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How Do Business Owners Respond to a Tax Cut? Examining the 199A Deduction for Pass-through Firms

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ABSTRACT

We measure the short- and medium-run responses of businesses and their owners to Section 199A, a deduction that reduced the effective tax rate on most U.S. pass-through business income beginning in 2018. Using tax records of individuals and businesses, we compare taxpayers with exogenously differing levels of exposure to the deduction, exploiting limitations within the statute. We find evidence of a 3 to 4 percent increase in reported business income eligible for the deduction during 2018 and 2019 for the more-exposed group relative to the less-exposed group. We also find some evidence of effects on specific hypothesized margins of adjustment. Partnerships reduced ineligible forms of compensation paid to owners by approximately 10 to 15 percent, in line with the incentives created by Section 199A, but S corporations did not reduce wages to owners. We find no evidence that Section 199A encouraged movements from employee to contractor status or increased contractor activity. Finally, we find little evidence of changes in real economic activity as measured by physical investment, wages to non-owners, or employment.

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In 2019, over 22 million U.S. individual taxpayers enjoyed a reduced effective tax rate on certain business income. These taxpayers deducted $160 billion from taxable income as a result of Section 199A, a provision created by the Tax Cuts and Jobs Act (TCJA) that became effective in 2018. Section 199A generally allows a deduction for 20 percent of "pass-through" business income, a category that comprises the vast majority of income from the self-employed and small- to mid-sized businesses as well as an increasing share of income from larger businesses. The deduction reduces effective tax rates on eligible businesses by 20 percent—a large tax cut that was predicted to have substantial implications for the economy.

As a whole, the TCJA was the largest tax act in over thirty years, and Section 199A was a major part of it. The TCJA's estimated ten-year revenue cost was $1,456 billion, with $415 billion attributed to Section 199A (Joint Committee on Taxation, 2017). The provision is controversial, in part because it reduces the progressivity of the tax system. We estimate that in 2019 over two-thirds of Section 199A deduction amounts were claimed by taxpayers with more than $200,000 in adjusted gross income (AGI), and over one-third were claimed by taxpayers with more than $1,000,000 in AGI. Under current law, Section 199A is set to expire after 2025; policymakers will soon be discussing any extension or modification of the provision (United States Congress, 2023).

In this paper, we inform that discussion by studying individual and business behavioral responses to Section 199A using administrative tax data. The reduction in effective tax rates on pass-through income creates incentives to generate income eligible for the deduction and to shift income between eligible and ineligible sources. We analyze the total effect of the deduction on reported pass-through income as well as specific margins across which taxpayers can potentially convert non-qualifying income into qualifying income. We also study the deduction's effect on real inputs to production, including business investment and employment.

We find that individuals who were more exposed to Section 199A increased their qualifying business income by 3 to 4 percent relative to a less-exposed group. We also find clear evidence of income shifting along some margins and a lack of shifting along others. We do not see evidence of real effects on investment or employment. Our findings contrast somewhat with critical predictions made by some commentators that Section 199A would prompt a wave of tax avoidance, encouraging workers to move from employee to contractor status and causing business owners to shift income and perhaps restructure businesses to obtain a greater deduction (Duke, 2018; Kamin et al., 2019; Kleinbard, 2019).[1] Our results also stand somewhat in contrast with optimistic predictions that the business tax cut would encourage economic activity, although it is too early to observe long-run effects (Hassett and Hubbard, 2002; Barro and Furman, 2018).[2] Both the optimistic and pessimistic predictions were plausible *a priori* given the magnitude of the tax cut implicit in Section 199A: the deduction effectively reduces marginal tax rates on qualifying income by between two to seven percentage points, with larger cuts for higher-income taxpayers.

Our empirical analysis begins with motivating descriptive evidence. Owners of pass-through businesses commonly receive multiple types of income from the business, and only some types are eligible for the Section 199A deduction. For example, partners may receive ordinary profits from the part-

[1] Senate testimony by Kamin (2018) summarizes the possible perverse incentives and tax avoidance effects from Section 199A. This testimony discusses both the incentives for workers to switch from employee to contractor status and the incentives for businesses to restructure to create additional tax units that meet Section 199A's industry and capital and wage requirements.

[2] Barro and Furman (2018) show that if one applies existing estimates of how business investment responds to the marginal tax rate, making Section 199A permanent would increase the long run capital stock of pass-through businesses by 3 percent, with corresponding increases in productivity per worker.

nership; such income is generally eligible for Section 199A, while "guaranteed payments" – which function economically like wages – are not. In the aggregate time series, in 2018 we see a 15 percent reduction in the share of partnership income that is guaranteed payments, sharply breaking from a flat trend in previous years, consistent with Section 199A's incentives. Similarly, owners of S corporations may receive profits, which are generally eligible for Section 199A, or wages, which are not. However, in the aggregate time series, we see no trend break in 2018. The difference across entity types may be due to the legal requirement that owners receive "reasonable compensation" for services rendered, which applies to S corporations but not partnerships.

Despite the lack of aggregate response, for a very small subset of S corporation shareholders, we do see clear evidence of wages responding to Section 199A's incentives. In particular, some S corporations are incentivized by Section 199A to *increase* wages to owners as a result of the statutory rule that limits the Section 199A deduction for high-income owners if the business has too little tangible capital and wages paid. We find clear evidence that S corporations affected by the limitation raised shareholder wages to bunch at the point that maximized 199A deductions.

Our final descriptive evidence concerns worker reclassification as a response to Section 199A. When the TCJA passed, some worried that firms and workers would classify existing or new workers as contractors rather than employees because contractor income would generally be eligible for the deduction while employee income would not (Duke, 2018). However, we find no evidence that within-firm worker transitions to contractor status have increased relative to pre-TCJA trends, nor do we see a rise in individuals becoming contractors (or forming other sole proprietorships) more generally. Thus, using several measures, we do not find any evidence that Section 199A has led to increased contractor work relative to wage employment.

Our descriptive evidence largely relies on time series variation; to more formally assess Section 199A's causal effects, we use a difference-in-differences research design based on statutory limitations that restrict Section 199A eligibility. For high-income taxpayers ($415,000 for married couples and $207,500 for other taxpayers in 2018), income from a service sector trade or business (SSTB; e.g., medical or legal services) is not eligible for the deduction. Income from non-SSTB businesses is eligible but the amount of the deduction may be limited if the firm has relatively little tangible capital and wages paid to employees. We characterize taxpayers and firms into those whose income is likely eligible for Section 199A and those that are likely ineligible using the reported NAICS industry code on the firm's tax return and reported taxable income of owners, both measured with lags.[3] Our strategy restricts the analysis to owners in industries where the SSTB and wage and capital limitations are most binding and compares owners above the income threshold (whose deductions are likely limited) to those below the income threshold (whose deductions tend not to be limited). We show that, indeed, the lower-income treatment group exhibits much higher Section 199A claiming rates than the high-income control group, indicating substantially different levels of exposure to section 199A.

Using this difference-in-differences strategy, we confirm our owner compensation results. We find that the decline in partner guaranteed payments is concentrated among individuals more exposed to Section 199A. By contrast, and consistent with the time series evidence, more-exposed S corporations did not reduce wages to shareholders to a greater extent than less-exposed S corporations. These results tie the aggregate time series patterns more definitively to Section 199A and further validate our difference-in-differences design.

[3]While the SSTB determination depends on the facts and circumstances of the business, not its reported NAICS code, we test for and find some evidence of strategic changes in NAICS codes in response to Section 199A.

Next, we examine changes in individual income from sources that would be eligible for the deduction if statutory requirements are met; we term this income "potential qualifying business income," or "potential QBI" for short.[4] We estimate that greater exposure to Section 199A leads to a 3 to 4 percent increase in business owners' potential QBI. When translated into an elasticity with respect to the net-of-tax rate, our estimate of 0.75 represents a modestly larger response than common estimates of the elasticity of taxable income—consistent with Section 199A yielding more shifting possibilities compared to a broad tax rate change.

Finally, we test for Section 199A's effects on firms' real inputs to production. The deduction could change the break-even rate of return for investment opportunities in existing firms, potentially leading to changes in employment and investment in tangible property. Additionally, the tax reduction caused by Section 199A could be shared with workers in the form of higher wages, as a bargaining model would predict (Risch, 2024). We test for the effect of firms' exposure to Section 199A on tangible investment, the number of non-shareholder employees, and the total non-shareholder wage bill. Our point estimates for each of these three outcomes in 2018 and 2019 are close to zero and statistically insignificant. In particular, our confidence intervals allow us to reject the positive impacts on wages implied by Risch (2024).

Our analyses relate to several existing bodies of work. First, a small set of papers also study tax provisions that reduce the tax rate on pass-through business income relative to wage income. Prior to Section 199A, this literature focused on a tax reform in Kansas (which has since been reversed) that exempted some pass-through income from state income taxation (DeBacker et al., 2018, 2019; Goodman, 2018; McCloskey, 2018). These papers generally find small effects on both real economic activity and shifting between various tax bases, with the exception that DeBacker et al. (2018) do find a large shift away from partnership guaranteed payments. Along with our previous paper (Goodman et al., 2019), which simulated the Section 199A deduction using 2016 data, we contribute to this literature by studying a nationwide, highly salient change in the tax wedge between business and wage income. Additionally, we contribute to an unresolved literature that assesses the potential ramifications of Section 199A, arguing that the unintended consequences might be severe (Kamin et al., 2019) or not (Oei and Ring, 2020).

Second, we expand the literature that uses tax data to describe the landscape of pass-through businesses in the United States. Two important such papers are Smith et al. (2019) and Cooper et al. (2016). The former explores the characteristics of high-income owners of pass-through businesses, concluding that the business income of these owners mostly reflects returns to human capital. The latter traces through the complicated ownership structures of partnerships and finds that partnership income faces a relatively low tax rate. We contribute to this literature by documenting some of the ways that the TCJA has and has not altered the organization of pass-through business activity.

More broadly, we add to studies of tax avoidance in the form of shifting income across tax bases. This literature goes at least as far back as Slemrod (1992), which proposed a hierarchy of tax response into (1) timing responses, (2) avoidance responses, including across tax bases, and (3) real responses. Interested readers are directed to the thorough reviews of this literature in Slemrod and Yitzhaki (2002), and Saez, Slemrod and Giertz (2012). Indeed, the growth of pass-through entities itself is arguably an example of such a response: the share of business income earned by pass-through entities increased substantially and immediately after the Tax Reform Act of 1986 made the pass-through form more tax

[4]Potential QBI is a subset of pass-through income that excludes income that is always ineligible for Section 199A: guaranteed payments paid by partnerships to partners as well as certain types of interest, dividends, and other investment income.

favorable than the C corporate form in many circumstances (Saez, 2004; Auten, Splinter and Nelson, 2016). Our study examines newly created channels for tax avoidance, finding substantial shifting along some margins but not others.

In sum, our paper provides evidence that a large policy change, which reduced effective tax rates on non-corporate business and created tax wedges between different types of income, resulted in behavioral responses on some margins but not others. In particular, we find null or small effects on behavioral margins that are costly to change, such as business investment or worker classification. In contrast, we find more substantial responses across margins that are easier to adjust, such as partnership guaranteed payments for services. We note that reducing guaranteed payments may have material economic effects, as shifting the partner's compensation to shares of profits could result in a riskier income stream. Nonetheless, this is a margin with fewer adjustment frictions. We also find increases in reported qualified business income, which could result from shifting income away from ineligible sources and towards eligible sources, less under-reporting of income, or increases in real business income. Responses along some of the margins with greater frictions may have been muted by the temporary nature of the deduction, which is set to expire after 2025. As the sunset date approaches, we hope that our study can inform discussions about the merits and demerits of potentially modifying or extending Section 199A.

I Institutional Background

In this section, we provide a brief overview of business taxation to motivate our empirical approach and offer background on the incentives created by the Section 199A deduction, which applies only to pass-through business income earned by individual owners.[5] Businesses can be divided into two categories based on their tax treatment: C corporations and pass-through businesses. Virtually all of the largest businesses in the United States are taxed as C corporations, which face an entity-level tax on profits and whose shareholders in general pay tax on dividends and capital gains. However, most small and medium (and some large) businesses are organized as "pass-through" entities, which generally do not pay tax at the entity level. Instead, their income "passes through" the business and is taxed as income to the owner. If the owner is an individual, then the income faces individual tax rates, with items like long-term capital gains retaining their character and therefore facing lower tax rates than items like ordinary business income, which faces ordinary income tax rates. Pass-through entities are characterized as sole proprietorships, S corporations, or partnerships for tax purposes. Limited liability companies (LLCs) as a default are taxed as sole proprietorships if they are single-member and as partnerships if they are multi-member; however, either form of LLC may elect to be taxed as an S corporation (or as a C corporation, foregoing pass-through status). In addition to the issue of whether the business pays an entity-level tax, another key feature of the pass-through tax regime regards the timing of income. Owners of C corporations pay individual taxes only when dividends are distributed or when they sell shares of stock, while pass-through income is taxed in the year that it is earned regardless of when the income is distributed to owners.

The share of business activity occurring in pass-through entities has steadily increased since the Tax Reform Act of 1986 (Smith et al., 2019; Saez, 2004). Today around half of business income in the United States is earned through pass-through businesses (Cooper et al., 2016) and we estimate that 39.5 million individual tax units reported pass-through income in 2019.

[5] Portions of this section are reproduced verbatim from our working paper, Goodman et al. (2019).

In December 2017, the bill originally titled the "Tax Cuts and Jobs Act" (hereafter TCJA) was signed into law. Among its many provisions is the introduction of Section 199A, which creates a deduction for pass-through owners, effective for tax years 2018 through 2025.[6] Though the rules governing this deduction are complex, at its core it allows individuals to deduct up to twenty percent of their pass-through business income from taxable income. This change reduces effective average and marginal tax rates on pass-through business income relative to other forms of ordinary income such as wages.

Only income that is considered qualified business income (QBI) is eligible for the Section 199A deduction. QBI from pass-throughs generally includes ordinary business income, rents and royalties, and interest income properly allocable to the business. As previously mentioned, income from a pass-through business generally retains its character when passed to an owner, so while capital gains and qualified dividends from a pass-through business are not considered QBI, they remain eligible for the lower capital gains rates. Any wages paid to active S corporation owners or guaranteed payments paid to partners are also not considered QBI.

There are a number of provisions that limit eligibility for the Section 199A deduction based on taxpayer income and business type. Individuals with taxable income above the top of a phase-out range (in 2018, $415,000 for married couples and $207,500 for other taxpayers) are subject to two limitations.[7] The first is that income derived from a specified service trade or business (SSTB) is not considered QBI and therefore is ineligible for the deduction.[8] The second is that any portion of the deduction derived from a non-SSTB is reduced (potentially to zero) if the business does not pay a sufficient amount of wages to employees or own a sufficient amount of tangible capital. Specifically, the amount of the deduction derived from a non-SSTB cannot exceed the greater of: half of the owner's share of W-2 wages paid by the business, or the sum of 25 percent of the owner's share of the W-2 wages paid by the business plus 2.5 percent of the owner's share of the tangible capital of the firm.[9] Although the limitations on the deduction reduce the benefit of Section 199A for high-income taxpayers, the deduction benefits are concentrated among high-income taxpayers because pass-through income accrues disproportionately to them. We show further details of the estimated distribution of the Section 199A benefits in Appendix Tables C2 and C3.

