Business Organization and Taxation of High-Income Professionals: Evidence from Canadian Doctors

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Abstract

Small businesses can choose from a range of organizational forms, including sole-proprietorship, corporations, and others depending on legal regime in place. These decisions are shaped by both non-tax considerations (limited liability, regulatory environment, administrative and accounting costs) and tax implications (the relationship between individual and corporate tax rates, deductions and base for both, capital gains tax rates, and tax enforcement). We assess both tax and real economic implications of facilitating the option to incorporate by doctors in Canada. Specifically, we exploit the 2006 reform in Ontario which allowed physicians' family members to own shares in these medical businesses. The administrative datasets, which link individual tax returns with their ownership information on both incorporated and unincorporated businesses, allow us to trace their individual and businesses incomes and taxes as long as 12 years after the reform. We use a triple-differences design, comparing the outcomes of physicians in Ontario with the outcomes of physicians in control provinces, and making the same comparisons for other high-income professionals between Ontario and control provinces. We find that the reform substantially increased the rate of incorporation by physicians. Subsequently, their pre-tax personal income and taxes paid (aggregated at the family level) significantly decrease, while their pre-tax business income and corporate taxes substantially increase, providing evidence of income shifting from the personal side to the corporate side. Importantly, the overall taxable income (personal and corporate combined) increases while the average effective tax rate (defined as total taxes paid divided by overall taxable income) decreases after the reform. Taken together, these results are consistent with both tax avoidance through a corporation and real response via business expansion after incorporation. This evidence is also consistent with intertemporal substitution of labor: working earlier in life to take advantage of higher rates of return within a corporation and retiring earlier. We plan to estimate the welfare impacts of this policy, measured by the change in excess burden per dollar of lost tax revenues, by using our reduced-form estimates on both behavioral responses and mechanical effects and by exploiting heterogeneous responses across age cohorts to proxy their life cycle.

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1 Introduction

Small businesses can choose from a range of organizational forms including sole-proprietorship, partnerships, corporations, and others depending on the legal regime in place at a given time and country. These decisions are shaped by both non-tax considerations (limited liability, regulatory environment, administrative and accounting costs) and tax implications (the relationship between individual and corporate tax rates, deductions and base for both, capital gains tax rates, and tax enforcement). Importantly, analyzing the behavior of (especially but not just, small) businesses should not be done while abstracting from their owners. In fact, the line between business and individual considerations is often blurry or non-existent, especially for closely-held businesses, with business activity potentially mixed with personal consumption and saving objectives of the owners (see e.g., Alstadsæter, Kopczuk and Telle, 2014; Kopczuk and Zwick, 2020; Leite, 2024).

Our main objective in this work is to analyze implications of the option to incorporate. We construct a welfare framework that allows us to understand the incentives and welfare implications, and provide empirical evidence by focusing on Canadian doctors and based on reforms that modified the incentives to incorporate. We show that these reforms had large effect on organizational form, correspond to income shifting from individual tax base to corporate one, generate income shifting within family, and correspond to accumulation of undistributed earnings within firms. They naturally switch which (corporate or individual) taxes are paid and we show that they reduce the effective average tax rate. However, the responses are not limited to shifting and planning. We show that overall (business and personal) income increases and that there is some evidence of increased employment, capital investments, and sales. In this context, income increases are best thought of as labor supply increases and we find evidence consistent of intertemporal substitution – acceleration of work toward earlier in life and earlier retirements.

We study physicians in Canada for the following reasons. First, it is a specific example of high-income professionals of the kind that played an important role for growing inequality (Smith et al., 2019; Gottlieb et al., 2023). Second, this is a group known to respond to tax incentives on the incorporation margin in some other countries (Romanov, 2006). These two reasons make it a potentially fruitful area for studying behavioral responses in an important and well-defined context with required data.[1]

In order to evaluate the effects of incorporation by high-income professionals, we must know

[1]This context is also tied with the political economy of public expenditures: while the Canadian supply of health care is to a large extent private, spending is predominantly public and policy-makers choose to partially compensate physicians through tax breaks, with implications for the true fiscal cost and industrial organization of this important sector. However, we can abstract from these considerations by comparing across provinces and providing corroborating evidence for dentists who are not subject to the same considerations.

the long-run effective tax rate paid on income that is deferred from current taxation, and the changes in economic activity that result from it. We show that the welfare costs of tax deferral can be estimated, to a first-order approximation, by measuring the long-run effects of deferral on government revenue alone, i.e. the "fiscal externality" from tax deferral. Public finance economists have long understood that the marginal excess burden of a tax is, under fairly general conditions, equal to its marginal effect on government revenue through behavioral channels. Using this idea, Hendren (2016) and Hendren and Sprung-Keyser (2019) have proposed simple rules for evaluating the welfare impacts of a wide variety of policies based on a minimal set of elasticities and tax–transfer parameters. More recently, Lee et al. (2019) have proposed estimating the deadweight loss of unemployment insurance policies by measuring their fiscal externalities in a reduced form way. We show how these insights can be applied to evaluating tax avoidance through incorporation and deferral, even in complex, dynamic environments.

Incorporation offers owner-managers flexibility about the timing of distributions from the firm and so, in some cases, the tax advantages that flow from deferral of tax liabilities. Tax deferral through small business corporations may be advantageous if it lowers the user cost of capital for reinvested earnings. If income deferred for tax purposes is eventually taxed at the same tax rate, however long in the future, then the present value of taxes saved through deferral will be zero—an idea known as the "New View" of Dividend Taxation (Auerbach, 1979). But the "New View" rests on strong assumptions about the choices facing the firm and the effectiveness of the tax system in controlling tax avoidance. If deferral leads to long-run tax advantages, it raises obvious concerns about the loss of tax revenues and the horizontal inequity in the treatment of business owners and other high-income earners who cannot adopt the corporate form.

Our framework highlights that a variant of "new view" insights also applies to human-capital rich business owners who do not run capital intensive businesses. Even absent capital investments, retaining earnings and deferral may be still beneficial as a substitute for private savings if the after-tax rate of return within a business is higher than the after-tax return in private savings. We show that such an owner would finance consumption by making dividend (or compensation) payments as needed and otherwise save within a business, without dividend taxation distorting consumption choices. However, when the effective rate of return is higher, the consumption profile should be steeper. At the same time, the higher rate of return makes inside-equity more attractive and the only mechanism for accumulating is to work more, especially earlier in life. All of this goes together: a higher rate of return implies delaying both consumption and leisure until later. We will show evidence consistent with these observations: an increase in labor supply following incorporation, some evidence of acceleration of retirement (steeper labor supply path) and the growing stock of retained earnings within a business consistent with delayed consumption (or transfers).

