on full-time workers. Second, we restrict workers to have at least 4,000 CAD in annual earnings to ensure that we study workers with stable income and attached to their firms (Card et al., 2013; Sorkin, 2018). Finally, we impose that all workers were employed in the treated or control firms during the entire pre-event period (2011 to 2013). This tenure restriction is chosen to obtain a sample of workers with attachment to our analysis firms and is similar to tenure restrictions used in the mass layoff literature (Jacobson et al., 1993; Von Wachter et al., 2009; Lachowska et al., 2020). While these restrictions allow us to focus on workers that have stable jobs at either treated or control firms in our analysis sample, we do a robustness check by including multiple-job holders or those making below 4,000 CAD in annual earnings without the tenure restriction, and find qualitatively similar results (see Appendix B.1).

3.3 Data and Outcome Variables

For empirical analysis, we use the Canadian Employer Employee Dynamics Database (CEEDD), a matched employee-employer dataset that covers the universe of workers and companies in Canada from 2001 to 2017. To prevent the disclosure of confidential information, Statistics Canada requires researchers to round estimates and observation counts. The CEEDD draws information from both individual (T1) and corporate (T2) tax return records, merged with job-level information using T4 employee tax records and Record of Employment (ROE) data, and with firm-level information from the National Accounts Longitudinal Micro-data File (NALMF). This database has rich information on the universe of firms and workers in Canada.

The main outcome variables used in the firm-level analysis are provincial income tax rates, federal income tax rates, provincial income taxes paid, taxable income, employment, average payroll, capital stock, total revenue, after-tax profits, EBITDA per worker, and total factor of productivity (TFP). Provincial and federal income tax rates are the firm's provincial and federal taxes (reported as Part I tax payable), scaled by its taxable income, respectively. These tax rates are equal to zero in a given year if the firm pays zero tax or claims zero taxable income. Employment is defined as the average number of employees reported from the T4s. We sum expenditures in different asset classes in a given year to define investment using a dataset on capital cost allowance for depreciated capital. Additionally, we use the reported book value of tangible assets, net of depreciation, as a measure of capital stock. We compute the amount of depreciated tangible assets in each year based on yearly changes in accumulated depreciation from their balance sheets. After-tax profits are defined as net income after taxes and extraordinary items. EBITDA is defined as a company's earnings before interest, taxes, depreciation, and amortization. TFP is estimated using firms' total

revenue, tangible assets, employment, and intermediate inputs. Following Ackerberg et al. (2015), we estimate the production function in each 4-digit NAICS industry, accounting for endogenous input choices of labor and capital, and use the residuals to define TFP.

At the worker-level, the key outcome is annual earnings which are aggregated across all employers in a given year. While we include earnings across all employers, we associate workers with the "dominant" employer (i.e., the employer from which the employee receives the highest pay in the year). We use information on workers' gender and age from T1 for heterogeneity analyses.

All outcome variables are winsorized at the first and ninety-ninth percent levels, except for provincial and federal income tax rates, provincial income taxes paid, taxable income, and after-tax profits that are winsorized at the fifth and ninety-fifth percent levels, due to disclosure rules set by Statistics Canada.

3.4 Descriptive Statistics

We close this section with descriptive statistics of our data. Table 1 shows the means for key outcome variables measured during the pre-reform period (2011 – 2013), separately by provinces and sectors. On average, firms operating in the M&P sector are older and larger than firms operating in non-M&P sectors, in terms of tangible assets, revenue, employment, and payrolls. However, firms operating in non-M&P sectors have higher profit margins and EBITDA per worker on average, compared to firms in the M&P sector. Moreover, firms in the M&P (or non-M&P) sector(s) are similar in size across treated and control provinces. In Quebec, the share of firms in the M&P sector is about 10 percent. The majority of firms operating in non-M&P sectors is in construction (25 percent), retail (19.2 percent), transportation (9.5 percent), and other services (34.1 percent), which include administrative support, education, accommodation, and food services. The sectoral composition is similar for firms located in British Columbia or Ontario.

Table 2 shows the means for key variables from the worker sample measured in the year before the reform, separately by provinces and sectors. On average, workers in the M&P sector are slightly older and earn a bit more relative to workers in non-M&P sectors. Additionally, the share of male workers is a bit larger in the M&P sector compared to the share in non-M&P sectors. While workers in Quebec are younger and earn less than workers in British Columbia or Ontario on average, the relative differences between workers in the M&P sector and workers in non-M&P sectors are similar across these provinces. In Quebec, the share of workers in the M&P sector is about 16 percent. The majority of workers in non-M&P sectors is in construction (20.2 percent), retail (25.2 percent), transportation (7.1 percent), and other services (35.1 percent). The sectoral composition is similar for workers located in British Columbia or Ontario.

4 Results

This section reports estimation results from the triple-differences models in Section 3, and presents additional tests supporting the interpretations of the results.

4.1 Effective Corporate Income Tax Rates, Taxes Paid, and Taxable Income

Figure 3 plots estimates of θ_τ from equation (1) on provincial income tax rates, federal income tax rates, provincial income taxes paid, and taxable income using our analysis sample. Provincial and federal income tax rates represent (average) effective tax rates for firms. Panel (a) shows that provincial tax rates for treated firms followed a similar pattern as those of their control firms before 2014. After 2014, provincial income tax rates decreased significantly for treated firms, consistent with the fact that the reform reduced statutory corporate income tax rates for small businesses operating in the Quebec M&P sector. As explained in Section 3, these estimates are based on the differences between small M&P firms and small non-M&P firms in Quebec before and after the reform, relative to the same differences in British Columbia and Ontario. By contrast, panel (b) shows that federal income tax rates remained flat after 2014, because the federal tax rates remained constant for treated firms relative to control firms. Panel (c) shows that provincial corporate income taxes paid followed a parallel pre-trend with those of control firms before 2014 and decreased significantly after 2014. Finally, panel (d) shows that taxable income followed a similar pattern as that of control firms before the reform, and increased significantly after the reform.

Columns (1) and (2) of Table 3 present the triple-differences estimates on the provincial income tax rates and federal income tax rates. Column (1) shows that treated firms' provincial income tax rates decreased by 1.4 percentage points. This implies that the net of tax rate increased by 1.5 percent after 2014 using the mean effective tax rate of 7.7 percent before 2014.[8] By contrast, column (2) shows that treated firms' federal income tax rate remained unchanged after 2014. These results suggest that the reform in Quebec had significant impacts on reducing corporate income tax rates for treated firms in our sample. Column (3) shows that treated firms' provincial income taxes paid decreased by 3,033 CAD on average per year after the reform. Column (4) shows that treated firms' taxable income increased by 5,161 CAD on average per year after the reform, implying that the tax cuts led these firms to grow. Using the change in statutory tax rates for small M&P firms in Quebec, the implied average tax saving is computed as the new taxable income (79,216 CAD) multiplied by the tax rate cut (0.04), which equals 3,170 CAD per year. Note that the amount of average tax savings is similar to the estimated reduction in provincial taxes paid in Column (3).

[8] The net of tax rate change is defined as $\frac{(\tau_0-\tau_1)}{(1-\tau_0)} = \frac{0.0139}{(1-0.077)} = 0.015$, where τ_0 is the initial tax rate.

If we use the statutory tax rates instead, the net of tax rate increased by 4.94 percent for treated firms after 2014.[9] Firms can lower their taxable income base through tax deductions, and can also claim tax credits, both of which will lower their effective tax rates relative to their statutory tax rates.[10] Thus, effective tax rates are lower than statutory tax rates, and changes in effective tax rates are smaller than changes in statutory tax rates in general. We use changes in statutory tax rates to compute the corresponding elasticities so that we can compare our estimates with those from prior studies that also use statutory tax rate changes.

4.2 Worker-level Earnings and Job Transitions

To estimate how corporate tax cuts affect employee earnings, we use the worker-level data which allows us to control for compositions by tracking the same workers over time. In Figure 4, we plot $\hat{\theta}_\tau$ from estimating equation (3) on workers' annual earnings. As the figure shows, earnings of treated workers trended similarly with those of their control workers in the years prior to 2014, but increased significantly after 2014. Column (1) of Table 4 shows that workers' annual earnings in small M&P firms increased by 1.34 percent on average after 2014. Again, this estimate is based on the differences between workers in small M&P firms and workers in small non-M&P firms in Quebec before and after the reform, relative to the same differences in British Columbia and Ontario. The elasticity of workers' earnings with respect to the net of statutory corporate income tax rate is 0.27, implying that an one-percent increase in the net of tax rate would increase workers' earnings by roughly 0.27 percent. We discuss the interpretation and comparison of this estimate with the estimates from prior studies in Section 5.1.

Next, we examine whether workers move to other firms after their original employers receive the tax cuts. Column (2) of Table 4 shows that the probability of moving to another firm for treated workers remained unchanged after 2014, relative to control workers. Column (3) of Table 4 shows that annual earnings for stayers in treated firms increased by 1.37 percent on average after the reform. This increase in earnings is similar to the one from all treated workers, given that workers in treated firms mostly stayed at their firms after the reform compared to control workers.

In Appendix D.1, we show that annual earnings of new entrants at treated firms also increased

[9] Assuming that small businesses have taxable income below 500,000 CAD and taxable capital below 10 million CAD, their statutory corporate income tax rate was 19 percent (11 percent for the federal and 8 percent for Quebec) before the reform. Since the treated firms' statutory provincial tax rate decreased from 8 percent to 4 percent after the reform, the net of statutory tax rate change was $\frac{0.04}{(1-0.19)} = 0.0494$. Using just the statutory provincial tax rate would yield the net of tax rate change of $\frac{0.04}{(1-0.08)} = 0.0435$, which is similar to the one using the combined statutory tax rate.

[10] The average effective tax rate is defined as $\tau_e = \tau_s - \frac{\text{Tax Credits}}{\text{Taxable Income}}$, where τ_s is the statutory tax rate. As the amount of tax credits increases, τ_e decreases relative to τ_s. Similarly, as the amount of tax deductions increases, which lowers taxable income, τ_e decreases relative to τ_s.

after the reform, consistent with the increase in average payrolls at treated firms. However, we do not find that worker characteristics, such as age or gender, changed after the reform. If anything, we see a slight increase in the share of full-time workers at treated firms after the reform.

4.3 Employment, Payrolls, and Capital

Next, we turn to firms' investment responses to corporate tax cuts to help understand responses in worker-level earnings. If the increase in incumbent workers' earnings is driven by the expansion of treated firms after the tax cuts, we should expect to see increases in investment in labor and capital to the extent that both inputs are complementary, resulting in a market-level response in labor demand. Figure 5 plots estimates of θ_τ from equation (1) on employment, average payrolls, tangible assets, and investment using our analysis sample. Panels (a) – (d) show that treated firms followed a similar pattern as control firms before 2014 for each of these outcomes. After 2014, we observe significant increases in these outcomes for treated firms, relative to control firms, suggesting that the tax cut led these firms to increase demand for both labor and capital.

Table 5 presents the triple-differences estimates on these firm-level outcomes. Columns (1) and (2) show that treated firms' employment and average payrolls increased by 1.74 percent and 2.34 percent, respectively, implying a large and significant response in demand for labor. Columns (3) and (4) show that treated firms' tangible assets and investment in physical assets increased by 3.17 percent and 2,036 CAD, respectively, after the tax cuts. Using the changes in statutory tax rates, the elasticities of firms' employment, average payrolls, and tangible assets with respect to the net of corporate income tax rate are 0.35, 0.47, and 0.64 respectively. We discuss the interpretations and comparisons of these estimates with prior studies in Section 5.1. In Appendix D.2, we show that treated firms' intangible assets and investment in computers also increased, but dividend payouts did not change much after the reform, consistent with our main findings that treated firms increased investment in capital and labor, instead of increasing payouts to shareholders.

4.4 Sales, After-tax Profits, and Productivity

To delve into a potential mechanism behind the responses in worker earnings, we assess changes in firms' profitability and productivity after the tax cuts. Even if the labor market is not perfectly competitive, due to market power, search frictions, or bargaining, the increase in labor demand at the firm-level can increase worker earnings without a market-level shift. Specifically, we examine whether the increase in worker earnings is driven by increases in firms' productivity, in the form of rent-sharing or efficiency wage. Figure 6 plots estimates of θ_τ from equation (1) on total revenue,

after-tax profits, EBITDA per worker, and TFP using our analysis sample. Panels (a) – (d) show that treated firms followed a similar pattern as control firms before 2014 for each of these outcomes. After 2014, we observe significant increases in these outcomes for treated firms, suggesting that the tax cut led these firms to experience increases in sales, after-tax profits, and productivity. While increases in after-tax profits partly reflect a mechanical change from lower tax rates, the increased EBITDA per worker and TFP suggest that treated firms became more profitable and productive after increasing investment in response to the tax cuts. Note that the responses in profitability and productivity happen more gradually compared to investment responses as shown in Figure 3, which occur immediately after the reform. The differences in the timing of these responses suggest that the increase in investment likely resulted in increased productivity.

Table 6 presents the triple-differences estimates on these firm-level outcomes. Columns (1) and (2) show that treated firms' total revenue and after-tax profits increased by 5.17 percent and 7,263 CAD, respectively, on average per year, implying a large and significant response in firm growth and profitability. Furthermore, EBITDA and TFP increased by 890 CAD per worker and 0.015 percentage points, suggesting that firms became productive after the reform. Subtracting the mechanical increase from the tax savings (3,170 CAD) yields an increase in after-tax profits of 4,093 CAD, implying that treated firms became more profitable after the reform by increasing investment.

4.5 Potential Explanation Behind Increased Productivity

A potential explanation behind the increased productivity is that the tax cuts led treated firms to increase capital investment, especially in computers or other productive equipment.[11] As shown in Appendix D.2, roughly one third of the increase in investment was tied to investment in computers. Furthermore, as we show in the next section, firms that invest more in capital experience a larger increase in after-tax profits and productivity, suggesting that the increased productivity is closely connected with the increase in capital investment after the reform.

A natural question is then why treated firms did not increase investment before the tax cuts, even if such investment would have led to better outcomes. We hypothesize that it is likely due to a mixture of both cash constraints and borrowing costs, given that they are small businesses. If treated firms had to borrow a significant part of the increased investment, then the marginal return on the additional investment without the tax cuts may be still much lower than the marginal cost of investment, making it not worthwhile to increase spending before the tax cuts.

[11] Another potential explanation is capital deepening, where capital per worker increases, resulting in increased productivity even without a technological progress.

As shown in Column (4) of Table D.2 in Appendix D.2, treated firms increased total expenses (net of taxes and interest payments), which include expenditures in capital, labor, and general operations, by 72,586 CAD on average per year after the reform. At the same time, as shown in Column (5) of Table D.2, total debt increased by 27,483 CAD, implying that roughly 38 percent of the increased spending was financed by borrowing. Since the increase in after-tax profits is 7,263 CAD on average per year after the tax cuts (Column (2) of Table 6), the marginal return on the additional operating expenses is 10 percent after the tax cuts. However, without the tax saving of 3,170 CAD on average per year, the marginal return is only 5.6 percent.[12] Assuming a risk-free rate of 4 percent and the average interest rate of 8 percent estimated from our firm balance sheet data, the marginal cost of the additional investment is about 5.6 percent, which equals the marginal return on the additional spending. Even if we assume a bit lower risk-free rate and average interest rate, the marginal return without the tax cuts is not high enough to justify the additional spending, given the risks associated with any investment. However, the tax cuts almost double the marginal return on the additional investment, making it worthwhile to increase spending after the reform. In Appendix C, we further explore other potential mechanisms behind our findings.

4.6 By High-growth versus Low-growth Industries

To further explore whether responses in worker earnings are driven by the increased productivity after the tax cuts, we test whether firms and workers in high-growth (based on asset size) industries respond more strongly to a tax cut relative to firms and workers in low-growth industries. The intuition is that firms that invest more and have higher asset growth rates likely have higher net present value projects, making it particularly worthwhile to invest in productive capital. Firms that invest more in productive capital may experience larger increases in productivity and profitability, leading to higher salaries for workers, either in the form of rent-sharing or efficiency wage.

To test whether the effects of the tax cuts are stronger for firms and workers that are in faster growing industries, we compute growth rates using year-to-year changes in total assets ($\frac{assets_t - assets_{t-1}}{assets_{t-1}}$) between 2011 and 2013, and define "High-growth" (or "Low-growth") industries as those with pre-reform average growth rates above (or below) the sample median. Table A.3 in Appendix A describes examples of high-growth and low-growth industries ranked by employment in our sample, and Table A.4 shows characteristics of firms and workers in high-growth versus low-growth industries within our analysis sample.[13] On average, firms in high-growth industries

[12]The marginal return without the tax saving is computed by subtracting the amount of the tax benefit from the increase in after-tax profits and dividing it by the increase in total operating expenses.

[13]Within the M&P sector in our sample, examples of the top five high-growth industries are (1) Screw, nut, and bolt manufacturing (3327), (2) Plastic product manufacturing (3261), (3) General-purpose machinery manufacturing (3339), (4) Metalworking machinery manufacturing (3335), and (5) Fabricated metal product manufacturing (3329).

have higher profit margins, after-tax profits, and taxable income, relative to firms in low-growth industries, prior to the reform. Furthermore, workers in high-growth industries have higher earnings relative to workers in low-growth industries on average. However, firms in high-growth and low-growth industries are similar in terms of capital intensity (sum of tangible and intangible assets), number of employees, and average payrolls. These statistics imply that while high-growth industries are similar in terms of capital intensity or sizes, they are more profitable and productive on average compared to low-growth industries. We estimate our main specifications (1) and (2), separately for firms in high-growth industries and low-growth industries. To estimate these effects on worker-level earnings, we repeat this using our main specifications (3) and (4), separately for workers in high-growth industries and low-growth industries in the year before the reform.

Panels (a) – (c) of Figure 7 show that the tax effects on worker-level earnings, employment, and capital stock are larger for workers and firms in high-growth industries than for workers and firms in low-growth industries. Furthermore, panels (d) – (f) show that firms in high-growth industries generate higher after-tax profits and become more productive relative to firms in low-growth industries. Table 7 confirms that the difference between high-growth and low-growth industries is statistically different from zero for each of these outcomes. These results imply that firms in high-growth industries tend to grow faster and demand more capital and labor in order to facilitate their expansion after a tax cut. The larger increase in investment, in turn, leads to larger increases in after-tax profits and productivity, resulting in the larger increase in worker-level earnings. In fact, the increases in earnings and productivity were almost entirely driven by workers and firms in high-growth industries that predominantly increase investment after the tax cuts. In Section 5, we estimate a pass-through of the increased surplus from the tax cuts on worker earnings and show that there exists significant rent-sharing within small businesses in our setting.

4.7 Individual Owners

In Appendix D.3, we link the ownership data, which contains information about individuals' ownership rates of their companies, to our main dataset to test whether there was any change in owners' capital income after the reform. Critics may argue that small business owners would use any increase in after-tax profits from tax reductions to increase payouts. We do not find evidence that individual owners' dividend income or shares changed much after the tax cuts. Overall, these results show that individual owners do not increase payouts to profit themselves after the tax cut; rather, these results are consistent with our main findings that treated firms increased investment in both capital and labor and continued to grow after the tax cut.

4.8 Robustness and Internal Validity

We conduct several robustness checks to strengthen the internal validity of our results. First, to account for any industry-specific shock in a given year potentially driving our results, we include 4-digit industry by year fixed effects in the main specification, and find that the results are quantitatively similar to our main results. Second, to account for any local labor market-specific shock in a particular year potentially driving our results, we additionally include commuting zone by year fixed effects in the main specification, and find that the results are quantitatively similar to our main results. Third, to account for any differences in industrial compositions between M&P firms in Quebec and M&P firms in control provinces, we re-weight firms and workers in the M&P sector in British Columbia and Ontario such that they have the same distribution of 4-digit NAICS industries as the M&P sector in Quebec. Fourth, we define small businesses as those with taxable capital below 10 million CAD (or with missing observations for taxable capital as these firms are not legally required to report it), and find that the results are qualitatively similar. Fifth, we include previously excluded provinces and sectors as part of the control group, and find qualitatively similar results. Finally, while we impose tenure restrictions and drop multiple-job holders or those making below 4,000 CAD in annual earnings to focus on full-time workers with stable jobs, our results including these previously excluded workers are qualitatively similar. The results from these robustness checks are included in Appendix B.1.

In addition, we conduct placebo tests, using non-CCPCs that are ineligible for small business deductions and therefore, are not impacted by the reform in 2014.[14] As shown in Appendix B.2, the estimated coefficients are indistinguishable from zero across all main outcomes in each of these tests. These results also suggest that the tax cut for small M&P firms in Quebec had minimal spillover effects on other ineligible firms that were not directly impacted by the reform.

Finally, one may be concerned about small firms bunching at the taxable income threshold of 500,000 CAD, as taxable income above the cutoff faces a higher tax rate. In Appendix B.3, we show that the distribution of treated firms' taxable income is smooth before and after the reform, and provides a potential explanation behind the lack of bunching in our setting.

4.9 Reallocation

To conclude this section, we examine how much of the impact on employment is driven by reallocation of workers between treated and control firms. If most of the responses in treated firms' employment were driven by workers moving from control firms, then our triple-differences esti-

[14] We have a very limited sample of large M&P firms in Quebec, making the placebo estimates based on large firms imprecise and hard to interpret.

mate would be biased upward, and the resulting welfare implication would be different.

Except for workers already employed at treated firms (operating in the M&P sector in Quebec), every worker that gets hired by a treated firm after the reform must come from either (1) control firms (non-M&P firms in Quebec or firms in British Columbia or Ontario), (2) out-of-sample firms eligible for small business deductions (e.g., in other provinces or in excluded sectors), (3) ineligible firms (large firms above 10 million CAD in total assets or non-CCPCs), or (4) non-employment (unemployment, fresh graduates, or new immigrants). Figure B.11 in Appendix B.4 shows the rate of inflow, outflow, and net inflow among workers from each of the four groups to treated firms, and Table B.11 reports the average difference of the net inflow in both head counts and rates before and after the reform. We estimate that the net inflow of workers from control firms to treated firms increases after the reform by an average of 780 workers per year, which is about 0.03 percent of total employment in control firms. Adjusting for this reallocation will reduce our estimate on employment from 1.74 percent to 1.71 percent (see Appendix B.4 for details). This suggests that while there was reallocation of workers from control firms to treated firms after the reform, the change was too small to affect our main estimate on employment.

Similarly, only about 0.18 percent of firms in non-M&P sectors switched to the M&P sector and 0.01 percent of firms outside of Quebec moved to Quebec after the reform, suggesting very little reallocation of firms across sectors or provinces. This is likely driven by the fact that the vast majority of firms in our analysis sample are small businesses that are mostly single establishments or have multi-establishments within the same province.

5 Economic Interpretations

The previous section showed that the implied elasticities of capital and labor with respect to the net of corporate income tax rate are both economically and statistically significant. This section discusses potential explanations for the magnitude of these estimates, compared to estimates from the existing literature. Furthermore, we use our estimates to measure corporate tax incidence on workers and pass-through of corporate profits on worker earnings, and to conduct a cost-per-job calculation for welfare implications.

5.1 Comparing Elasticities to Prior Estimates

To compare our estimates with those from prior studies, we first estimate the change in the cost of capital for treated firms after the reform so that we can compute the corresponding elasticities

with respect to the change in user cost. A standard user cost of capital, widely used in the literature (Zwick and Mahon 2017; Maffini et al. 2019; Curtis et al. 2022), is defined as:

$$c = \frac{1 - \tau z}{1 - \tau}(r + \delta)$$

where τz represents the net present value of tax deductions due to capital cost allowances for one dollar increase in investment, τ is the marginal corporate tax rate, r is the interest rate (assumed to be 15 percent), and δ is the economic rate of depreciation (assumed to be 20 percent).

Prior to the reform, the estimated rate of depreciation for tax purposes (capital cost allowance rate, or CCA rate hereinafter) is $d = 0.265$ for treated firms in our sample. To compute d, we use data on claims of CCA derived from corporate tax returns (Schedule 8, T2). The data contains firms' undepreciated capital costs (UCC), costs of acquiring new assets, and CCA rates by different asset classes.[15] We then average CCA rates across different asset classes at the firm-level, weighted by their undepreciated capital costs, to compute d.