For all taxpayers, the Section 199A deduction can only offset ordinary taxable income, not long-term capital gains or qualified dividends. In particular, the deduction cannot exceed 20 percent of ordinary taxable income, meaning that taxpayers with little or no ordinary taxable income may not receive much tax savings from the Section 199A deduction. In addition, owners of multiple businesses must offset positive QBI with any negative QBI, potentially reducing the deduction. If the net quantity of QBI is negative, it must be carried forward, reducing the Section 199A deduction in future years

[6] Section 199A replaces former Section 199, which provided the Domestic Production Activities Deduction for domestically produced goods. Section 199A also allows a deduction for qualified Real Estate Investment Trust dividends, qualified publicly traded partnership income, and certain income from co-operatives. In addition, Section 199A allows trusts to benefit from the general pass-through deduction. We do not study these aspects of the law.

[7] In 2018, these limitations are phased in from $315,000 to $415,000 in income for joint filers and $157,500 to $207,500 for other filers. For taxpayers with incomes in the phase-in region, only a fraction of the limitations apply while for taxpayers with incomes above the end of the phase-in region the limitations are in full effect. The threshold values are indexed for inflation.

[8] To be clear, for taxpayers below the phase-in thresholds, SSTBs can generate QBI. Therefore we include SSTB income in our definition of "potential QBI", as we discuss later.

[9] "Owner's share of wages" refers to the taxpayer's share of the business owned (for purposes of the wage deduction) multiplied by the total W-2 wage bill paid to all employees. "Owner's share of tangible capital" refers essentially to the owner's share of the business owned (for purposes of depreciation deductions) multiplied by the total cost of depreciable property that was placed in service within the past 10 years (or longer for longer-lived assets such as structures). The total wage bill includes the wages paid to S corporation shareholders, but does not include guaranteed payments paid to partners.

when QBI is positive.[10]

In August of 2018, the IRS and the Treasury Department issued proposed regulations interpreting and clarifying the operation of Section 199A, and the regulations were finalized in February 2019. The regulations provide additional clarity and precision regarding the definition of SSTBs. They also establish a presumption that individuals who switch from employment to independent contracting for the same employer continue to be treated as an employee for the purpose of Section 199A, making it more difficult for independent contracting income to qualify for the deduction.

Businesses may view the Section 199A tax deduction as temporary. The tax cut was initially implemented for eight years. Statements by Congress Members, accountants, and lobbyists, however, indicate that many stakeholders expect that Section 199A will be extended or made permanent.[11] In August of 2023, over 100 House members co-sponsored the Main Street Tax Certainty Act which, if passed, would make the Section 199A deduction permanent.[12]

II Data

Our analyses rely on two panel datasets: one covering individuals and one covering firms. The individual panel is based on a stratified, representative sample of individual tax filers. The firm panel covers the universe of S corporations and a subset of partnerships – specifically, those who are owned only by natural persons. We use these multiple datasets to examine responses at the pass-through entity level and the level of individual business owners and workers. In each dataset, all dollar-denominated variables are adjusted for inflation to 2018 levels. The data come from the near-universe of administrative records of tax returns and information returns. This section provides an overview of the data construction with further details provided in later sections where relevant to each empirical exercise.

II.A Individual sample

Our first dataset, the "individual sample," is based on a representative sample of all individuals who ever filed a tax return (as a primary or secondary filer) from 2008 through 2021. We select individuals into the sample in a stratified manner, oversampling certain groups that are most relevant to our empirical analyses; we discuss details of the stratification in Appendix A.1. In all specifications, we use sample weights to ensure the sample is representative of the underlying population to which that specification applies. We construct a panel using individuals' tax returns and information returns for tax years 2008 through 2021, restricting to years in which the individual is 18 years of age or older and is still living according to Social Security records. The dataset includes information on businesses owned by individuals in our sample. This information comes from Form 1040 Schedules C, E, and F, as well as the tax returns and Schedule K-1s of partnerships and S corporations that the individual partially or fully owns.

For each individual-year observation, we compute an income construct that we refer to as "potential QBI". We define potential QBI as the sum of all net income reported on Schedules C and F, rental real estate income from Schedule E, and total S corporation and partnership income from Schedule E, minus guaranteed payments to partners (which we retrieve from Form 1065, Schedule K-1). This income is

[10] See Joint Committee on Taxation (2019) for a more detailed description of the Section 199A deduction, including examples of how it is calculated.

[11] See https://www.nfib.com/content/analysis/national/u-s-house-re-introduces-bill-to-stop-a-small-business-tax-hike/ and https://s-corp.org/2023/08/support-for-199a-reaches-new-heights/

[12] https://www.congress.gov/bill/118th-congress/house-bill/4721?s=1&r=3

considered "potential" QBI since qualification for the deduction depends on (i) whether Section 199A is in effect that year, (ii) whether the activity rises to the level of a trade or business, (iii) whether the business is an SSTB, and (iv) whether the owner satisfies the wage and capital limitations, among other factors, as explained in Section I.

Our dataset also includes information from Forms W-2 and 1099-MISC. These forms allow us to study worker transitions between employee and contractor status from year to year. We derive our main measure of contractor earnings from non-employee compensation reported on Form 1099-MISC. However, a substantial share of 2019 Form 1099-MISCs appear to be missing, likely due to COVID-19-related processing challenges. For this reason, our analysis of contractor transitions focuses on 2018 transitions with the exception of contractor transitions measured by new Schedule C filers, which we extend to 2019.

We measure the individual's labor income as the sum of wages from Form W-2 and contractor earnings from non-employee compensation on Form 1099-MISC.[13] We do not use income reported on the Form 1099-K to measure contractor income because of inconsistent reporting over time, including substantial reporting changes between 2017 and 2018 (Handwerger, 2018; Collins et al., 2019).

Panel A of Table 1 provides summary statistics for this full sample, which is representative of all filers. Around 23 percent of the sample has potential QBI in any given year and 12 percent of the sample claimed a positive QBI deduction after Section 199A was introduced. The most common source of QBI is Schedule C or Schedule F income, which 16 percent of taxpayers have. Only 7 percent of taxpayers have QBI from S corporations or partnerships.

Appendix Tables C2 and C3 use our individual sample to report information about the distribution of taxpayers who claimed Section 199A deductions in 2018 and 2019. We estimate that 22.5 million taxpayers claimed a total of $160 billion in Section 199A deductions in 2019. These deductions are strongly concentrated among high-income individuals. Over 35 percent were claimed by taxpayers with AGI in excess of $1,000,000; an additional 32 percent was claimed by those with AGI between $200,000 and $1,000,000. While most of the dollars are claimed by high-income individuals, most of the claimants are located further down the income distribution. Approximately 27 percent of those claiming Section 199A had under $50,000 in AGI; another 27 percent had AGI between $50,000 and $100,000; and a further 26 percent had AGI between $100,000 and $200,000.[14]

II.B Firm panel

Our second dataset is a panel of firms; we refer to this as the "firm panel." Specifically, for the years 2008 through 2021, we include the universe of all S corporations and the universe of partnerships that are owned solely by natural persons.[15] These data allow us to examine entity-level outcomes, including wages paid to S-corporation shareholders, wages paid to non-owners, and investment. To each firm-year observation, we attach information about the owners, including the fraction of owners with taxable incomes above the Section 199A phaseout thresholds. Additionally, we use the firm's industry (reported NAICS code) to develop a treatment proxy for the firm's Section 199A eligibility as described in more detail in Section IV.

[13] Contractor earnings are included only if they exceed 600 nominal dollars, which is the threshold for mandatory reporting. We exclude payments under the threshold to provide consistency in measuring contractor activity regardless of the reporting behavior of the issuing firm.

[14] Appendix Tables C2 and C3 are broadly consistent with the published statistics of Internal Revenue Service (2021).

[15] We discard partnerships owned by other partnerships, corporations, or other types of entities, to ascertain treatment status more cleanly. S corporations do not cause a similar issue as they are owned almost exclusively by natural persons.

Table 2 Panel A reports summary statistics for the firm panel. Around 36 percent of observations are partnerships and the mean and median number of owners is around two. The average number of non-owner employees is seven, while the median is zero, as only 32 percent of firms have non-owner employees. The mean level of gross receipts is $1.2 million, the average wages paid to S-corporation shareholders is $53,200, and the average amount of potential QBI is $95,600. The median for each of these statistics is substantially smaller, reflecting the skewness in the firm-size distribution.

II.C Data imperfection: missing K-1s in 2019

In general, S corporations and partnerships must file one Schedule K-1 each year for each owner. Due to miscellaneous processing and/or compliance errors, in most years we are unable to find any Schedule K-1s for between two and four percent of firms that we observe filing a Form 1120-S or 1065, causing a small amount of baseline measurement error. However, the share of firms without any observed K-1s increased substantially in tax year 2019, to around eight percent, possibly due to pandemic-related processing challenges. We show the share of S corporations and partnerships missing K-1s over time in Panel A of Appendix Figure C2. In Panel B, we show counts of Schedule K-1 (combined between Forms 1120-S and 1065) separately for electronically-filed and paper-filed forms; this figure strongly suggests that the missing forms were filed on paper. One plausible hypothesis is that these forms were destroyed by the IRS as part of pandemic-related operational prioritization (Treasury Inspector General for Tax Administration, 2021). In Appendix Table C4, we show, using our S corporation sample, that firms missing Schedule K-1 in 2019 tended to be smaller – both in terms of gross receipts and lagged number of shareholders – and were much more likely to file Form 1120-S itself on paper. Such firms were less likely to have high-income owners but had a similar prevalence of being an SSTB.

We drop individuals and firms affected by the missing K-1 data issue. Specifically, in the individual sample, we drop all observations (in any year) of individuals who were 2018 owners of a partnership or S corporation that has missing Schedules K-1 in 2019. Similarly, in the firm panel, we drop firms with missing 2019 K-1s from the full panel.

III Descriptive Evidence of 199A Responses

In this section, we provide descriptive evidence of behavioral responses to the incentives created by Section 199A. First, we show aggregate time series evidence of sharp declines in partnership guaranteed payments as a share of business income – consistent with Section 199A's incentive to shift from ineligible compensation to eligible compensation—followed by less conclusive evidence of declines in S corporation owner wages as a share of business income. Next, we show that certain S corporation owners modified owner wages consistent with the incentive to maximize the 199A deduction, including some precise bunching in wages. Finally, we show that there were no visible effects on independent contractor transitions in the aggregate. Overall the descriptive evidence is consistent with behavioral responses to Section 199A incentives when those incentives were clear and the responses required low effort and low complexity costs to implement.

III.A Owner compensation

In general, owners of partnerships and S corporations must decide what share of the surplus generated by the firm should be labeled as compensation for each owner's labor and what share should be labeled

as the profits of the firm. For owners of S corporations, this compensation takes the form of W-2 wages. Even prior to TCJA, such wages were generally tax disfavored relative to profits, because the former are subject to Federal Insurance Contributions Act (FICA) taxes while the latter are not. In order to protect the FICA tax base, the IRS has long required owners of S corporations to pay themselves "reasonable compensation" in the form of W-2 wages for their labor services, though there is no hard-and-fast rule that establishes whether compensation is reasonable. Section 199A generally strengthened the existing tax preference in favor of profits, increasing the incentive for owners to reduce their wages.

By contrast, partners generally do not receive W-2 wages from the partnership; rather, they can receive what is known as "guaranteed payments".[16] Guaranteed payments are ineligible for the Section 199A deduction. They are (but for tax) economically identical to wages: a partner will be allocated their guaranteed payments (if any) plus their allocative share of the partnership income determined after subtracting guaranteed payments to all partners. However, unlike S corporation owners, there is no IRS requirement that partners receive reasonable compensation for their labor services.

In Figure 1, Panel A we show the average ratio of guaranteed payments to business income among partners over time. There is a large decline of 2.6 percentage points or 15 percent in 2018 that persists in 2019. In Panel B, we show that for S corporation owners there was a much smaller decline in wages paid to owners—a decline of about 1 percentage point in 2018 from a much higher baseline. Furthermore, it is not clear that the decline in shareholder wages marks a break in the downward trend pre-dating TCJA. These descriptive findings suggest a large reduction in guaranteed payments caused by Section 199A but are inconclusive on how Section 199A affected wages to S corporation shareholders. In Section IV below, we use a difference-in-differences strategy to more formally evaluate Section 199A's causal effects.

Next, we study deduction-maximizing behavior by the small subset of firms that face the opposite incentive: they can reduce their tax burden by *increasing* owner wages. This incentive is created by the wage and capital limitation for high-income owners of non-SSTB businesses and does not apply to partnerships, as partners do not receive wages. As described in Section I, owners above the income threshold can claim the Section 199A deduction for non-SSTB income, but the deduction is limited by a function of wages paid (to shareholders or otherwise) and tangible capital. Specifically, the amount of the deduction cannot exceed the greater of (i) 50 percent of the owner's share of W-2 wages paid by the business to all employees, or (ii) 25 percent of the owner's share of wages plus 2.5 percent of the owner's share of tangible capital. For illustration, suppose a high-income individual's only business is a non-SSTB S corporation earning profits of π before paying wages to her (w), and further assume that the firm pays no other wages and has no tangible capital. In that case, the owner's deduction would equal the smaller of $0.2(\pi - w)$ (twenty percent of the net income of the firm) or $0.5w$. Whenever $w < \frac{2}{7}\pi$, the owner can increase her Section 199A deduction by increasing w.

To study whether owners of firms with such an incentive do in fact increase the firm's wages paid to shareholders, we refine our firm panel. Specifically, we restrict to S corporation firm-year observations where (1) the firm is a non-SSTB (determined based on $t-2$ reported NAICS code), (2) the firm has only one shareholder in $t-2$, and (3) that shareholder was above the bottom of the Section 199A phase-out threshold in $t-2$. This severe set of restrictions drops 96 percent of S corporation observations. We focus on single-shareholder S corporations because multi-shareholder firms face greater adjustment

[16] Less commonly, a partner can receive guaranteed payments in exchange for capital provided to the partnership; such guaranteed payments are also ineligible for Section 199A. In our data, both types of guaranteed payments are aggregated together. Therefore, any estimated effects on guaranteed payments will include effects on both components.

costs due to coordination difficulties.

Within this subset of S corporations, we define a firm-year observation to be bound if the wage limitation would have limited the owner's deduction in $t-2$ by at least 50 percent. Because we are not able to observe the proper capital measure, we consider only the component of the limitation that refers to 50 percent of wages. This will tend to cause us to misclassify certain firms as "bound" that are not actually bound, which will generally attenuate our estimates. Roughly 23 percent of S corporation observations in this analysis are identified as bound.

Figure 2 Panel A plots the share of bound firms (as measured in $t-2$) that start paying shareholder wages in year t, among those that paid zero wages in $t-2$. Prior to TCJA, the share that begins to pay wages to their shareholder is roughly flat at slightly more than 5 percent. In 2018 and 2019, the share of these firms that start paying wages to shareholders increases by over 0.5 percentage points in each year. While these firms represent a very small share of S corporations overall, it does appear that they responded to Section 199A by paying wages to their shareholders, increasing their ability to claim Section 199A deductions.