Incorporation and deferral are examples of income shifting in response to tax incentives (Saez, Slemrod and Giertz, 2012). Income shifting across tax bases makes analyzing welfare implications of tax reforms difficult because it requires tracking different bases. Our framework and empirical analysis deals with that by linking individuals and firms, individuals with their family members, and following over time. Deferral corresponds to shifting across periods. Incorporation corresponds to income shifting between individual and corporate tax base. Flexibility of the organizational form allows for strategies that involve retaining earnings, reclassifying wages as profits, and various forms of tax avoidance. Recent interest in the extent of tax evasion at the top of the distribution has also focused on closely-held businesses that tax authorities have difficulty seeing through (Guyton et al., 2021). Finally, different countries have different legal and tax environments and, as the result, business income can be taxed predominantly by corporate taxation, as in Canada and United Kingdom, or have a half or more of it subject to individual income taxation, as in the United States and Germany (Clarke and Kopczuk 2017; Joint Committee on Taxation 2013). Hence, these organizational issues are central to understanding behavioral responses to taxation.

We apply our welfare framework to assess real and tax implications of incorporation by Canadian physicians. We exploit the 2006 reform in Ontario which allowed physicians' family members to own shares in these businesses. We leverage administrative datasets that merge individual tax returns with ownership information on both incorporated and unincorporated businesses, allowing us to trace their individual and businesses incomes for over 12 years following the reform. The Canadian tax system has a lower business tax rate for small businesses coupled with corporate tax integration, which nevertheless creates significant opportunities for tax planning through a corporation (Wolfson et al., 2016; Smart, 2021). Since the administrative data links tax records of individuals with their family members and businesses that they own, we can comprehensively observe household income (important for understanding income shifting within a family), income from all sources including retained earnings in closely held businesses, tax liability including individual income taxes, capital gains taxation, business-side taxation, and real business activities (i.e., employment and capital investment). This rich data environment is crucial in the context where physicians can incorporate and represent income that was previously reported as individual professional income, but now gives rise to business revenue and profits instead.

To estimate the causal impacts of the reform, we use a triple-difference design, where we compare the outcomes of physicians in Ontario with the outcomes of physicians in other provinces, and make the same comparisons for other high-income professionals between Ontario and other provinces. We find that the reform substantially increased the rate of incorporation by physicians. Subsequently, their pre-tax personal income and taxes paid (aggregated at the family level) significantly decrease, while their pre-tax business income and corporate taxes increase, providing

evidence of income shifting from the personal side to the corporate side. Importantly, overall taxable income (personal and corporate) increases while the average effective tax rate (total taxes paid scaled by overall taxable income) decreases after the reform. These results are consistent with both tax avoidance through a corporation and real response through business expansion after incorporation. This evidence is also consistent with intertemporal substitution of labor: working earlier in life to take advantage of higher rates of return within a firm and retiring earlier. We plan to estimate the welfare impacts of this policy, measured by the change in excess burden per dollar of lost tax revenues, by using our reduced-form estimates on behavioral responses and mechanical effects and by exploiting heterogeneous responses across age cohorts to proxy their life cycle.

2 Institutional Details

This section provides institutional details regarding the incorporation rules for physicians and dentists in Canada relevant for our empirical design.

2.1 Incorporation in Canada

In Canada, roughly 50,000 businesses are incorporated on average in each year since 2001. There are three main benefits of incorporation. First, an incorporated business is a separate legal entity from its owner and therefore grants a limited liability to the owner. Second, an incorporated business has easier access to capital; for example, it can borrow at a cheaper interest rate, issue corporate bonds, and raise money by issuing new equity. Third, an incorporated business faces a corporate income tax, which has a much lower top marginal rate (for small businesses) compared to the top marginal tax rate on personal income. While there is no pass-through entity (similar to a S-corporation in the United States), Canada has an integrated tax system that avoids double taxation by giving dividend tax credits on after-tax distributed income. These three main benefits of incorporation facilitate business expansion through increased investment and hiring.

Besides helping business growth, incorporation gives business owners a more tax-favored retirement vehicle through retained earnings. While a government-sponsored retirement saving account (i.e., 401k in the U.S. and RSP in Canada) has an upper limit on how much one can contribute, a business owner can retain an unlimited amount of money inside her corporation and use it towards private investment, such as buying real estates, stocks, or risk-free bonds. Upon retirement, the business owner can then sell the shares of her company and faces a much lower tax rate on the realized capital gains. Furthermore, the business owner can split her income with family members (with a lower tax base) by giving shares and reduce their overall tax burdens. Finally,

there exists a more tax-favored bequest through setting up a trust fund. Therefore, incorporation can facilitate business expansion and acts as a tax-favored retirement and bequest method.

Despite these great benefits of incorporation, the majority of business owners in Canada remains unincorporated. Corporate entities follow different tax schedules and regulations compared to sole proprietors. Once incorporated, owners have to pay legal and accounting fees, which may not be trivial for most small businesses. Furthermore, there are regulations on who can incorporate or who can own shares of an incorporated business. For example, until 1991, physicians in British Columbia were not allowed to incorporate their medical clinics. During our sample period (2001 – 2017), doctors across provinces are allowed to incorporate, but there are different provincial regulations regarding who can own shares of their clinics. We provide more details below.

2.2 Reform in Ontario

In Canada, business and medical practices of physicians are heavily regulated by provincial governments (i.e., setting service fees). On average, physicians become licensed at age 30 with a large amount of student loans, so new physicians are often self-employed and delay incorporation.

Since the reform that allowed physicians to incorporate their medical clinics (the latest one was 2001 for most provinces), there has been a significant increase in the share of incorporated doctors across provinces. However, there still exists a large share of unincorporated clinics; roughly a half of physicians in Canada works as a sole proprietor even to date. For example, after the 2001 reform in Ontario that allowed physicians to incorporate, the incorporation rate still remained low at around 15 percent on average. A key restriction was that only doctors can own shares of a clinic.

In 2006, the Ontario government allowed physicians' family members to own non-voting shares of medical clinics. As mentioned before, this reform would allow physicians to split their income with their family members (often with a lower tax base) and therefore reduce their overall (family-level) tax burdens. Furthermore, giving shares to family members would give them a more tax-favored bequest vehicle. In Canada, there is a life-time exemption on realized capital gains up to 1 million dollars per business owner. As an example, if a physician has a medical business worth 3 million dollars upon realization, she would have to pay taxes on the realized gains of 2 million dollars after the exemption. By giving an equal share to her spouse and her child, each member can exercise the life-time exemption and sell the business without paying any taxes on capital gains. Therefore, allowing physicians to give shares to their family members can lower their overall tax burdens immediately (by splitting their income with lower tax-base members through dividend payments) and also give them a much more tax-favored way of passing their wealth to their spouses and children upon retirement or death.