Then the net-present value of tax deductions is computed as:

$$\tau z = \tau d\left(1 + \frac{1-d}{1+r} + \left(\frac{1-d}{1+r}\right)^2 + \left(\frac{1-d}{1+r}\right)^3 + ...\right) = \frac{\tau d(1+r)}{r+d} = 0.734\tau$$

Since there was no change in the schedule for capital cost allowance (i.e., accelerated depreciation) during our sample period (2011 – 2017), we can compute the user cost for treated firms before ($c_0 = 0.372$) and after ($c_1 = 0.366$) the reform, using the change in the marginal (statutory) tax rate (from 19 percent to 15 percent). Then the percent change in the user cost of capital for the treated firms after the reform is $\frac{c_1 - c_0}{c_0} * 100 = -1.5$. The estimated capital stock elasticity of -2.11 with respect to the estimated change in the cost of capital is in line with recent estimates from Zwick and Mahon (2017), Moon (2022), and Curtis et al. (2022). The estimated labor elasticity of -1.16 with respect to the estimated change in the cost of capital is close to the estimated elasticity of production labor (based on either high demand elasticity or high share in capital costs) with respect to the estimated change in the cost of capital found in the United States (Curtis et al. 2022).

Turning to worker-level earnings, we find that the elasticity of workers' earnings with respect to the net of statutory tax rate is 0.27, which is comparable to the estimate of 0.39 found in Germany (Fuest et al. 2018). Since we observe neither workers' wages nor their hours of work, we focus on full-time workers (see Section 3), so that we can try to rule out changes in workers' hours to a tax

[15] To avoid measurement errors in CCA rates reported in tax returns, we use the statutory rates specified in the following document: https://www.canada.ca/en/revenue-agency/services/tax/businesses/topics/sole-proprietorships-partnerships/report-business-income-expenses/claiming-capital-cost-allowance/classes.html.

cut and argue that our earnings estimate is close to the wage estimate. We conclude that workers bear a significant burden of corporate taxes. While the tax effects are not concentrated on the top in the within-firm earnings distribution, we find that male and older workers disproportionally benefited from the tax cuts, implying that the progressivity of the corporate tax system may be limited (see Appendix C.5), in line with Fuest et al. (2018).

Overall, our estimated elasticities of capital stock, labor, and worker earnings are comparable to the estimates across other settings, such as the United States and Germany. However, there might be country-specific institutional differences that generate heterogeneous responses to a tax cut in general. For example, if a large share of firms in a given country consists of fast-growing firms, then one may expect to see larger capital and labor responses to a corporate tax cut. These heterogeneous responses, either driven by different firm characteristics or institutional settings, may be observed in different proportions across different countries over time, which can lead to different observed aggregate effects.

5.2 Incidence of Corporate Taxes on Workers and Firm Owners

To evaluate the distributional impacts of corporate taxes, we follow the approach by Suárez Serrato and Zidar (2016) and Fuest et al. (2018) and measure tax incidence on workers and firm owners. The basic idea is to link a welfare change for workers, driven by a marginal tax rate change, to the sum of welfare changes for workers and firm owners. Furthermore, using the data on firm ownership, we can differentiate workers without ownership and workers with ownership in their own companies ("Owner-workers").

Based on the framework by Fuest et al. (2018), the change in worker utility from the change in wage rate is given by $dV_i = L_i(1-t_i)dw_i = L_i w_i \epsilon_{w_i}(1-t_i)d(1-\tau)$, where V_i is the representative worker's indirect utility function for type i, L_i is the quantity of labor for type i, t_i is the marginal income tax rate for type i, w_i is the wage rate for type i, and ϵ_{w_i} is the elasticity of wage with respect to net of corporate tax rate for type i, and τ is the tax rate on corporate income. Note that there are two types of workers: (1) workers without ownership and (2) owner-workers. Furthermore, the change in welfare for firm owners from the change in wage rate is given by $d\pi = -d\tau T - dw_1 L_1(1-\tau) - dw_2 L_2(1-\tau) = \pi\epsilon_\pi d(1-\tau)$, where π is the firm's after-tax profits, $T = f(K,L) - wL - \theta rK$ is the tax base, θ is the share of deductible capital costs, r is the interest rate, K is capital, and ϵ_π is the elasticity of after-tax profits with respect to net of tax rate. Then we compute the share of workers, owner-workers (with ψ ownership rate), and firm owners in the overall burden of a

marginal change in the corporate tax rate as follows:

$$I^{w_1} = \frac{dV_1}{dV_1 + dV_2 + d\pi} = \frac{L_1 w_1 \epsilon_{w_1}(1-t_1)}{L_1 w_1 \epsilon_{w_1}(1-t_1) + L_2 w_2 \epsilon_{w_2}(1-t_2) + \pi\epsilon_\pi} = 0.34,$$

$$I^{w_2} = \frac{dV_2 + \psi d\pi}{dV_1 + dV_2 + d\pi} = \frac{L_2 w_2 \epsilon_{w_2}(1-t_2) + \psi\pi\epsilon_\pi}{L_1 w_1 \epsilon_{w_1}(1-t_1) + L_2 w_2 \epsilon_{w_2}(1-t_2) + \pi\epsilon_\pi} = 0.39,$$

$$I^{\pi} = \frac{(1-\psi) d\pi}{dV_1 + dV_2 + d\pi} = \frac{(1-\psi)\pi\epsilon_\pi}{L_1 w_1 \epsilon_{w_1}(1-t_1) + L_2 w_2 \epsilon_{w_2}(1-t_2) + \pi\epsilon_\pi} = 0.27,$$

where I_{w_1}, I_{w_2}, and I_π capture corporate tax incidence on workers, owner-workers, and firm owners, respectively. To compute the above estimates, we use our triple-differences estimates of ϵ_{w_1}, ϵ_{w_2}, and ϵ_π, along with the pre-reform averages of $L_1 w_1$, $L_2 w_2$, and π for treated firms and workers (see Tables 4 – 6 and Table D.4 in Appendix D.4) and the top marginal income tax rates (federal and provincial combined), $(t_1, t_2) = (0.285, 0.384)$, based on their average annual earnings in 2013.

We find that on average, workers without ownership bear about a third of the corporate tax burden, and firm owners bear about two thirds of the tax burden. However, given that among firm owners, workers have about 58 percent ownership, they bear higher tax burdens compared to firm owners who do not work at the companies. When we combine both worker types, we find that tax incidence on workers is roughly three quarters. When focusing on workers without ownership in their own companies, our incidence estimate of 0.34 is close to the estimate from Suárez Serrato and Zidar (2016), but is smaller than the estimate from Fuest et al. (2018). However, our incidence measure of 0.73 based on workers with and without ownership is larger than the estimates from prior studies. Therefore, it is important to distinguish workers with or without ownership at the firms they work to have a more accurate incidence measure on workers, especially for small firms where the share of owner-workers is high relative to the share of owner-workers in big firms.[16]

5.3 Pass-through Estimates

In the previous sections, we show that workers bear a substantial corporate tax burden and that the increase in worker earnings is larger among firms that experience larger increases in after-tax

[16] Without the ownership information, our measure of tax incidence on workers would have been the following:

$$I^{w} = \frac{dV}{dV + d\pi} = \frac{Lw\epsilon_w(1-t)}{Lw\epsilon_w(1-t) + \pi\epsilon_\pi} = 0.37.$$

To compute I^w, we use our triple-differences estimates of ϵ_w and ϵ_π, along with the pre-reform averages of Lw and π for treated firms and workers (see Tables 4 – 6) and $t = 0.285$. By ignoring the owner-workers in small firms, our incidence measure on workers is about half of our measure based on both types of workers, and therefore understates tax incidence on overall workers in our setting.

profits and productivity. Next, we estimate a pass-through of firms' additional surplus from the tax cuts on worker earnings. Following Kline et al. (2019), we estimate the following model:

$$\log W_{jt} = \pi \log S_{jt} + \phi Post_t \cdot MP_j + \psi Post_t \cdot QC_j + \alpha_j + \alpha_t + \epsilon_{jt}, \tag{5}$$

where W_{jt} are workers' annual earnings aggregated at the firm level j and S_{jt} represents firms' surplus (defined as the sum of firms' total payrolls and EBITDA) per worker.[17] To compare our estimates with those in the literature, we focus on full-time incumbent workers satisfying the restrictions described in Section 3. In particular, we use the reform as an instrument for surplus per worker, with the first stage given by

$$\log S_{jt} = \eta Post_t \cdot MP_j \cdot QC_j + \rho Post_t \cdot MP_j + \sigma Post_t \cdot QC_j + \alpha_j + \alpha_t + u_{jt}. \tag{6}$$

Column (1) of Table 8 shows that the pass-through estimate is $\hat{\pi} = 0.353$, implying that an average firm passes 35.3 percent of the additional surplus generated by the tax cuts on to workers. This estimate is in line with the estimate from Kline et al. (2019). Furthermore, Column (2) shows a smaller pass-through estimate of 0.249 on to owner-workers, while the pass-through estimate is much larger for workers without ownership at the firms they work, suggesting that employers pass a larger share of the extra surplus generated from the tax cuts in the form of higher salaries to workers without ownership. Therefore, the increase in worker earnings is consistent with treated firms increasing investment and expanding after the tax cuts, which result in increases in productivity and profits that are passed on to workers through rent-sharing.

5.4 Cost-per-Job Estimate

To compare the fiscal cost of the reform to the number of jobs it created, we estimate a cost-per-job:

$$\text{Cost-per-Job} = \frac{\text{Losses in Corporate Tax Revenue} - \text{Gains in Labor Income Tax Revenue}}{\text{Number of Jobs Created}}.$$

We estimate losses in corporate tax revenue for Quebec to be 123.6 million CAD within the first four years after the reform, based on the decrease in provincial income taxes of 3,033 CAD per firm per year (column (3), Table 3).[18] This suggests a medium-run loss of 31 million CAD in tax revenue per year by the Quebec government. Furthermore, in Appendix D.5, we estimate gains in

[17] As in Kline et al. (2019), this surplus measure is mostly positive in our sample even though firms may report negative EBITDA in a given year.

[18] This estimate is based on the assumption that the number of treated firms is 10,205, as indicated in column (1), Table 4, to make the cost terms comparable with the estimated jobs creation.

personal income tax revenue to be 1.8 million CAD per year based on increases in income taxes paid from the rise in annual earnings for treated workers after the reform. Finally, the number of jobs created is estimated to be 2,024 per year among treated firms (column (1), Table 4) after the reform. These estimates yield an estimate of the cost equal to 14,402 CAD per job.

Note that these estimates are based on medium-run outcomes within our analysis sample of firms and workers in the partial equilibrium framework, and ignore potential general equilibrium and spillover effects.[19] Furthermore, the gains in personal income tax revenue are likely over-stated because we impute the provincial income taxes based on workers' taxable income and personal income tax schedules, ignoring provincial tax credits. Moreover, the number of jobs created may be higher at the aggregate level if we incorporate previously excluded firms and workers from our main analysis sample. Therefore, our cost-per-job number can be higher or lower depending on how much the omitted factors affect each estimate in the calculation. A comprehensive welfare calculation accounting for these components is an interesting avenue for future research. Our estimated cost-per-job is lower than (but still comparable to) the estimate of 20,000 USD per job from Garrett et al. (2020), which assesses the bonus depreciation policy in the United States.

In terms of aggregate dollars, the total employment and revenue were roughly 107,000 workers per year and 17.2 billion CAD per year on average among the treated firms (M&P in Quebec) after the reform. Then the aggregate increases in employment and sales are about 5,391 workers per year and 0.87 billion CAD per year, respectively, within the main analysis sample. These are roughly 0.4 percent and 0.3 percent increases in total employment and sales per year within the entire firms in Quebec (the second largest province in Canada) after the reform.[20] Note that the aggregate amount is based on the entire sample of firms in Quebec, which includes previously excluded firms across all sectors. Although these aggregate increases (in percent terms) in employment and sales may seem small, these are relatively large responses, considering that the treated firms account for about 10 percent of firms in Quebec within our analysis sample, and small businesses account for 35 percent of total revenue and 49 percent of total employment within the M&P sector in Quebec.[21]

[19] We do not account for positive externalities from productivity spillovers through firm expansion and job creation, as we also do not consider negative spillovers from competition in input markets with firms in other sectors.

[20] This calculation is based on a formula, $Y_{actual} = Y_{counterfactual} \times e^{\theta}$, where θ is from the triple-differences estimate of the tax effects on each of these outcomes. The change in aggregate investment is computed by $\Delta Y = Y_{actual} \times (1 - e^{-\theta})$.

[21] Small businesses account for 60 percent of total revenue and 70 percent of total employment across all firms and sectors in Quebec. Since treated firms account for roughly 10 percent of small businesses, they account for about 6 percent of total revenue and 7 percent of total employment across all firms and sectors in Quebec.

6 Conclusion

This paper exploits variation in tax rates across sectors and provinces, a policy reform, and administrative data from tax records to estimate the effects of corporate tax reductions for small businesses on worker earnings as well as firm outcomes. From 2014 to 2015, small firms operating in the M&P sector received a tax reduction of 4 percentage points from the combined statutory rate of 19 percent. We compare the outcomes of affected firms and workers with those of unaffected firms and workers operating in non-M&P sectors and located in other major provinces, finding that worker earnings and firms' investment increased significantly for treated firms after the tax cuts. Additionally, we find that these responses are larger for firms and workers in high-growth industries, where firms increase investment more and experience larger increases in productivity and profitability, relative to firms in low-growth industries. Taken together, our findings suggest that workers bear significant corporate tax burden, and that the increase in worker earnings is closely connected with increased profits after tax cuts.

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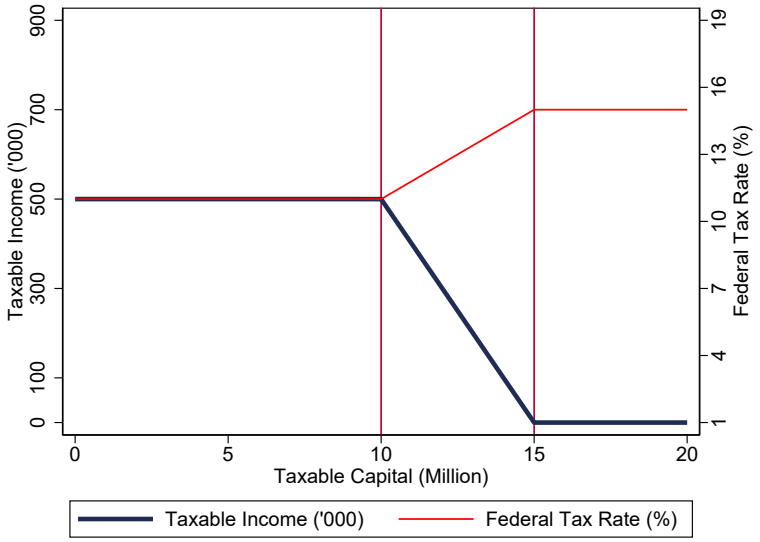
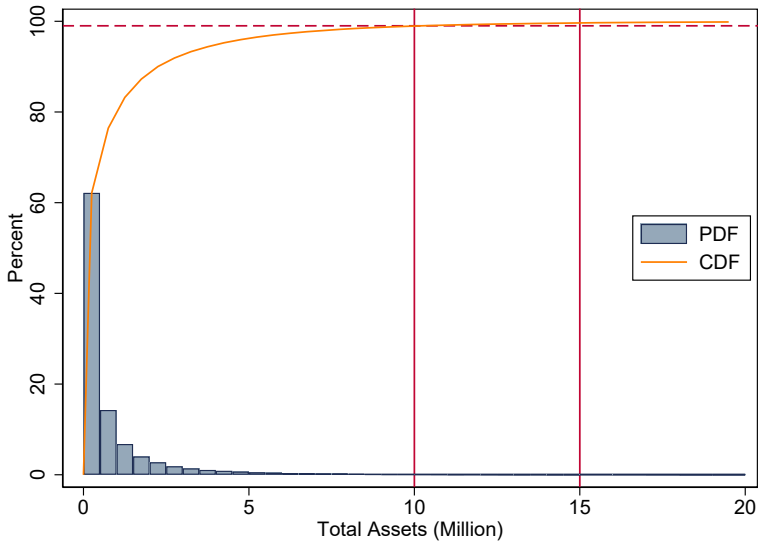
Figure 1: Phase-out Schedule for Small Business Deductions and Distribution of SBD Claimants

(a) Phase-out Schedule for Small Business Deductions

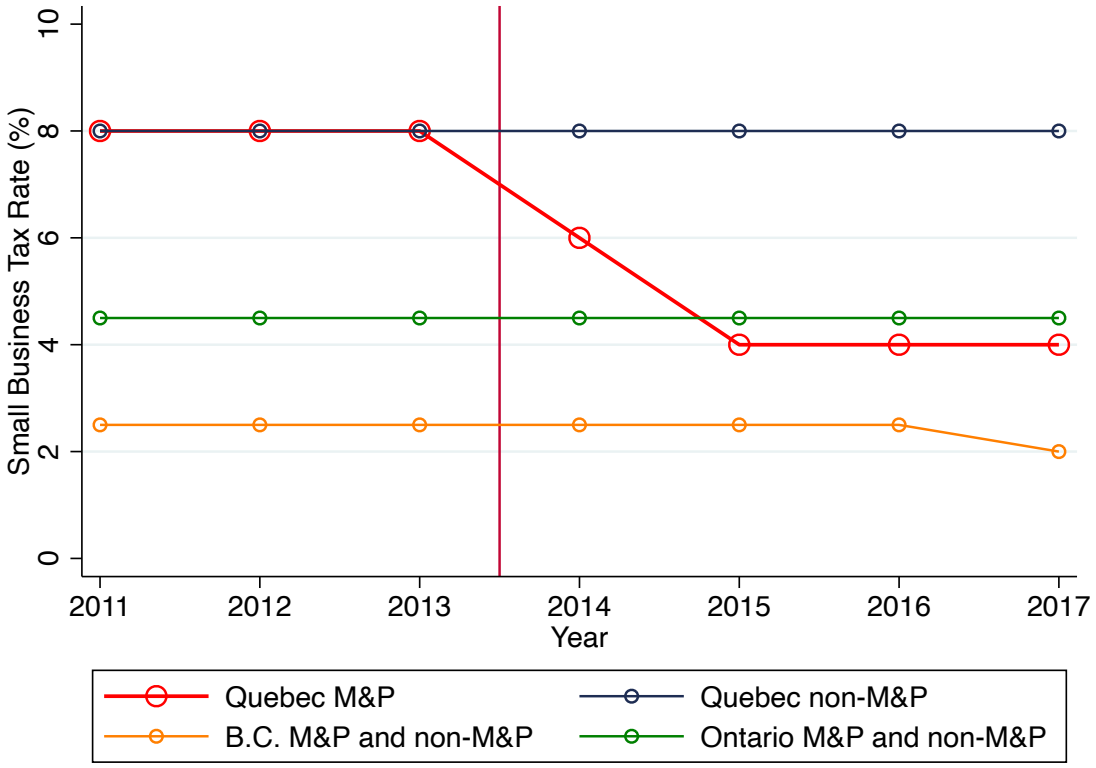


(b) PDF and CDF of SBD Claimants across Total Assets



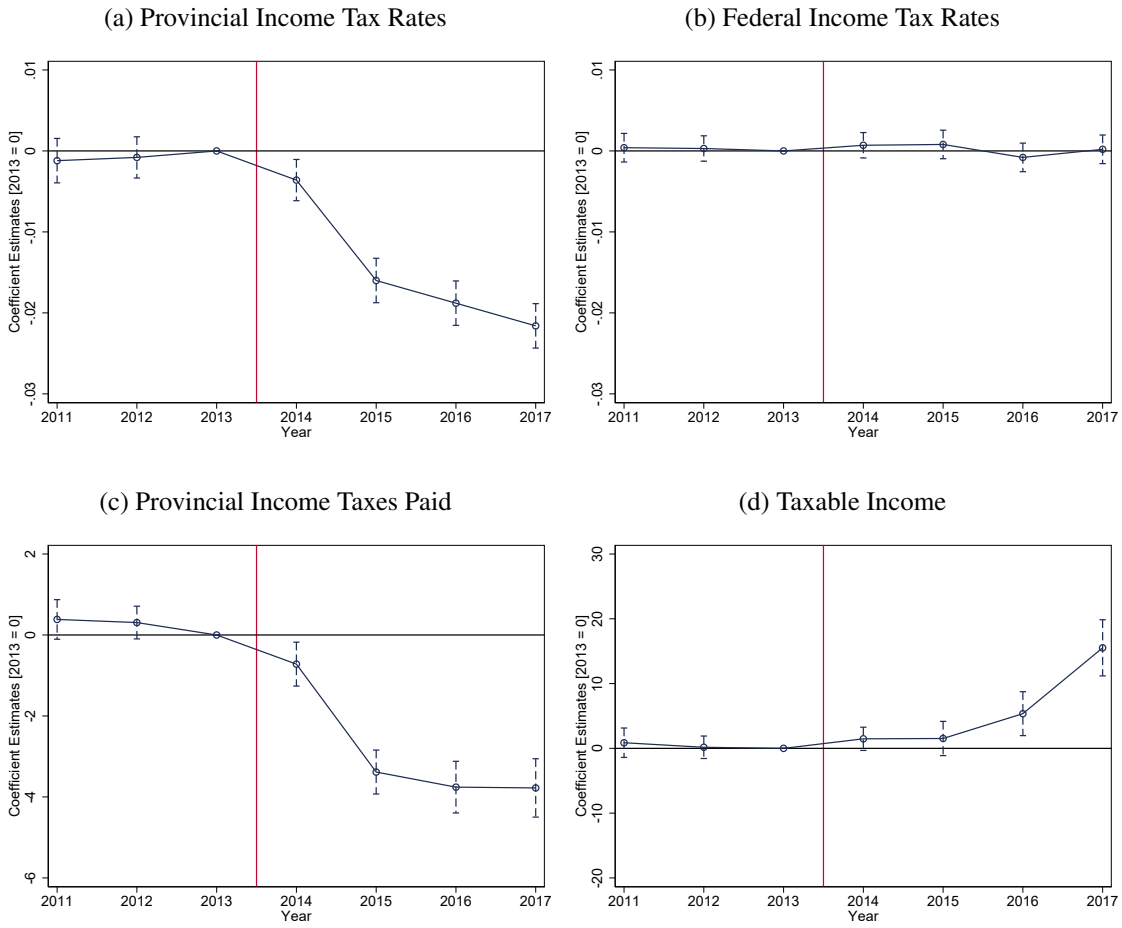
Notes: Panel (a) shows the phase-out schedule for small business deductions. At each level of taxable capital (x-axis), the navy line indicates how much of a firm's taxable income (y-axis on the left) is qualified for the lower federal tax rate of 11 percent, and the red line indicates the average federal corporate income tax rate (y-axis on the right) after the small business deductions, assuming that the firm's taxable income is 500,000 CAD. For example, if a firm's taxable capital is below 10 million CAD, its entire 500,000 CAD of taxable income is subject to the reduced tax rate of 11 percent. If the firm's taxable capital is 12.5 million CAD, then only its first 250,000 CAD of taxable income is qualified for the reduced rate of 11 percent and the remainder is subject to the general rate of 15 percent, which results in an average tax rate of 13 percent. If the firm's taxable capital exceeds 15 million CAD, then it is not eligible for small businesses deductions and its entire taxable income is subject to the general tax rate of 15 percent. Panel (b) shows the probability distribution function (PDF) and cumulative distribution function (CDF) of small business deduction claimants in our sample across total assets. About 99 percent of firms that claimed small business deductions had total assets below 10 million CAD in 2013.