For affected firms, the incentive to increase shareholder wages only applies until 50% of total wages equals 20% of potential QBI, assuming they have little-to-no tangible capital. We therefore expect an excess mass of firms at this precise level of wages. Figure 2 Panel B confirms this expectation, plotting the density of the ratio of 50% of total wages to 20% of potential QBI among the set of S corporations meeting our sample restrictions (i.e., non-SSTB, with a single shareholder who is above the income threshold in $t-2$). We observe a small amount of bunching in 2018 and 2019 where this ratio equals one, and no such bunching in 2016 and 2017 before the introduction of the deduction. In Panels C and D, we show that this bunching of wages comes from changes in the wages paid to shareholders and not those paid to non-shareholder employees. Panel C plots the change in wages paid to shareholders between $t-2$ and t, while Panel D plots the change in wages paid to non-shareholder employees. This response is consistent with a strategic shifting of owner compensation in response to incentives created by Section 199A. However, we stress that this effect is modest in magnitude: from Panel A, fewer than 6 percent of bound firms that pay zero wages in $t-2$ are paying positive wages in t, and the excess mass in Panel B represents less than 1.4 percent of firms in this restricted subsample and less than 0.05 percent of S corporations overall.

III.B Reported industries

One margin on which businesses may respond to Section 199A is their reported SSTB status, given that income from SSTBs is ineligible for the deduction for high-income owners. We do not observe this margin directly, but we can look for indirect evidence. In the ordinary course of filing a tax return, firms must describe themselves via a six-digit NAICS code. As a legal matter, the NAICS code does not affect whether a business is an SSTB; rather, SSTB status is determined based on the facts and circumstances of the business. Nevertheless, a business owner might reasonably believe that the IRS could use the reported NAICS code as evidence when judging an SSTB determination. Thus, business owners who claim that their business generates non-SSTB income might have an incentive to report a NAICS code that is not associated with the service sector.

We test this hypothesis in Figure 5. The figure restricts the firm panel to those that reported a NAICS code that we classify as an SSTB in $t-2$. The left panel focuses on those that reported being "consultants" (NAICS 5416) in $t-2$, while the right panel restricts to those that reported any other

NAICS code in $t-2$ that we classify as SSTB. The outcome is an indicator for reporting a non-SSTB NAICS code at time t. In each panel, we separately analyze those firms with at least one owner above the income threshold at $t-2$ (where the SSTB classification matters most) compared to those with all owners below the income threshold. We find that over 5 percent of "consultant" firms in 2016 and 2017 with high-income owners reported non-SSTB NAICS codes in 2018 and 2019, up from 1.0 to 1.3 percent in other years; firms without high-income owners had a much smaller jump. We also see a very slight increase in 2017, possibly reflecting changes to NAICS codes written on returns prepared during 2018 after TCJA had passed. There was also an increase in NAICS reclassifications among non-consultant SSTB firms after TCJA, but the increase is an order of magnitude smaller than the increase for consultant firms. Thus, we do find evidence of some firms changing their reported NAICS code in a manner consistent with the incentives of TCJA, but the overall magnitude was modest: nearly 95 percent of high-income consultant firms continued to list SSTB NAICS codes even after TCJA.

III.C Independent contracting

Section 199A also affected incentives on the margin of employment versus independent contracting. Income received as an independent contractor is generally eligible for the Section 199A deduction, while wages earned as an employee are not. When TCJA was enacted, some observers speculated that workers and firms might restructure their labor arrangements from employment to contracting to decrease tax liability (Duke, 2018). Prior to Section 199A, there was already a modest trend towards hiring workers as contractors rather than employees (Katz and Krueger, 2019; Abraham et al., 2018). This rise in contracting could be driven by firms' and workers' changing demands for traditional employee benefits versus workplace autonomy and flexibility. Additionally, new platform economy companies such as Uber and Lyft have used a large number of contractors to provide their services.

In Figure 3 Panel A, we show that there was no increase in the number of individuals switching from employee to independent contractor within the same employer in 2018, suggesting a lack of behavioral response to Section 199A on this margin.[17] We use data from Forms 1099-MISC and W-2 in our individual sample to identify individuals who receive non-employee compensation in year t and who received wages from the same employer (as proxied by EIN) in year $t-1$. We characterize individuals as switching from employee to contractor in year t when an individual receives at least 60 percent of their labor income from a firm on Form W-2 in year $t-1$ and at least 60 percent of their labor income from that same firm on Form 1099-MISC in year t. While Section 199A provided a tax incentive to change worker classification, the Section 199A regulations disincentivized them within employer by specifying that the nature of the work relationship must change when an employee becomes an independent contractor; otherwise the contractor income is deemed ineligible for the deduction.

We also see no evidence that independent contracting became more common in 2018 or 2019 more generally. Using our individual sample, we examine three types of transitions towards contracting: (i) newly receiving any contracting income as measured by non-employee compensation income from a Form 1099-MISC, (ii) newly receiving the majority of labor income from 1099-MISC contracting (which we refer to as being a "primary contractor"), and (iii) newly filing a Schedule C. In each case,

[17] As discussed in Section II.A, we cannot extend analyses of Form 1099-MISC to 2019 due to data quality issues.

we use the word "newly" to mean having the characteristic in year t but not $t-1$.[18] Figure 3 Panel B plots the number of transitions to contractor status for an individual taxpayer, relative to the number of 2017 transitions. The number of primary contractor transitions is falling from 2014 through 2017, and we see a continuation of that trend in 2018. Transitions into any contractor income are rising over time, with the trend continuing uninterrupted into 2018, and Schedule C filings display an upward trend from 2013 through 2016 with declines and increases between 2017 and 2019 that do not appear out of line with previous trends.

Taken together, our analyses of contractor transitions show no evidence of a short-run increase in independent contracting as a result of Section 199A.[19] It is possible that the tax wedge was not large or salient enough to encourage many individuals and firms to incur the costs of coordinating to change employment arrangements, especially given the larger ramifications of worker classification for employment law. Nonetheless, a substantial shift to contracting due to Section 199A may still occur in the medium or long run as a growing number of individuals change jobs and new firms enter the labor market.

IV Empirical Strategy

In this section, we implement a more rigorous method of testing for behavioral responses to Section 199A in support of our descriptive findings using the statutory limitations on the deduction for identification.

IV.A Identifying variation

Our main analyses use a difference-in-differences regression framework to compare groups of taxpayers predicted to have varying degrees of eligibility for Section 199A given the statutory limitations. As discussed in section I, not all pass-through income constitutes QBI and qualifies for the 199A deduction. In particular, we focus on the limitations placed on high-income taxpayers for whom income received from SSTBs is ineligible and income from non-SSTBs is subject to additional limitations based on wages paid and capital employed in the firm.

Figure 4 Panel A illustrates the effect of these limitations on Section 199A eligibility. The figure is a heat map of Section 199A treatment intensity—that is, the share of potential QBI that leads to a deduction—as a function of two variables. The x axis reflects the business-level limitation that results from either the disallowance of SSTB income or the wage and capital limitation. A value of zero corresponds to a business that is an SSTB or has no wages or tangible capital. A positive value corresponds to a non-SSTB, and a value of one corresponds to a non-SSTB with sufficient wages and capital to fully qualify for Section 199A. The y axis represents the income of the individual owner (for illustration, we consider a married couple in 2018). In the figure, all taxpayers with income below the bottom of the phase-out range ($315,000 in this case) are fully eligible for Section 199A regardless of the SSTB, wage, or capital status of the business. Those above the top of the phase-out range ($415,000

[18] Although Schedule C is an imperfect measure of contracting income because it includes other types of income as well, we study it because Section 199A may encourage individuals to report contracting income that may have otherwise gone unreported (Collins et al., 2019). In addition, Schedule C allows us to analyze contractors whose income is reported on Form 1099-K, which we cannot study directly due to inconsistent reporting over time (Handwerger, 2018; Collins et al., 2019). Moreover, unlike Form 1099-MISC, we are able to study Schedule C in 2019.

[19] We study transitions into independent contracting using additional identification strategies in Appendix C.1. These alternative strategies and specifications also indicate null effects.

in this case) are treated by Section 199A exactly according to their position on the x axis. Those in the interior of the phase-out region have Section 199A treatment intensity equal to a convex combination of one and their x value.

We exploit the variation in Section 199A eligibility using a difference-in-differences identification strategy that compares higher- versus lower-income taxpayers among those whose business is an SSTB or has low wages and capital. This strategy is illustrated by Figure 4 Panel B. An alternative strategy would be to focus on higher-income taxpayers and use the horizontal variation in treatment intensity arising from SSTB status and the wage and capital limitations. We show results using this alternative method in Appendix B.1; it yields less conclusive findings, but they do not contradict our main results.

IV.B Implementation

The key characteristics that determine treatment intensity—current income, wages and capital employed in the business, and reported industry—are endogenous. Thus we use proxies based on $t-2$ characteristics, prior to the introduction of Section 199A, to assign axis values to taxpayers in year t. The y axis in Figure 4 determines treatment status in our main identification strategy; we label its proxy $treat_{it}$. In the individual panel, we compute $treat_{it}$ based on individual i's taxable income with respect to the phase-out range in $t-2$: $treat_{it}$ equals 1 if below the phase-out range, or 0 if above the phase-out range. We restrict the sample to those with $t-2$ income between 50% and 300% of the Section 199A thresholds to improve the comparability of the treatment and control groups, and we drop those with income between 90% and 150% of the threshold, as their $t-2$ income is less informative about their location relative to the threshold in t. Hence the treatment variable, $treat_{it}$, is binary. In the firm panel, we aggregate the individual treatment measures of the owners to create a firm-year treatment measure, weighting by each individual's ownership share. The result is a continuous measure of treatment, from zero to one. In constructing the firm treatment measure, we include all owners regardless of income. To help ensure comparability between treatment and control firms, we control for lagged firm income, discussed further below.

For the x axis in Figure 4, we begin by constructing an "industry treatment proxy" that measures Section 199A eligibility for a given business assuming it employs labor and capital in a similar manner as other businesses within the industry that have the same entity type. For this we use a separate dataset of firms: the IRS Statistics of Income samples for partnerships (Form 1065); S corporations (Form 1120-S); and sole proprietorships and farms (Form 1040 Schedules C and F), pooled from 2013 to 2017. For each firm in these datasets, we calculate the share of potential QBI that would be eligible for the deduction based only on the wage and capital limitation, if Section 199A were in effect. Next, we calculate the average share of potential QBI eligible for the deduction across firms in a three-digit NAICS code for each entity type (partnerships, S corporations, sole proprietorships, and farms). Since SSTB income is ineligible for the Section 199A deduction for high-income owners, we set the industry treatment proxy equal to zero for all firms in industries that we determine are likely SSTBs.[20] We denote this measure, which depends only on entity type and industry, as z_{jt} for any given firm j in year t. In Appendix A.2 we validate this measure by showing that it is strongly correlated with actual Section 199A deduction claiming.

In the firm panel, we assign the industry treatment proxy to firms directly. In the individual panel, we aggregate industry treatment proxies across all pass-through businesses owned by the individual,

[20] See Appendix A for details on SSTB status determination.

weighted by the absolute value of potential QBI coming from the business. In both cases, we use lagged data from year $t-2$ to construct this measure, which we denote $\bar{z}_{i,t-2}$. This "aggregated industry treatment proxy" represents the predicted share of individual or firm i's potential QBI that would be eligible for Section 199A in year t, based on $t-2$ characteristics, assuming they (or their owners, in the case of a firm) had income above the top of the phase-out threshold. Our main identification strategy focuses on the left part of Figure 4 – restricting to firms and owners predicted to have low levels of eligible potential QBI based on the industry treatment proxy. We formalize this restriction by requiring $\bar{z}_{i,t-2} < 0.2$.

One empirical challenge in our setting is that our outcomes of interest tend to be highly skewed in magnitude, without a natural bound at or above zero. In order to maximize power and provide interpretable estimates, we construct the dependent variable in our regressions, Y_{it}, as an outcome of interest scaled by the average magnitude of its lagged values. Specifically, for a given raw variable y_{it}, such as QBI, we compute Y_{it} as

$$Y_{it} = \frac{y_{it}}{\frac{1}{3}\big(|y_{i,t-2}| + |y_{i,t-3}| + |y_{i,t-4}|\big)}. \tag{1}$$

We restrict the sample to established firms and to individuals that are more consistently attached to the pass-through business sector. Specifically, in the firm panel, we require that the firm was in existence (i.e., filing Form 1120-S or Form 1065) in each of $t-2$, $t-3$, and $t-4$. Similarly, in the individual panel, we require that the absolute value of QBI is at least \$5,000 in each of $t-2$, $t-3$, and $t-4$; this restriction also helps to insure that $\bar{z}_{i,t-2}$ is well-measured.[21] We winsorize Y_{it} at the 95th percentile in each regression sample (and also at the 5th percentile level for potential QBI, as potential QBI can take on negative values).

IV.C Regression Equations

Our difference-in-differences regressions estimate how Y_{it} changes for the treated versus untreated group after Section 199A is implemented in 2018. Our event study estimation equation is as follows:[22]

$$Y_{it} = \underbrace{\alpha_{T(i,t)} + \gamma_{T(i,t)} \times t}_{\text{Treatment-specific linear trends}} + \underbrace{\lambda_{C(i,t-2)t}}_{\text{Cell-by-year fixed effects}} + \underbrace{\sum_{\tau=2014, \tau \neq 2017}^{2019} \beta_\tau treat_{it} \times 1(t=\tau)}_{\text{Event study terms}} + \epsilon_{it}. \tag{2}$$

This regression isolates the variation coming from income levels prior to the reform. As discussed above, $treat_{it}$, which depends on year $t-2$ income, is binary in the individual panel and is continuous in the firm panel. $T(i,t)$ represents bins of $treat_{it}$. In the individual panel, there are only two bins: treatment (below the Section 199A threshold) and control (above the Section 199A threshold). In the firm panel, there are 100 bins for varying levels of treatment intensity. The first term in braces, $\alpha_{T(i,t)} + \gamma_{T(i,t)} \times t$, soaks up time-invariant differences between those with higher and lower income (or owner income, in the case of firms) and also allows Y_{it} to evolve differently between groups according to a linear trend.[23]

The term $\lambda_{C(i,t-2)t}$ is a fixed effect for the interaction of year and a cell of firms C defined by

[21] In regressions using the individual sample, we also require that the average value of $|y_{i,t-2}|$, $|y_{i,t-3}|$, and $|y_{i,t-4}|$ exceeds two percent of average AGI over those years in order to ensure that the denominator is meaningful.

[22] Our analysis as implemented uses the user-written Stata command `reghdfe` (Correia, 2019).

[23] We estimate this regression using data from 2013 to 2019. The fact that the 2013 and 2017 event study terms are omitted from Equation 2 means that the α_1 and α_2 terms are estimated off of those two years.

i's characteristics in $t-2$. In the individual sample, this cell is defined by the dominant six-digit industry of individual i measured at $t-2$. Our treatment-effect estimates for individuals therefore reflect comparisons over time between individuals who earn income from the same industry but whose overall prior income differs, yielding differing levels of Section 199A eligibility. In the firm sample we define $C(i, t-2)$ as the triple interaction of entity type (i.e., partnership or S corporation), six-digit industry at $t-2$, and 100 bins of business income at $t-2$. The inclusion of lagged business income in this cell means that variation in treatment intensity – driven by variation in owner income at time $t-2$ – is caused entirely by differences in owners' income *from other sources*, in the spirit of Risch (2024). That is, in our firm analysis, we compare firms of the same entity type, with similar lagged business income, in the same industry, but whose owners have different amounts of income from other sources. The main coefficients of interest are β_{2018} and β_{2019}, which estimate the difference in outcomes between the treatment and control groups in 2018 and 2019, relative to their difference in 2017, after adjusting for the fixed effects and control variables.