By contrast, physicians in British Columbia have been allowed to give non-voting shares to their family members since the 1991 reform that permitted incorporation. Therefore, physicians in British Columbia serve as a natural control group to physicians in Ontario. On the other hand, a reform similar to the one in Ontario was implemented in 2010 Alberta and in 2007 Quebec; physicians in Alberta and Quebec were allowed to give shares of their clinics after the reform. For this reason, we drop physicians in Alberta and Quebec from our analysis and plan to use them as separate treated groups in the future. Furthermore, a similar reform was implemented in 2006 Ontario for dentists; since the reform, they are allowed to give shares to their family members. For now, we include them as part of the treated group, but we plan to explore the differences between physicians and dentists, as the latter group's service fee system is not regulated by the government.

3 Conceptual Framework

This section presents our conceptual framework that describes how a policy inducing incorporation may affect the reallocation of income from a personal side to a corporate form, and subsequently may affect the overall taxable income and tax burdens of a business owner. Then we use our model to describe which behavioral responses are relevant for evaluating the policy that provides tax incentives for incorporation.

Suppose that a self-employed physician chooses the organizational form of her business either as a pass-through (sole-proprietor) entity ($i = P$) or a corporate entity ($i = C$). The physician's objective is to maximize the discounted sum of after-tax cash flows from the business, net of the utility cost of her own effort:

$$V^i = \max \sum_t \frac{1}{(1+r)^t} \left[Y_t - T_t^i - G_t(L_t) \right] \qquad i \in \{P, C\} \tag{1}$$

where $G_t(L_t)$ is utility cost of effort L_t, and Y_t is net cash flow of the business in period t, which satisfies the budget constraint:

$$Y_t = F_t(I_t, L_t) - I_t \tag{2}$$

where I_t is net equity investment in period t, and F_t is net operating cash flow.

Taxes (T_t^i) depend on the organizational form $i \in \{P, C\}$. For the pass-through entity, the business's full operating cash flow is subject to tax at the physician's personal tax rate τ_p. For the corporate entity, business income is subject to tax at the corporate tax rate τ_c, while distributions

from the corporation to the shareholder are taxed again at rate τ_d:[2]

$$T_t^i = \begin{cases} \tau_p F_t(I_t, L_t) & \text{if } i = P \\ \tau_c F_t(I_t, L_t) + \tau_d D_t & \text{if } i = C \end{cases} \tag{3}$$

where $D_t \leq Y_t$ are earnings distributed from the corporation to the shareholder at t.

To characterize the physician's choices under the two forms, we focus on the case in which the business's net cash flows F_t in each period are sufficient to finance its net investment I_t. In this case, the physician's optimal choices of labor and equity investment satisfy the first-order conditions that are, for the pass-through firm,

$$F_{It} = \frac{r}{(1-\tau_p)} \qquad F_{Lt} = \frac{G_t'(L_t)}{(1-\tau_p)} \tag{4}$$

and, for the corporate firm,

$$F_{It} = \frac{r}{(1-\tau_c)} \qquad F_{Lt} = \frac{G_t'(L_t)}{(1-\tau_c)(1-\tau_d)} \tag{5}$$

These equations show the fundamental difference between the organizational forms lies in the effective tax rate applied to the firm's investment. In the corporate form, as long as investment is financed from retained earnings, the effective tax rate on investment is the corporate tax rate alone. The marginal investment returns $(1-\tau_c)(1-\tau_d)F_{It}$ to the shareholder after taxes. It is financed by reducing distributions to the shareholder, which would otherwise bear tax at the rate τ_d, so the marginal cost of investment finance is $(1-\tau_d)r$. The tax on distributions reduces both the cost and return to the marginal investment proportionally, and these terms drop out of the first-order condition. Thus the model replicates the "new view" that dividend taxes are irrelevant to investment financed by retained earnings (Auerbach, 2002). In contrast, the return to labor effort is fully taxed in both organizational forms, returning $(1-\tau_p)F_{Lt}$ in the pass-through case, and $(1-\tau_c)(1-\tau_d)F_{Lt}$ in the corporate case. Since the cost of the owner's own labor effort is not tax-deductible, the effort decision in the corporate firm reflects both levels of taxation.

When $\tau_c < \tau_p$ and $\tau_p \leq (1-\tau_c)(1-\tau_d)$, we expect the corporate firm to invest more than the passthrough entity. If capital and labor are complements, we may also expect greater work effort by the owner-manager who chooses the corporate form. This is true even if the corporate

[2]Distributions may occur through the payment of dividends, the realization of capital gains, or other means. What matters is that such payments are not deductible from the corporate tax base.

and personal tax systems are fully integrated, so that

$$\tau_p = (1 - \tau_c)(1 - \tau_d)$$

In the case of full integration, the effective tax rate on income earned in the corporation and distributed is the same as that of a pass-through firm. Nevertheless, the tax rate on investment is lower, leading to the conclusions above.

In practice, corporate tax systems may be "under-integrated," in the sense that the effective tax rate on income earned through the corporate form is lower than that which would be paid by shareholders on the same income earned form a pass-through entity. Income taxes in Canada include a dividend imputation system that delivers integration for income that is earned in a corporation and immediately distributed to owners as dividends or wages. But distributions to owner-managers' family members and in the form of capital gains likely face lower personal taxes, leading to under-integration for many small firms (Smart, 2021). Moreover, passive investment income earned by the corporation may be taxed at preferential rates, delivering an additional deferral advantage. The ultimate effect of incorporation on effective tax rates and therefore on incentives to invest and work for corporate owner-managers is therefore an empirical question.

Consider an exogenous switch in the organizational form from pass-through to incorporation. When $\tau_c < \tau_p$, the greater output of the firm and income of the shareholder comes at a cost of lower tax revenue as the owner shifts the income to inside the firm. The effect on revenues consists of the mechanical change M resulting from the change in tax rates, at fixed behavior Y_t^P, plus the effect of behavioral changes on revenue B. The combined effect on present-value tax revenues is

$$\Delta R = M + B = \sum \frac{1}{(1+r)^t} \left[T_t^C - T_t^P \right] \tag{6}$$

At the same time, the behavioral effect on tax revenues is approximately equal to

$$B = \tau_p \sum \frac{1}{(1+r)^t} \Delta F_t \tag{7}$$

where $\Delta F_t = F(K_t^C, L_t^C) - F(K_t^P, L_t^P)$.

The physician's willingness to pay for the change to corporate form is $V^C - V^P$. The willingness to pay net of the lost tax revenue is the associated change in excess burden of taxation, $\Delta EB = V^C - V^P + \Delta R$. We can use the Harberger approximation to show that

$$\Delta EB \approx -B = -\tau_p \sum \frac{1}{(1+r)^t} \Delta Y_t \tag{8}$$

A convenient metric of social return to incorporation is then the resulting change in excess burden per dollar of lost revenue, $-B/(M+B)$.[3]

In summary, we want to estimate the mechanical and behavioral impacts on revenue from an exogenous switch from pass-through to corporate organization. The behavioral effect can be approximated by the long-run change in combined (corporate and personal) income of the physician, multiplied by the tax rate that would have applied to the passthrough entity. The size of the behavioral gain in revenues, relative to the mechanical loss in revenues, is a sufficient statistic for the impact of the change on social welfare.