Figure 2: Small Business Tax Rates in Quebec, British Columbia, and Ontario



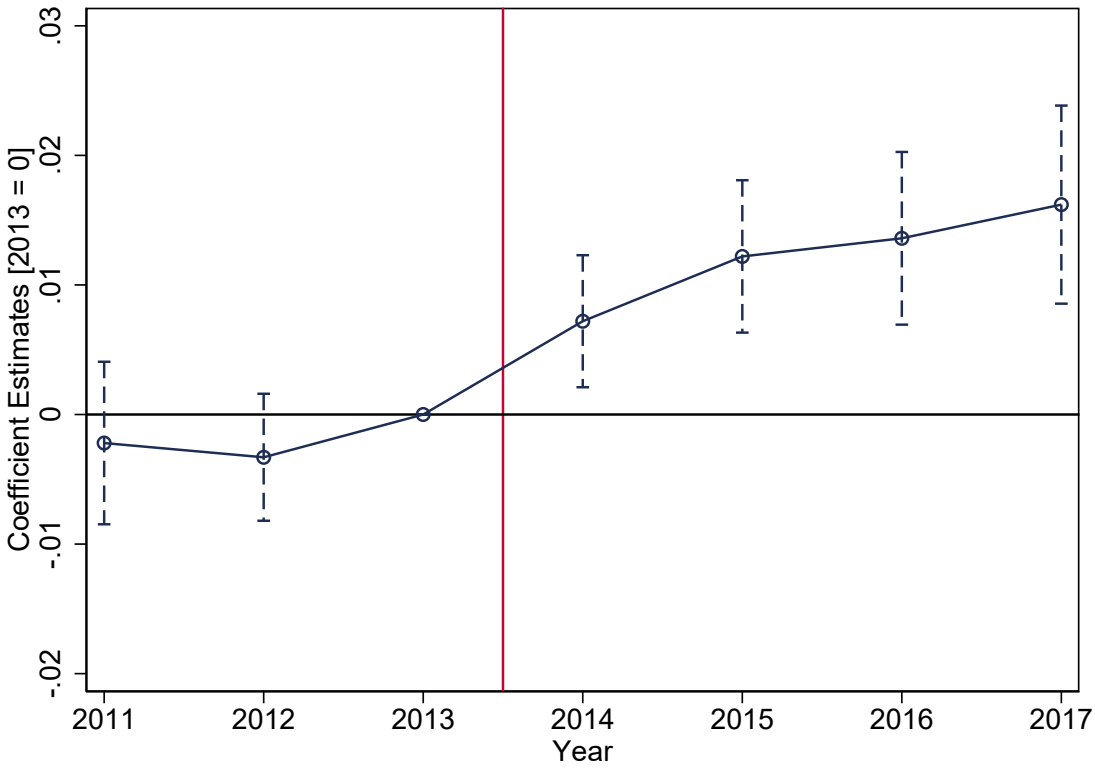
Notes: This figure shows the provincial corporate income tax rates on small businesses in Quebec, British Columbia (B.C.), and Ontario, from 2011 to 2017. For Canadian-Controlled Private Corporations (CCPCs) with taxable capital below 10 million CAD, only the first 500,000 CAD of taxable income is eligible for these small business tax rates, which are substantially lower than the general tax rates. The CCPCs with taxable capital between 10 million CAD and 15 million CAD are also eligible for these tax rates, with lower qualified taxable income (See Section 2 and Appendix A for details). The small business tax rate for the manufacturing and processing (M&P) sector in Quebec was reduced from 8 percent to 6 percent in 2014, and was further reduced to 4 percent in 2015. For British Columbia, Ontario, and Quebec non-M&P sectors, the small business tax rates remained constant from 2011 to 2017 (except for British Columbia, which reduced its rate from 2.5 percent to 2 percent in 2017).

Figure 3: Changes in Average Effective Tax Rates, Taxes Paid, and Taxable Income



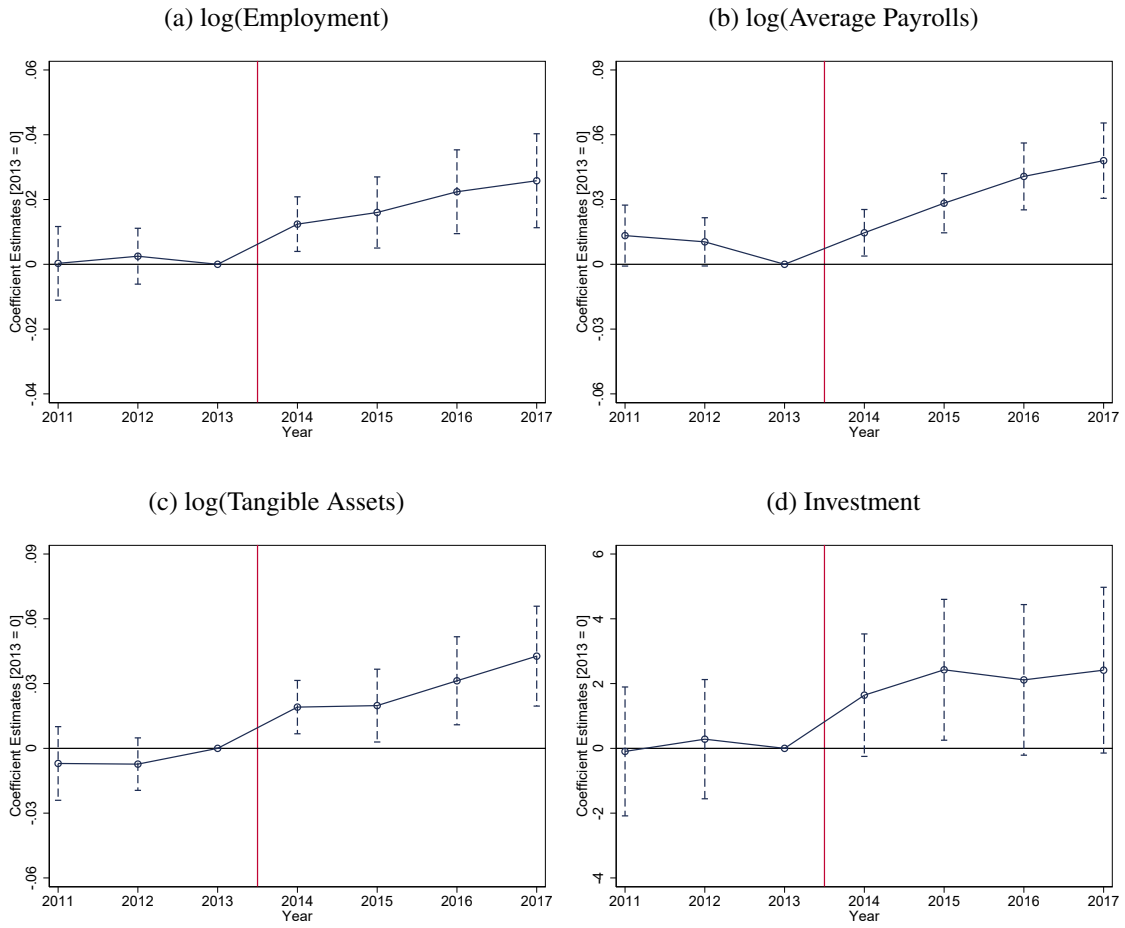
Notes: Panels (a) – (d) show the coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' provincial income tax rates, federal income tax rates, provincial income taxes paid, and taxable income, respectively. Provincial and federal income tax rates are the firm's provincial and federal taxes (reported as Part I tax payable), respectively, scaled by taxable income. Provincial income taxes paid and taxable income are measured in thousand CAD. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals.

Figure 4: Tax Effects on Worker-level Earnings



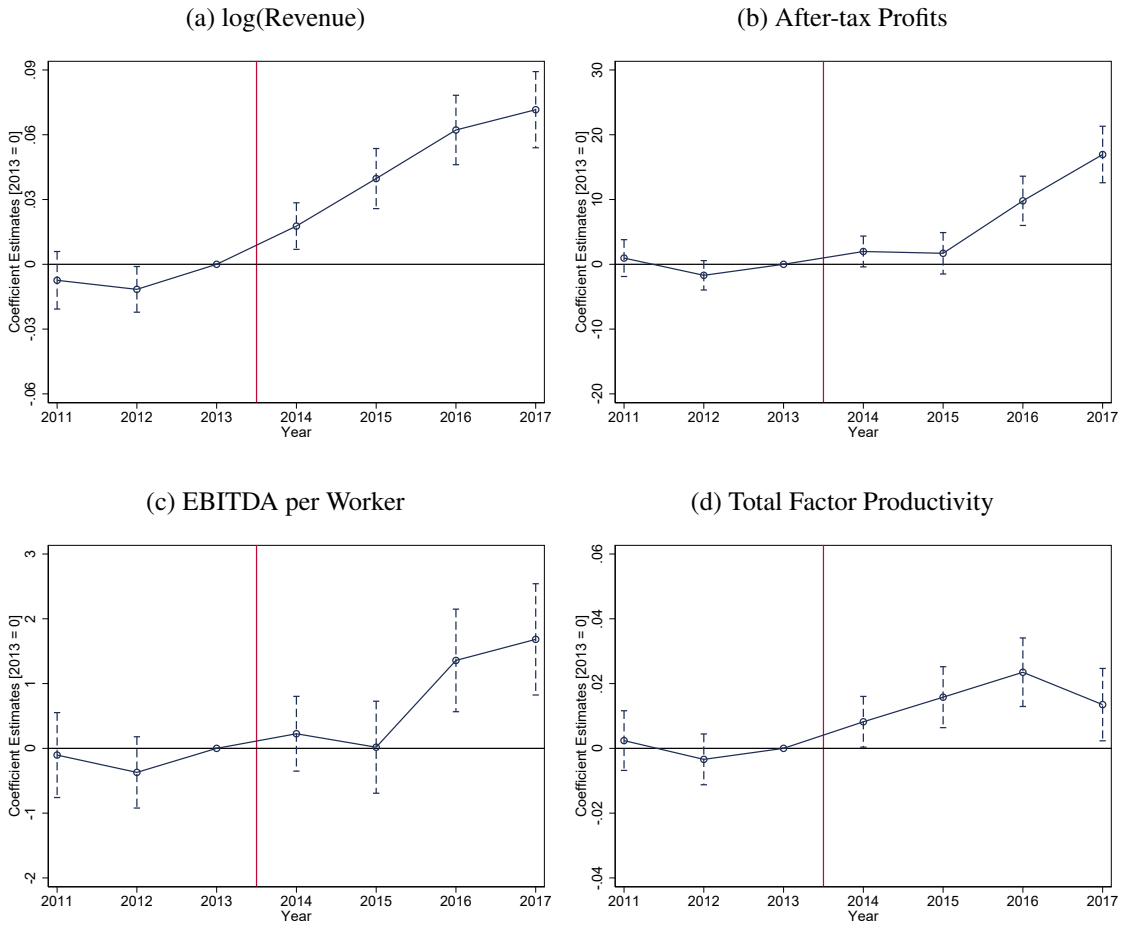
Notes: This figure shows the coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (3) for workers' log(annual earnings). The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals. We exclude part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who were not continuously employed by the same firm during 2011 – 2013. See Appendix B.1 for the result that incorporates these excluded workers.

Figure 5: Tax Effects on Employment, Payrolls, and Capital Stock



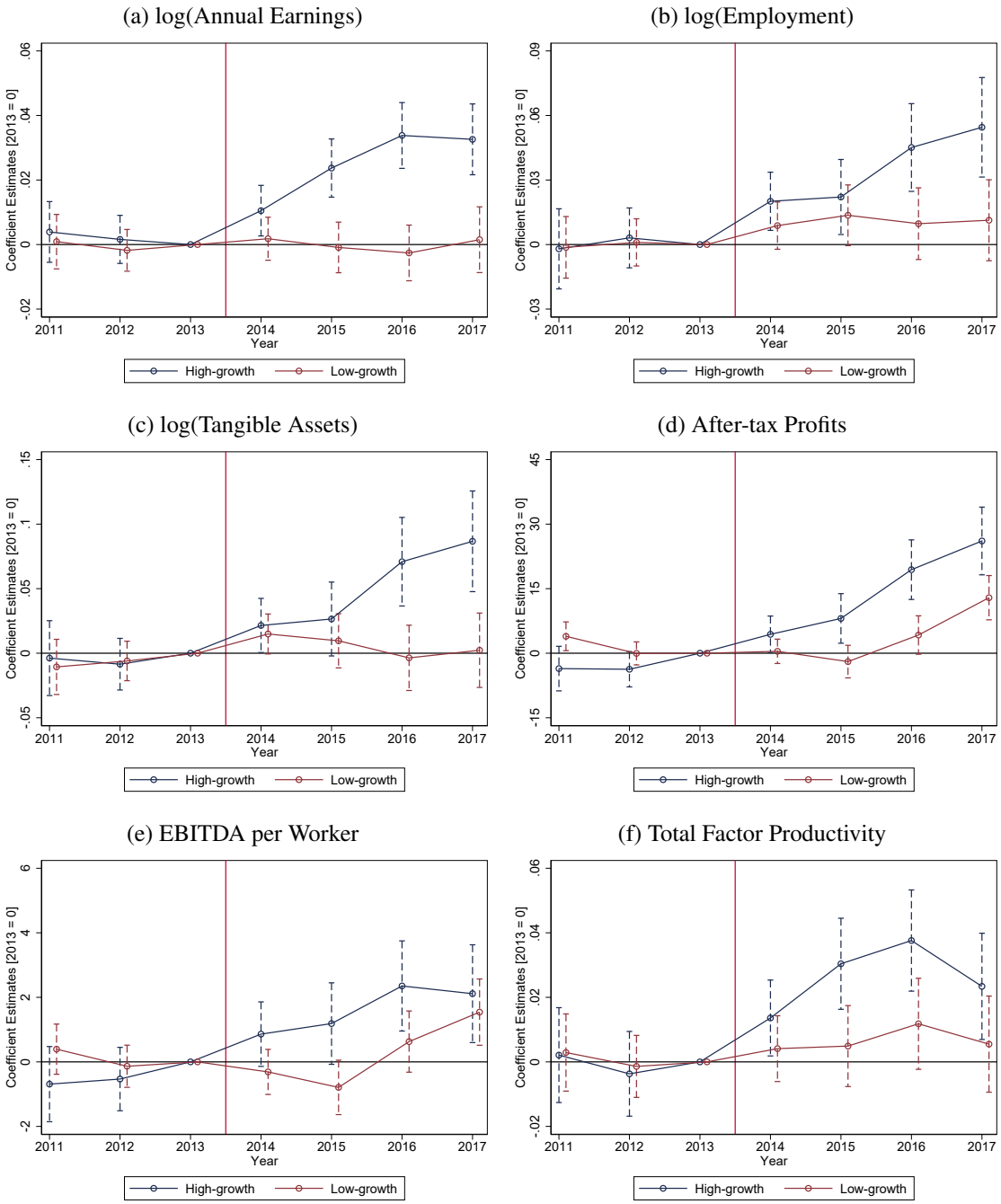
Notes: Panels (a) – (d) show the coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' log(employment), log(average payrolls), log(tangible assets), and investment, respectively. The book value of tangible assets, net of depreciation, represents a firm's capital stock. Investment is the sum of expenditures in different asset classes from a dataset on capital cost allowance for depreciated capital and is measured in thousand CAD. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals.

Figure 6: Tax Effects on Sales, After-tax Profits, and Productivity



Notes: Panels (a) – (d) show the coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' log(revenue), after-tax profits, EBITDA per worker, and total factor productivity (TFP), respectively. After-tax profits are defined as firms' net income after taxes and extraordinary items. EBITDA is earnings before interest, taxes, depreciation, and amortization. TFP is estimated using the method of Ackerberg et al. (2015) at the 4-digit NAICS industry level. After-tax profits and EBITDA per worker are measured in thousand CAD. TFP is measured in log points. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals.

Figure 7: Tax Effects by High-growth versus Low-growth Industries



Notes: Panel (a) shows the coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (3) for workers' log(annual earnings). We exclude part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who were not continuously employed by the same firm during 2011 – 2013. Panels (b) – (f) show the coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' log(employment), log(tangible assets), after-tax profits, EBITDA per worker, and total factor productivity (TFP), respectively. The book value of tangible assets, net of depreciation, represents a firm's capital stock. After-tax profits are firms' net income after taxes and extraordinary items. EBITDA is earnings before interest, taxes, depreciation, and amortization. TFP is estimated using the method of Ackerberg et al. (2015) at the 4-digit NAICS industry level. After-tax profits and EBITDA per worker are measured in thousand CAD. TFP is measured in log points. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals. In each panel, the dark navy line indicates estimates for firms (or workers) in high-growth industries, and the red line indicates estimates for firms (or workers) in low-growth industries.

Table 1: Summary Statistics for Firms

	Quebec		BC/Ontario	
	(1) M&P	(2) Non-M&P	(3) M&P	(4) Non-M&P
Panel A. Firm Characteristics				
Tangible Assets ('000)	790.6	363.1	709.8	314.0
Total Revenue ('000)	1649.6	1264.3	1582.8	1176.8
Employment	11.4	8.2	10.0	7.6
Average Payroll ('000)	35.6	21.6	36.2	21.4
EBITDA per Worker ('000)	7.4	9.9	6.6	8.6
After-tax Profits ('000)	51.8	35.4	45.3	29.6
Taxable Income ('000)	74.1	47.5	63.5	39.4
Provincial Income Tax Rates	0.077	0.079	0.041	0.041
Federal Income Tax Rates	0.080	0.087	0.082	0.089
Firm Age	14.2	12.0	14.1	11.2
Panel B. Sectors				
Mining		0.002		0.004
Construction		0.250		0.223
Wholesale		0.002		0.004
Retail		0.192		0.181
Transportation		0.095		0.110
Information		0.021		0.025
Other Services		0.341		0.356
Observations	28,740	274,110	56,075	595,425
Firms	10,205	100,245	20,165	222,825

Notes: This table reports summary statistics for firms in our analysis sample. The sample consists of CCPCs with total assets below 10 million CAD and located in Quebec, British Columbia (BC), and Ontario. All of the variables are measured as averages of years 2011 – 2013. Panel A reports firm characteristics by province and by the M&P sector versus non-M&P sectors. The book value of tangible assets, net of depreciation, represents a firm's capital stock. EBITDA is earnings before interest, taxes, depreciation, and amortization. After-tax profits are firms' net income after taxes and extraordinary items. Provincial and federal income tax rates are the firm's provincial and federal taxes (reported as Part I tax payable), respectively, scaled by taxable income. Panel B reports the distribution of firms across major 2-digit NAICS industries. Other services include administrative support, education, arts and entertainment, accommodation and food services.

Table 2: Summary Statistics for Workers

	Quebec		BC/Ontario	
	(1)	(2)	(3)	(4)
	M&P	Non-M&P	M&P	Non-M&P
Panel A. Worker Characteristics				
Annual Earnings ('000)	38.3	35.1	46.3	39.9
Age	45.7	43.3	46.6	43.7
Male	0.689	0.627	0.704	0.607
Panel B. Sectors				
High-tech	0.109		0.122	
Low-tech	0.891		0.878	
Mining		0.002		0.003
Construction		0.202		0.207
Wholesale		0.002		0.003
Retail		0.252		0.218
Transportation		0.071		0.072
Information		0.016		0.018
Other Services		0.351		0.373
Observations	192,755	1,007,210	320,735	1,883,400
Workers	64,250	335,740	106,915	627,800

Notes: This table reports summary statistics for workers in our analysis sample. The sample consists of workers at CCPCs with total assets below 10 million CAD and located in Quebec, British Columbia (BC), and Ontario. All of the variables are measured as averages of years 2011 – 2013. Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. Panel A reports worker characteristics by province and by the M&P sector versus non-M&P sectors. Panel B reports the distribution of workers across major 2-digit NAICS industries. Other services include administrative support, education, arts and entertainment, accommodation and food services.

Table 3: Triple-differences Estimates on Effective Tax Rates, Taxes Paid, and Taxable Income

	(1) Provincial Income Tax Rates	(2) Federal Income Tax Rates	(3) Provincial Income Taxes Paid	(4) Taxable Income
Post × MP × QC	-0.0139***	0.0001	-3.0330***	5.1606***
	(0.0009)	(0.0006)	(0.2335)	(1.3170)
Mean Dep. Var.	0.077	0.080	12.9	74.1
Observations	1,165,415	1,274,865	1,165,415	2,106,660
Firms (Treated)	7,645	7,970	7,645	10,205
Firms (Control)	244,595	264,835	244,595	343,235
Adjusted R^2	0.363	0.474	0.674	0.724

Notes: Columns (1) – (4) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for firms' provincial income tax rates, federal income tax rates, provincial income taxes paid, and taxable income, respectively. Provincial and federal income tax rates are the firm's provincial and federal taxes (reported as Part I tax payable), respectively, scaled by taxable income. The mean for each dependent variable is based on years 2011 – 2013, measured in level for columns (1) – (2) and in thousand CAD for columns (3) – (4). All specifications include firm fixed effects and year fixed effects. Standard errors are clustered at the firm level and reported in parentheses.

Table 4: Triple-differences Estimates on Worker-level Earnings and Job Transitions

	(1) log(Annual Earnings)	(2) Job Transition	(3) log(Annual Earnings) for Stayers
Post × MP × QC	0.0134***	-0.0011	0.0137***
	(0.0026)	(0.0013)	(0.0026)
Mean Dep. Var.	38.3	0.040	38.6
Observations	6,692,730	6,692,730	6,211,970
Workers (Treated)	64,250	64,250	61,230
Workers (Control)	1,070,455	1,070,455	1,010,275
Adjusted R^2	0.812	0.080	0.829

Notes: Columns (1) – (2) report coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings) and job transition probabilities, respectively. Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. Column (3) reports the estimate on log(annual earnings) for workers who stayed with their pre-reform employers until after 2014 ("stayers") and are tracked until they move to other firms. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (2) and in thousand CAD for columns (1) and (3). All specifications include worker fixed effects and year fixed effects. Standard errors are two-way clustered at the firm level and worker level, and reported in parentheses.

Table 5: Triple-differences Estimates on Employment, Payrolls, and Capital Stock

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) Investment
Post × MP × QC	0.0174***	0.0234***	0.0317***	2.0361***
	(0.0052)	(0.0063)	(0.0084)	(0.7206)
Mean Dep. Var.	11.4	35.6	790.6	40.9
Observations	2,106,660	2,106,660	2,011,725	2,111,875
Firms (Treated)	10,205	10,205	10,165	10,160
Firms (Control)	343,235	343,235	339,825	340,285
Adjusted R^2	0.917	0.888	0.938	0.449

Notes: Columns (1) – (4) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for firms' log(employment), log(average payrolls), log(tangible assets), and investment, respectively. The book value of tangible assets, net of depreciation, represents a firm's capital stock. Investment is the sum of expenditures in different asset classes from a dataset on capital cost allowance for depreciated capital. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1) and in thousand CAD for columns (2) – (4). All specifications include firm fixed effects and year fixed effects. Standard errors are clustered at the firm level and reported in parentheses.

Table 6: Triple-differences Estimates on Sales, After-tax Profits, and Productivity

	(1) log(Revenue)	(2) After-tax Profits	(3) EBITDA per Worker	(4) Total Factor Productivity
Post × MP × QC	0.0517***	7.2627***	0.8895***	0.0150***
	(0.0062)	(1.3717)	(0.2707)	(0.0039)
Mean Dep. Var.	1649.6	51.8	7.4	0.335
Observations	2,106,660	2,106,660	2,106,660	1,864,920
Firms (Treated)	10,205	10,205	10,205	9,950
Firms (Control)	343,235	343,235	343,235	318,975
Adjusted R^2	0.916	0.629	0.581	0.994

Notes: Columns (1) – (4) report coefficient estimates on *Post* × *MP* × *QC* in equation (2) for firms' log(revenue), after-tax profits, EBITDA per worker, and total factor productivity (TFP), respectively. After-tax profits are defined as firms' net income after taxes and extraordinary items. EBITDA is earnings before interest, taxes, depreciation, and amortization. TFP is estimated using the method of Ackerberg et al. (2015) at the 4-digit NAICS industry level. The mean for each dependent variable is based on years 2011 – 2013, measured in thousand CAD for columns (1) – (3), and in log points in column (4). All specifications include firm fixed effects and year fixed effects. Standard errors are clustered at the firm level and reported in parentheses.