Under the standard parallel trends assumption, β_{2018} and β_{2019} capture the average treatment effect on the treated of Section 199A for our samples. Specifically, we require that changes in outcomes in 2018 and 2019 – net of those implied by the linear trends and those implied by the cell-by-year fixed effects – are uncorrelated with treatment status, except for those changes attributable to responses to Section 199A. In our default analyses, we compute analytical standard errors clustered by the panel unit (i.e., individuals in the individual sample and firms in the firm sample); these standard errors account for the uncertainty created by sampling error.

Our results suggest that the parallel trends assumption does not hold perfectly, however. In some specifications, the β_τ estimates are significantly different from zero for some values of $\tau < 2017$. Thus, we explore robustness to constructing confidence intervals based on the more "credible" method described in Rambachan and Roth (2023). Under this approach, rather than assume that the parallel trends assumption holds exactly, we allow the assumption to hold only approximately. Specifically, we assume that the 2018 or 2019 violation of the parallel trends assumption is no larger than M times the largest magnitude of a pre-treatment event study coefficient (that is, $\max\{|\beta_{2014}|, |\beta_{2015}|, |\beta_{2016}|\}$). For some specifications, we report the critical value of M at which we can reject a null hypothesis of interest.[24]

Even with these "credible" confidence intervals, the parallel trends assumption is less plausible for 2020 and 2021 outcomes, which were affected by COVID-19 and the ensuing recovery. COVID-19 was an enormous shock and likely had differential effects on businesses and business owners by income level even controlling for industry. For example, Chetty, Friedman and Stepner (2024) find that pandemic-era changes in consumption varied greatly by income levels. In Appendix B.2 we extend our results through 2021 for interested readers. Several of the 2020 and 2021 point estimates are inconsistent with the estimated effects for 2018 and 2019 for which we have significantly more confidence in our identifying assumptions.

[24] In the language of Rambachan and Roth (2023), we are assuming that the 2018 and 2019 elements of δ_{post} are no larger in magnitude than $M \times \max\{|\beta_{2014}|, |\beta_{2015}|, |\beta_{2016}|\}$. We compute the top and bottom of these confidence intervals using a bootstrap for a grid of values of M. In each bootstrap iteration, we recompute the pre-period event study coefficients as well – i.e., these confidence intervals account for the fact that the pre-period event study coefficients are also estimated subject to sampling error.

IV.D Summary statistics

Table 1 reports summary statistics for the treatment (Panel B) and control (Panel C) subsets of the individual sample used in the difference-in-differences regressions described above. Mechanically, all observations in these panels have potential QBI in $t-2$, and we see that a high share – between 92 and 95 percent – of these individuals has nonzero potential QBI in year t as well. Despite the fact that the treatment group receives only about one third of the potential QBI of the control group, the treatment group's observed QBI deduction in 2018 and 2019 is larger than that of the control group – an initial confirmation that the treatment proxy likely captures variation in true eligibility for Section 199A.

The composition of potential QBI differs somewhat between the treatment and the control group; the treatment group tends to receive most of their potential QBI from Schedules C or F, while the control group's potential QBI is more evenly split between those schedules, S corporation income, and partnership income. Receiving guaranteed payments is relatively rare in both groups; 5 percent of the treatment group and 14 percent of the control group receive guaranteed payments. Finally, about 56 percent of both groups also receive Form W-2 wages, and the reference individual's Form W-2 wages comprises about one quarter of the household-level AGI for both groups.

Panels B and C of Table 2 provide summary statistics for our panel of firms that contribute to our regression sample of treated firms and control firms. Partnerships make up about 13 percent of treated firms compared to 15 percent of control firms. Control firms have 2.0 owners on average compared to 1.5 owners among treated firms, but both have a median number of owners of one. Control firms are bigger by every measure. They have higher average values of QBI, wages paid to S corporation shareholders, guaranteed payments to partners, and number of employees. When we compare the share of firms with non-zero values of these quantities; however, they are relatively similar across treated and control group firms.

V Results

Before we estimate the effects of Section 199A on pass-through income, we test whether our measures of Section 199A exposure are indeed associated with higher levels of QBI deductions. Table 3 shows our β_{2018} and β_{2019} estimates comparing taxpayers with incomes below the threshold to those above, where the outcome is the deduction claimed by the taxpayer scaled by the total possible deduction based on potential QBI.[25] We find that the treated group had a claiming rate that was about 47 to 48 percentage points higher than the control group. Had we been able to measure Section 199A exposure and potential QBI perfectly, each of these estimated treatment effects would be 100 percent, assuming taxpayers perfectly comply with the tax code.

There are several reasons why such ideal conditions do not hold, and we list a few here. First, we use $t-2$ information to predict treatment status in year t, which creates some error in treatment status as individuals change income levels and may have a different mix of business income in t. Second, the statutory eligibility of income for Section 199A does not follow NAICS codes and is not determined at the entity level, but at the trade or business level, adding complexity that we cannot observe. Third, the exact allocation of each owners' share of wages and capital may differ from our industry treatment proxy due to heterogeneity within industries, measurement differences, or business structures with tiered entities. Additionally, we include in our control group taxpayers with predicted

[25] This sample is restricted to those with positive potential QBI. We remove the REIT portion of the deduction in this exercise to focus on the part of the deduction coming from pass-through business income.

industry $\bar{z}_{i,t-2} < 0.2$ meaning we allow for a small share of business income to be predicted eligible for Section 199A. Fourth, take-up of the deduction conditional on eligibility is likely not universal.

Despite all of the above, Table 3 confirms that our treatment proxies are indeed strongly correlated with actual Section 199A exposure.

V.A Owner labor compensation

We now proceed to estimating our differences-in-differences specification for the key outcomes of interest, beginning with testing whether owners of partnerships and S corporations reduced their labor compensation (which is ineligible for Section 199A), creating a corresponding increase in firm profits (which may be eligible). As noted in Section III, this labor compensation takes the form of guaranteed payments for partners and Form W-2 wages for S corporation shareholders.

To test for changes in guaranteed payments to partners, we estimate Equation (2) on the individual sample. We find that guaranteed payments fell by around 10 percent through 2019 for treated partners relative to higher-income control partners as shown in Figure 6 Panel A. The effect is statistically and economically significant. This reinforces the time series evidence of a large decline in aggregate guaranteed payments in Section III and indicates that the decline was concentrated among partners more exposed to Section 199A.

In Table 4, we consider how robust the decrease in guaranteed payments is to modest violations of the parallel trends assumption (Rambachan and Roth, 2023). As discussed in section IV.C, we assume that the failure of the parallel trends assumption creates a bias of no more than M times the maximum observed pre-period deviation from parallel trends. We then compute the largest value of M such that we can still reject (pointwise) the null hypotheses of no effects in 2018 and 2019. We find that these critical values are 1.19 in 2018 and 1.83 in 2019, implying that the estimated reduction in guaranteed payments remains statistically significant even if the parallel trends assumption is somewhat inaccurate.

In Figure 6 Panel B, we estimate Equation (2) on the firm panel, studying the effects of Section 199A on the W-2 wages paid to S corporation shareholders. To the extent that owners shift their income from wages to profits, we expect treated firms' shareholder wages to decline relative to control firms. We restrict the regression to S corporations with a single shareholder, where the shifting incentives are starkest. Surprisingly, our point estimates suggest that S corporation owner wages *increased* by roughly 1.5 percent in firms more exposed to Section 199A. These effects are economically small, though, and a tiny violation in the parallel trends assumption would render the estimates statistically insignificant. As shown in Table 4, in 2018 the violation would only need to be 0.23 times the largest pre-treatment coefficient and in 2019 0.04 times. Thus, we interpret our findings as consistent with a null effect on S corporation owner compensation.

In summary, we find that the introduction of Section 199A was associated with a substantial decline in partner guaranteed payments and, if anything, a small increase in S corporation shareholder wages. One possible explanation for this set of results is that pass-through business owners are attentive to both tax incentives and legal constraints. In particular, owners of S corporations may not have reduced their wages in response to Section 199A because they were already bound by the reasonable-compensation standard. By contrast, there is no legal constraint preventing owners of partnerships from reducing or eliminating guaranteed payments.

V.B Owner QBI

We have seen that some pass-through owners – namely partners – reduced income *ineligible* for Section 199A in response to the provision. We now test whether pass-through owners increased income *eligible* for Section 199A: QBI. We estimate Equation (2) on the individual panel with potential QBI, which is well defined for both the treatment and control groups, as the outcome of interest.

Our estimation strategy yields relatively precise evidence, shown in Figure 7, that Section 199A increased overall pass-through income. The regression coefficients in 2018 and 2019 are 0.026 and 0.037 respectively; relative to a baseline mean of 0.866, these represent increases of 3.0 percent in 2018 and 4.3 percent in 2019 among treated owners compared to control owners.[26] These estimates are robust to substantial violations of the parallel trend assumption. As shown in Table 4, the post-period deviation from parallel trends would need to be 1.45 and 2.22 times the largest pre-period event study coefficient in order for us to fail to reject the null hypothesis of no effect in 2018 and 2019, respectively.

To evaluate the magnitude of this change in income in response to Section 199A, we convert our 2019 point estimate to an elasticity with respect to the net-of-tax rate. The numerator of the elasticity is the percentage change in potential QBI, 0.043. The denominator is the percentage change in the net-of-tax rate. We assume a baseline federal marginal tax rate of 35% on average and a state marginal tax rate of 7% on average. Thus, the original net-of-tax rate was 0.58. The change in the net-of-tax rate for a treatment individual, relative to a control individual, is the federal marginal tax rate (35%) times the statutory deduction rate (20%) times our first stage estimate (47.6% in 2019). Thus, the appropriate denominator for the elasticity computation is $^{0.35\times0.2\times0.476}/_{0.58}$, and the estimated elasticity of QBI with respect to the net-of-tax rate is

$$\frac{0.043}{^{0.35\times0.2\times0.476}/_{0.58}} \approx 0.75. \tag{3}$$

This elasticity is substantial but lower than the 1.25 estimate found by DeBacker et al. (2019) who study a similar reduction in tax rates for pass-through income at the state level in Kansas. Our confidence intervals allow us to reject the DeBacker et al. (2019) estimate. On the other hand, our estimate of the elasticity of potential QBI with respect to the net-of-tax rate is somewhat larger than many of the recent estimates of the elasticity of *taxable income* with respect to the net-of-tax rate. Saez, Slemrod and Giertz (2012) conclude that the consensus range for this parameter is 0.12 to 0.4. We believe that the larger QBI elasticity can be explained by taxpayers having more latitude to adjust QBI through shifting across tax bases than they have adjusting the sum of their income more broadly. That said, the magnitude of this difference in elasticities is modest.

Overall, we find that Section 199A meaningfully increased pass-through business income in 2018 and 2019. Changes in potential QBI reflect any increases in real business activity as a result of Section 199A as well as reclassification of income from ineligible sources to eligible sources. In the following section, we focus on the effect of Section 199A on real business inputs.

V.C Effects on real inputs to production

By reducing effective tax rates, Section 199A may have spurred pass-through businesses to increase their investments in capital and labor. While these investments would likely lead to increases in pass-

[26] Recall we define our dependent variable as $Y_{it} = \frac{y_{it}}{\frac{1}{3}\left(|y_{i,t-2}|+|y_{i,t-3}|+|y_{i,t-4}|\right)}$, where y_{it} in this case is potential QBI. Since potential QBI can be negative, the baseline mean is meaningfully less than one.

through income in the long-run, they may decrease pass-through income in the short-run by increasing business deductions, potentially changing the interpretation of our earlier analyses. Therefore, we again estimate Equation (2) – testing for responses in investment, employment, and wages paid to non-owners – using the firm panel.

Figure 8 Panel A presents the estimated effect on wages paid to non-shareholder employees. The point estimates of the difference between treated and control firms in 2018 or 2019 are very close to zero. Our 95 percent confidence intervals rule out increases in wages paid of 1 percent in 2019, relative to control firms. Panel B shows results where the outcome is the number of employees as measured by Form W-2s issued by the EIN on the firm's tax return to non-owners.[27] We similarly see no evidence of a differential change between treated and control firms in their number of employees after Section 199A's introduction. The top of our confidence interval rules out increases in the number of employees of 1.3 percent or more, relative to control firms.

To benchmark our estimates, we compare them to that of Risch (2024), who studies S corporation owners' responses to marginal tax rate increases under the American Taxpayer Relief Act of 2012. We calculate the implied elasticity of the total wage bill with respect to the marginal tax rate (MTR) from Risch (2024) to be -0.115.[28] Applying this elasticity to Section 199A's change in MTR of -0.20, we calculate a predicted change in wages to non-owners of 0.023 in our setting.

Under conventional inference, which accounts for sampling error, we can reject the Risch (2024) estimate for wages paid to non-owners– i.e., the top of the confidence intervals in Figure 8, Panel A, are well below 2.3 percent. However, there are instances where our pre-treatment period coefficients are statistically different from zero, and thus it is important to account for potential violations of the parallel trends assumption. Using the methodology of Rambachan and Roth (2023) discussed in Section IV.C, we cannot reject the hypothesis that our 2019 coefficient is as large as 0.023 if the 2019 violation of parallel trends is more than 0.77 times the worst deviation from parallel trends in the pre-period. In sum, our point estimate is much smaller than that implied by Risch (2024), and we can reject that value using conventional inference, but we cannot reject that value if we allow for modest violations of the parallel-trends assumption.

To study effects on investment behavior, we use a measure of tangible investment, which we define as the sum of property placed in service on Form 4562, including structures and equipment, whether expensed or depreciated over time. Data from this form are available only for firms that file Form 1120-S or 1065 electronically. For this analysis, we restrict attention to firms that file electronically in all years of our sample period (2013-2021) that they file; this restriction drops 29 percent of firms. Within this subset, 31 percent report some investment on Form 4562.

Theoretically, the effective tax rate reduction under Section 199A has an ambiguous effect on incentives for investment. In the standard user cost of capital model (Hall and Jorgenson, 1967; Gravelle, 2014), the firm's break-even rate of return (f_K) on a marginal investment financed by equity (such as retained earnings) in tangible property is given by:

[27] As discussed in Section IV, in estimating Equation (2) in the firm sample, we generally require that the outcome in $t-2$, $t-3$, and $t-4$ is greater than 2% of gross receipts in those years, on average. An exception is the count-of-employees outcome, where we instead require wages to non-owners in $t-2$, $t-3$, and $t-4$ to be greater than 2% of gross receipts in those years.

[28] First, we get the numerator of this elasticity from Table III, which shows the percentage change in the total wage bill was estimated to be -0.0136. For the denominator, we use information from Table II to calculate the implied percentage change in the MTR. The elasticity of average wages with respect to the MTR was -0.163 and the change in log average wages was estimated to be 0.0198. Backing out the denominator of the average wages to MTR elasticity implies a percentage change in the MTR of 0.118.

$$f_K = \frac{1-\tau z}{1-\tau} \times (\delta + r). \tag{4}$$

In this expression, τ is the tax rate, z is the schedule of depreciation deductions converted to present value, δ is the geometric depreciation rate, and r is the firm's exogenous discount rate (i.e., investors' required return gross of individual-level taxes). Intuitively, the tax rate matters for investment decisions for two reasons: taxes reduce the benefit of investment (by taxing the income stream produced by it), while taxes also reduce the cost of investment due to depreciation deductions. When $z < 1$, the former dominates, and a higher tax rate reduces investment.