4 Data and Outcome Variables

For our empirical analysis, we use the following datasets all merged at the individual level using the unique ID: (1) individual tax returns data (T1PMF) to identify individual income and tax information, (2) family data file (T1FF) to identify family-level income and tax information, (3) ownership data on incorporated businesses (T2S50), (4) firm-level balance sheet data (NALMF) to identify corporate income and tax information, and (5) ownership data on unincorporated businesses. We link these datasets at the individual level so that we have comprehensive information on the person's various income sources, taxes, ownership rates of incorporated and/or unincorporated businesses and their balance sheets. If the person is married, we also construct the combined income and tax information that accounts for the spouse and children.

All of these data are from 2001 to 2017, except for the ownership data on unincorporated businesses, which start in 2005. The relevant analysis sample is all individuals who ever own any incorporated or unincorporated business starting from 2005 (given that our data on unincorporated businesses start from 2005). We make this sample restriction to identify and focus on high-income professionals (i.e., doctors) since we do not observe the individual's occupation, but instead only observe the industry code for each business – i.e., an individual who has ownership in a clinic (NAICS 6211, offices of physicians) must be a doctor in Ontario prior to the 2006 reform, and is still most likely to be a doctor, rather than a nurse or health care staff, even after the reform. From the family files, we can differentiate a doctor from her family members among all owners in a medical business. The main limitation due to the unincorporated data starting from 2005 is that we cannot test for parallel pre-trends for outcomes related to businesses alone, such as employment, capital investment, and total revenue. For example, to examine what happens to capital investment

[3]It is common to refer to B as the fiscal externality of the reform. This reflects the notion that, when $B > 0$, lump-sum taxes on the incorporating physician could in principle be increased, leaving the physician indifferent to the change, but generating a net gain in revenue to the government. For a discussion, see Boadway and Smart (2024).

or employment after incorporation, we need to be able to follow the investment and the number of workers before and after a business is incorporated. Because the unincorporated business data starts from 2005, we cannot test whether the trends were parallel relative to the control group before 2005. But for all the other key outcome variables at the individual level, such as their taxable income and tax burdens, we can follow from 2001.

The main outcome variables are various measures of individual- and family-level income, such as their taxable income, capital income (i.e., dividends), and labor income. We also look at taxes paid on their income (combining federal and provincial levels). To assess whether there is any income shifting from the personal side to the corporate one after incorporation, we directly examine the key outcomes at the firm level, such as pre-tax business income (defined as changes in retained earnings plus corporate taxes) and corporate taxes paid (federal and provincial taxes combined). For individuals who incorporate their businesses only after the reform, these variables would be mechanically zero prior to the reform. Any subsequent changes in these outcomes reflect both the reallocation of income (from personal to corporate) and changes in businesses activities (i.e., firm expansion after incorporation). Therefore, we also examine overall taxable income and taxes paid, combining pre-tax personal income and taxes with pre-tax corporate income and taxes paid. Note that the overall taxable income would remain the same after incorporation if there is no change in real business activities. However, the combined taxes paid may decrease after incorporation via reallocation of income given that the marginal tax rate on corporate income is lower than the marginal tax rate on personal income. On the other hand, if there are large increases in business activities through firm expansions after incorporation, corporate income may increase significantly, which may lead to increases in corporate income. To check whether there is any change in real business activities, we look at changes in the number of workers, capital investment, and revenue.

5 Empirical Strategy

We use a triple-difference design to estimate the impact of decisions to incorporate on the business activities of small firms, and on the incomes received and taxes paid by business owners. The decision to incorporate reflects multiple factors, creating challenges in identifying the causal impact of incorporation events. To provide causal evidence, we focus on incorporation by Canadian physicians. In particular, we exploit the 2006 reform in Ontario which allowed physicians' family members to own shares in these businesses, creating opportunities for "income sprinkling" to family members and other forms of tax avoidance via the corporate form.

To assess the effects of this reform on the key outcomes, we first compare the outcomes of physicians in the treated province (Ontario) with the outcomes of physicians in other provinces

(i.e., British Columbia) before and after the policy change. The intuition is that physicians across different provinces are similar in terms of their income level, but their incentives to incorporate their businesses were unaffected by the reform. To absorb any province-specific or other policy changes, we make the same difference-in-differences comparisons using business owners in similar professions (i.e., other health care professionals, lawyers, accountants). Our triple difference design would absorb any province-specific shocks or industry-specific shocks that may have coincided with the policy. The key identifying assumption behind our empirical design is that affected and unaffected groups' outcomes would have trended similarly in the absence of the reform.

To validate our empirical design and visualize the reform's effects on the key outcomes, we estimate the following model:

$$Y_{it} = \sum_{\tau=2001}^{2017} \theta_\tau \cdot \mathbb{1}_{\{t=\tau\}} \cdot Doctor_i \cdot ON_i + \sum_{\tau=2001}^{2017} \gamma_\tau \cdot \mathbb{1}_{\{t=\tau\}} \cdot Doctor_i + \sum_{\tau=2001}^{2017} \lambda_\tau \cdot \mathbb{1}_{\{t=\tau\}} \cdot ON_i + \alpha_i + \phi_t + u_{it}, \quad (9)$$

where Y_{it} is the outcome of individual i in year t, $Doctor_i$ is an indicator equal to one if the individual is a physician (or dentist), ON_i is an indicator equal to one if the individual is in Ontario, α_i are individual fixed effects, and ϕ_t are year fixed effects. Each coefficient θ_τ measures the change in Y_{it} for treated relative to control individuals in year $t = \tau$ and θ_{2005} is normalized to zero. Standard errors are clustered at the individual level.

To ensure that the control group (in other industries/occupations) is comparable to physicians, we first find 4-digit industries of business owners that had a similar pre-reform incorporate rate compared to that of physicians in Ontario. Then among business owners within these industries as well as physicians in other provinces, we match them based on their age bins, gender, marital status, and family size measured in 2005. Table 1 shows that while the overall income and tax burdens of doctors in Ontario are larger compared to those of doctors in other provinces, the difference is comparable to that of other high-income professionals between Ontario and other provinces. Furthermore, the demographics of physicians in Ontario, such as their average age, share of males, marital status, and family size, are also comparable across provinces and other high-income professionals.

To study the life-cycle impacts of incorporation in more detail, we plan to exploit heterogeneous responses across different age cohorts (i.e., physicians in 30's, 40's, ..., in 2005) because the incentives to incorporate and behavioral responses to incorporation may differ significantly across their life cycle. For example, we would expect younger physicians to expand their businesses much more upon incorporation and experience a larger increase in their overall taxable income compared to older physicians.