Table 7: Tax Effects by High-growth versus Low-growth Industries

	(1) log(Annual Earnings)	(2) log(Employment)	(3) log(Tangible Assets)
Post × MP × QC (Low-growth)	-0.0001	0.0104	0.0116
	(0.0033)	(0.0067)	(0.0104)
Post × MP × QC (High-growth)	0.0216***	0.0336***	0.0528***
	(0.0040)	(0.0084)	(0.0143)
Difference	0.0217***	0.0232**	0.0412**
	(0.0048)	(0.0107)	(0.0177)
Mean Dep. Var. (Low-growth)	37.3	11.2	726.8
Mean Dep. Var. (High-growth)	41.4	11.9	910.7
Observations	6,692,730	2,106,660	2,011,725
Workers/Firms (Treated)	64,250	10,205	10,165
Workers/Firms (Control)	1,070,455	343,235	339,825
Adjusted R^2	0.813	0.917	0.938
	(4) After-tax Profits	(5) EBITDA per Worker	(6) Total Factor Productivity
Post × MP × QC (Low-growth)	2.1759	0.0895	0.0057
	(1.6183)	(0.3207)	(0.0052)
Post × MP × QC (High-growth)	16.0480***	1.9388***	0.0261***
	(2.4845)	(0.4820)	(0.0058)
Difference	13.8721***	1.8493***	0.0204***
	(2.9651)	(0.5790)	(0.0078)
Mean Dep. Var. (Low-growth)	43.2	6.2	0.160
Mean Dep. Var. (High-growth)	68.0	9.4	0.724
Observations	2,106,660	2,106,660	1,864,920
Firms (Treated)	10,205	10,205	9,805
Firms (Control)	343,235	343,235	310,025
Adjusted R^2	0.629	0.581	0.994

Notes: Column (1) reports coefficient estimates on *Post* × *MP* × *QC* in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. Column (2) – (6) report coefficient estimates on *Post* × *MP* × *QC* in equation (2) for firms' log(employment), log(tangible assets), after-tax profits, EBITDA per worker, and total factor productivity (TFP), respectively. The book value of tangible assets, net of depreciation, represents a firm's capital stock. After-tax profits are firms' net income after taxes and extraordinary items. EBITDA is earnings before interest, taxes, depreciation, and amortization. TFP is estimated using the method of Ackerberg et al. (2015) at the 4-digit NAICS industry level. The mean for each dependent variable is based on years 2011 – 2013, in thousand CAD for columns (1) and (3) – (5), measured in level for columns (2), and in log points for column (6). Column (1) includes worker fixed effects and year fixed effects. Columns (2) – (6) include firm fixed effects and year fixed effects. For each outcome, we estimate equation (2) for firms (or equation (4) for workers) in 4-digit NAICS industries with pre-reform growth rates below and above the sample median, and compare the two coefficient estimates in a single regression. Growth rates are defined by average growth rates of firms' total assets. Standard errors are two-way clustered at the firm level and worker level for column (1), clustered at the firm level for columns (2) – (6), and reported in parentheses.

Table 8: Pass-through Estimates

	(1) log(Annual Earnings)	(2) log(Annual Earnings) of Owner Workers	(3) log(Annual Earnings) of Non-owner Workers
log(Average Surplus)	0.3531***	0.2487*	0.4645***
	(0.0522)	(0.1365)	(0.0615)
Observations	1,505,810	909,475	1,170,460
Firms	255,500	157,395	209,695
F-statistic	121.6	27.8	111.6

Notes: Columns (1) – (3) report coefficient estimates on π in equation (5) that represent pass-through of firms' log(average surplus) on log(annual earnings) aggregated from all workers, workers with ownership, and workers without ownership, respectively. Firms' surplus is instrumented by $Post \times MP \times QC$ following Kline et al. (2019). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. Column (1) reports the number of firms with at least one worker matched to the main worker sample. Columns (2) – (3) report the number of firms with at least one owner-worker or with at least one non-owner worker, respectively, matched to the main worker sample. All specifications include firm fixed effects and year fixed effects. Standard errors are clustered at the firm level and reported in parentheses.

ONLINE APPENDIX:

Corporate Tax Cuts and Worker Earnings: Evidence from Small Businesses

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A Additional Institutional Details and Descriptive Statistics

In Appendix A, we provide further descriptive statistics from our data and institutional details regarding the corporate income tax system in Canada.

Figure A.1 describes the share of small business deduction (SBD) claimants, conditional on being a Canadian-Controlled Private Corporation (CCPC), across years for the treated group (M&P in Quebec) and the control group separately. The share of SBD claimants is roughly the same between these two groups, both before and after the reform. Note that a small firm may not claim any small business deductions in a given year depending on its taxable income.

Figure A.2 shows the share of new entrants and those that exit the sample across years for the treated and control groups separately. From 2011 to 2017, there has been a modest decline in firm entry rates and a slight increase in exit rates. However, the treated and control groups experience parallel trends in firm entry and exit rates both before and after the reform.

Figure A.3 shows the distribution of M&P firms across the top twenty industries (4-digit NAICS) in our sample, separately for the treated province (Quebec) and control provinces (British Columbia and Ontario). For the majority of these industries, the share of M&P firms is similar between the treated province and control provinces. To account for industries with non-trivial differences in shares of M&P firms (3371, 3152, and 3335) potentially confounding our results, we additionally control for industry by year fixed effects, and also re-weight industries to make the distribution of M&P firms more comparable between the treated province and control provinces (see Appendix B.1 for details).

Table A.1 describes federal and provincial corporate income tax rates from 2009 to 2017. Alberta, New Brunswick, Nova Scotia, Newfoundland and Labrador, Prince Edward Island, and Yukon experience non-trivial changes in the general or small business tax rates between 2011 and 2017. By contrast, the general and small business tax rates in British Columbia, and Ontario remain stable between 2011 and 2017. In 2014 and 2015, Quebec experienced one of the largest tax cuts for small businesses operating in the M&P sector. In Appendix B.1, we show results including previously excluded provinces without any change in corporate tax rates between 2011 and 2017 (Manitoba, Northwest Territories, Nunavut, and Saskatchewan) as part of the control provinces.

Table A.2 describes the share of firms, along with their revenue share, asset share, and employment share, by each of the provinces and territories in Canada. Quebec, British Columbia and Ontario jointly make up 73.6 percent of all firms, 71.4 percent of total assets, 73.5 percent of total revenue, and 75.2 percent of total employment. By including these three provinces, our analysis sample provides a good representation of the entire Canadian economy.

Table A.3 shows lists of the top five high-growth and low-growth industries, ranked by employment, in our sample. Table A.4 reports summary statistics for firms and workers, separately by provinces and by high-growth versus low-growth industries. High-growth and low-growth industries are similar in terms of assets, average payroll, and firm age. However, firms in high-growth industries have larger revenue, EBITDA per worker, after-tax profits, and taxable income compared to those in low-growth industries, implying that high-growth firms are more productive.

Lastly, we discuss additional tax benefits specifically designed for small businesses in the M&P sector in Quebec, and show additional tests to confirm that our results are unlikely driven by these extraneous tax benefits. First, small firms in the M&P sector in Quebec are eligible for additional tax deductions for transportation costs if their locations are remote from major urban centers. For example, small firms located in the "intermediate zone" are eligible to deduct 2 percent of their gross income, with a 100,000 CAD cap, small firms located in the "remote zone" are eligible to deduct 4 percent of their gross income, with a 250,000 CAD cap, and small firms located in the "special remote zone" are eligible to deduct 6 percent of their gross income, with no cap.[22] In short, the further away a firm is located from major urban centers, the higher tax benefit the firm gets. We test whether treated firms eligible for larger additional tax deductions (located in either the "remote zone" or the "special remote zone") show greater responses in our key outcomes relative to treated firms ineligible or eligible for smaller additional tax deductions (located in either the major urban centers or the "intermediate zone"). Table A.5 shows that the tax effects on these main outcomes are neither economically nor statistically different from zero between these two groups, implying that this additional tax benefit is unlikely the main contributor to our findings.

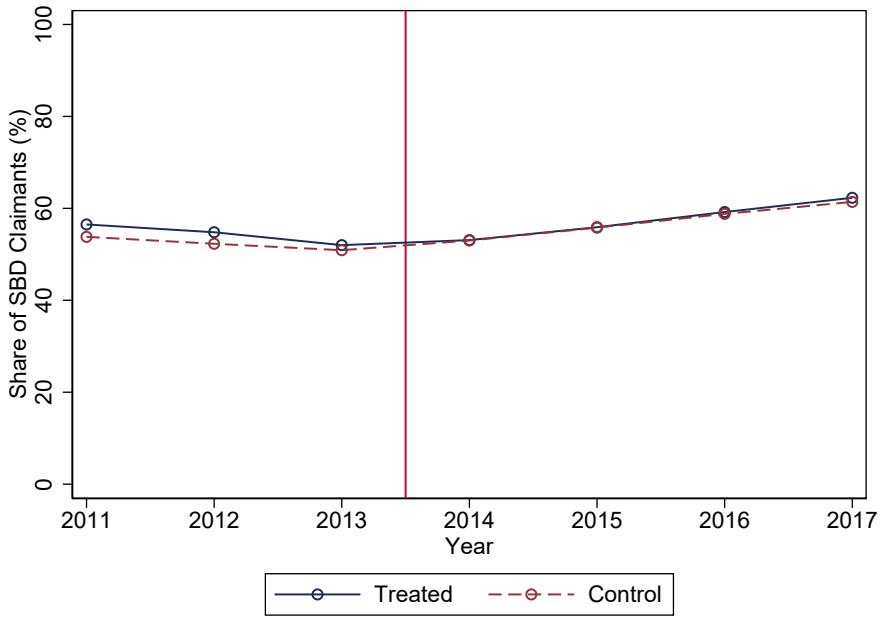
Second, small firms in the M&P sector in Quebec are eligible for refundable tax credits for acquiring or making an addition to a building. The rate of the tax credit (up to 50 percent) is determined by where the building is located and the paid-up capital of the eligible firm for the taxation year. The expenditures on a building are capped at 150,000 CAD cumulatively. To test whether this additional tax benefit affected our main results, we directly check whether treated firms' investment in buildings increased after the reform. Column (1) of Table A.6 shows that treated firms' investment in buildings does not change much after the reform.

Finally, small firms in the M&P sector in Quebec are eligible for refundable tax credits for integrating (i.e., buying a qualified management software) information technologies (IT) in their

[22]The major urban centers include the Montréal, Québec and Gatineau census metropolitan areas (CMAs). The intermediate zone is defined as the territory, delimited by the RCMs, within a radius of 100 kilometres of Gatineau or Québec or within a radius of 150 kilometres of Montréal. The remote zone is defined as the territory, delimited by the RCMs, beyond a radius of 100 kilometres of Gatineau or Québec or beyond a radius of 150 kilometres of Montréal. The special remote zone is made up of territories more isolated from the rest of Québec, i.e. the municipality of L'Île-d'Anticosti, the agglomeration of Îles-de-la-Madeleine, the Golfe-du-Saint-Laurent MRC (Côte-Nord) and the Kativik Regional Government (Nord-du-Québec).

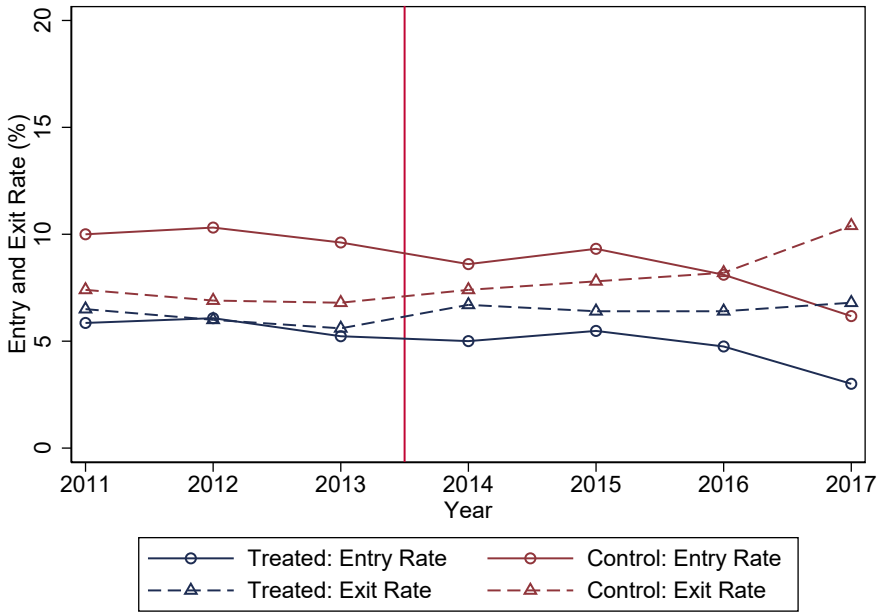
business processes. The total amount of this tax credit is limited to 62,500 CAD. While we observe investment in physical capital assets (i.e., computer hardware and associated system software), we do not observe IT-related expenditures in our data. To test whether this additional tax benefit affected our key outcomes, we check whether investment tax credits, scaled by taxable income, increased after the reform. Since there are no more additional tax credits designed for small M&P firms besides the one for buildings and the one for IT integration, if the rise in additional tax credits is what drives our main findings, we should expect to see a disproportional increase in treated firms' investment tax credits relative to their taxable income after the reform. Column (2) of Table A.6 shows that treated firms' investment tax credits relative to their taxable income stay roughly the same after the reform. In summary, while there exist three main additional tax benefits specifically designed for small firms in the M&P sector in Quebec, we provide suggestive evidence that these extraneous benefits are not the main driver behind our findings. Furthermore, we interpret our results scaled by changes in average effective tax rates, which account for other potential changes in corporate tax rates besides the statutory tax rate cuts, such as changes in investment tax credits or tax deductions that may have coincided with the reform.

Figure A.1: Share of Small Business Deduction Claimants



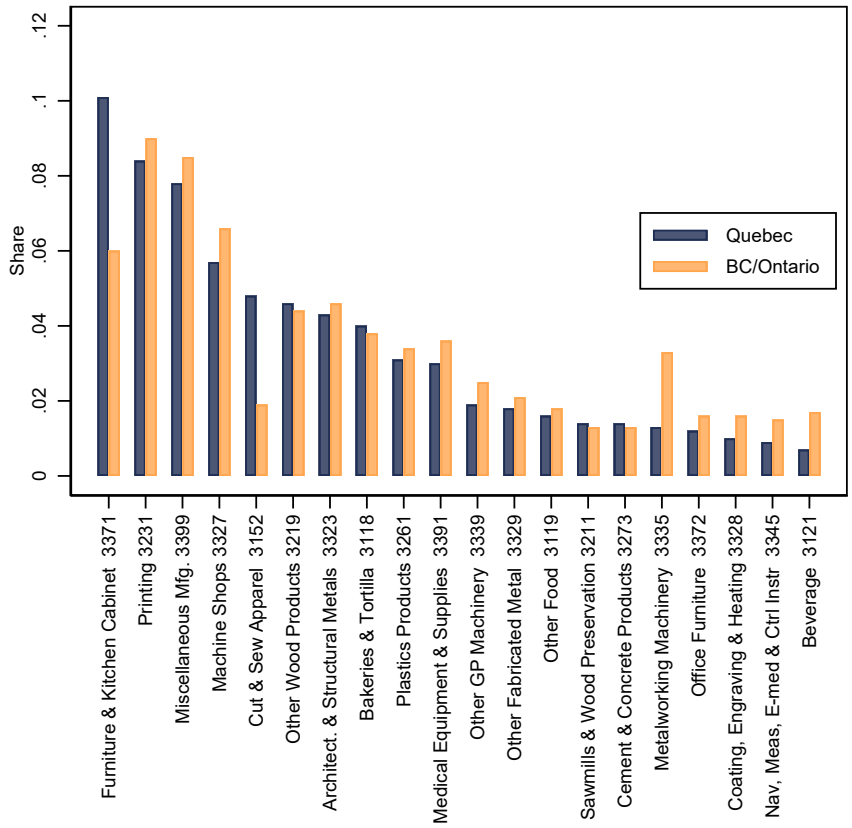
Notes: This figure shows the share of firms claiming for small business deductions among CCPCs in Quebec, British Columbia, and Ontario, for each year during 2011 – 2017. Note that a small firm (based on its taxable capital) may not claim any small business deductions in a particular year depending on its taxable income. The dark navy line indicates treated firms in Quebec and the M&P sector, and the red line indicates control firms in non-M&P sectors or in British Columbia (BC) or Ontario.

Figure A.2: Firm Entry and Exit



Notes: This figure shows the share of firms entering or exiting our analysis sample in each year during 2011–2017. The dark navy lines indicate treated firms in the M&P sector in Quebec, and the red lines indicate control firms in non-M&P sectors or in British Columbia (BC) or Ontario. The solid lines indicate entry rates and the dashed lines indicate exit rates.

Figure A.3: Distribution of 4-digit NAICS Industries



Notes: This figure shows the shares of firms in top 20 4-digit NAICS industries in the M&P sector, for Quebec versus British Columbia (BC) and Ontario, respectively, during 2011 – 2013. The dark blue bars represent Quebec, and the orange bars represent BC and Ontario.

Table A.1: Corporate Income Tax Rates

Federal/ Province	Types	2009	2010	2011	2012	2013	2014	2015	2016	2017
Federal	General / Investment	19	18	16.5	15	15	15	15	15	15
	M&P	19	18	16.5	15	15	15	15	15	15
	Small Businesses (M&P)	11	11	11	11	11	11	11	10.5	10.5
	Small Businesses (non M&P)	11	11	11	11	11	11	11	10.5	10.5
Quebec	General / Investment	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.8
	M&P	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.8
	Small Businesses (M&P)	8	8	8	8	8	6	4	4	4
	Small Businesses (non M&P)	8	8	8	8	8	8	8	8	8
British Columbia	General / Investment	11	10.5	10	10	11	11	11	11	11
	M&P	11	10.5	10	10	11	11	11	11	11
	Small Businesses (M&P)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2
	Small Businesses (non M&P)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2
Ontario	General / Investment	14	12	11.5	11.5	11.5	11.5	11.5	11.5	11.5
	M&P	12	10	10	10	10	10	10	10	10
	Small Businesses (M&P)	5.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
	Small Businesses (non M&P)	5.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5

Table A.1: Corporate Income Tax Rates (Continued)

Federal/ Province	Types	2009	2010	2011	2012	2013	2014	2015	2016	2017
Alberta	General / Investment	10	10	10	10	10	10	12	12	12
	M&P	10	10	10	10	10	10	12	12	12
	Small Businesses (M&P)	3	3	3	3	3	3	3	3	2
	Small Businesses (non M&P)	3	3	3	3	3	3	3	3	2
Manitoba	General / Investment	12	12	12	12	12	12	12	12	12
	M&P	12	12	12	12	12	12	12	12	12
	Small Businesses (M&P)	1	0	0	0	0	0	0	0	0
	Small Businesses (non M&P)	1	0	0	0	0	0	0	0	0
New Brunswick	General / Investment	12	11	10	10	12	12	12	14	14
	M&P	12	11	10	10	12	12	12	14	14
	Small Businesses (M&P)	5	5	5	4.5	4.5	4.5	4	3.5	3
	Small Businesses (non M&P)	5	5	5	4.5	4.5	4.5	4	3.5	3
Nova Scotia	General / Investment	16	16	16	16	16	16	16	16	16
	M&P	16	16	16	16	16	16	16	16	16
	Small Businesses (M&P)	5	5	4.5	4	3.5	3	3	3	3
	Small Businesses (non M&P)	5	5	4.5	4	3.5	3	3	3	3
Newfoundland and Labrador	General / Investment	14	14	14	14	14	14	14	15	15
	M&P	5	5	5	5	5	5	5	15	15
	Small Businesses (M&P)	5	4	4	4	4	3	3	3	3
	Small Businesses (non M&P)	5	4	4	4	4	3	3	3	3

Table A.1: Corporate Income Tax Rates (Continued)

Federal/ Province	Types	2009	2010	2011	2012	2013	2014	2015	2016	2017
Northwest Territories	General / Investment	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
	M&P	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
	Small Businesses (M&P)	4	4	4	4	4	4	4	4	4
	Small Businesses (non M&P)	4	4	4	4	4	4	4	4	4
Nunavut	General / Investment	12	12	12	12	12	12	12	12	12
	M&P	12	12	12	12	12	12	12	12	12
	Small Businesses (M&P)	4	4	4	4	4	4	4	4	4
	Small Businesses (non M&P)	4	4	4	4	4	4	4	4	4
Prince Edward Island	General / Investment	16	16	16	16	16	16	16	16	16
	M&P	16	16	16	16	16	16	16	16	16
	Small Businesses (M&P)	2.1	1	1	1	4.5	4.5	4.5	4.5	4.5
	Small Businesses (non M&P)	2.1	1	1	1	4.5	4.5	4.5	4.5	4.5
Saskatchewan	General / Investment	12	12	12	12	12	12	12	12	11.5
	M&P	10	10	10	10	10	10	10	10	9.5
	Small Businesses (M&P)	4.5	4.5	2	2	2	2	2	2	2
	Small Businesses (non M&P)	4.5	4.5	2	2	2	2	2	2	2
Yukon	General / Investment	15	15	15	15	15	15	15	15	12
	M&P	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Small Businesses (M&P)	4	4	4	2.5	2.5	1.5	1.5	1.5	1.5
	Small Businesses (non M&P)	4	4	4	4	4	3	3	3	2

Table A.2: Distribution of Firms across Provinces

Provinces and Territories	(1) Firm Share	(2) Assets Share	(3) Revenue Share	(4) Employment Share
Quebec	0.230	0.240	0.243	0.251
Ontario	0.357	0.332	0.359	0.358
British Columbia	0.148	0.143	0.133	0.143
Subtotal	0.736	0.714	0.735	0.752
Alberta	0.153	0.158	0.145	0.127
Manitoba	0.027	0.031	0.029	0.032
New Brunswick	0.018	0.018	0.018	0.019
Newfoundland and Labrador	0.013	0.015	0.014	0.013
Nova Scotia	0.019	0.019	0.021	0.022
Prince Edward Island	0.004	0.004	0.004	0.004
Saskatchewan	0.029	0.036	0.031	0.028
Northwest Territories	0.001	0.002	0.002	0.001
Nunavut	0.000	0.001	0.000	0.000
Yukon	0.001	0.002	0.001	0.001
Total	1.000	1.000	1.000	1.000

Notes: This table reports the distribution of firms in Canada across provinces and territories in 2013. Together, Quebec, British Columbia (BC) and Ontario make up about 75 percent of firm counts, total assets, total revenue, and total employment.

Table A.3: Examples of High-growth and Low-growth Industries

High-growth industries	
Top 5 by employment, within M&P sector	
3327	Machine shops, turned product, and screw, nut and bolt manufacturing
3261	Plastic product manufacturing
3339	Other general-purpose machinery manufacturing
3335	Metalworking machinery manufacturing
3329	Other fabricated metal product manufacturing
Top 5 by employment, within non-M&P sectors	
2382	Building equipment contractors
4461	Health and personal care stores
5617	Services to buildings and dwellings
2361	Residential building construction
2383	Building finishing contractors
Low-growth industries	
Top 5 by employment, within M&P sector	
3231	Printing and related support activities
3371	Household and institutional furniture and kitchen cabinet manufacturing
3399	Other miscellaneous manufacturing
3323	Architectural and structural metals manufacturing
3219	Other wood product manufacturing
Top 5 by employment, within non-M&P sectors	
7225	Full-service restaurants and limited-service eating places
4451	Grocery stores
8111	Automotive repair and maintenance
2381	Foundation, structure, and building exterior contractors
8121	Personal care services

Notes: This table reports the top five high-growth and low-growth industries, ranked by employment, within the M&P sector and non-M&P sectors, respectively, in our analysis sample.

Table A.4: Summary Statistics by High-growth and Low-growth Industries

	Quebec		BC/Ontario	
	(1) High-growth	(2) Low-growth	(3) High-growth	(4) Low-growth
Panel A. Firm Characteristics				
Tangible Assets ('000)	399.6	409.8	329.5	369.1
Intangible Assets ('000)	11.2	14.4	9.9	21.0
Total Revenue ('000)	1,353.4	1,250.0	1,274.2	1,149.0
Employment	7.0	10.0	6.4	9.1
Average Payroll ('000)	23.6	22.3	23.8	21.6
EBITDA per Worker ('000)	13.1	6.3	11.0	5.9
After-tax Profits ('000)	44.0	30.2	37.1	24.8
Taxable Income ('000)	57.0	43.3	47.6	35.4
Provincial Income Tax Rates	0.082	0.076	0.043	0.042
Federal Income Tax Rates	0.085	0.086	0.088	0.086
Firm Age	12.0	12.5	11.4	11.6
Observations	148,855	153,995	326,155	325,345
Firms	54,500	55,930	122,355	120,615
Panel B. Worker Characteristics				
Annual Earnings ('000)	41.6	30.9	47.7	34.9
Age	44.5	43.1	44.9	43.4
Male	0.737	0.557	0.707	0.547
Observations	530,510	669,455	1,016,630	1,187,505
Workers	176,835	223,155	338,880	395,835

Notes: This table reports summary statistics by province and by high-growth versus low-growth industries within our analysis sample. The sample consists of CCPCs (and their workers) with total assets below 10 million CAD, and located in Quebec, British Columbia (BC), and Ontario. All of the variables are measured in years 2011 – 2013. Panel A reports firm characteristics and Panel B reports worker characteristics. The book value of tangible assets, net of depreciation, represents a firm's capital stock. EBITDA is earnings before interest, taxes, depreciation, and amortization. After-tax profits are firms' net income after taxes and extraordinary items. Provincial and federal income tax rates are the firm's provincial and federal taxes (reported as Part I tax payable), respectively, scaled by taxable income.