However, a different TCJA provision (the expansion of bonus depreciation) meant that, in fact, $z = 1$ for most investment by pass-through businesses in 2018 and 2019. When $z = 1$, theory predicts that the reduction in costs and benefits precisely offset, meaning that the tax rate does not affect a marginal investment. Thus, while TCJA reduced the cost of capital under this model by increasing z, the change in tax rate τ induced by Section 199A did not *further* reduce the cost of capital. That is, the treatment and control groups in our regression were generally exposed to a similar reduction in the cost of capital.

There are several modifications to the standard model that would predict an investment response to a change in the tax rate, though, even when $z = 1$. For example, suppose that the firm incurs $c > 0$ dollars of non-deductible costs (e.g., entrepreneurial effort) for each dollar of investment. In that case, with $z = 1$, the threshold rate of return becomes $\frac{1+c-\tau}{1-\tau} \times (\delta + r)$, which is increasing in τ, implying that a lower tax rate increases investment. Alternatively, if investment is financed by debt, debt-financed investment faces a *subsidy* when interest payments are deductible and $z = 1$. In this scenario, a decrease in the tax rate reduces the subsidy and therefore reduces investment. Finally, Section 199A delivered a positive cash flow shock to some businesses; this could encourage investment in the presence of liquidity constraints. In sum, theory provides us little guidance even for the expected *sign* of Section 199A's effect on investment.

We find no evidence that Section 199A changed investment among eligible firms relative to ineligible firms. Using variation in 199A exposure due to differences in owner incomes, Figure 8 Panel C shows that investment relative to baseline level of investment did not change differentially by treatment status in either 2018 or 2019. The point estimates are negative and close to zero. Our 95 percent confidence intervals can rule out increases of more than 4 percent and decreases in excess of 11 percent.

In summary, we find no evidence that exposure to Section 199A changed real outcomes in the form of investment, employment, or wages for non-owner employees by S corporations and simple partnerships during the first two years that the deduction was in effect. Changes to real inputs may be more sensitive to the provision's legislated sunset than income-shifting responses. They also may take longer to manifest. However, in Appendix B.2, we extend our analyses through 2021 and continue to find little effect on real firm investments in labor and capital.

VI Conclusion

Section 199A cuts effective tax rates on pass-through businesses, providing billions of dollars of tax reductions to millions of taxpayers. We document behavioral responses among businesses and their owners to this TCJA provision. Overall, we estimate that potential QBI rose by 3 to 4 percent among more-exposed owners relative to less-exposed owners following the introduction of Section 199A. This

could reflect some combination of income reclassification and increased business activity.

When we study specific responses, we find strong shifting responses along some margins but not others. In particular, we find a clear reduction in guaranteed payments paid, with larger reductions among partners more exposed to Section 199A. And we find a clear increase in firms changing their reported NAICS codes, especially among firms that formerly listed themselves as "consulting" firms.

On the other hand, we find no evidence of large changes in investment, wages to non-owners, or hiring of non-owners. We also find no effect on wages paid to S corporation shareholders – except for the small subset of S corporations limited by the wage and capital limitation, where we see the predicted *increase* in shareholder wages. Finally, there is no identifiable effect on independent contracting.

As policymakers contemplate whether to extend or modify Section 199A beyond its 2025 expiration, we hope that the evidence we have presented can inform the discussion.

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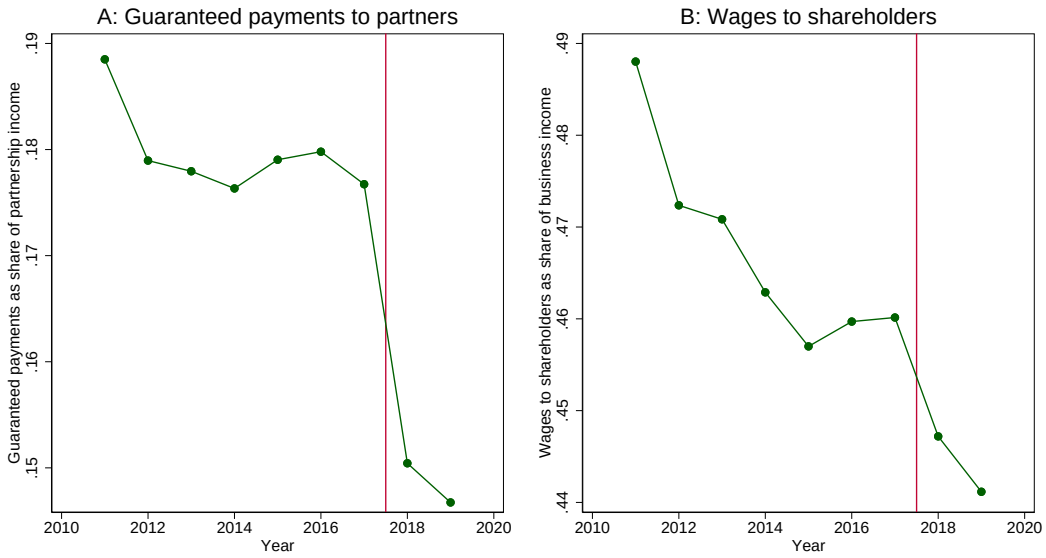
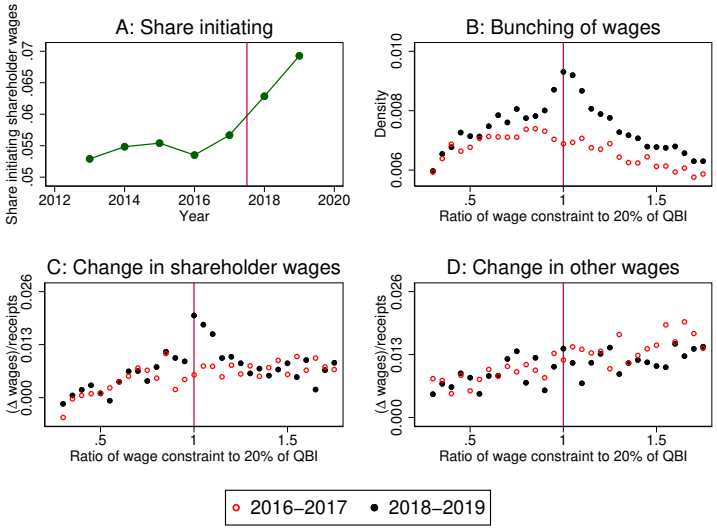
Figures and Tables

Figure 1: Changes in Owner Compensation



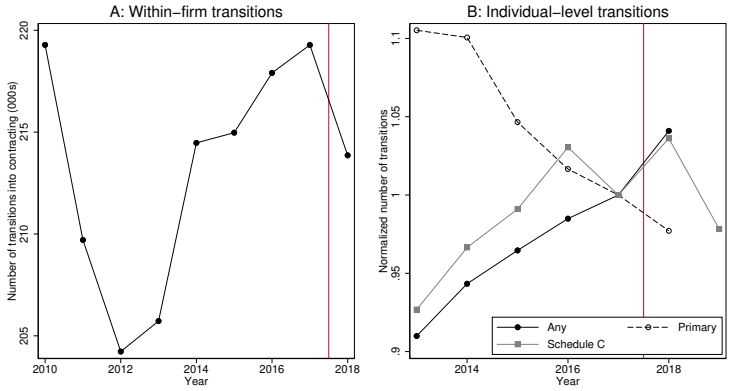
Notes: Panel A shows the average guaranteed payments as a share of partnership business income over time, measured in the individual sample, and weighted by individual. Partnership business income is defined as guaranteed payments plus positive potential QBI. Panel B shows the average ratio of S corporation wages to S corporation business income using the firm sample. S corporation business income is defined as wages to shareholders divided plus potential QBI. We restrict to observations with at least $10,000 of partnership business income (Panel A) or $10,000 of S corporation business income (Panel B). Both panels were created by the authors using data from the population of tax returns.

Figure 2: S corporations and the Section 199A wage limitation



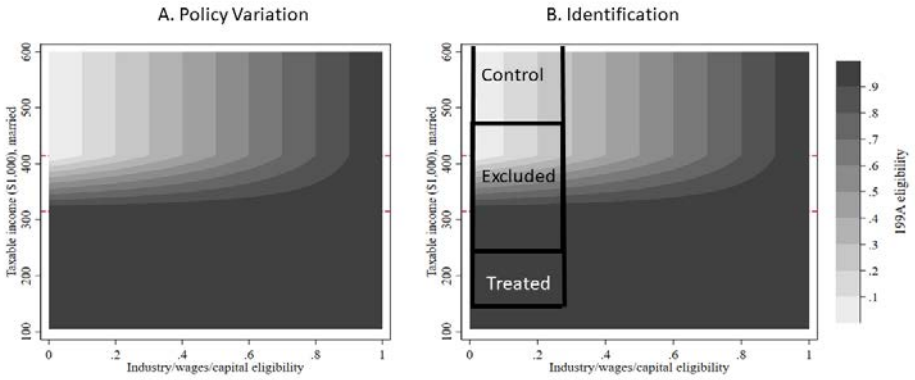
Notes: This figure uses the firm panel. In all panels, we restrict attention to S corporations that (i) were not SSTBs in $t-2$, and (ii) had a single shareholder in $t-2$ whose income was above the bottom of the phase-out range. In Panel A, we further restrict to firms that (iii) were bound by the wage limitation in $t-2$, and (iv) paid zero wages to shareholders in $t-2$. Panel A plots the share of these firms that pay a positive wage to shareholders at time t. We deem a firm to be "bound" by the wage limitation if total wages paid is less than 20% of potential QBI (hypothetically reducing the owner's Section 199A deduction by at least 50%). In Panel B, for firms subject to restrictions (i) and (ii) above, we plot their density with respect to the year-t ratio of their wage constraint (50% of wages) to 20% of potential QBI. Theory predicts an excess mass of firms in 2018-2019 with this ratio approximately equal to one. In Panels C and D, we plot characteristics of firms as a function of this ratio. Panel C plots the mean change in wages to shareholders (t minus $t-2$) scaled by $t-2$ gross receipts. Panel D plots the mean change in all other wages (t minus $t-2$) scaled by $t-2$ gross receipts. These changes in wages are winsorized at the 1st and 99th percentiles of non-zero values within this sample. All panels were created by the authors using data from the population of tax returns.

Figure 3: Transitions into independent contracting



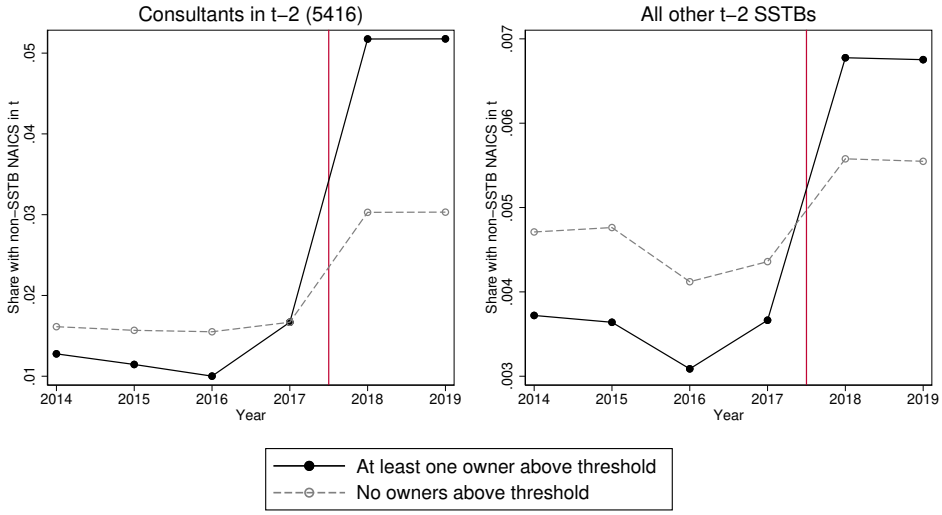
Notes: Panel A shows the total number of individuals who experience within-firm employee-to-contractor reclassifications. A within-firm employee-to-contractor reclassification occurs when an individual receives at least 60 percent of labor income from a given firm in the form of wage income in year $t-1$ and as 1099-MISC non-employee compensation (NEC) income from the same firm in year t. Panel B uses the individual sample to plot counts of transitions into contractor status (normalized to one in 2017), without requiring that the firm providing the income is the same. We have three definitions of a transition in Panel B. A transition into receiving "any"' Form 1099-MISC non-employee compensation (NEC) occurs when an individual receives positive NEC from any firm at time t and zero at time $t-1$. A transition into "primary" NEC status occurs when NEC comprises more than 50% of labor income (NEC plus wages) at time t and less than 50% at time $t-1$. A transition into "Schedule C" occurs when Schedule C income is zero at $t-1$ and non-zero at t. All panels were created by the authors using data from the population of tax returns.

Figure 4: Above-Below Identification



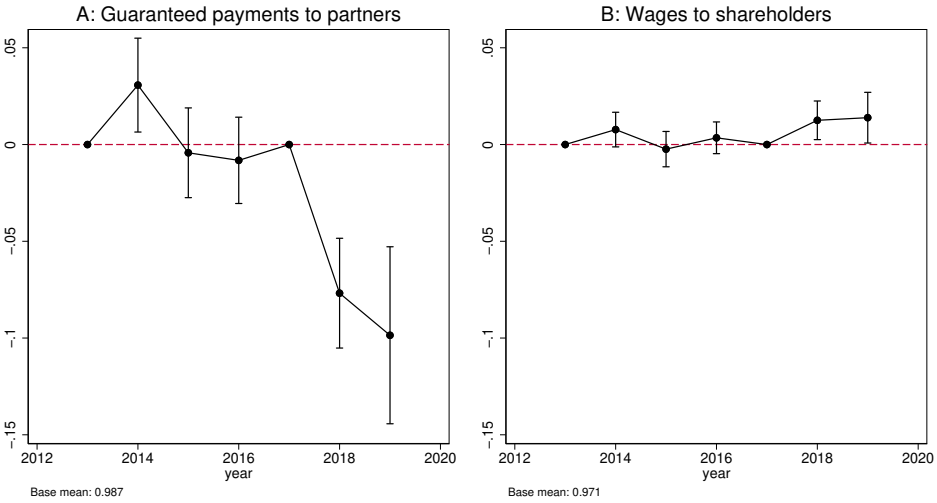
Notes: The figure depicts heat maps of Section 199A treatment intensity—that is, the share of potential QBI that is eligible for Section 199A. Darker colors indicate greater treatment intensity. Panel A describes the variation in treatment intensity based on owner income (assuming a married taxpayer in 2018) and the business's industry, wages and capital. Panel B shows the same information and highlights our identification strategy, which compares taxpayers below vs. above the phase-out region among taxpayers with low aggregated industry treatment proxies—i.e., those with pass-through income from entities likely to either be SSTBs or have low wage and capital employed in the business.