6 Results and Economic Interpretations

To evaluate the impacts of the reform, we first look at the share of incorporated businesses. We compare the incorporation rates of physicians in Ontario relative to those of physicians in other provinces before and after the reform. Then we compare these differences relative to the same differences among other high-income professionals. As Figure 1 shows, we find a large and significant increase in incorporation rates for physicians in Ontario after the reform. Column (1) of Table 2 shows that the incorporation rate increases by 15.3 percentage points (from the mean of 16.6 percent), meaning that it almost doubles after the reform. Note that this estimate is based on comparing physicians in Ontario relative to physicians in other provinces, and comparing the same differences among other high-income professionals between Ontario and other provinces. To simplify, we will describe our triple-difference estimates as the outcomes for physicians in Ontario relative to those of the control group after the reform.

Next, we assess how pre-tax individual income and taxes change after the reform. As Figure 2 and Table 2 show, the personal income of physicians and the family-level personal income (including the spouse's income when married) in Ontario decrease by 22,895 dollars and 13,840 dollars on average, relative to the control group after the reform. By contrast, the corporate income and retained earnings of incorporated businesses at the family level increase by 25,450 dollars and 40,065 dollars on average after the reform. These results suggest significant reallocation of family-level income from the personal side to the business side.

In particular, as Figure 3 and Table 3 show, the physician's employment income decreases sharply and almost immediately, by 28,511 dollars on average, while the dividend incomes rises by 4,399 dollars (but not to the level where it offsets the fall in the labor income). By contrast, the spouse's employment and dividend income increase by 3,622 dollars and 1,860 dollars, respectively, on average, showing evidence of income-splitting of physicians with their spouses (with a lower tax base) after the reform. Subsequently, as Figure 4 and Table 4 show, the personal taxes paid (the federal and provincial taxes combined) decreases by 8,475 dollars on average. By contrast, we see increases in corporate income taxes paid (combining both federal and provincial ones), by 6,997 dollars on average. These findings suggest the reform not only provided strong incentives for physicians in Ontario to incorporate their businesses, but also to subsequently shift to and retain part of their income in the lower-taxed organizational form.

Assessing overall taxable income and taxes paid (combining both the personal side and the corporate side), however, shows that these results reflect something beyond the pure reallocation and tax-saving behaviors. As Figure 5 shows, we find that the combined taxable income goes up in the medium run, with a fall in the long run after the reform. Consequently, the overall tax burdens

rise in the medium run and fall in the long run, leading to a reduction in the average effective tax rates (defined as total taxes divided by overall taxable income). Table 5 shows that overall taxable income goes up by 15,028 dollars, but overall taxes paid and average effective tax rates decrease by about 1,000 dollars and 0.64 percentage points (3-percent reduction) on average after the reform. We find that the number of workers, capital investment, and revenue of their firms increased for the treated group after the reform, providing evidence of firm expansion (Figure 6). These results suggest that the post-reform increases in firms' retained earnings reflect not only reallocation effects, but also increased business activities and intertemporal substitution of labor after incorporation.

To estimate the welfare impacts of this reform, we plan to measure the change in excess burden per dollar of lost tax revenues using our reduced-form estimates on these behavioral responses and mechanical effects. We also plan to exploit heterogeneous responses across age cohorts to proxy their life cycle, so that we can account for important dynamic effects we document in our current results.

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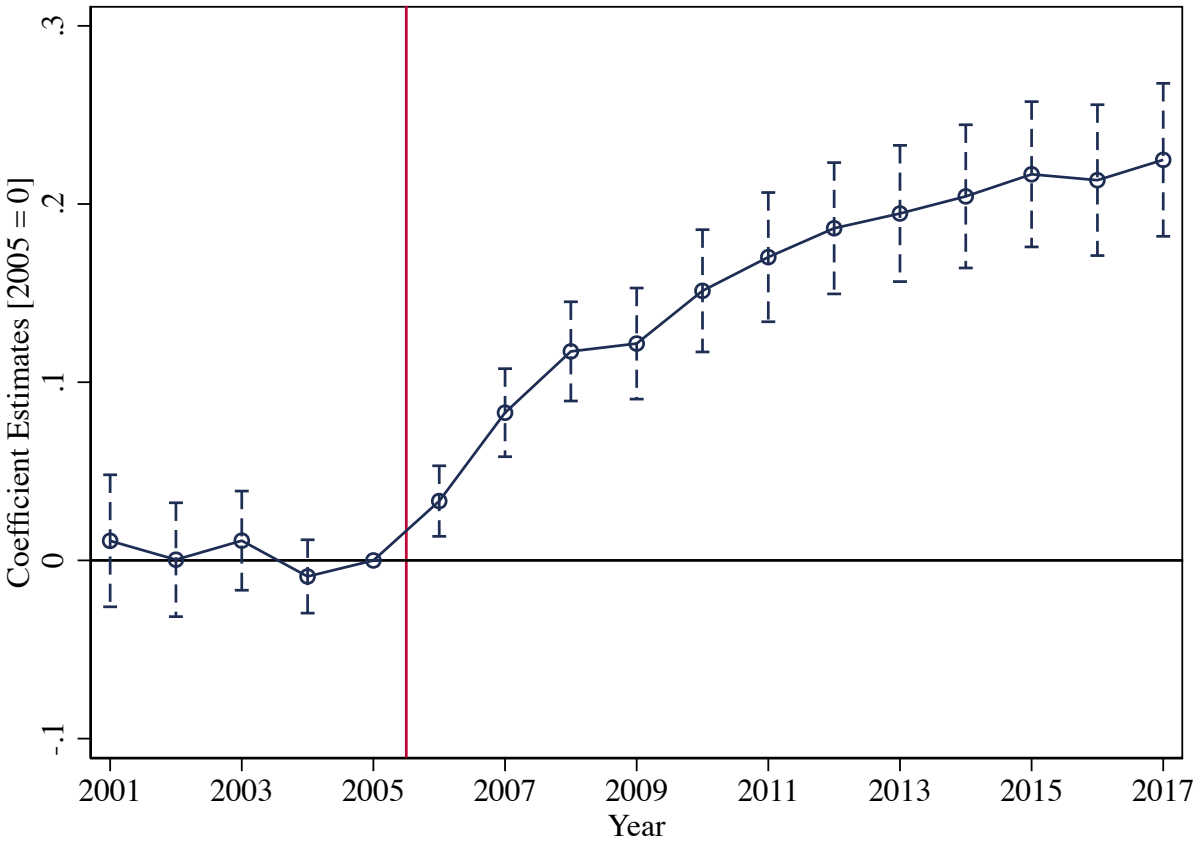
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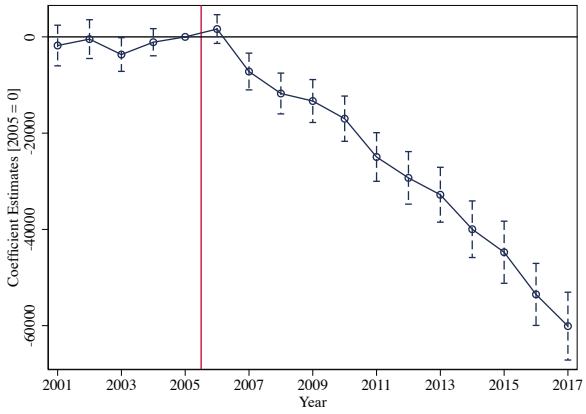
Figure 1: Reform Effects on Incorporation