Table A.5: Additional Tax Deductions for Transportation Costs

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC (Non-remote)	0.0168***	0.0250***	0.0369***	0.0116***
	(0.0061)	(0.0073)	(0.0102)	(0.0029)
Post × MP × QC (Remote)	0.0233***	0.0276***	0.0335***	0.0173***
	(0.0079)	(0.0096)	(0.0111)	(0.0039)
Difference	0.0065	0.0027	-0.0034	0.0057
	(0.0090)	(0.0109)	(0.0132)	(0.0043)
Mean Dep. Var. (Non-remote)	11.6	36.6	766.9	39.0
Mean Dep. Var. (Remote)	11.1	33.6	840.6	36.5
Observations	2,106,660	2,106,660	2,011,725	6,692,730
Firms/Workers (Treated)	10,205	10,205	10,165	64,250
Firms/Workers (Control)	343,235	343,235	339,825	1,070,455
Adjusted R^2	0.917	0.889	0.938	0.813

Notes: Columns (1) – (3) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1) and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and year fixed effects. Column (4) includes worker fixed effects and year fixed effects. For each outcome, we estimate equations (2) and (4) for firms (or workers) in the M&P sector in remote and special remote zones versus other regions of Quebec, both relative to the baseline control group, and compare the two coefficient estimates in a single regression. Standard errors are clustered at the firm level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table A.6: Investment in Buildings and Investment Tax Credits

	(1) Investment in Buildings	(2) Investment Tax Credits / Taxable Income
Post × MP × QC	-0.0670	-0.0007**
	(0.2831)	(0.0003)
Mean Dep. Var.	5.7	0.012
Observations	2,106,660	2,106,660
Firms (Treated)	10,205	10,205
Firms (Control)	343,235	343,235
Adjusted R^2	0.274	0.560

Notes: Columns (1) – (2) report coefficient estimates on *Post* × *MP* × *QC* in equation (2) for firms' investment in buildings and investment tax credits scaled by taxable income, respectively. The mean for each dependent variable is based on years 2011 – 2013, measured in thousand CAD for column (1) and in level for column (2). All specifications include firm fixed effects and year fixed effects. Standard errors are clustered at the firm level and reported in parentheses.

B Robustness Checks and Internal Validity

In Appendix B, we provide results from robustness tests discussed in Sections 3 and 4.

B.1 Different Specifications

To check whether our results were driven by trends specific to Quebec or the M&P sector, Table B.1 reports coefficient estimates on $Post \cdot MP$ and $Post \cdot QC$ from equations (2) and (4). For example, if the coefficient estimate on $Post \cdot MP$ is positive and larger than our triple-differences coefficient estimate, then it would imply that M&P firms across different provinces expanded after the reform, and M&P firms in Quebec grew a bit more. Similarly, if the coefficient estimate on $Post \cdot QC$ is positive and larger than our triple-differences coefficient estimate, then it would imply that firms in Quebec across different sectors expanded after the reform, and M&P firms in Quebec grew a bit more. By contrast, if the coefficient estimates on $Post \cdot MP$ and $Post \cdot QC$ are non-positive or smaller than our triple-differences estimates, it would suggest that changes in firm and worker outcomes were driven by the tax cuts specific to small M&P firms in Quebec. Table B.1 confirms that all of these difference-in-differences coefficient estimates on our key outcomes are either non-positive or much smaller than our triple-differences estimates.

Furthermore, Figure B.1 shows coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \cdot MP$, separately for firms in Quebec and for firms in the control provinces (British Columbia and Ontario). The dark navy line tracks differences between small M&P firms and small non-M&P firms in Quebec, and the red line tracks the same differences in the control provinces. For employment, average payroll, and capital stock outcomes, the parallel pre-trend between M&P firms and non-M&P firms holds for Quebec. However, for worker earnings, there is a clear downward trend for workers in the M&P sector in both treated and control provinces. Therefore, it is necessary to remove such sector-specific trends using our triple-differences design.

To account for any 4-digit industry specific shock in a given year that might drive our results, we include 4-digit industry by year fixed effects (Figure B.2 and Table B.2). Analogously, we include commuting zone by year fixed effects to absorb any local labor market specific shock in a given year potentially driving our findings (Figure B.3 and Table B.3). Here, we cluster standard errors at the industry by commuting zone level. The results from these robustness tests are quantitatively similar to our main findings.

To further lessen a potential concern that our results are driven by differences in industrial composition in the M&P sector across provinces, we re-weight firms and workers in the M&P sector in British Columbia and Ontario such that they have the same distribution of 4-digit NAICS

industries as the M&P sector in Quebec. Specifically, suppose p_k is the share of observations in the 4-digit NAICS industry k within the M&P sector in Quebec, and $\tilde{p}_k$ is that share within the M&P sector in British Columbia and Ontario. In our estimation, observations in the M&P sector in British Columbia and Ontario are weighted by $\frac{p_k}{\tilde{p}_k}$ and other observations are weighted by one. The results, as shown in Figure B.4 and Table B.4, are qualitatively similar to our main results.

Next, we consider alternative definitions of small businesses in our sample. Figure B.5 and Table B.5 use firms with taxable capital either missing or below 10 million CAD during the pre-reform period. Note that firms are legally required to report their taxable capital only if it is above 10 million CAD, and roughly 99 percent of our sample have missing observations in taxable capital. The results from these robustness tests are qualitatively similar to our main findings.

Furthermore, Figure B.6 and Table B.6 include previously excluded provinces without any change in corporate income tax rates between 2011 and 2017 (Manitoba, Northwest Territories, Nunavut, and Saskatchewan) as part of the control provinces. Figure B.7 and Table B.7 include previously excluded sectors (agriculture, finance, real estate, professional services, and healthcare) as part of the control sectors. Results from including these previously excluded provinces and sectors are similar to our main results.

In the preferred specification of equations (3) and (4), we impose tenure restrictions and drop multiple-job holders or those making below 4,000 CAD in annual earnings to focus on full-time workers with stable jobs. In Figure B.8 and Table B.8, we relax these restrictions and include the previously excluded workers. While this greatly increases the sample size, the estimated effect of the tax cut on workers' earnings is qualitatively similar to (if anything, larger than) our main estimate.

B.2 Placebo Tests

In Figure B.9 and Table B.9, we conduct placebo tests using non-CCPC firms and workers. They are ineligible for small business deductions regardless of their sectors or locations, and therefore, are not directly impacted by the reform. Across all outcomes we study, the estimated coefficients are indistinguishable from zero and noisier due to smaller sample sizes. Thus, our main results are unlikely driven by other contemporaneous shocks.

B.3 Bunching at Taxable Income Threshold of 500,000 CAD

The small business deduction for CCPCs is only applicable for the first 500,000 CAD of taxable income. We examine whether there is any evidence of bunching by CCPCs at the taxable income

threshold of 500,000 CAD. Furthermore, we test whether there was any change in bunching for treated firms, relative to control firms, after the reform.

Panel (a) of Figure B.10 shows the distribution of taxable income for CCPCs in the M&P sector in Quebec (treated group) before and after the reform. We focus on taxable income in the range between 250,000 CAD and 750,000 CAD. Visually, there is little evidence of bunching at the threshold, and no change in the distribution of taxable income after the reform. We observe a similar pattern for non-M&P firms in Quebec in Panel (b). Panels (c) – (f) plot the distribution of taxable income for M&P and non-M&P firms in British Columbia and Ontario. In contrast to the treated group, the share of control firms with taxable income between 470,000 CAD and 505,000 CAD is disproportionately large, suggesting bunching around 500,000 CAD.

To quantify the relative change of bunching between treated and control firms before and after the reform, we estimate the probability of bunching around the threshold following the approach by Saez (2010). Specifically, we estimate equation (2) for the probability that a firm's taxable income falls between 470,000 CAD and 505,000 CAD. Then we re-estimate equation (2) for the probability that a firm's taxable income falls in two neighboring regions – between 440,000 CAD and 470,000 CAD or between 505,000 CAD and 510,000 CAD. The difference between these two estimates indicates the effect of the reform on bunching with regard to the original taxable income distribution. Table B.10 show that the probability of bunching by treated firms, relative to control firms, did not change after the reform, implying that the tax cut did not affect bunching around the taxable income threshold for treated firms, relative to control firms.

Even if the change in tax rates above the threshold is only at the marginal rate, one may expect to see firms bunching at the taxable income cutoff if there is a large difference in the general tax rate and small business tax rate. The main explanation for the lack of bunching for firms in Quebec is that the difference between the general tax rate and small business tax rate had been historically very small, compared to British Columbia and Ontario. For example, from 2009 to 2013, the small business tax rate in British Columbia and Ontario was up to 7 percentage points lower than the general tax rate, while the small business tax rate in Quebec was only 3.9 percentage points lower than the general tax rate. Even after the tax rate cut in 2014 for small M&P firms in Quebec, the lack of bunching at the taxable income threshold persisted, likely because of inertia. For example, Figure B.11 and Table B.11 report a subsample analysis where we focus on treated and control firms and workers just below the taxable income threshold (and above 400,000 CAD). We find almost no impacts of the tax cuts on this subsample of firms and workers close to the threshold.

B.4 Worker Reallocation

We examine whether there was reallocation of workers across firms after the reform, and how much this allocation can explain our results on employment. This analysis implicitly assumes that treated firms and control firms compete in the input market for workers. If most of the responses in treated firms' employment were driven by workers moving from control firms to treated firms, then not only our estimates on employment are biased upward, but our results would have a different welfare implication on the labor market.

Besides workers already employed at treated firms (operating in the M&P sector in Quebec), every worker that gets hired by a treated firm after the reform must come from either (1) control firms (non-M&P firms in Quebec or firms in British Columbia or Ontario), (2) out-of-sample firms eligible for small business deductions (e.g., in other provinces or in excluded sectors), (3) ineligible firms (large firms above 10 million CAD in total assets or non-CCPCs), or (4) non-employment (unemployed, fresh graduates, or new immigrants). Figure B.12, Panels (a), (d), (e), and (f) show the rate of inflow, outflow, and net inflow of workers from each of the four groups to treated firms. In Panels (b) and (c), we separate control firms into Quebec and non-Quebec (British Columbia or Ontario). All estimates are scaled by the total number of workers in the origin group in each previous year, and we normalize the net inflow in 2013 by zero. In Table B.12, we report the average difference of the net inflow before and after the reform, in both head counts and rates. All numbers are rounded by five following the disclosure requirement set by Statistics Canada.

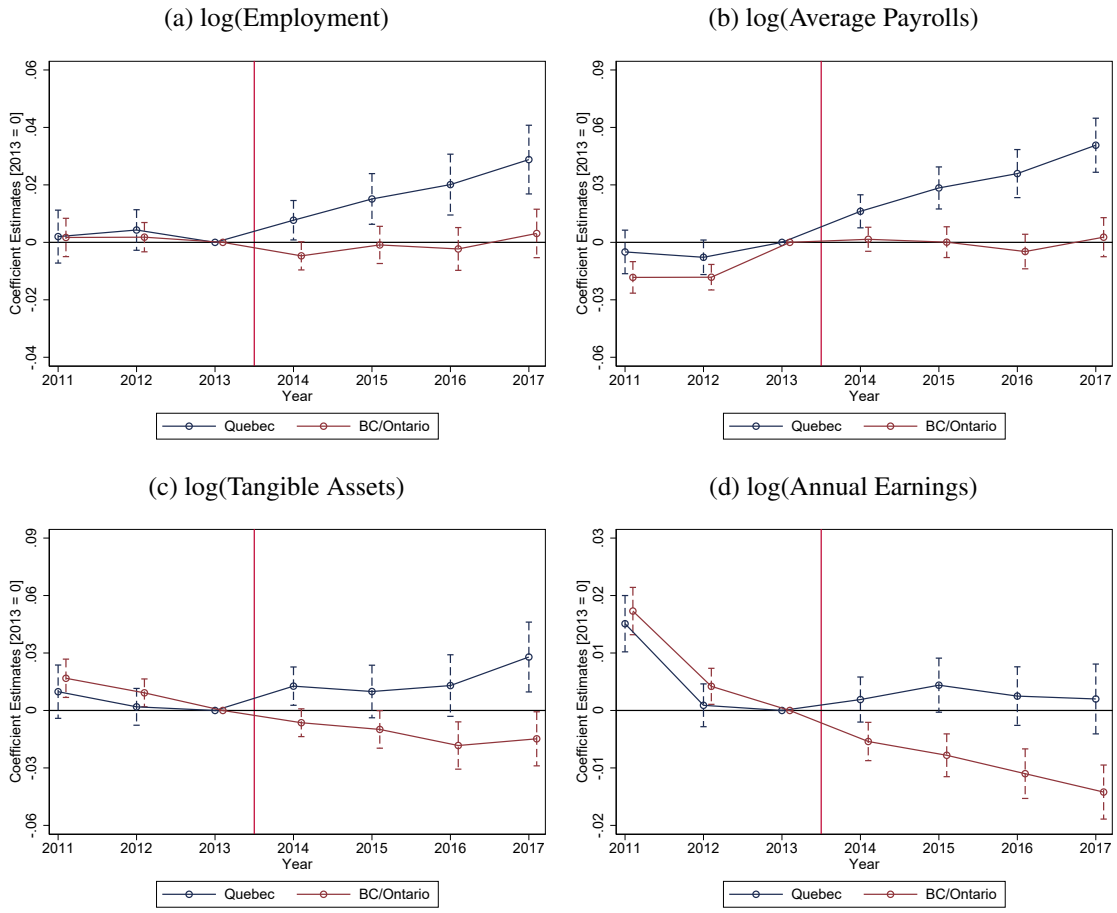
Panel (a) of Figure B.12 shows that the gross inflow and outflow of workers from control firms to treated firms moved in parallel before the reform, whereas the outflow decreased sharply after the reform. As a result, the net inflow of workers from control firms to treated firms increased after the reform by an average of 780 workers per year. This is about 0.03 percent of total employment in control firms. Therefore, the reallocation of workers between treated and control firms does not lead to a large correction for the main triple-differences estimate on employment: to adjust for this net inflow, the increase of 1.74 percent in employment after the reform would be reduced only by 0.03 percentage points (to 1.71 percent). Furthermore, Panels (b) and (c) show that the reallocation between treated and control firms almost entirely took place within Quebec (between the M&P sector and non-M&P sectors).

In addition, panel (d) of Figure B.12 shows that the net inflow of workers from out-of-sample firms to treated firms followed a flat trend before the reform, and decreased after the reform, suggesting that there was a small increase in the share of workers at treated firms that moved to out-of-sample firms after the reform. Panel (e) shows that the net inflow of workers from ineligible firms to treated firms followed a flat trend before the reform, and decreased slightly after the

reform, implying that there was a small increase in the share of workers at treated firms moving to ineligible firms after the reform. Finally, panel (f) shows that the net inflow of workers from non-employment to treated firms was on a decreasing trend prior to the reform, and remained flat after the reform, suggesting that the share of workers that moved from treated firms to unemployment was increasing prior the reform, but stopped increasing further after the reform. Note that non-employment is defined as not receiving T4 slips for two consecutive years, so the outflow and net inflow rates of the non-employment group are identified up to 2015.

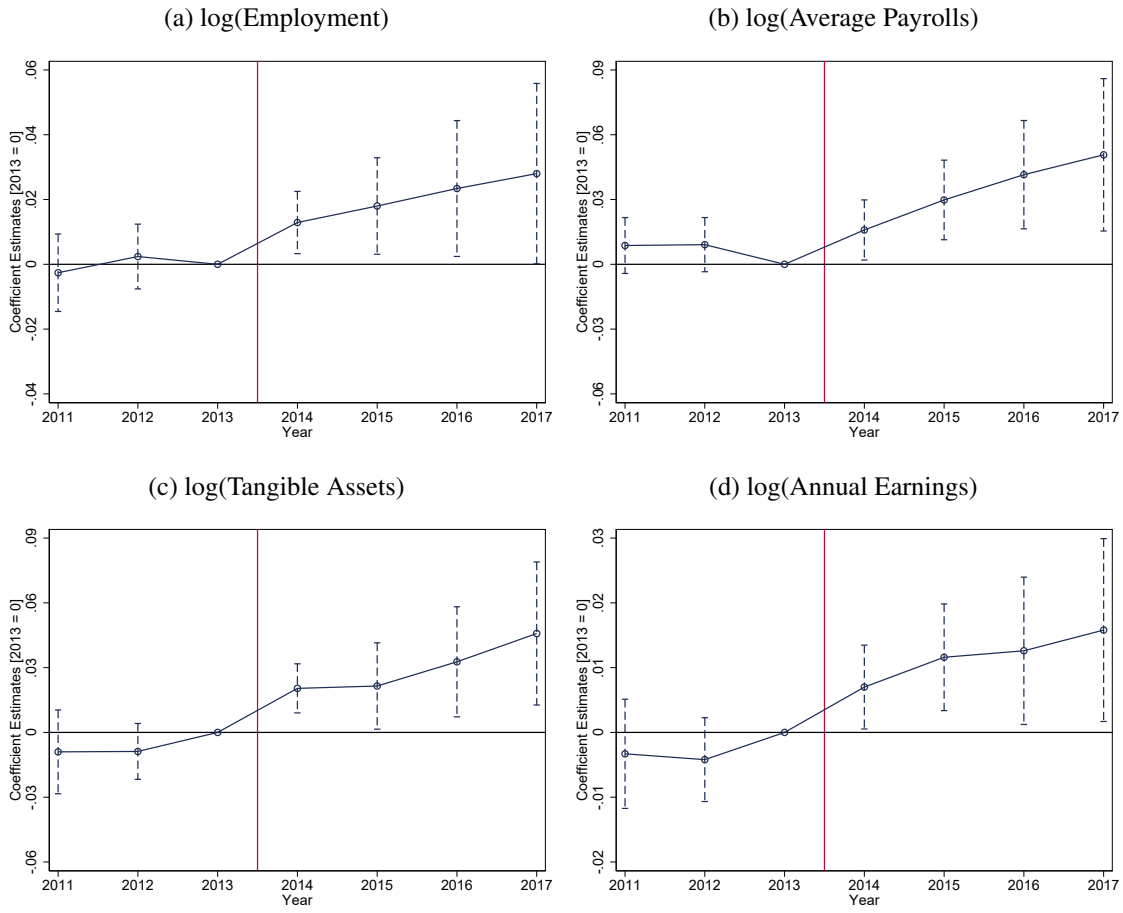
Similar to the results on reallocation of workers, about 0.18 percent of firms in non-M&P sectors switched to the M&P sector and 0.01 percent of firms outside of Quebec moved to Quebec after the reform, suggesting very little reallocation of firms across sectors or provinces. This is likely driven by the fact that the vast majority of firms in our analysis sample are small businesses that are mostly single establishments or multi-establishments within the same province.

Figure B.1: Difference-in-differences Estimates



Notes: In Panels (a) – (c), the red lines show coefficient estimates in equation (1) on $\mathbb{1}_{\{t=\tau\}} \times MP$, and the dark navy lines show those on $\mathbb{1}_{\{t=\tau\}} \times MP$ plus $\mathbb{1}_{\{t=\tau\}} \times QC \times MP$, for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Panel (d) shows corresponding estimates in equation (3) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals.

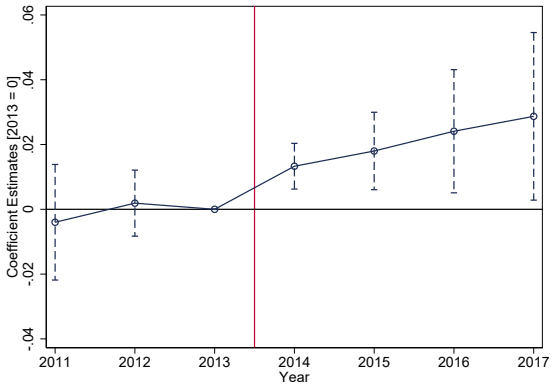
Figure B.2: Including Industry × Year FEs



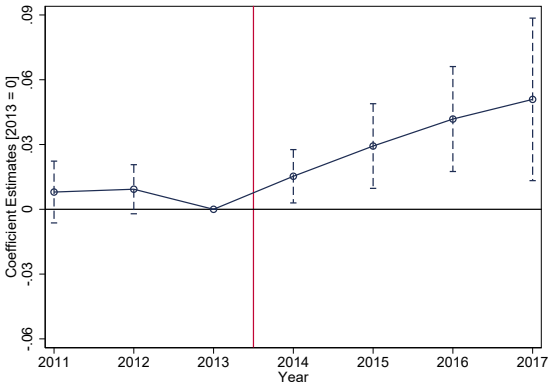
Notes: Panels (a) – (c) show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Panel (d) shows coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (3) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals. We additionally control for 4-digit NAICS industry by year fixed effects.

Figure B.3: Including Industry × Year and Commuting Zone × Year FEs

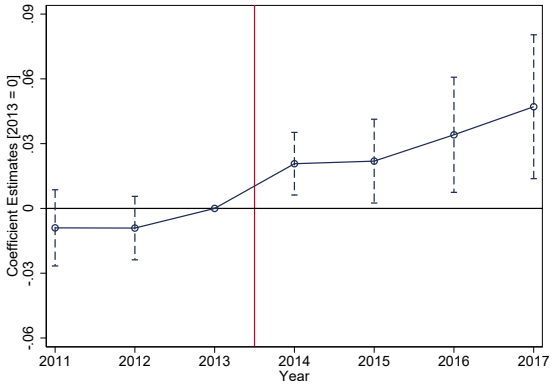
(a) log(Employment)



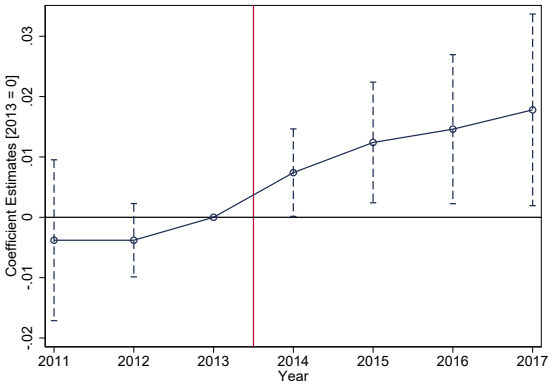
(b) log(Average Payrolls)



(c) log(Tangible Assets)

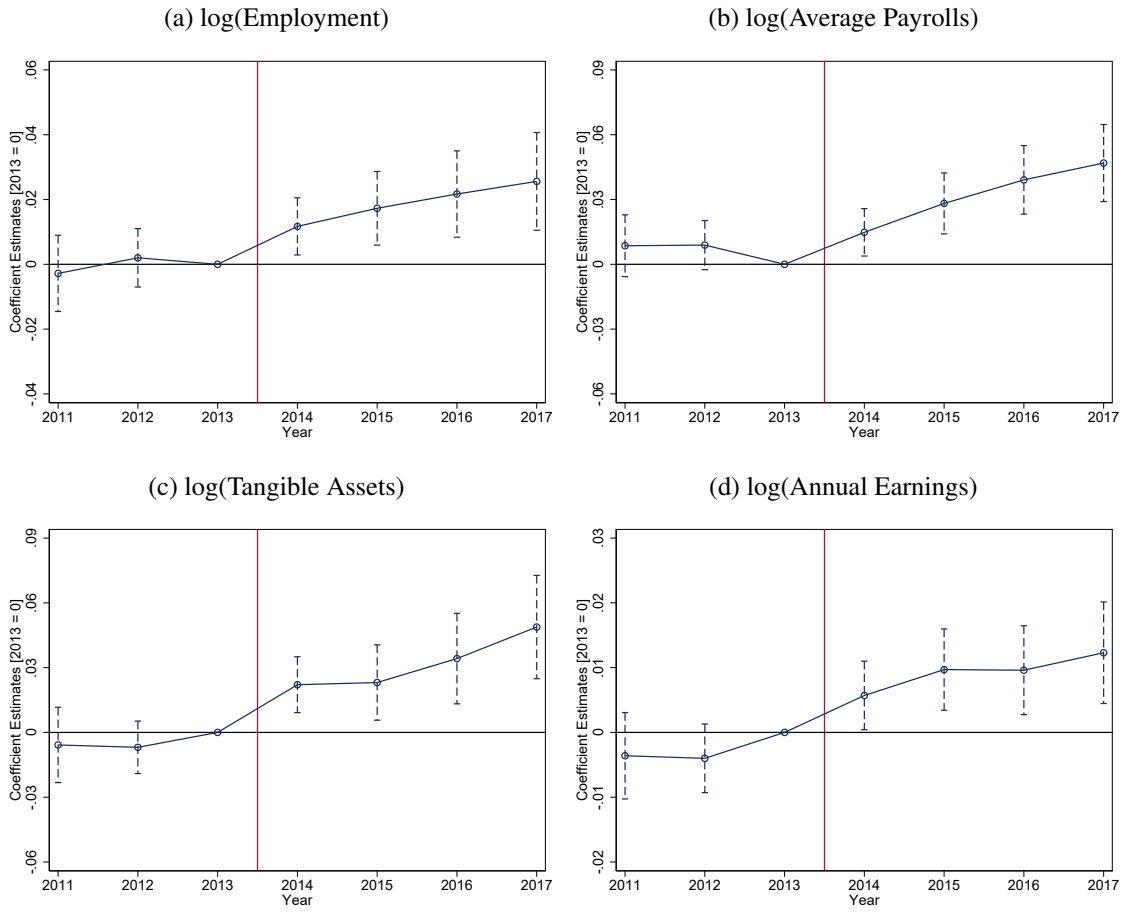


(d) log(Annual Earnings)