Figure 5: NAICS-code switching for S corporations and partnerships: moving from SSTB to non-SSTB status



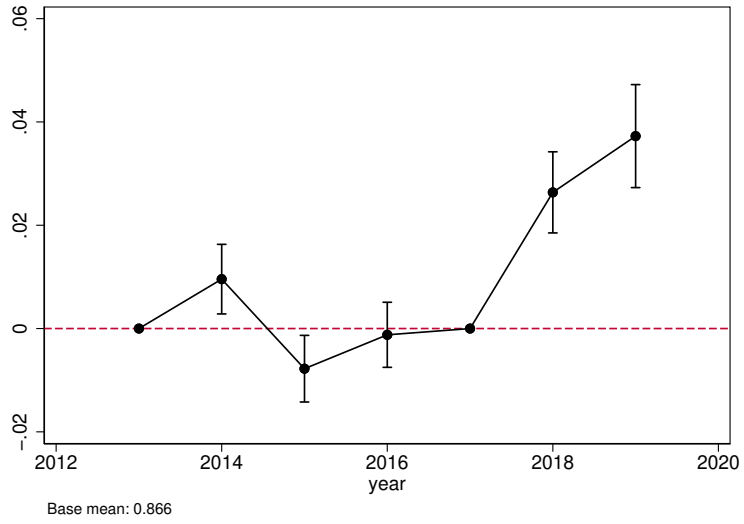
Notes: This figure uses the firm panel. In each panel, we plot the probability of reporting a NAICS code in our set of SSTB NAICS codes (an "SSTB NAICS") in year t, conditional on reporting a non-SSTB NAICS in year $t-2$. The solid series in each panel restricts to those firms where at least one owner of the firm had income above the bottom of the phase-out range at time $t-2$; the dashed series restricts to all other firms. The left panel restricts to those firms that reported a four-digit NAICS code of 5416 at $t-2$, while the right panel restricts to those firms that reported some other SSTB NAICS code at $t-2$. We stress that this list of NAICS codes is a modeling approximation. Neither the law nor the regulations define SSTB with reference to NAICS codes, but rather, based on the facts and circumstances of each business. Readers should not infer that this list of NAICS codes represents an interpretation by the Department of the Treasury regarding which businesses would be considered SSTBs. All panels were created by the authors using data from the population of tax returns.

Figure 6: Changes in owner compensation



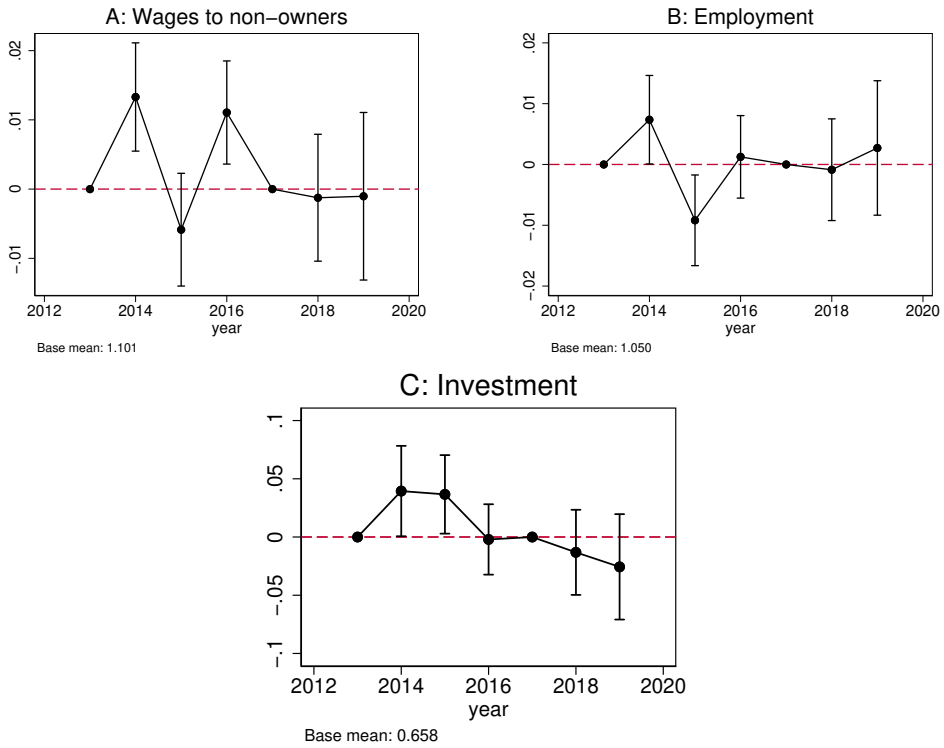
Notes: Panel A presents regression estimates of the year-specific treatment effects (β_t) in equation (2) on partnership guaranteed payments using our individual panel. Panel B presents analogous regression estimates for S corporation wages paid to shareholders in the firm panel. In both cases, the dependent variable is the ratio of outcome in question in year t to the average of that outcome in years $t-2$, $t-3$, and $t-4$. In Panel B, we restrict to single-shareholder S corporations. See section IV for further details regarding the regression specification and sample restrictions. Standard errors are clustered by panel unit. All panels were created by the authors using data from the population of tax returns.

Figure 7: Owner QBI



Notes: This figure presents regression estimates of the year-specific treatment effects (β_t) in equation (2) using our individual level sample. The dependent variable is the ratio of potential QBI in year t to the average of the absolute value of potential QBI in years $t-2$, $t-3$, and $t-4$. See section IV for further details regarding the regression specification and sample restrictions. Standard errors are clustered by firm. All panels were created by the authors using data from the population of tax returns.

Figure 8: Wages to non-shareholders, employment, and investment



Notes: This figure presents regression estimates of the year-specific treatment effects (β_t) in equation (2) using our firm panel. The outcome of interest in panel A is wages paid to non-owner employees. In panel B, the outcomes is the number of non-owner employees. In panel C, the outcomes is Form 4562 investment. In each case, the dependent variable is the ratio of outcome in question in year t to the average of that outcome in years $t-2$, $t-3$, and $t-4$. The sample in panel C is restricted to those firms that always file electronically in years that they file between 2013 and 2021. See section IV for further details regarding the regression specification and sample restrictions. Standard errors are clustered by firm. All panels were created by the authors using data from the population of tax returns.

Table 1: Summary statistics: individual sample

Panel A: full sample ($N = 97,056,500$)	Mean	Median	Standard Deviation	Fraction with nonzero value
Potential QBI	6,266	0	283,012	0.23
Observed QBI deduction (2018+)	1,089	0	110,276	0.12
Adjusted gross income (AGI)	68,432	34,962	562,199	0.82
QBI from Scheds. C and F	2,406	0	72,746	0.16
QBI from S corps/partnerships	2,751	0	19,539,502	0.07
Form 1099-MISC non-employee comp.	1,837	0	2,809,044	0.07
Form W-2 wages	31,150	11,366	127,633	0.63
Panel B: regression treatment group ($N = 2,711,400$)				
Potential QBI	96,299	51,126	161,737	0.92
Observed QBI deduction (2018+)	12,190	5,119	17,638	0.73
Adjusted gross income (AGI)	232,921	224,304	201,340	0.99
QBI from Scheds. C and F	60,905	9,334	121,387	0.70
QBI from S corps	18,688	0	87,443	0.23
QBI from partnerships	15,714	0	94,587	0.28
Guaranteed payments (GP)	4,329	0	44,280	0.05
Form 1099-MISC non-employee comp.	22,178	0	92,811	0.28
Form W-2 wages	64,505	13,534	105,210	0.56
Panel C: regression control group ($N = 963,000$)				
Potential QBI	295,294	180,581	494,428	0.95
Observed QBI deduction (2018+)	8,734	0	31,401	0.52
Adjusted gross income (AGI)	615,359	582,886	579,110	0.99
QBI from Scheds. C and F	96,510	0	260,806	0.53
QBI from S corps	77,145	0	324,811	0.36
QBI from partnerships	117,745	0	348,365	0.59
Guaranteed payments (GP)	23,082	0	116,764	0.14
Form 1099-MISC non-employee comp.	34,439	0	198,490	0.24
Form W-2 wages	149,301	21,147	284,901	0.56

Notes: See Section II for our sample and variable definitions. Panel A includes the entire sample, while Panels B and C restrict to the samples used the regressions using Equation (2) in the individual sample. Panels B and C are limited to observations with positive AGI, on average, in years $t-2$, $t-3$, and $t-4$. Observation counts are rounded to the nearest hundred. To protect taxpayer privacy, medians are equal to the mean of all observations between the 49.9th and 50.1th percentiles. All dollar values are adjusted for inflation to 2018 levels. Sample weights are used everywhere except for reported observation counts. The table was created by the authors using data from the population of tax returns.

Table 2: Firm panel: summary table

Panel A: full sample ($N = 49,325,000$)	Mean	Median	Standard Deviation	Fraction with nonzero value
Partnership dummy	0.36	0.00	0.48	0.36
Number of owners	1.98	2.00	8.27	0.98
Gross receipts	1,178,235	72,375	25,577,759	0.67
Wages to shareholders (S corps)	53,165	1,023	448,204	0.68
Guaranteed payments (partnerships)	12,419	0	455,336	0.67
Number of non-owner employees	7	0	139	0.32
Wages to non-owners	150,355	0	2,572,235	0.32
QBI	95,587	5,626	40,361,035	0.93
Investment	48,591	0	36,931,556	0.37
Panel B: regression treatment group ($N = 4,365,700$)				
Partnership dummy	0.13	0.00	0.34	0.13
Number of owners	1.48	1.00	2.28	0.98
Gross receipts	664,115	224,449	7,235,524	0.94
Wages to shareholders (S corps)	61,506	27,677	199,510	0.71
Guaranteed payments (partnerships)	61,199	0	500,024	0.91
Number of non-owner employees	5	0	69	0.49
Wages to non-owners	119,234	0	918,992	0.49
QBI	70,849	19,068	5,662,879	0.96
Investment	12,440	0	253,115	0.48
Panel C: regression control group ($N = 1,226,200$)				
Partnership dummy	0.15	0.00	0.36	0.15
Number of owners	2.01	1.00	7.73	0.99
Gross receipts	3,309,557	967,663	40,097,363	0.93
Wages to shareholders (S corps)	286,869	119,492	2,239,442	0.78
Guaranteed payments (partnerships)	369,671	0	2,650,351	0.91
Number of non-owner employees	18	4	221	0.64
Wages to non-owners	629,456	105,140	4,242,430	0.64
QBI	529,581	115,403	8,907,932	0.97
Investment	46,530	0	1,081,344	0.55

Notes: This table displays summary statistics from the firm panel. See Section II for our sample and variable definitions. Panel A includes the entire sample, while Panels B and C using Equation (2) in the firm sample. For the sake of this table, the treatment group (Panel B) is defined as those firms where at least half of $t-2$ shareholders (weighted by ownership share) are below the top of the Section 199A income phase-out range, while the above/below control group (Panel C) is defined as all other firms that satisfy the above/below sample restrictions. To protect taxpayer privacy, medians are equal to the mean of all observations between the 49.9th and 50.1th percentiles. The table was created by the authors using data from the population of tax returns.

Table 3: First-Stage Owner Level

	2018	**2019**
Treatment	0.474	0.476
	(0.001)	(0.001)
Control mean	0.199	0.197
Observations	130,139	133,910

Notes: This table reports the coefficient of a regression of the ratio of the QBI deduction to 20% of potential QBI on a dummy for being treated (having income below the Section 199A thresholds) interacted with dummies for the years 2018 and 2019 using the individual sample. The regression controls for industry-by-year fixed effects. The sample is restricted to be the same sample used in Figure 7. Standard errors are clustered by individual. The table was created by the authors using data from the population of tax returns.

Table 4: Critical level of allowable parallel trend violations

	2018	**2019**
Guaranteed payments	1.19	1.83
Wages to shareholders	0.23	0.04
Potential QBI	1.45	2.22

Notes: This table reports the largest value of M such that we can reject the null hypothesis of zero effect when we allow a parallel trend violation equal to M times the largest absolute value of a pre-treatment event study coefficient. See text and Rambachan and Roth (2023) for further details. Hypothesis testing was performed using a fixed set of 799 bootstrap iterations. The table was created by the authors using data from the population of tax returns.

A Additional Data and SSTB Measure Details

In this appendix, we provide more details on our sample stratification design and the assignment of SSTB status. We also provide some validation of our SSTB measure.

A.1 Sample stratification for individual panel

We strategically stratify our sample that forms the basis of the individual panel. Our primary aim is to to maximize power in Equation (2), subject to constraints on dataset size. We set the baseline sampling rate to 0.2%, but this sampling rate is increased if the individual meets certain conditions in any year. In particular, an individual's sampling rate is 50% if, in at least one year, they own at least one business with a low industry treatment proxy ($z_{jt} < 0.2$) and they have income high enough to be included in the regression when estimating Equation (2). In addition, high-income (above the Section 199A threshold in at least one year) owners of high-industry-treatment-proxy firms are sampled at a rate of 25%, and moderate-income (above 50% of the Section 199A threshold in at least one year) owners of high-industry-proxy firms are sampled at a rate of 5%. Those who receive pass-through income but never contemporaneously have income high enough to qualify for the previous categories are sampled at a rate of 0.5%. Finally, we sample 100% of the individuals in Figure 3, Panel A: those who receive contractor (1099-MISC or 1099-NEC) income at time $t + 1$ from the same employer from which they received wage (Form W-2) income in year t.

A.2 Validating industry treatment proxy

To validate our industry treatment proxy, which is based on pre-2018 data, we compare it with actual deductions claimed in 2018 and 2019, when Section 199A was in effect. We restrict this analysis to a sample of business owners with income above the Section 199A thresholds who have only one business, ensuring a clean mapping between deductions and specific businesses, and ensuring that SSTB status is relevant. Appendix Figure A1 shows four binned scatter plots of the actual claiming ratio (that is, the observed QBI deduction divided by 20% of potential QBI[29]) on the y axis against the industry treatment proxy on the x axis. Each panel considers a separate entity type. For each type, the regression fit lies close to the 45 degree line, meaning that the industry treatment proxy accurately predicts actual treatment on average, both within and across entity types.[30]

A.3 Estimating and validating SSTB status

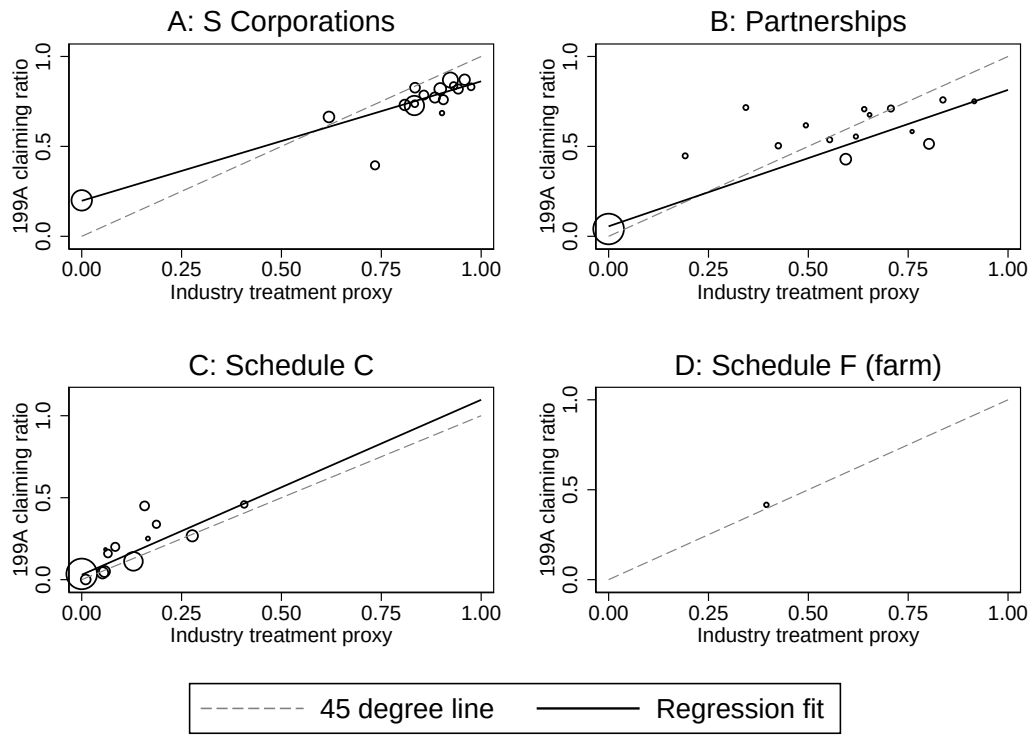
In this section, we describe and validate how we classify businesses as SSTB or non-SSTB. To distinguish SSTB vs. non-SSTB owners in year t, we use year $t - 2$ data. We first look to the business's reported NAICS code and use our best judgement to match NAICS codes to the definitions of SSTBs described in the statute and the regulations.[31] This inevitably results in some misclassification, as NAICS codes do not correspond cleanly with SSTB status, which depends on the facts and circumstances of

[29] We subtract 20% of observed REIT dividends from the observed QBI deduction for this purpose.