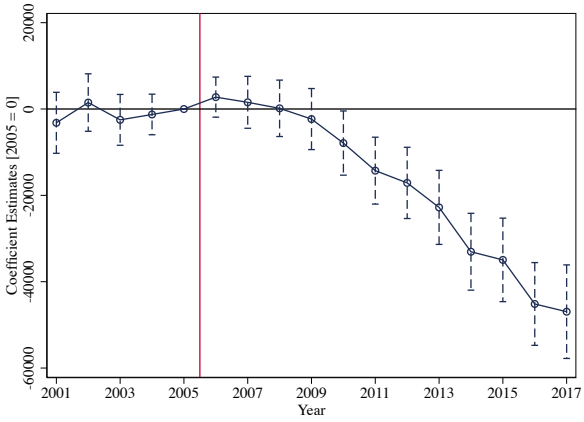
Notes: This figure shows coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \cdot Doctor_i \cdot ON_i$ in equation (9) for physicians' incorporate rate relative to the control group. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals.

Figure 2: Reform Effects on Taxable Income and Retained Earnings

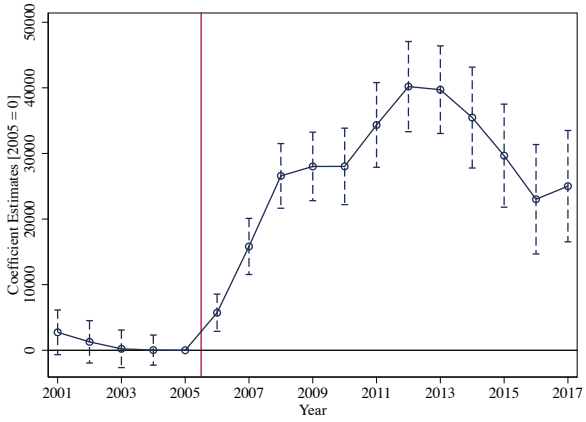
(a) Taxable Income (individual level)



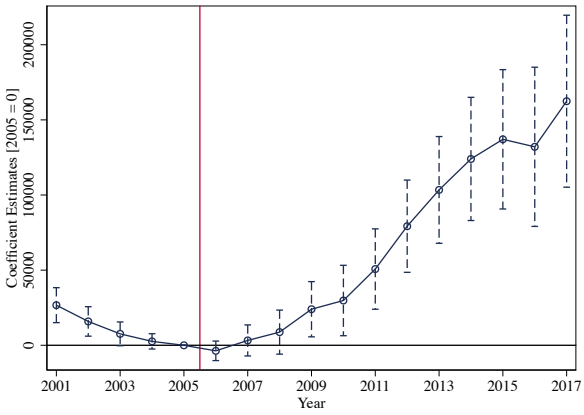
(b) Taxable Income (family level)



(c) Business Income (family level)



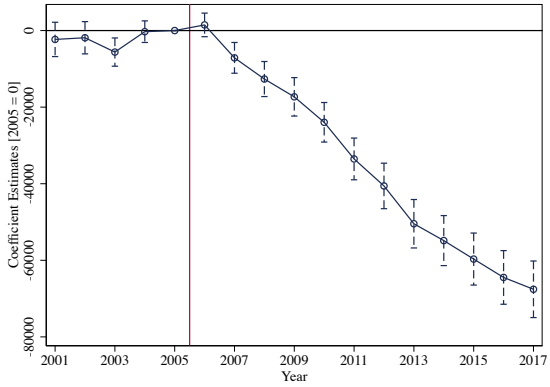
(d) Retained Earnings (family level)



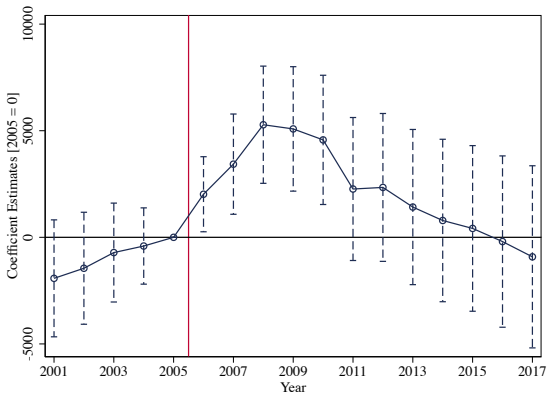
Notes: Panels (a) – (d) of this figure show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \cdot Doctor_i \cdot ON_i$ in equation (9) for physicians' own personal income, family-level personal income, business income, and retained earnings, respectively, relative to the control group. Taxable income is defined as the total pre-tax individual income. Business income is defined as changes in retained earnings plus corporate income taxes. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals.

Figure 3: Reform Effects on Employment Income and Dividend Income

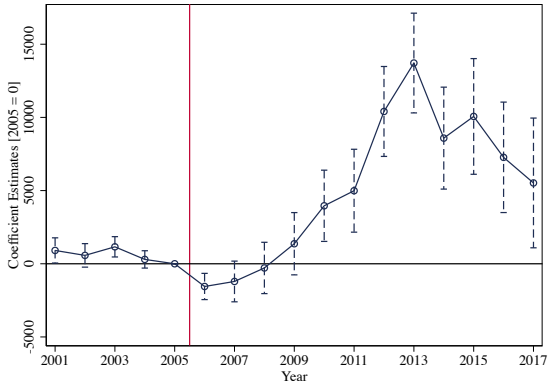
(a) Employment Income (doctor)



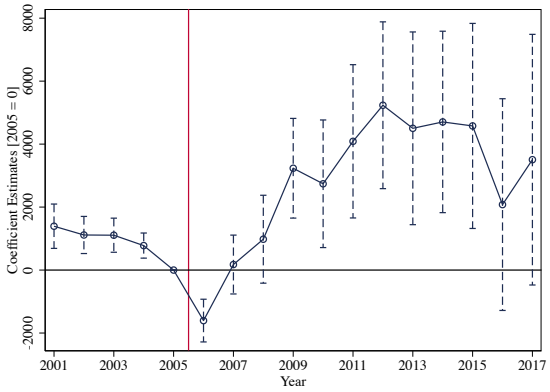
(b) Employment (spouse)