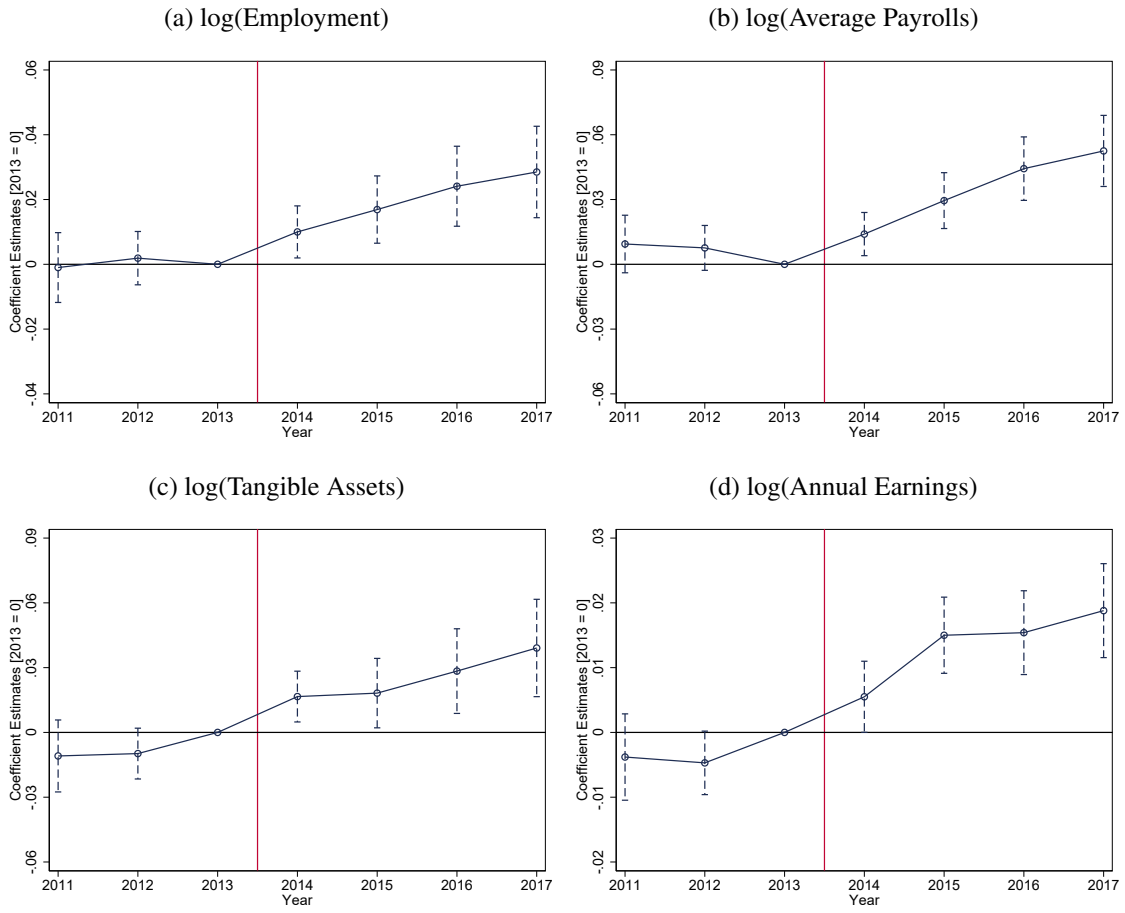
Notes: Panels (a) – (c) show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Panel (d) shows coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (3) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals. We additionally control for 4-digit NAICS industry by year and commuting zone by year fixed effects.

Figure B.4: Re-weighting Industries



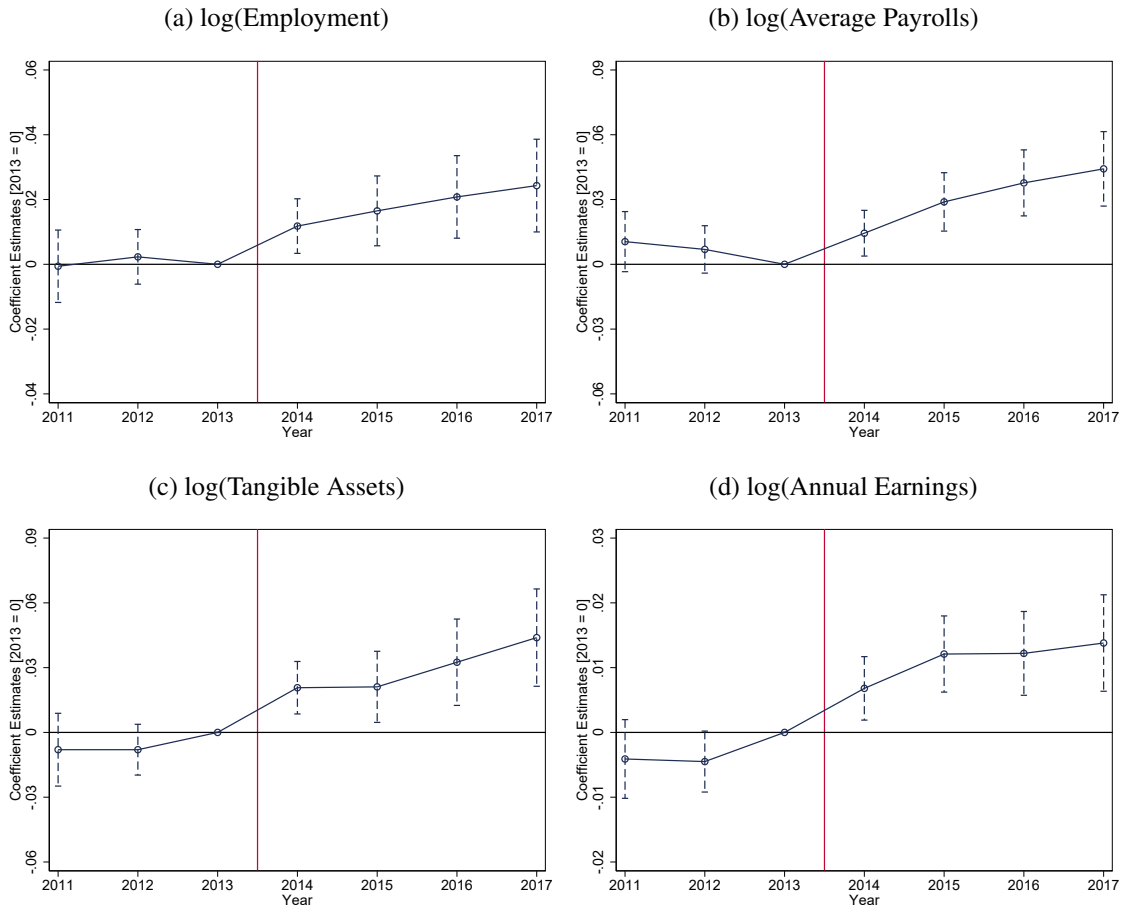
Notes: Panels (a) – (c) show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Panel (d) shows coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (3) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals. Treated and control firms in the M&P sector are re-weighted such that both groups have the same distribution of 4-digit NAICS industries. Observations in the M&P sector in BC and Ontario are weighted by $p_k/\tilde{p}_k$, where p_k is the share of observations in the 4-digit NAICS industry k within the M&P sector in Quebec during 2011 – 2013, and $\tilde{p}_k$ is that share within the M&P sector in BC and Ontario. Other observations are unweighted.

Figure B.5: Firms with Taxable Capital below 10 Million CAD



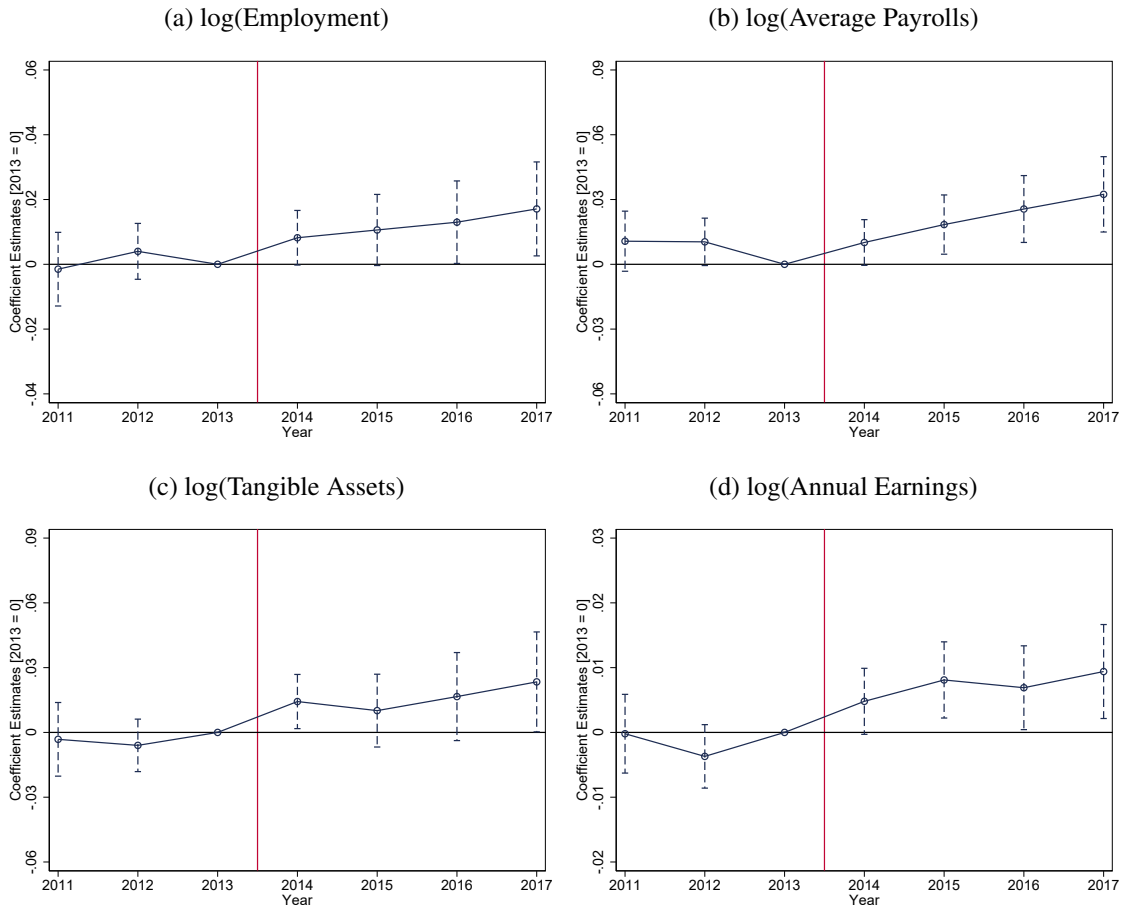
Notes: Panels (a) – (c) show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Panel (d) shows coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (3) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals. The sample consists of CCPCs (and their workers) with taxable capital below 10 million CAD or missing during 2011 – 2013.

Figure B.6: Including Other Provinces



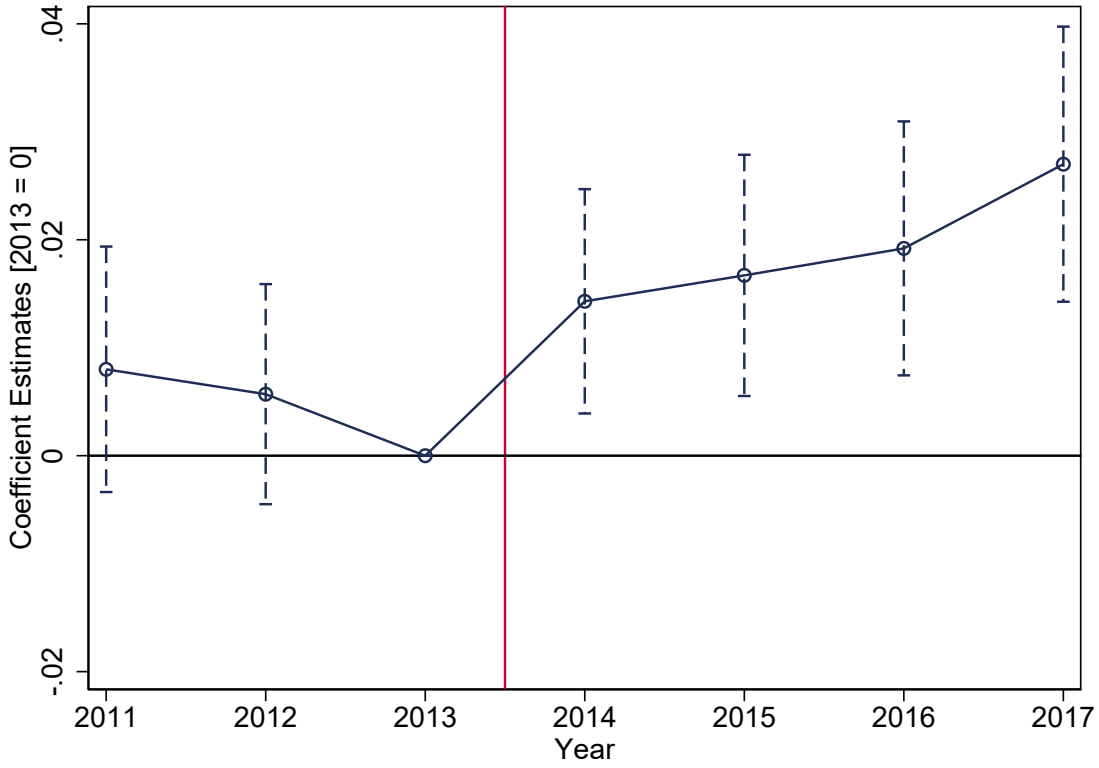
Notes: Panels (a) – (c) show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Panel (d) shows coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (3) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals. The sample includes other Canadian provinces without change in corporate income tax rates in 2011 – 2017 (Manitoba, Northwest Territories, Nunavut, and Saskatchewan).

Figure B.7: Including Other Sectors



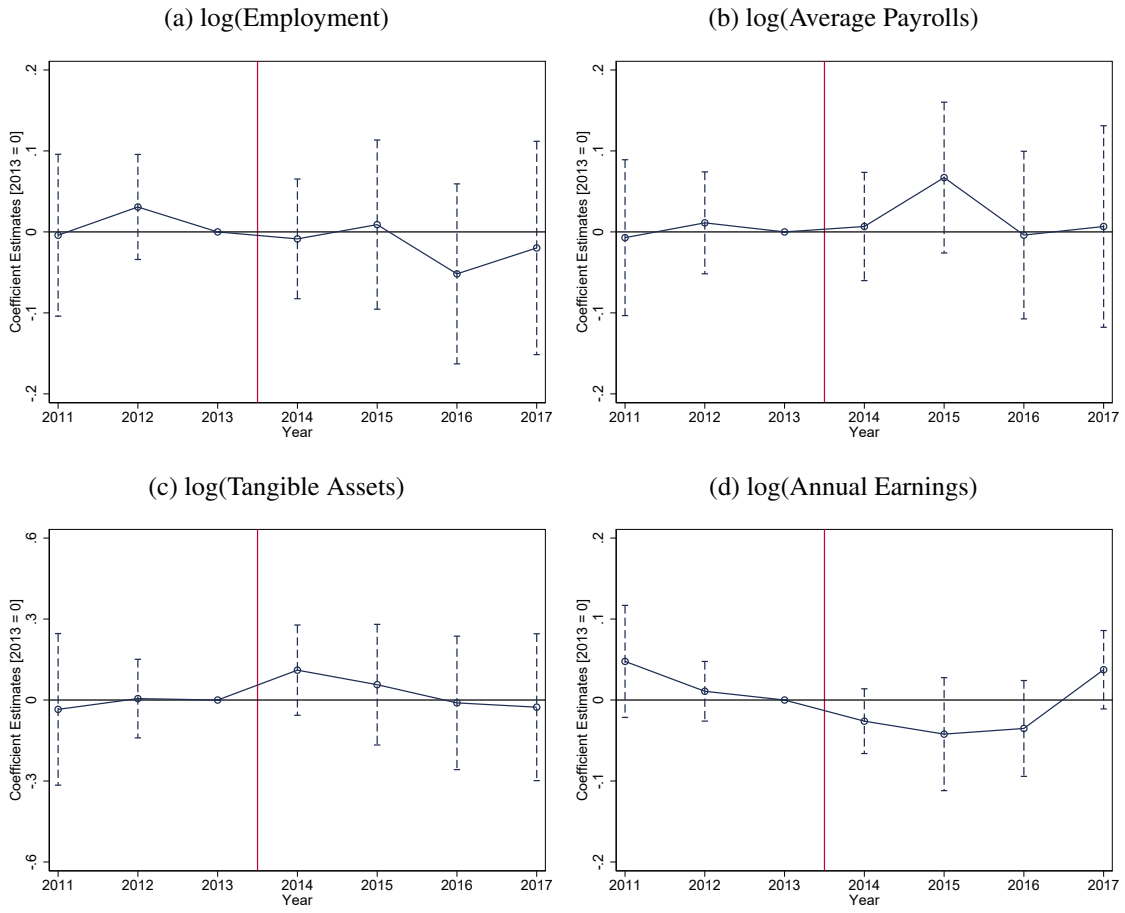
Notes: Panels (a) – (c) show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Panel (d) shows coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (3) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals. The sample includes previously excluded agriculture, finance and real estate, healthcare, and professional services sectors.

Figure B.8: Including Part-time and Multiple-job Workers and Dropping Tenure Restrictions



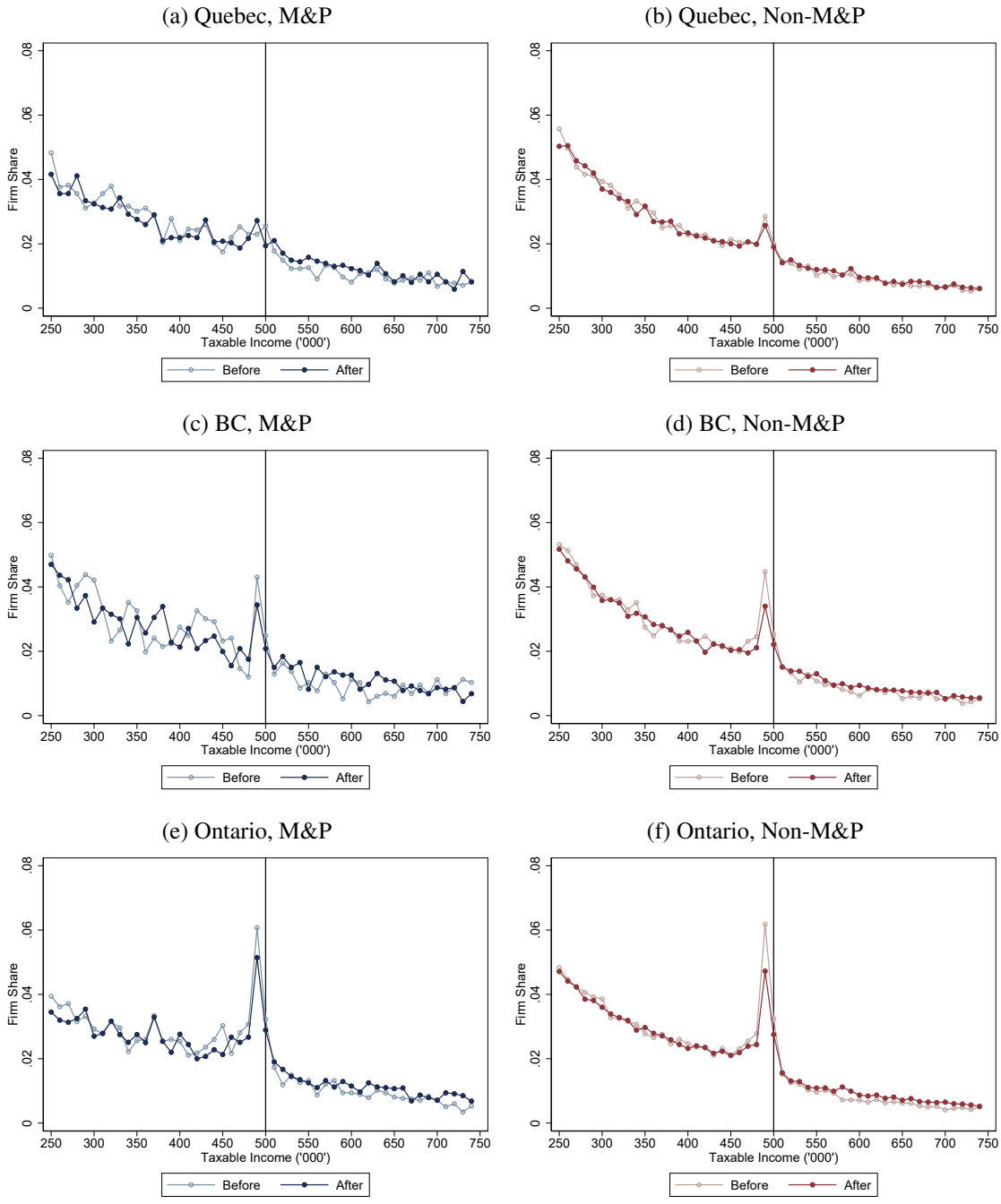
Notes: This figure shows coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (3) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are included. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals.

Figure B.9: Placebo Tests using Non-CCPCs



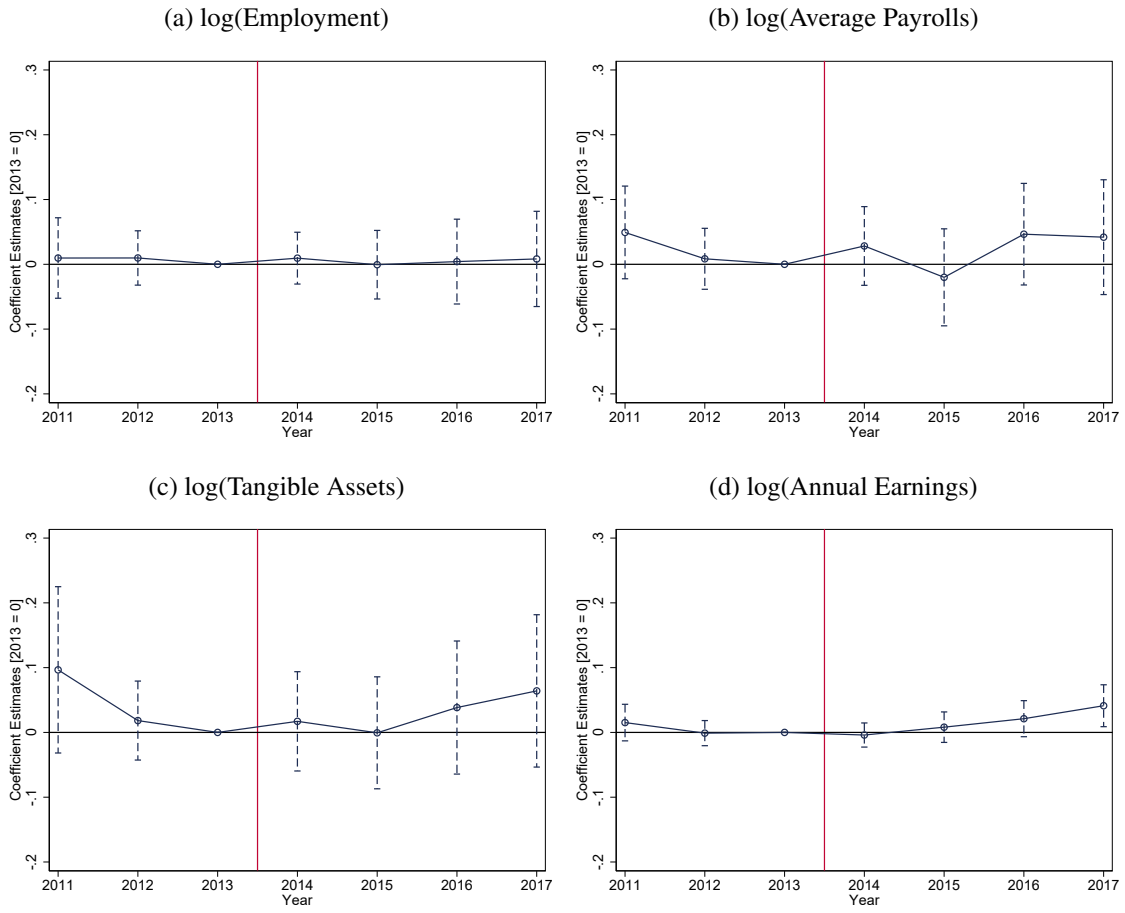
Notes: Panels (a) – (c) show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Panel (d) shows coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (3) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals. The sample consists of non-CCPCs (and their workers) that are not impacted by the reform regardless of their sectors or provinces.