[30] We consider all Schedule F activity to be a single industry, so there is no within-entity-type variation in this case. Still, the aggregate of all Schedule F activities lies reassuringly close to the 45 degree line.

[31] We stress that the list of SSTB NAICS codes we use – and the use of NAICS codes at all – is a modeling approximation. Neither the law nor the regulations define SSTB with reference to NAICS codes, but rather, based on the facts and circumstances of each business. Readers should not infer that this list of NAICS codes represents an interpretation by the Department of the Treasury regarding which businesses would be considered SSTBs.

Figure A1: Scatter of industry treatment proxy against claiming ratio in restricted sample.



Notes: This figure plots entity-type-specific binned scatter plots of the Section 199A claiming ratio against the industry treatment proxy. This figure uses a restricted sample of individuals in 2018 and 2019 who (1) have contemporaneous income above the top of the Section 199A phase-out range, (2) own exactly one business, (3) have positive potential QBI, and (4) in the case of 2019 observations, did not experience any pass-through losses in 2018. The Section 199A claiming ratio is claimed QBI divided by potential QBI, where claimed QBI equals the lesser of (a) the actual Section 199A deduction (less the REIT dividend component) divided by 0.2, or (b) potential QBI. In each panel we plot the 45 degree line and the (within-entity-type) regression fit. In Panels A, B, and C, observations at the 6-digit-industry level are grouped into roughly 20 quantiles based on the industry treatment estimate, using the owners' aggregate potential QBI as weights. The size of the scatter points corresponds to their potential QBI. All Schedule F filers are deemed to be in the same industry, so Panel D contains only one scatter point. All panels were created by the authors using data from the population of tax returns.

the business. Moreover, one entity for tax purposes may consist of multiple trades or businesses, some of which may be SSTBs and some of which may not. Since our data are at the tax-entity level, we cannot observe this complexity. This mismeasurement of SSTB status implies that our difference-in-differences regression frameworks are biased towards null results to some extent.

We assess the accuracy of our SSTB classification by examining claiming behavior in 2018 and 2019 among restricted sets of taxpayers who are potentially affected by the SSTB limitation and for whom we can cleanly identify the amount of QBI deduction attributable to a certain business. We do so for two sets of taxpayers. First, we restrict to the universe of tax units in 2018 and 2019 who (1) have contemporaneous taxable income (adding back the Section 199A deduction, if any) above the top of the phase-out range, (2) own exactly one pass-through business, (3) have positive potential QBI, and (4) in the case of 2019 observations, did not experience any pass-through losses in 2018. For the individuals included in this sample, the SSTB and wage/capital restrictions are in full effect, and we can cleanly map the QBI deduction to a specific business.[32]

[32]There are approximately 240,000 such tax units in 2018 and 192,000 in 2019. Approximately 58% of such tax units correspond to a Schedule C, while 16% own an S corporation, 25% own a partnership, and less than 1% file a Schedule F.

Second, we make use of Form 8995-A, which is filed by taxpayers in or above the phase-out region to compute the Section 199A deduction. Beginning in 2019, taxpayers report the necessary information – including whether the taxpayer is treating it as an SSTB – for each trade or business (or each aggregation of trades or businesses) in order to compute the deduction amount attributable to each business. Furthermore, each trade or business is identified by an EIN if it has one, which allows us to merge in reported NAICS codes from the business's tax return (e.g., Form 1120-S). We use these data to directly estimate the share of businesses in each industry that individual taxpayers report being SSTBs. However, an important limitation of this data is that taxpayers *above* the Section 199A phase-out region tend not to report any information about their SSTBs because such businesses are always ineligible for Section 199A for these taxpayers. Therefore, we solely analyze taxpayers in the interior of the income phase-out range for this exercise.

The two columns of Appendix Table A1 show the results of the first and second exercises, respectively, by selected industries. We divide the NAICS codes into those that are likely to be SSTBs, a few that could be considered borderline or a mix of SSTB and non-SSTB businesses (but which we classify as non-SSTB throughout the rest of this paper), and a few that are likely to be non-SSTB businesses. For example, consider NAICS 523 (securities and other financial investments), the first row in the table. In column 1, we restrict to those individuals with income above the top of the income phase-out range and whose only source of pass-through income is a business from NAICS code 523. Among these individuals, we estimate that the QBI deduction was equal to 6.6% of the theoretical maximum (20% of QBI). That is, some combination of the SSTB denial and the wage and capital limitations reduced the QBI deduction by 93.4% among this group. In column 2, we restrict to taxpayers in the interior of the income phase-out range, where we can observe whether a given individual treats a given business as SSTB or not. Among such individuals, 57.3% treated their NAICS 523 business as non-SSTB (or, equivalently, 43.7% treated it as SSTB). With some exceptions, this table shows that in industries that we classify as SSTB, potential QBI tends to produce a much smaller QBI deduction (column 1), and most taxpayers indeed report such businesses as SSTBs.

Table A1: Section 199A deductions among high-income owners, by industry

	NAICS code	Deduction share (one business) (1)	Non-SSTB share (Form 8995-A) (2)
SSTBs			
Securities, Commodity Contracts, and Other Financial Investments and Related Activities	523	0.066	0.573
Hospitals	622	0.049	0.313
Legal Services	5411	0.039	0.255
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	5412	0.017	0.297
Management, Scientific, and Technical Consulting Services	5416	0.083	0.767
Offices of Physicians	6211	0.035	0.348
Offices of Dentists	6212	0.070	0.284
Offices of Other Health Practitioners	6213	0.096	0.491
Outpatient Care Centers	6214	0.266	0.649
Veterinary Services	54194	0.120	0.458
Borderline SSTBs			
Nursing and Residential Care Facilities	623	0.385	0.940
Performing Arts, Spectator Sports, and Related Industries	711	0.065	0.791
Motion Picture and Video Industries	5121	0.337	0.885
Architectural, Engineering, and Related Services	5413	0.573	0.961
Specialized Design Services	5414	0.314	0.934
Computer Systems Design and Related Services	5415	0.444	0.913
Home Health Care Services	6216	0.478	0.870
Other Ambulatory Health Care Services	6219	0.139	0.774
Lessors of Nonfinancial Intangible Assets	53311	0.775	0.969
Non-SSTBs			
Manufacturing	31	0.760	0.992
Wholesale Trade	42	0.590	0.988
Construction of Buildings	236	0.684	0.990
Newspaper, Periodical, Book, and Directory Publishers	5111	0.651	0.976
Restaurants and Other Eating Places	7225	0.838	0.991

Notes: Column 1 reports the Section 199A claiming ratio among several industries in a restricted sample of individuals who (1) have contemporaneous taxable income (disregarding Section 199A) above the top of the phase-out range, (2) own exactly one business, (3) have positive potential QBI, and (4) in the case of 2019 observations, did not experience any pass-through losses in 2018. The Section 199A claiming ratio is claimed QBI to potential QBI, where claimed QBI equals the lesser of potential QBI or the actual Section 199A deduction (less the REIT dividend component) divided by 0.2. We use data from 2018-2019 in column 1. Column 2 reports the share of individual-by-firm observations (weighted by potential QBI) that are treated by individuals as non-SSTB on Form 8995-A, restricting to taxpayers whose contemporaneous taxable income (disregarding Section 199A) is in the interior of the phase-out range. We use data from 2019-2021 in column 2. We divide codes into those that are likely to be SSTBs, a few that might be more borderline, and a few that are likely to be non-SSTB businesses. We stress that this list of NAICS codes is a modeling approximation. Neither the law nor the regulations define SSTB with reference to NAICS codes, but rather, based on the facts and circumstances of each business. Readers should not infer that this list of NAICS codes represents an interpretation by the Department of the Treasury regarding which businesses would be considered SSTBs. This table was created by the authors using data from the population of tax returns.

B Alternative Specifications

In this appendix, we report results under a number of alternative specifications that measure the effects of Section 199A. These alternative specifications generally yield results that are consistent with our baseline specifications.

B.1 Industry-Variation Identification Strategy

In this section we explore an alternative to our main identification strategy, comparing high-income owners of businesses with different levels of predicted eligibility for Section 199A due to the SSTB and wage and capital limitations. Within this group of taxpayers, treatment intensity varies continuously based on the taxpayer's business's SSTB status, wages paid, and capital employed, as illustrated by the horizontal variation in Figure 4.

The analysis here generally follows the methods described in Section IV with appropriate modifications to the sample restrictions and treatment measure. For our individual sample, we restrict the sample to individuals with $t-2$ income above the top of the Section 199A phase-out region. For the firm sample, we include only firms where the firm-year level treatment measure based on owners' income is less than or equal to 0.5, meaning that the owners' incomes are generally high enough in $t-2$ to be substantially affected by the income limitations under Section 199A. This analysis compares individuals and firms with different values of the aggregated industry treatment proxy, $\bar{z}_{i,t-2}$, and we use the continuous variation in this measure among high-income taxpayers or firms with high-income owners.

The estimation equation is:

$$Y_{it} = \underbrace{\alpha_{T(i,t)} + \gamma_{T(i,t)} \times t}_{\text{Treatment-specific linear trends}} + \underbrace{\lambda_{C(i,t-2)t}}_{\text{Cell-by-year fixed effects}} + \underbrace{\sum_{\tau=2014,\tau\neq2017}^{2019} \beta_\tau treat_{it} \times 1(t=\tau)}_{\text{Event study terms}} + \epsilon_{it}. \quad (5)$$

This equation is analogous to Equation (2), with some subtle differences. First, our treatment measure $treat_{it}$ is equal to $\bar{z}_{i,t-2}$ and is continuous. Second, we include 100 evenly-spaced bins of treatment status in $T(i,t)$; this absorbs time-invariant differences between individuals and firms with higher and lower values of $treat_{i,t}$. Third, the cell $C(i,t-2)$ is defined by entity-type by lagged business income in the firm sample, and lagged AGI in the individual sample. The identifying variation comes from individuals or firms who have similar incomes, but operate businesses in industries with different levels of Section 199A eligibility.

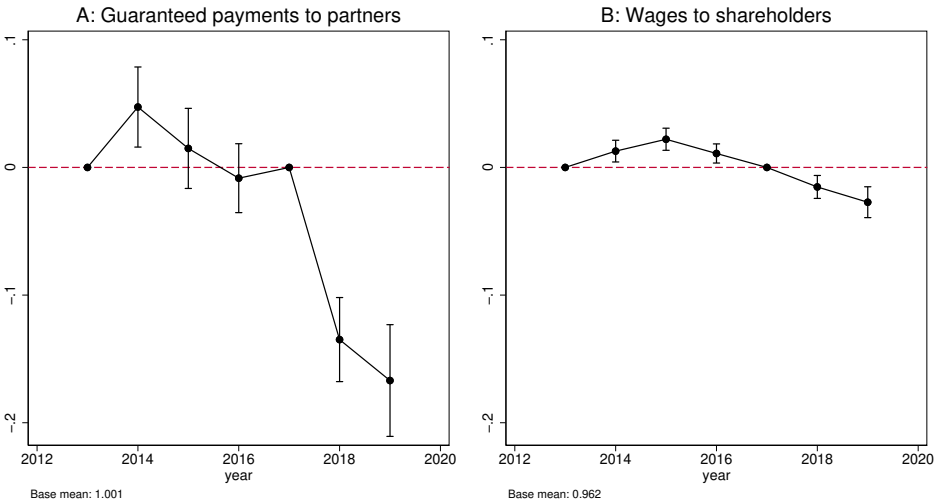
Figure B1 Panel A shows that guaranteed payments decreased in response to Section 199A using our alternative identification method. The 2014 pre-period coefficient is statistically different from zero, but the decline in guaranteed payments in 2018 and 2019 is much larger, suggesting an effect of Section 199A, which is consistent with our main results. In Panel B, we show negative point estimates on the effect of Section 199A on wages paid to S-corporation shareholders. The effect is relatively small, especially when compared to the estimates in the pre-period, which suggest that the treated and control groups may not have been evolving in parallel in the pre-period. Our main identification strategy suggested a small increase in wages paid to S-corporation owners, although it was only marginally statistically significant and not robust to violations of the parallel-trends assumption. The point estimates in our alternative strategy are opposite signed, but the magnitudes again are small relative to

the pre-2018 parallel-trends violations. Overall the evidence remains consistent with a null effect on S corporation shareholder wages.

In Figure B2, the point estimates of the effects of Section 199A in 2018 and 2019 on individual owners' QBI are positive and slightly higher than the point estimates using our main identification strategy. In this specification, the 2018 and 2019 event study coefficients are 0.029 and 0.055, respectively. The figure shows nontrivial and statistically significant pre-2018 differences (in 2014 to 2016), however, suggesting a violation of the parallel-trends assumption. While our results using this alternative strategy are somewhat inconclusive, they do not contradict our main finding that QBI increased among taxpayers who were eligible for Section 199A relative to those who were not.

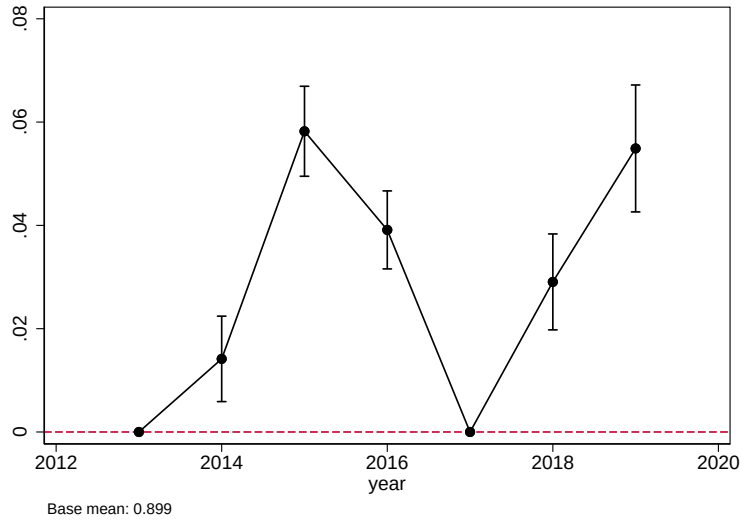
Figure B3 is analogous to Figure 8 but uses the variation in industry and entity exposure to Section 199A among high-income taxpayers and firms with high-income owners. Our estimates of wages paid to non-owners (Panel A) and employment (Panel B) show violations of the parallel-trend assumptions with statistically significant pre-period coefficient estimates. The point estimates for 2018 and 2019; however, do not suggest increases or decreases in either of these outcomes, relative to the size of violations observed in the pre-period. Panel C shows our results for investment and here none of the coefficients is statistically different from zero, although the standard errors do not allow us to rule out meaningful effects of Section 199A on investment. Overall, the results using industry variation in Section 199A exposure are consistent with our main results of no identifiable effect of Section 199A on wages to non-owners, employment. and investment.