(c) Dividend Income (doctor)



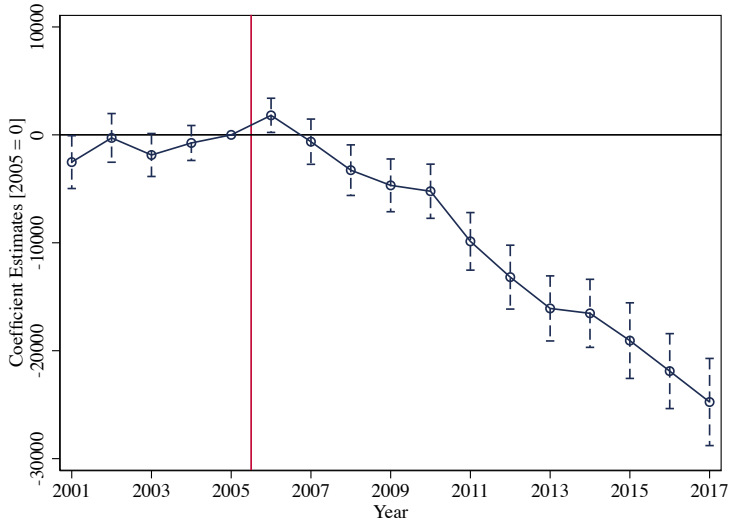
(d) Dividend (spouse)



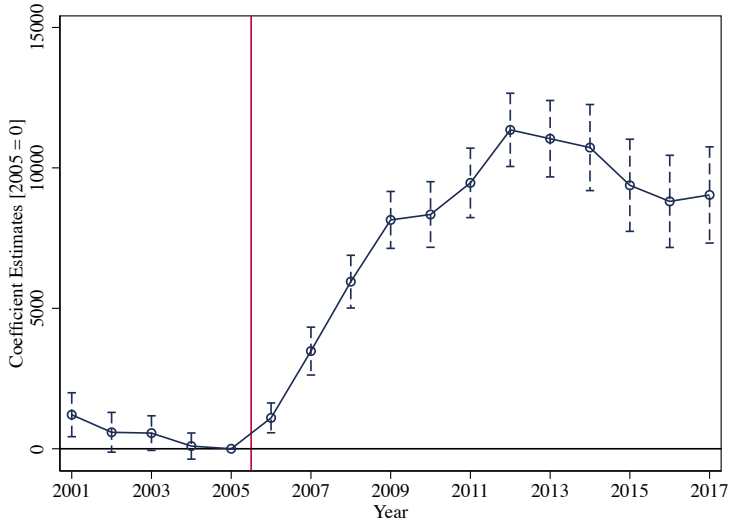
Notes: Panels (a) – (d) of this figure show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \cdot Doctor_i \cdot ON_i$ in equation (9) for physicians' employment income, the spouse's employment income, physicians' dividend income, and the spouse's dividend income, respectively, relative to the control group. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals.

Figure 4: Reform Effects on Personal and Corporate Income Taxes

(a) Personal Income Taxes (family level)



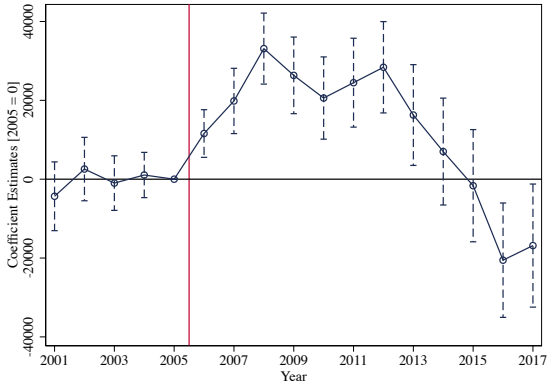
(b) Corporate Income Taxes (family level)



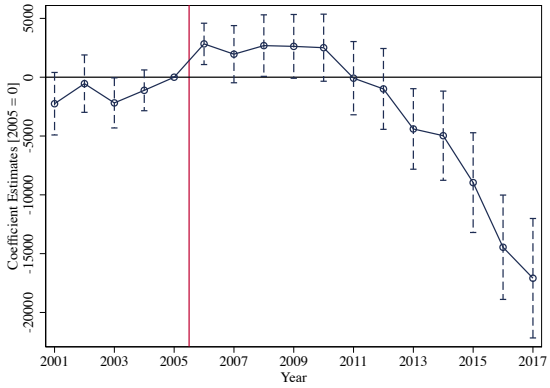
Notes: Panels (a) – (b) of this figure show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \cdot Doctor_i \cdot ON_i$ in equation (9) for physicians' personal income taxes and corporate income taxes (federal and provincial taxes combined), respectively, relative to the control group. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals.

Figure 5: The Reform Effects on Overall Taxable Income and Total Taxes Paid

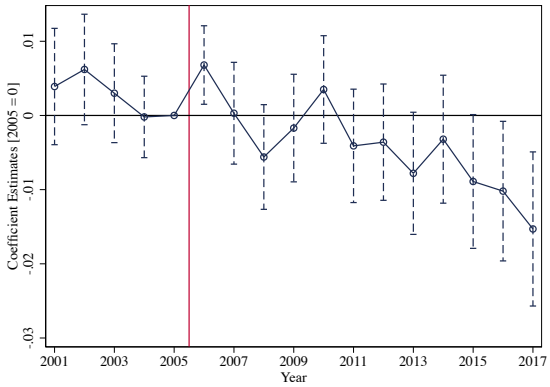
(a) Overall Taxable Income (family level)



(b) Total Taxes Paid (family level)



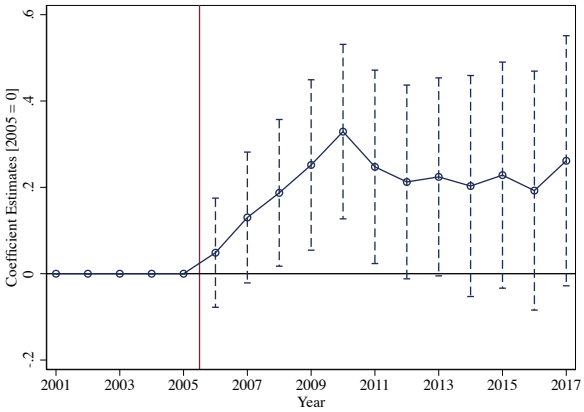
(c) Effective Tax Rates (family level)



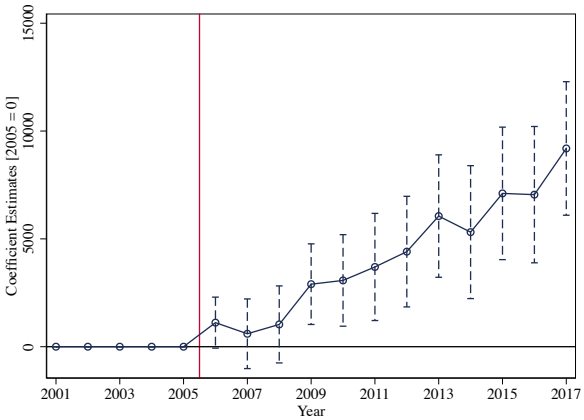
Notes: Panels (a) – (c) of this figure show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \cdot Doctor_i \cdot ON_i$ in equation (9) for physicians' overall taxable income, total taxes paid, and effective tax rates, respectively, relative to the control group. Overall taxable income is the sum of both pre-tax personal income and pre-tax business income. Effective tax rates are defined as the total taxes paid scaled by overall taxable income. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals.