Figure B.10: Distribution of Taxable Income around 500,000 CAD



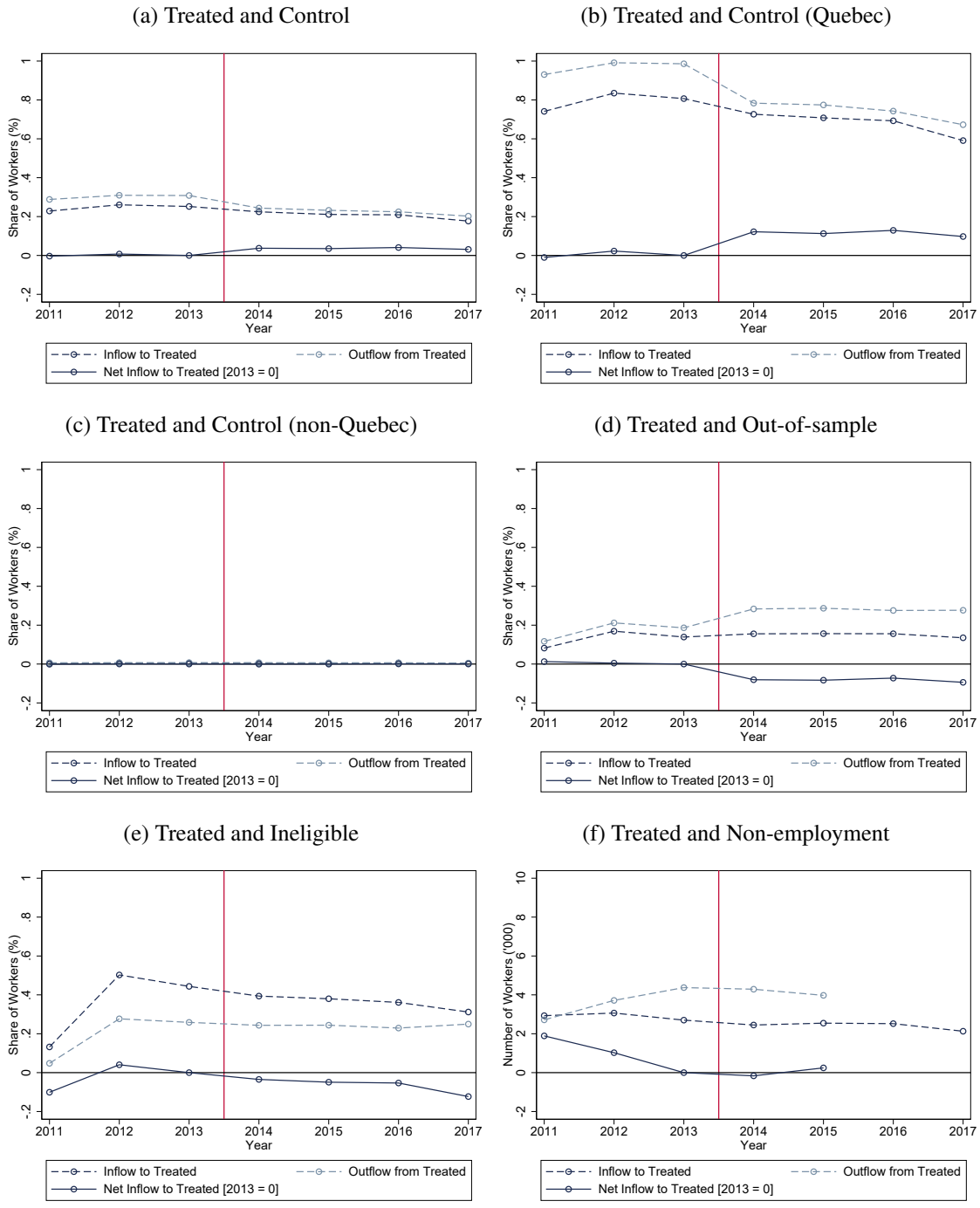
Notes: Panels (a) – (f) show the distribution of taxable income between 250,000 and 750,000 CAD in Quebec, BC, and Ontario, and in M&P versus non-M&P sectors, respecrively. The light blue and light red lines represent years 2011 – 2013 ("before"). The drak blue and dark red lines represent years 2014 – 2017 ("after").

Figure B.11: Firms with Taxable Income between 400,000 and 500,000 CAD



Notes: Panels (a) – (c) show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (1) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Panel (d) shows coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \times MP \times QC$ in equation (3) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals. The sample consists of firms (and their workers) with taxable income between 400,000 CAD and 500,000 CAD in 2013.

Figure B.12: Worker Reallocation



Notes: Panels (a) – (f) show worker reallocation between treated firms and each of the following: (a) control firms, (b) control firms in Quebec, (c) control firms out of Quebec, (d) out-of-sample firms, (e) ineligible firms, and (f) non-employment. Out-of-sample firms refer to CCPCs with total assets below 10 million and in provinces other than Quebec, B.C., Ontario or in excluded sectors. Ineligible firms refer to non-CCPCs or CCPCs with total assets above 10 million regardless of their provinces or sectors. Non-employment refers to workers without T4 earnings for at least two consecutive years. The dashed dark blue lines represent gross inflow into treated firms. The dashed light blue lines represent gross outflow from treated firms. The solid dark blue lines represent net inflow into treated firms scaled by the net inflow in 2013. In panels (a) – (e), the number of reallocated workers is scaled by the number of workers in the corresponding group in the previous year.

Table B.1: Difference-in-differences Estimates

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP	-0.0024	0.0118***	-0.0201***	-0.0162***
	(0.0020)	(0.0036)	(0.0049)	(0.0016)
Post × QC	-0.0359***	-0.0689***	-0.0328***	-0.0174***
	(0.0016)	(0.0020)	(0.0027)	(0.0010)
Post × MP × QC	0.0174***	0.0234***	0.0317***	0.0134***
	(0.0052)	(0.0063)	(0.0084)	(0.0026)
Mean Dep. Var.	11.4	35.6	790.6	38.3
Observations	2,106,660	2,106,660	2,011,725	6,692,730
Firms/Workers (Treated)	10,205	10,205	10,165	64,255
Firms/Workers (Control)	343,235	343,235	339,825	1,070,450
Adjusted R^2	0.917	0.888	0.938	0.813

Notes: Columns (1) – (3) report coefficient estimates on *Post* × *MP*, *Post* × *QC*, and *Post* × *MP* × *QC* in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports the same coefficient estimates in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1), and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects. Column (4) includes worker fixed effects. Standard errors are clustered at the firm level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table B.2: Including Industry × Year FEs

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × QC	-0.0353***	-0.0697***	-0.0317***	-0.0177***
	(0.0053)	(0.0073)	(0.0083)	(0.0010)
Post × MP × QC	0.0198**	0.0266**	0.0347***	0.0135***
	(0.0095)	(0.0120)	(0.0110)	(0.0025)
Mean Dep. Var.	11.4	35.6	790.6	38.3
Observations	2,106,660	2,106,660	2,011,725	6,692,730
Firms/Workers (Treated)	10,205	10,205	10,165	64,255
Firms/Workers (Control)	343,235	343,235	339,825	1,070,450
Adjusted R^2	0.917	0.889	0.938	0.814

Notes: Columns (1) – (3) report coefficient estimates on *Post* × *QC* and *Post* × *MP* × *QC* in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports the coefficient estimates in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1) and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and industry by year fixed effects. Column (4) includes worker fixed effects and 4-digit NAICS industry by year fixed effects. Standard errors are clustered at the industry level for columns (1) – (3), two-way clustered at the industry level and worker level for column (4), and reported in parentheses.

Table B.3: Including Industry × Year and Commuting Zone × Year FEs

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × QC	-0.0271***	-0.0695***	-0.0114	-0.0105*
	(0.0054)	(0.0083)	(0.0110)	(0.0058)
Post × MP × QC	0.0210**	0.0274**	0.0358***	0.0150**
	(0.0094)	(0.0123)	(0.0126)	(0.0071)
Mean Dep. Var.	11.4	35.6	790.6	38.3
Observations	2,106,660	2,106,660	2,011,725	6,692,730
Firms/Workers (Treated)	10,205	10,205	10,165	64,255
Firms/Workers (Control)	343,235	343,235	339,825	1,070,450
Adjusted R^2	0.917	0.889	0.938	0.815

Notes: Columns (1) – (3) report coefficient estimates on *Post* × *QC* and *Post* × *MP* × *QC* in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports the same coefficient estimates in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1) and in thousand CAD for columns (2) – (4). Columns (1) – (3) include 4-digit NAICS industry by year fixed effects and commuting zone by year fixed effects. Column (4) includes worker fixed effects, industry by year fixed effects, and commuting zone by year fixed effects. Standard errors are two-way clustered at the industry level and commuing zone level and reported in parentheses.

Table B.4: Re-weighting Industries

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC	0.0180***	0.0244***	0.0351***	0.0118***
	(0.0053)	(0.0064)	(0.0086)	(0.0026)
Mean Dep. Var.	11.4	35.6	790.6	38.3
Observations	2,106,480	2,106,480	2,011,565	6,692,300
Firms/Workers (Treated)	10,205	10,205	10,165	64,250
Firms/Workers (Control)	343,195	343,195	339,795	1,070,385
Adjusted R^2	0.917	0.889	0.939	0.816

Notes: Columns (1) – (3) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1) and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and 4-digit NAICS industry by year fixed effects. Column (4) includes worker fixed effects and 4-digit NAICS industry by year fixed effects. Treated and control firms (or workers) in the M&P sector are re-weighted such that both groups have the same distribution of 4-digit NAICS industries. Observations in the M&P sector in BC and Ontario are weighted by $p_k/\tilde{p}_k$, where p_k is the share of observations in the 4-digit NAICS industry k within the M&P sector in Quebec during 2011 – 2013, and $\tilde{p}_k$ is that share within the M&P sector in BC and Ontario. Other observations are unweighted. Standard errors are clustered at the firm-level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table B.5: Firms with Taxable Capital below 10 Million CAD

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC	0.0186***	0.0276***	0.0311***	0.0156***
	(0.0050)	(0.0060)	(0.0081)	(0.0025)
Mean Dep. Var.	17.7	60.0	1505.9	39.0
Observations	2,179,530	2,179,530	2,082,760	7,611,670
Firms/Workers (Treated)	11,115	11,115	11,070	78,420
Firms/Workers (Control)	354,170	354,170	350,670	1,209,805
Adjusted R^2	0.925	0.902	0.941	0.817

Notes: Columns (1) – (3) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1) and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and year fixed effects. Column (4) includes worker fixed effects and year fixed effects. The sample consists of CCPCs (and their workers) with taxable capital below 10 million CAD or missing during 2011 – 2013. Standard errors are clustered at the firm-level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table B.6: Including Other Provinces

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC	0.0170***	0.0239***	0.0335***	0.0135***
	(0.0051)	(0.0062)	(0.0082)	(0.0025)
Mean Dep. Var.	11.4	35.6	790.6	38.3
Observations	2,268,455	2,268,455	2,166,195	7,139,045
Firms/Workers (Treated)	10,205	10,205	10,165	64,250
Firms/Workers (Control)	370,685	370,685	366,970	1,370,145
Adjusted R^2	0.916	0.888	0.938	0.816

Notes: Columns (1) – (3) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1) and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and 4-digit NAICS industry by year fixed effects. Column (4) includes worker fixed effects and 4-digit NAICS industry by year fixed effects. The sample includes other Canadian provinces without change in corporate income tax rates in 2011 – 2017 (Manitoba, Northwest Territories, Nunavut, and Saskatchewan). Standard errors are clustered at the firm-level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table B.7: Including Other Sectors

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC	0.0108**	0.0132**	0.0187**	0.0082***
	(0.0052)	(0.0063)	(0.0084)	(0.0025)
Mean Dep. Var.	11.4	35.6	790.6	38.3
Observations	3,045,135	3,045,135	2,897,315	8,491,095
Firms/Workers (Treated)	10,205	10,205	10,165	64,250
Firms/Workers (Control)	504,235	504,235	498,690	1,370,145
Adjusted R^2	0.913	0.875	0.941	0.821

Notes: Columns (1) – (3) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1) and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and 4-digit NAICS industry by year fixed effects. Column (4) includes worker fixed effects and 4-digit NAICS industry by year fixed effects. The sample includes previously excluded agriculture, finance and real estate, healthcare, and professional services sectors. Standard errors are clustered at the firm-level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table B.8: Including Part-time and Multiple-job Workers, and Dropping Tenure Restrictions

	(1)
	log(Annual Earnings)
Post × MP × QC	0.0239***
	(0.0041)
Mean Dep. Var.	10.1
Observations	12,740,900
Workers (Treated)	115,330
Workers (Control)	2,623,440
Adjusted R^2	0.747

Notes: Column (1) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). The dummy *Post* equals 1 for years 2014 – 2017. Part-time workers whose annual earnings are below 4000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are included. The mean for each dependent variable is based on years 2011 – 2013, and is measured in thousand CAD for column (1). The specification includes worker fixed effects and year fixed effects. Standard errors are two-way clustered at the firm level and worker level and reported in parentheses.

Table B.9: Placebo Tests Using Non-CCPCs

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC	-0.0268	0.0168	0.0935	-0.0390
	(0.0509)	(0.0457)	(0.1039)	(0.0344)
Mean Dep. Var.	141.0	669.5	30,120.3	61.5
Observations	16,790	16,790	16,470	679,095
Firms/Workers (Treated)	260	260	260	14,050
Firms/Workers (Control)	3,150	3,150	3,125	103,720
Adjusted R^2	0.958	0.959	0.933	0.796

Notes: Columns (1) – (3) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1) and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and year fixed effects. Column (4) includes worker fixed effects and year fixed effects. The sample consists of non-CCPCs (and their workers) that are not impacted by the reform regardless of their sectors or provinces. Standard errors are clustered at the firm-level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table B.10: Bunching of Taxable Income at 500,000 CAD

	(1)
	Bunching probability
Post × MP × QC	-0.0004
	(0.0011)
Observations	2,183,350
Firms (Treated)	11,145
Firms (Control)	354,805

Notes: Column (1) reports coefficient estimates on *Post* × *MP* × *QC* in equation (2) for the probability of excessive bunching at 470,000 – 505,000 CAD for treated firms relative control firms following Saez (2010). *Post* equals 1 for years 2014 – 2017. Standard errors are clustered at the firm level and reported in parentheses.

Table B.11: Firms with Taxable Income between 400,000 and 500,000 CAD

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC	-0.0012	0.0047	-0.0080	0.0097
	(0.0276)	(0.0349)	(0.0528)	(0.0111)
Mean Dep. Var.	25.2	89.9	1701.3	43.1
Observations	29,580	29,580	29,580	304,775
Firms/Workers (Treated)	200	200	200	3,190
Firms/Workers (Control)	4,290	4,290	4,290	47,385
Adjusted R^2	0.934	0.995	0.939	0.840

Notes: Columns (1) – (3) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1) and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and year fixed effects. Column (4) includes worker fixed effects and year fixed effects. The sample consists of firms (and their workers) with taxable income between 400,000 CAD and 500,000 CAD in 2013. Standard errors are clustered at the firm-level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table B.12: Worker Reallocation

	(1) Control	(2) Control (Quebec)	(3) Control (non-Quebec)	(4) Out of sample	(5) Ineligible	(6) Non-employment
Post	790	790	0	-1,315	-2,370	-930
	[0.0003]	[0.0011]	[0.0000]	[-0.0009]	[-0.0001]	

Notes: Columns (1) – (6) report net inflow of workers to treated firms from each of the following: (1) control firms, (2) control firms in Quebec, (3) control firms outside of Quebec, (4) out-of-sample firms, (5) ineligible firms, and (6) non-employment. Out-of-sample firms refer to CCPCs with total assets below 10 million and in provinces other than Quebec, B.C., Ontario, or in excluded sectors. Ineligible firms refer to non-CCPCs or CCPCs with total assets above 10 million regardless of their provinces or sectors. Non-employment refers to workers without T4 earnings for at least two consecutive years. Each column reports the average annual net inflow in 2014 – 2017 relative to the average net inflow in 2011 – 2013, rounded by five. In columns (1) – (5), the share of net inflow workers relative to the number of workers in each source group in the previous year is reported in brackets.

C Additional Heterogeneity Results

In Appendix C, we provide heterogeneity results in addition to those discussed in Section 5. We test potential mechanisms for responses in employment, average payroll, capital stock, and worker earnings after the tax cuts. Lowering corporate income tax rates for small firms can affect their outcomes through two main channels: (1) by increasing (immediate) cash flow and (2) by reducing the cost of capital. While the second channel would require a certain degree of complementarity between capital and labor in order for employment and wages to go up after tax cuts, firms can invest in either capital or labor or both, under the first channel when there is an increase in cash flow through tax cuts.

Since not all input costs are fully tax-deductible, wages can increase when corporate tax rates decrease by shifting the labor demand when the labor market is perfectly competitive under both channels. Furthermore, wages can increase after a tax cut without the market-level shift in labor demand if firms have monopsony power. In this case, firms would face an upward-sloping labor supply curve, and may increase wages more relative to the competitive benchmark as they demand more labor after a tax cut. Therefore, firms that demand more labor after a tax cut may increase wages more on average, either because of market-level shifts or because of monopsony power. Using this intuition, we test whether the tax effects on average payrolls and worker earnings are different depending on the two aforementioned channels. Additionally, we test whether the effects of the tax cuts are different depending on labor market concentration.

C.1 Cash-flow Channel

Small businesses may not be able to optimally invest in capital or labor due to financial constraints. Lowering corporate income tax rates may increase immediate cash flow to small firms with positive taxable income by reducing their tax burdens, which can subsequently relax their financial constraints. Small firms with tax cuts can use this extra cash to re-invest, which can not only lead to their growth, but also increase profits, assuming that they were sub-optimally investing due to constraints before the tax cuts. Our finding that profitability increased for treated firms seems consistent with the idea that these small businesses were constrained before on average, and that increasing cash flow through tax cuts helped them grow and become more profitable over time.

As a way to test the cash-flow channel, we check whether the tax effects are stronger for firms that appear more financially constrained, based on measures of financial constraints used in the literature, such as total revenue, leverage ratio, and retained earnings. Table C.1 shows results on key outcomes, separately for smaller firms (below the industry median of total revenue

measured in 2013) and for larger firms (above the industry median).[23] While we find that smaller firms show larger responses in capital after the tax cuts, consistent with findings from Zwick and Mahon (2017), we do not find statistically larger responses in employment or average payrolls among smaller firms. This is likely due to the fact that our treated firms are small businesses that are mostly cash-constrained. If anything, larger firms show larger responses in employment and average payroll, either because they are more labor-intensive (i.e., higher $\frac{wL}{rK}$) or have higher taxable income and the tax cuts would have larger immediate cash-flow for these firms.[24] Furthermore, Tables C.2 and C.3 show that the tax effects do not seem to statistically differ based on the pre-reform level of leverage ratio or retained earnings scaled by total assets, suggesting that cutting small firms based on measures of cash constraints may not give us enough variation in our setting to test the cash-flow channel.

C.2 Cost of Capital Channel

A standard user cost of capital widely used in the literature (Zwick and Mahon 2017; Maffini et al. 2019; Curtis et al. 2022), $c = \frac{1-\tau z}{1-\tau}(r+\delta)$, contains the tax component ($\frac{1-\tau z}{1-\tau}$), where τz represents the net-present value of tax deductions due to capital cost allowances for one dollar increase in investment. A reduction in (statutory) corporate income tax rate would mechanically lower the cost of capital ($\frac{\partial c}{\partial \tau} > 0$), which can induce firms to invest in capital. Assuming some degree of complementarity between capital and labor, a tax-induced increase in capital would lead to an increase in employment and wages. In Section 5, we estimate that the reform led to a 1.5 percent reduction in the cost of capital on average for treated firms, relative to control firms, in our sample.

To explore the reduction in the cost of capital as a potential mechanism behind our findings, we test whether more capital-intensive firms responded more strongly relative to less capital-intensive firms after the tax cuts. We use our measure of capital stock (book value of tangible and intangible assets net of depreciation and amortization) scaled by total revenue as a proxy for capital intensity, and define that a firm is capital-intensive if the ratio is above the industry-level median value in 2013. We estimate our main specifications (2) and (4), separately for firms and workers in more capital-intensive industries defined one year before the reform, and for firms and workers in less capital-intensive industries.

Table C.4 shows that differences in responses between capital-intensive and less capital-intensive

[23] Our results are qualitatively similar when we use the firm-level median to cut the sample, instead of using the industry-level median.

[24] Small firms with initially low taxable income would still benefit from the tax cuts in expectation; as these firms continue to invest and grow, they will pay lower taxes on their future income, although they may not have immediate cash-flow effects.

industries are not statistically different from zero for employment, average payroll, capital stock, and worker earnings, implying that industries that likely experienced a larger decrease in the cost of capital did not respond more relative to less capital intensive industries. These results seem consistent with the fact that our estimated change in the cost of capital is not large, and a reduction in corporate tax rates generally has a smaller impact on the cost of capital relative to other tax incentives, such as bonus depreciation or investment tax credits. For example, Curtis et al. (2022) estimate that the bonus depreciation policy led to a 14.5 percent reduction in the cost of capital, which is 10 times larger than the estimated change in the cost of capital from the tax rate cuts in our setting.

C.3 By High-tech versus Low-tech Industries

Similar to the heterogeneity based on asset growth, we examine whether firms operating in high-tech industries pay higher salaries to their workers after the tax cuts. The intuition is that firms in these industries may have a higher growth potential, and therefore, may have a stronger demand for capital and labor after the tax cut. Within our sample, the probability of a firm being in a high-tech industry conditional on being in a high-growth industry is 27 percent, implying that while there exists some overlap between high-tech industries and high-growth industries, the responses between firms in high-tech industries and firms in high-growth industries may not be the same.

We test whether the effects of the tax cuts are stronger for firms and workers in high-tech industries. To define high-tech versus low-tech industries, we follow the approach by Heckler (2005), where an industry is defined as high-tech if employment in technology-oriented occupations accounted for at least 9.8 percent of that industry's total employment.[25] On average, firms in high-tech industries have larger intangible assets, sales, average payrolls, after-tax profits, EBITDA per worker, and taxable income, relative to firms in low-tech industries, prior to the reform. Similarly, workers in high-tech industries have higher earnings relative to workers in low-tech industries. However, firms in high-tech and low-tech industries are similar in terms of the number of employees, and workers in both types of industries are similar in their ages. We estimate our main specifications (2) and (4), separately for firms and workers in high-tech industries and low-tech industries. Note that we use the same baseline control group in both estimations because we do not have this distinction between high-tech and low-tech industries within non-M&P sectors.[26]

[25] Within our analysis sample, examples of top five (sorted by employment) high-tech industries are (1) Pharmaceutical and medicine manufacturing (3254), (2) General-purpose machinery manufacturing (3339), (3) Communications equipment manufacturing (3342), (4) Navigational, measuring, electro-medical, and control instruments manufacturing (3345), and (5) Industrial machinery manufacturing (3339).

[26] The definition of Heckler (2005) also includes non-M&P sectors, but most high-tech industries in non-M&P sectors (i.e., professional services or healthcare) are excluded from our analysis sample.