Figure 6: Reform Effects on Hiring, Capital Investment, and Total Revenue

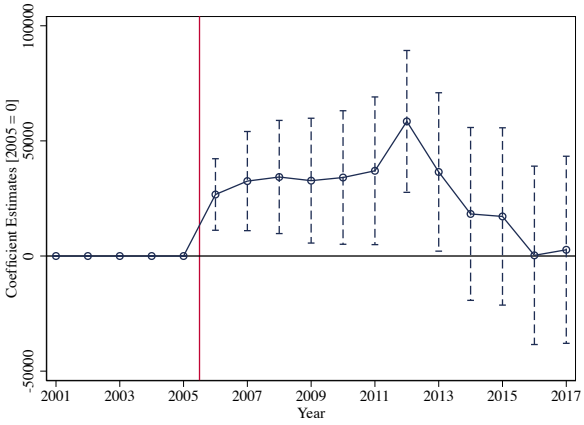
(a) Number of Employees



(b) Capital Investment



(c) Total Revenue



Notes: Panels (a) – (c) of this figure show coefficient estimates on $\mathbb{1}_{\{t=\tau\}} \cdot Doctor_i \cdot ON_i$ in equation (9) for the number of employees, capital investment, and total revenue of physicians' medical businesses, respectively, relative to the control group. The solid vertical line indicates the reform year. The dashed lines represent 95 percent confidence intervals. The coefficient estimates are set to zero for pre-2005 years because we do not observe business-level information for unincorporated businesses before 2005.

Table 1: Descriptive Statistics on Matched Sample (pre-reform)

	Ontario		Other Provinces	
	Doctors	Others	Doctors	Others
Overall Income	300,011.03	134,515.31	255,352.56	110,193.08
Overall Taxes	88,313.59	30,510.13	68,000.77	24,193.78
Average Tax Rate	0.24	0.18	0.23	0.15
Age	46.44	45.53	43.39	44.45
Male	0.62	0.63	0.57	0.62
Married	0.80	0.81	0.77	0.79
Family Size	2.97	3.08	2.85	2.99

Notes: This table reports descriptive statistics on physicians in Ontario and other provinces, as well as their matched control business owners across provinces. Overall income is the sum of both pre-tax personal income and pre-tax business income. Average tax rates are defined as the total taxes paid scaled by overall taxable income. All of these variables are measured as pre-reform averages.

Table 2: Reform Effects on Incorporation Rate, Taxable income, and Retained Earnings

	(1) Incorporation Rate	(2) Taxable Income	(3) Taxable Income	(4) Business Income	(5) Retained Earnings
Post × Doctor × ON	0.1526***	-22895.2555***	-13840.3650***	25450.0413***	40065.3749***
	(0.0153)	(1959.1400)	(3073.0693)	(2150.5949)	(14835.3888)
Observations	598,920	600,565	600,565	600,565	600,565
Clusters (Treat)	22,650	22,660	22,660	22,660	22,660
Clusters (Control)	22,630	22,640	22,640	22,640	22,640
Pre-reform Treated Mean	0.166	186,653.8	283,114.3	6,594.83	21,783.97
Adjusted R Squared	0.721	0.757	0.800	0.524	0.602

Notes: This table reports the triple-differences estimates for the impact of the reform on incorporation rate, taxable income, business income, and retained earnings. Taxable income is defined as the total pre-tax personal income. Column (2) indicates the taxable income at the individual level, while Column (3) indicates the taxable income at the family level. Business income is defined as changes in retained earnings plus corporate income taxes. The standard errors are clustered at the firm level.

Table 3: Reform Effects on Employment Income and Dividend Income

	(1) Employment Income	(2) Employment Income	(3) Dividend Income	(4) Dividend Income
Post × Doctor × ON	-28,511.93***	3,622.35***	4,399.50***	1,860.48**
	(2,255.93)	(1,323.48)	(1,013.07)	(937.57)
Observations	600,565	600,565	598,920	598,920
Clusters (Treat)	22,660	22,660	22,650	22,650
Clusters (Control)	22,640	22,640	22,630	22,630
Pre-reform Treated Mean	189,083.40	51,661.87	1,085.59	670.86
Adjusted R Squared	0.730	0.707	0.444	0.481

Notes: This table reports the triple-differences estimates for the impact of the reform on incorporation rate, taxable income, business income, and retained earnings. Column (1) indicates employment income of physicians, while Column (2) indicates employment income of the spouse. Column (3) indicates dividend income of physicians, while Column (4) indicates dividend income of the spouse. The standard errors are clustered at the firm level.

Table 4: Reform Effects on Personal Income Taxes and Corporate Income Taxes

	Personal Income Taxes	Corporate Income Taxes
Post × Doctor × ON	-8,475.49***	6,997.79***
	(1,080.32)	(508.66)
Observations	600,565	600,565
Clusters (Treat)	22,660	22,660
Clusters (Control)	22,640	22,640
Pre-reform Treated Mean	81,820.7	1,748.21
Adjusted R Squared	0.747	0.614

Notes: This table reports the triple-differences estimates for the impact of the reform on personal income taxes and corporate income taxes. The standard errors are clustered at the firm level.

Table 5: Reform Effects on Overall Taxable Income, Taxes Paid, and Average Tax Rates

	Overall Taxable Income	Overall Taxes Paid	Average Effective Tax Rates
Post × Doctor × ON	15,028.96***	-977.90	-0.0064**
	(4,429.52)	(1,341.33)	(0.0027)
Observations	600,565	600,565	598,685
Clusters (Treat)	22,660	22,660	22,650
Clusters (Control)	22,640	22,640	22,630
Pre-reform Treated Mean	294,417.7	84,901.13	0.2403
Adjusted R Squared	0.806	0.795	0.668

Notes: This table reports the triple-differences estimates for the impact of the reform on overall taxable income, total taxes paid, and average effective tax rates. Column (1) indicates overall taxable income, measured as the sum of both pre-tax personal income and pre-tax business income. Column (3) indicates average effective tax rates, defined as the total taxes paid scaled by overall taxable income. The standard errors are clustered at the firm level.