Table C.5 show that the tax effects on employment, average payrolls, capital stock, and worker-level earnings are larger for high-tech industries than for low-tech industries. These results imply that firms in high-tech industries tend to grow faster and demand more capital and labor in order to grow more after a tax cut. These findings are consistent with the results based on comparing firms and workers in high-growth versus low-growth industries.

C.4 Labor Market Concentration

In highly concentrated labor markets where firms likely have monopsony power, lower corporate taxes may lead to even higher wages for workers. This is because monopsonistic firms have the ability to set wages differently relative to the competitive benchmark when after-tax profits increase through a tax cut. Therefore, we hypothesize that workers in more concentrated labor markets may experience a larger increase in their annual earnings after their firms experience a tax cut.

We test whether the effects of the tax cuts are stronger for workers that are located in more concentrated labor markets. We define labor markets by an industry-by-commuting zone cell and measure concentration by the Herfindahl-Hirschmann Index (HHI) commonly used in antitrust analysis to predict anticompetitive effects of mergers. We estimate our main specifications (2) and (4), separately for firms located in labor markets below the median value of HHI measured in the year before the reform, and for firms located in labor markets above the median value. We additionally control for industry by year fixed effects to absorb any industry-specific shock in a given year across these specifications.

Table C.6 shows that the differences in responses between low-HHI and high-HHI labor markets are statistically not different from zero for employment, average payroll, capital stock, and worker earnings after the tax cuts. While these results suggest that there are no differential effects by local labor market concentration, our results could be driven by the fact that most of our treated firms are small businesses that may not have market power to begin with. In other words, it is possible that larger firms in high-HHI labor markets can increase (decrease) wages more after a tax cut (a tax hike) (Fuest et al., 2018).

C.5 Worker Characteristics

Finally, we compare tax effects on worker-level earnings based on worker characteristics. Tables C.7 and C.8 report estimates by gender and by age quartiles, respectively. The results show that most of the increases in worker-level earnings are driven by male workers and older workers (above the age of 45). These results are not only consistent with the fact that our treated firms are domi-

nated by male and older workers, but also consistent with recent findings that male workers extract higher rents from their firms in response to a payroll tax cut (Saez et al. 2019) and to a patent-induced demand shock (Kline et al. 2019). Furthermore, Table C.9 reports separate estimates by workers' earning quartiles, measured within firms in 2013. To clearly identify low-earnings versus high-earnings workers within each firm, we exclude firms with fewer than four workers from our sample. The estimates suggest that within each firm, the effects are concentrated among workers in the second and third quartiles. Additionally, we see positive and significant impacts of the tax cuts on workers in the lowest quartile, but we do not find much meaningful effects on workers in the highest quartile, suggesting that this reform did not disproportionately benefit higher-earners relative to lower-earners within a given firm. This result contrasts a key finding in Kennedy et al. (2022), which shows that the top ten percent of workers disproportionately benefited from a tax cut based on the U.S. Tax Cuts and Jobs Act in 2017.

Table C.1: Tax Effects by Pre-reform Revenue

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC (Low Revenue)	0.0169**	0.0194*	0.0522***	0.0137***
	(0.0079)	(0.0102)	(0.0125)	(0.0033)
Post × MP × QC (High Revenue)	0.0223***	0.0336***	0.0192*	0.0133***
	(0.0069)	(0.0076)	(0.0114)	(0.0038)
Difference	0.0054	0.0142	-0.0330**	-0.0004
	(0.0104)	(0.0127)	(0.0167)	(0.0050)
Mean Dep. Var. (Low Revenue)	3.8	26.9	259.2	35.7
Mean Dep. Var. (High Revenue)	19.2	37.5	1299.0	40.6
Observations	2,106,660	2,106,660	2,011,725	6,692,730
Firms/Workers (Treated)	10,205	10,205	10,165	31,265
Firms/Workers (Control)	343,235	343,235	339,825	34,040
Adjusted R^2	0.917	0.889	0.938	0.814

Notes: Columns (1) – (3) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1), and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and year fixed effects. Column (4) includes worker fixed effects and year fixed effects. For each outcome, we estimate equation (2) for firms (or equation (4) for workers) with revenue below and above industry-specific medians in 2013, and compare the two coefficient estimates in a single regression. Standard errors are clustered at the firm level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table C.2: Tax Effects by Pre-reform Leverage Ratio

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC (Low Leverage)	0.0207***	0.0250***	0.0323***	0.0084**
	(0.0067)	(0.0080)	(0.0115)	(0.0033)
Post × MP × QC (High Leverage)	0.0233***	0.0329***	0.0447***	0.0187***
	(0.0084)	(0.0103)	(0.0126)	(0.0038)
Difference	0.0025	0.0079	0.0124	0.0103**
	(0.0107)	(0.0130)	(0.0169)	(0.0051)
Mean Dep. Var. (Low Leverage)	12.4	39.1	876.4	39.1
Mean Dep. Var. (High Leverage)	10.1	31.2	672.5	37.2
Observations	2,106,660	2,106,660	2,011,725	6,692,730
Firms/Workers (Treated)	10,205	10,205	10,165	31,265
Firms/Workers (Control)	343,235	343,235	339,825	34,040
Adjusted R^2	0.917	0.889	0.938	0.814

Notes: Columns (1) – (3) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1), and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and year fixed effects. Column (4) includes worker fixed effects and year fixed effects. For each outcome, we estimate equation (2) for firms (or equation (4) for workers) with leverage ratio below and above industry-specific medians in 2013, and compare the two coefficient estimates in a single regression. Standard errors are clustered at the firm level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table C.3: Tax Effects by Pre-reform Cash (Retained Earnings Scaled by Assets)

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC (Low Cash)	0.0154*	0.0235**	0.0442***	0.0172***
	(0.0090)	(0.0110)	(0.0134)	(0.0039)
Post × MP × QC (High Cash)	0.0238***	0.0292***	0.0317***	0.0100***
	(0.0064)	(0.0076)	(0.0109)	(0.0033)
Difference	0.0083	0.0056	-0.0125	-0.0072
	(0.0110)	(0.0133)	(0.0172)	(0.0051)
Mean Dep. Var. (Low Cash)	9.6	28.6	622.0	37.0
Mean Dep. Var. (High Cash)	12.7	40.4	895.9	39.2
Observations	2,106,660	2,106,660	2,011,725	6,692,730
Firms/Workers (Treated)	10,205	10,205	10,165	64,250
Firms/Workers (Control)	343,235	343,235	339,825	1,070,455
Adjusted R^2	0.917	0.889	0.938	0.814

Notes: Columns (1) – (3) report coefficient estimates on *Post* × *MP* × *QC* in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on *Post* × *MP* × *QC* in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1), and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and year fixed effects. Column (4) includes worker fixed effects and year fixed effects. For each outcome, we estimate equation (2) for firms (or equation (4) for workers) with retained earnings scaled by total assets below and above industry-specific medians in 2013, and compare the two coefficient estimates in a single regression. Standard errors are clustered at the firm level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table C.4: Tax Effects by Industrial Capital Intensity

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC (Low Capital)	0.0158	0.0101	0.0508	0.0153*
	(0.0215)	(0.0255)	(0.0343)	(0.0088)
Post × MP × QC (High Capital)	0.0200***	0.0292***	0.0264***	0.0098***
	(0.0056)	(0.0067)	(0.0088)	(0.0029)
Difference	0.0042	0.0191	-0.0244	-0.0055
	(0.0222)	(0.0263)	(0.0354)	(0.0093)
Mean Dep. Var. (Low Capital)	10.4	30.2	331.2	41.9
Mean Dep. Var. (High Capital)	11.5	36.1	832.8	38.0
Observations	2,106,660	2,106,660	2,011,725	6,692,730
Firms/Workers (Treated)	10,205	10,205	10,165	64,250
Firms/Workers (Control)	343,235	343,235	339,825	1,070,455
Adjusted R^2	0.917	0.888	0.938	0.813

Notes: Columns (1) – (3) report coefficient estimates on *Post* × *MP* × *QC* in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on *Post* × *MP* × *QC* in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1), and in thousand CAD for columns (2) – (4). The dummy *Post* equals 1 for years 2014 – 2017. Columns (1) – (3) include firm fixed effects and year fixed effects. Column (4) includes worker fixed effects and year fixed effects. For each outcome, we estimate equation (2) for firms (or equation (4) for workers) in 4-digit NAICS industries with capital intensity below and above the sample median in 2013, and compare the two coefficient estimates in a single regression. Capital intensity is the sum of tangible and intangible assets scaled by revenue. Standard errors are clustered at the firm level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table C.5: Tax Effects by High-tech versus Low-tech Industries

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC (Low-tech)	0.0122**	0.0160**	0.0266***	0.0122***
	(0.0055)	(0.0066)	(0.0088)	(0.0027)
Post × MP × QC (High-tech)	0.0579***	0.0813***	0.0724***	0.0238***
	(0.0151)	(0.0182)	(0.0236)	(0.0069)
Difference	0.0456***	0.0654***	0.0458*	0.0116
	(0.0159)	(0.0191)	(0.0249)	(0.0072)
Mean Dep. Var. (Low-tech)	11.5	34.8	807.3	37.3
Mean Dep. Var. (High-tech)	11.1	42.4	660.8	46.4
Observations	2,106,660	2,106,660	2,011,725	6,692,730
Firms/Workers (Treated)	10,205	10,205	10,165	64,250
Firms/Workers (Control)	343,235	343,235	339,825	1,070,455
Adjusted R^2	0.917	0.888	0.938	0.813

Notes: Columns (1) – (3) report coefficient estimates on *Post* × *MP* × *QC* in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on *Post* × *MP* × *QC* in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1), and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and year fixed effects. Column (4) includes worker fixed effects and year fixed effects. For each outcome, we estimate equation (2) for firms (or equation (4) for workers) in high-tech and low-tech industries within the M&P sector, both relative to the baseline control group, and compare the two coefficient estimates in a single regression. High-tech industries are defined at the level of 4-digit NAICS following Heckler (2005). Standard errors are clustered at the firm level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table C.6: Tax Effects by Pre-reform Labor Market Concentration

	(1) log(Employment)	(2) log(Average Payrolls)	(3) log(Tangible Assets)	(4) log(Annual Earnings)
Post × MP × QC (Low HHI)	0.0222**	0.0298***	0.0379***	0.0153*
	(0.0087)	(0.0106)	(0.0139)	(0.0088)
Post × MP × QC (High HHI)	0.0194***	0.0274***	0.0266**	0.0098***
	(0.0070)	(0.0084)	(0.0113)	(0.0029)
Difference	-0.0028	-0.0024	-0.0114	-0.0055
	(0.0116)	(0.0140)	(0.0184)	(0.0093)
Mean Dep. Var. (Low HHI)	11.9	36.2	874.6	41.9
Mean Dep. Var. (High HHI)	11.2	35.3	738.2	38.0
Observations	2,106,660	2,106,660	2,011,725	6,692,730
Firms/Workers (Treated)	10,205	10,205	10,165	64,250
Firms/Workers (Control)	343,235	343,235	339,825	1,070,455
Adjusted R^2	0.917	0.889	0.938	0.813

Notes: Columns (1) – (3) report coefficient estimates on *Post* × *MP* × *QC* in equation (2) for firms' log(employment), log(average payrolls), and log(tangible assets), respectively. Column (4) reports coefficient estimates on *Post* × *MP* × *QC* in equation (4) for workers' log(annual earnings). Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013, measured in level for column (1), and in thousand CAD for columns (2) – (4). Columns (1) – (3) include firm fixed effects and year fixed effects. Column (4) includes worker fixed effects and year fixed effects. For each outcome, we estimate equation (2) for firms (or equation (4) for workers) in labor markets with Herfindahl-Hirschman Index (HHI) below and above industry-specific medians in 2013, and compare the two coefficient estimates in a single regression. Labor markets are defined by 4-digit NAICS industries and commuting zones. Standard errors are clustered at the firm level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table C.7: Tax Effects by Worker Gender

	(1) log(Annual Earnings)
Post × MP × QC × Female	-0.0012
	(0.0042)
Post × MP × QC × Male	0.0221***
	(0.0028)
Difference	0.0233***
	(0.0045)
Mean Dep. Var. (Female)	30.2
Mean Dep. Var. (Male)	41.9
Observations	6,601,005
Workers (Treated)	63,945
Workers (Control)	1,053,550
Adjusted R^2	0.815

Notes: Column (1) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers whose annual earnings are below 4000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean dependent variable is based on years 2011 – 2013 and measured in thousand CAD. We estimate equation (4) for male and female workers, and compare the two coefficient estimates in a single regression. The specification includes worker fixed effects and year fixed effects. Standard errors two-way clustered at the firm level and worker level and reported in parentheses.

Table C.8: Tax Effects by Worker Age

	(1) log(Annual Earnings)
Post × MP × QC × 1st Quartile	0.0037
	(0.0050)
Post × MP × QC × 2nd Quartile	0.0088**
	(0.0036)
Post × MP × QC × 3rd Quartile	0.0139***
	(0.0035)
Post × MP × QC × 4th Quartile	0.0132***
	(0.0043)
Mean Dep. Var. (1st Quartile)	32.0
Mean Dep. Var. (2nd Quartile)	40.8
Mean Dep. Var. (3rd Quartile)	41.3
Mean Dep. Var. (4th Quartile)	37.5
Observations	6,437,905
Workers (Treated)	63,615
Workers (Control)	1,024,465
Adjusted R^2	0.821

Notes: Column (1) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers whose annual earnings are below 4000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean dependent variable is based on years 2011 – 2013 and measured in thousand CAD. We estimate equation (4) for workers separately by age quartiles in 2013. The specification includes worker fixed effects and year fixed effects. Standard errors two-way clustered at the firm level and worker level and reported in parentheses.

Table C.9: Tax Effects by Worker Annual Earnings

	(1) log(Annual Earnings)
Post × MP × QC × 1st Quartile	0.0124***
	(0.0040)
Post × MP × QC × 2nd Quartile	0.0166***
	(0.0038)
Post × MP × QC × 3rd Quartile	0.0152***
	(0.0036)
Post × MP × QC × 4th Quartile	0.0051
	(0.0046)
Mean Dep. Var. (1st Quartile)	26.4
Mean Dep. Var. (2nd Quartile)	32.4
Mean Dep. Var. (3rd Quartile)	41.4
Mean Dep. Var. (4th Quartile)	65.1
Observations	6,484,840
Workers (Treated)	63,255
Workers (Control)	1,042,980
Adjusted R^2	0.818

Notes: Column (1) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' log(annual earnings). Part-time workers whose annual earnings are below 4000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. Firms with fewer than four workers are excluded. The mean dependent variable is based on years 2011 – 2013 and measured in thousand CAD. We estimate equation (4) for workers separately by within-firm earnings quartiles in 2013. The specification includes worker fixed effects and year fixed effects. Standard errors are two-way clustered at the worker level and firm level, and reported in parentheses.

D Additional Results

In Appendix D, we provide additional results on (1) new entrants' earnings and changes in worker composition, (2) other corporate outcomes, (3) individual owners, (4) workers' income taxes, and (5) annual earnings of owner-workers and workers without ownership at the firms they work.

D.1 New Entrants' Earnings and Worker Compositions

Table D.1 reports estimates of the tax effects on new entrants' annual earnings, worker composition within a firm, and the probability of part-time workers or multiple-job holders becoming full-time workers. These outcome variables are constructed by aggregating worker-level data at the firm level. We find that the tax reform led to an increase in new entrants' average payrolls by 1.8 percent, which is a bit smaller, but still comparable to the estimate that includes incumbent workers (see column (2) of Table 5). By contrast, there is no change in the gender composition or the average age of workers in treated firms, relative to control firms, after the reform. Finally, we find that the share of full-time workers at treated firms was 74.3 percent before the reform, and the share increased by 0.4 percentage points after the reform, implying that there was a small increase in the share of workers transitioning to full-time.

D.2 Other Corporate Outcomes

Table D.2 reports estimates of the tax effects on other firm-level outcomes related to our analysis. Columns (1) and (2) report the effects on intangible assets and investment in computers. Intangible assets are measured in book value, net of amortization.[27] Investment in computers is calculated using data on firms' capital cost allowance. On average, the tax cut led to increases in firms' intangible assets by 4.7 percent and investment in computers by 774 CAD on average per year, which accounts for 38 percent of the increase in physical capital investment.[28] Furthermore, Column (3) shows that the tax effects on dividend payouts (scaled by total revenue) are neither economically nor statistically different from zero.

Moreover, Columns (4) and (5) report the tax effects on total operating expenses and total debt. Operating expenses are defined as total expenses net of total taxes paid and interest and bank

[27] In Canada, the book value of intangible assets changes not only when a firm acquirers patents, but also when the firm completes the development of its own intellectual properties ("D" part of R&D expenditures) following the International Financial Reporting Standards (IFRS) under certain conditions (International Accounting Standard 38R.57).

[28] In comparison, the tax cuts led to an increase in firms' capital investment by 2,036 CAD per year.

charges. After the reform, treated firms increased operating expenses and total debt by 72,586 CAD and 27,483 CAD on average per year, suggesting that 38 percent of the increased spending after the reform was financed through borrowing.

Overall, these results are consistent with the main firm-level findings that firms with the tax cut increased investment in both labor and capital, and experienced significant growth and profitability after the reform, relative to control firms.

D.3 Owner Outcomes

We link our main dataset to the ownership data, which contains information about individuals' ownership of their companies. This allows us to test whether there was any change in owners' capital income and ownership rates after the reform. Critics of the tax reform argue that small business owners would use any increase in after-tax profits from tax reductions to increase payouts to themselves.

We focus on owners who have any share in either treated or control firms in 2013. Table D.3 reports estimates of the tax effects on the average dividends income of individual owners at the firm level and individual owners' ownership rates. We find no significant change in these outcomes after the reform. It is possible that individual owners can increase dividend payouts to their family members after the tax cuts. However, as shown in Table D.2, there was no statistically significant increase in firm-level dividend payouts after the tax cut. This is inconsistent with individual owners significantly increasing dividends to family owners. Overall, these results are consistent with our main findings that treated firms increased investment in both capital and labor and continued to grow after the tax cut.

D.4 Owner-workers versus Workers without Ownership

Table D.4 shows estimates of the reform effects on workers' annual earnings, separately for owner-workers and for workers without ownership in the companies they work. We find that the tax reform led to an increase in owner-workers' earnings by 0.66 percent, although the estimate is statistically insignificant. By contrast, the reform led to an increase of 1.53 percent in annual earnings for workers without ownership in their own companies. These results suggest that owner-workers did not disproportionately benefit from the tax cuts in the form of higher salaries. Instead, owner-workers still bear a larger tax incidence through their ownership and changes in after-tax profits.

D.5 Labor Income Taxes

Table D.5 shows estimates of the reform effects on workers' provincial labor income taxes. We find that the tax reform led to an increase in treated workers' provincial labor income taxes by 28.2 CAD on average per year after the reform. This is consistent with the increases in treated workers' annual earnings after the reform. Multiplying this estimate by the number of treated workers yields an increase of 1.8 million CAD per year in labor income tax revenue at the provincial level after the reform. Note that we do not directly observe provincial income taxes for workers in Quebec in our data, so we impute them using workers' taxable income and personal income tax schedules during our sample period. Therefore, this imputation likely overstates the provincial income taxes because we do not observe individual tax credits at the provincial level.

Table D.1: Tax Effects on Worker Composition

	(1) log(Annual Earnings) of New Entrants	(2) Male Share	(3) Average Age	(4) Pr(Full-time)
Post × MP × QC	0.0184***	-0.0005	-0.0261	0.0044**
	(0.0067)	(0.0012)	(0.0527)	(0.0019)
Mean Dep. Var.	25.7	0.697	44.3	0.743
Observations	1,155,455	1,935,580	1,931,270	12,740,900
Firms/Workers (Treated)	9,975	9,965	9,965	115,330
Firms/Workers (Control)	329,345	328,640	328,535	2,623,440
Adjusted R^2	0.698	0.917	0.881	0.472

Notes: Columns (1) – (3) report coefficient estimates on $Post \times MP \times QC$ in equation (2) for log(annual earnings) of new entrants, share of male workers, and average worker age, respectively, aggregated by firms in the analysis sample. Column (4) reports coefficient estimates on $Post \times MP \times QC$ in equation (4) for workers' probability of holding a full-time job. The mean for each dependent variable is based on years 2011 – 2013, measured in thousand CAD for column (1), and in level for columns (2) – (4). Columns (1) – (3) include firm fixed effects and year fixed effects. Column (4) includes worker fixed effects and year fixed effects. Standard errors are clustered at the firm level for columns (1) – (3), two-way clustered at the firm level and worker level for column (4), and reported in parentheses.

Table D.2: Tax Effects on Other Firm Outcomes

	(1) log(Intangible Assets)	(2) Investment in Computers	(3) Dividends / Revenue	(4) Operating Expenses	(5) Total Debts
Post × MP × QC	0.0468***	0.7740***	-0.0015	72.5861***	27.4833***
	(0.0128)	(0.1515)	(0.0022)	(6.2289)	(1.8470)
Mean Dep. Var.	16.2	7.1	0.080	1532.6	552.6
Observations	2,010,400	2,111,875	701,880	1,341,780	2,106,660
Firms (Treated)	10,160	10,160	6,085	8,640	10,205
Firms (Control)	339,810	340,285	167,715	261,455	343,235
Adjusted R^2	0.903	0.414	0.560	0.935	0.897

Notes: Columns (1) – (5) report coefficient estimates on *Post* × *MP* × *QC* in equation (2) for firms' log(intangible assets), investment in computers, dividend payouts scaled by revenue, operating expenses, and total debts, respectively. Operating espenses are total expenses net of taxes and interest payments. The mean for each dependent variable is based on years 2011 – 2013, measured in thousand CAD for columns (1) – (2) and (4) – (5), and in level for column (3). All specifications include firm fixed effects and year fixed effects. Standard errors are clustered at the firm level and reported in parentheses.

Table D.3: Tax Effects on Owner Outcomes

	(1) Dividends Income	(2) Share Owned
Post × MP × QC	-0.3297	0.0004
	(0.2636)	(0.0018)
Mean Dep. Var.	13.0	0.562
Observations	1,654,425	2,420,885
Firms (Treated)	8,300	8,110
Firms (Control)	286,675	270,235
Owners (Treated)		12,230
Owners (Control)		380,610
Adjusted R^2	0.638	0.892

Notes: Column (1) reports coefficient estimates on *Post* × *MP* × *QC* in equation (2) for individual owners' dividends income averaged by firms in the analysis sample. Column (2) reports coefficient estimates on *Post* × *MP* × *QC* in equation (4) for individual owners' shares owned at the owner-firm level. The mean for each dependent variable is based on years 2011 – 2013, measured in thousand CAD for column (1), and in level for column (2). All specifications include firm fixed effects and year fixed effects. Standard errors are clustered at the firm level in column (1), two-way clustered at the firm level and owner level for column (2), and reported in parentheses.

Table D.4: Tax Effects on Workers with and without Ownership

	(1) log(Annual Earnings) of Owner Workers	(2) log(Annual Earnings) of Non-owner Workers
Post × MP × QC	0.0066	0.0153***
	(0.0071)	(0.0029)
Mean Dep. Var.	58.6	35.6
Observations	1,183,225	5,509,505
Workers (Treated)	7,425	56,825
Workers (Control)	181,500	888,950
Adjusted R^2	0.751	0.454

Notes: Columns (1) and (2) report coefficient estimates on *Post* × *MP* × *QC* in equation (4) for log(annual earnings) of workers with and without ownership in firms where they receive payroll slips, respectively. Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for each dependent variable is based on years 2011 – 2013 and measured in thousand CAD. All specifications include worker fixed effects and year fixed effects. Standard errors are two-way clustered at the firm level and worker level and reported in parentheses.

Table D.5: Tax Effects on Worker's Provincial Income Taxes

	(1)
	Personal Income Taxes
Post × MP × QC	0.0282**
	(0.0122)
Mean Dep. Var.	4.4
Observations	6,319,425
Workers (Treated)	63,950
Workers (Control)	1,053,725
Adjusted R^2	0.863

Notes: Columns (1) reports coefficient estimates on *Post* × *MP* × *QC* in equation (4) for workers' provincial income taxes. Part-time workers with annual earnings below 4,000 CAD, multiple-job holders, and workers who are not continuously employed by the same firm in 2011 – 2013 are excluded. The mean for the dependent variable is based on years 2011 – 2013 and measured in thousand CAD. The specification includes worker fixed effects and year fixed effects. Standard errors are two-way clustered at the firm level and worker level, and reported in parentheses.