Figure B1: Changes in owner compensation; Industry variation



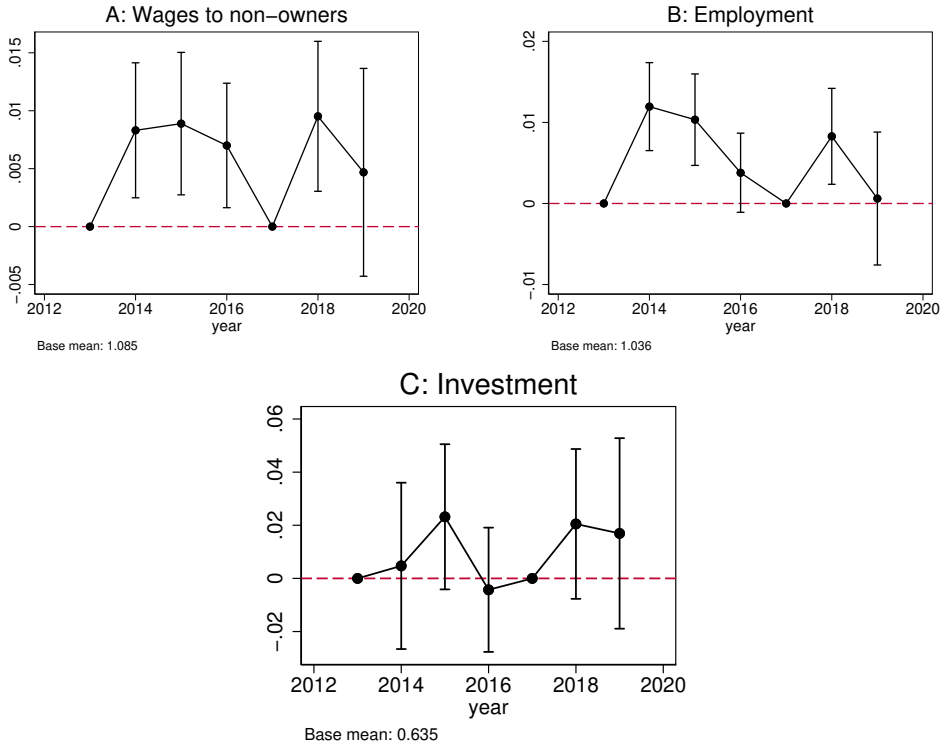
Notes: This figure plots regression coefficients and confidence intervals analogous to Figure 6, except using Equation (5). All panels were created by the authors using data from the population of tax returns.

Figure B2: Owner QBI; Industry variation



Notes: This figure plots regression coefficients and confidence intervals analogous to Figure 7, except using Equation (5). All panels were created by the authors using data from the population of tax returns.The figure created by the authors using data from the population of tax returns.

Figure B3: Wages to non-shareholders, employment, and investment; Industry variation



Notes: This figure plots regression coefficients and confidence intervals analogous to Figure B3, except using Equation (5). All panels were created by the authors using data from the population of tax returns.The figure created by the authors using data from the population of tax returns.

B.2 Extending results to 2021

In this section, we extend our analysis to include the years 2020 and 2021. We view these results as much less reliable than those for 2018 and 2019 due to the effects of the COVID-19 pandemic. In particular we are concerned about business owners with different incomes being differentially affected by the pandemic (Chetty, Friedman and Stepner, 2024).

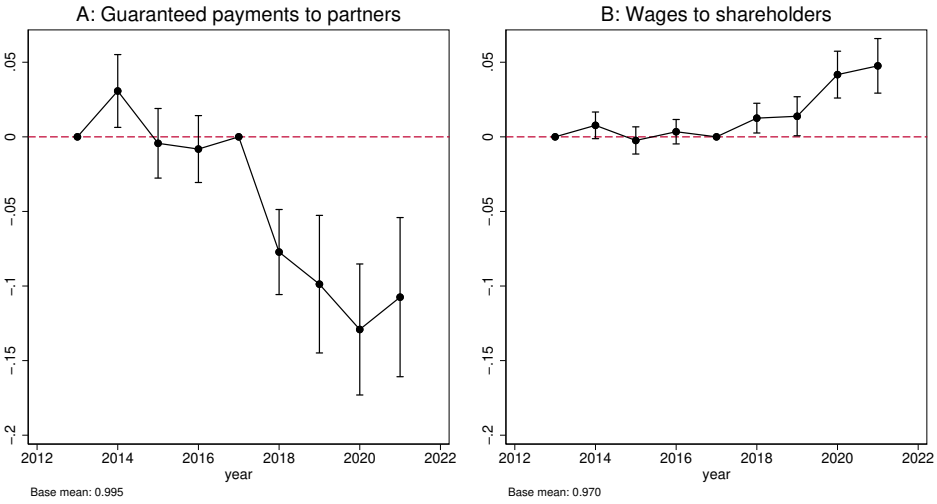
All of the analysis follows our main empirical strategy described in IV. We continue to use information from $t-2$ to determine our sample selection and treatment status measures; for 2020 and 2021, these measures are post-2018 and therefore potentially endogenous. We also continue to scale our outcomes by the averages in $t-2$, $t-3$, and $t-4$, which means that initial effects in 2018 and 2019 may attenuate the 2020 and 2021 estimates. The estimation equation is the following:

$$Y_{it} = \underbrace{\alpha_{T(i,t)} + \gamma_{T(i,t)} \times t}_{\text{Treatment-specific linear trends}} + \underbrace{\lambda_{C(i,t-2)t}}_{\text{Cell-by-year fixed effects}} + \underbrace{\sum_{\tau=2014, \tau \neq 2017}^{2021} \beta_\tau treat_{it} \times 1(t=\tau)}_{\text{Event study terms}} + \epsilon_{it}. \quad (6)$$

Figure B4 Panel A shows that the reduction in guaranteed payments continued in 2020 and 2021 relative to the averages in previous years. In Panel B, we show that treated S corporations increased their wages paid to shareholders relative to control owners in 2020 and 2021 by relatively large estimated magnitudes. Figure B5 shows point estimates that suggest that QBI treatment effects were smaller in 2020 and 2021 than in 2018 and 2019 with 2021 not being statistically different from zero.

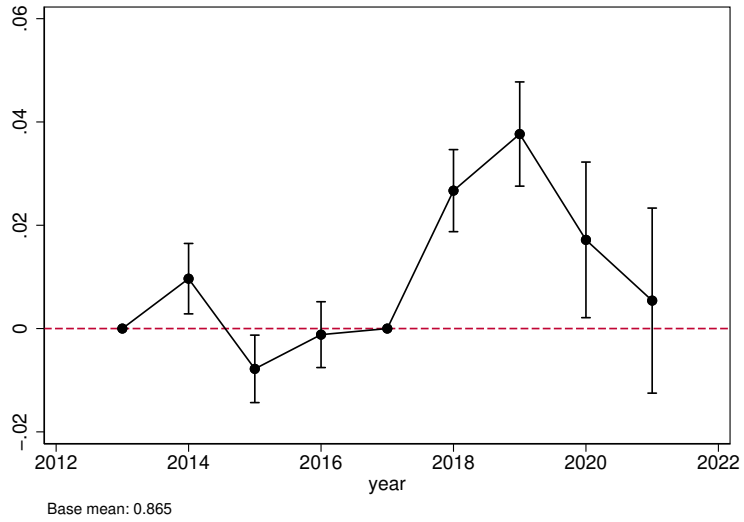
Turning to our estimates of real inputs, in Figure B6 we find that 2020 and 2021 do not show any statistically significant effects on wages paid to non-owners, employment, or investment. However, the standard errors on the point estimates increase, so we cannot reject meaningful effects.

Figure B4: Changes in owner compensation; Extended to 2021



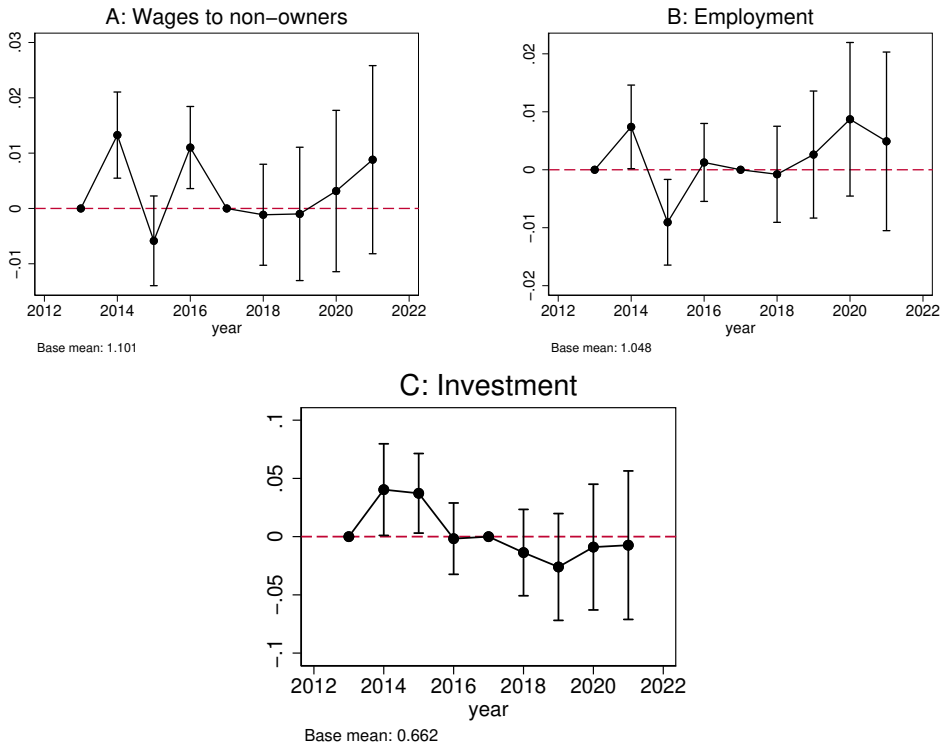
Notes: This figure plots regression coefficients and confidence intervals analogous to Figure 6, except extended to 2021. All panels were created by the authors using data from the population of tax returns.

Figure B5: Owner QBI; Extended to 2021



Notes: This figure plots regression coefficients and confidence intervals analogous to Figure 7, except using Equation (5). All panels were created by the authors using data from the population of tax returns.

Figure B6: Wages to non-shareholders, employment, and investment; Extended to 2021



Notes: This figure plots regression coefficients and confidence intervals analogous to Figure 8, except using Equation (5). All panels were created by the authors using data from the population of tax returns.

C Additional Figures and Tables

In this appendix, we provide additional results for the effect of Section 199A on independent contracting, additional tables on the distribution of Section 199A benefits and the extent of the missing Schedule K-1 data issue.

C.1 Additional Independent Contractor Results

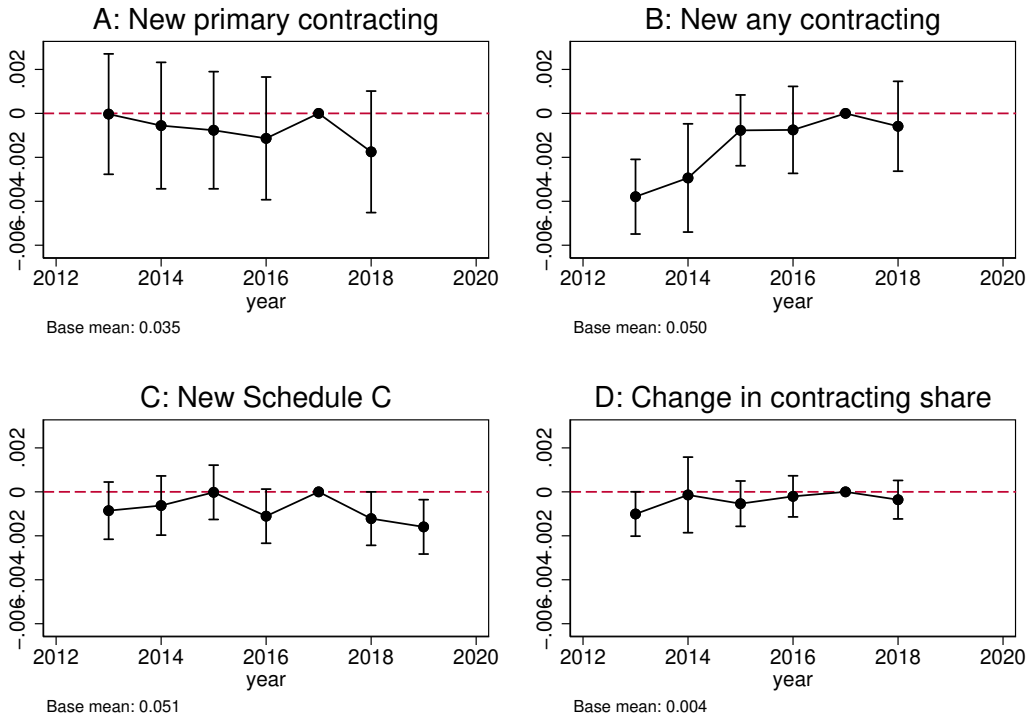
In Figure C1, we use our difference-in-differences identification strategy to test whether treated taxpayers were more likely to increase independent contractor activity relative to control individuals. We define treated taxpayers as those with $t-2$ taxable income between 50 percent and 90 percent of the relevant phase-out thresholds. Control taxpayers are those with between 150 percent and 300 percent of the phase-out thresholds. The underlying assumption is that individuals who provide contracting services and are above the phase-out threshold will not be eligible for Section 199A either due to the SSTB limitation or the capital and wage limitation.

The point estimates are all negative suggesting that treated individuals did not transition into contracting activity as measured by Form 1099-MISC income or filing of a Schedule C.

Next, we examine whether new contractors in 2018 are more likely than existing contractors to claim the Section 199A deduction. If a substantial number of individuals transition to contracting because of the deduction, they should be more likely to claim it. However, Table C1 shows that new contractors in 2018 are less likely to claim the deduction than existing contractors. This is true among those who become primary contractors in 2018 (the first row) as well as those who start receiving any contractor income that year (the second row), and it remains true after controlling for taxable income, contractor income, age and filing status (columns 2, 4, 6, and 8). Across specifications, we find that the contractor income and taxable income controls explain the majority of the difference in coefficients between "no controls" and "controls." On average, new contractors earn less in contracting income and have lower taxable income than existing contractors; furthermore, higher contracting income and higher taxable income is correlated with claiming the Section 199A deduction. These omitted variables drive the large negative estimates in the "no controls" columns (1, 3, 5, and 7).

We also test whether those with incomes below the Section 199A threshold were more likely to claim the deduction because they would be eligible for the full Section 199A deduction (columns 3-4 and 7-8), but the point estimates are similar and negative. Finally we compare new-2018 to new-2017 contractors (in 2018) rather than all existing contractors in columns 5-8, and we find similar results. Thus individuals who became contractors in 2018 are less likely to claim the deduction, even after controlling for taxable income, contractor income, and demographic characteristics.

Figure C1: Difference-in-differences: contractor transitions, below income threshold vs. above



Notes: This figure plots difference-in-differences coefficients for several outcomes related to contractor transitions. We exploit the income threshold for identification: treatment is defined as having taxable income at time $t-2$ that is below the Section 199A income thresholds at which the income limitations apply. The sample is limited to those individuals whose $t-2$ taxable income between 50% and 300% of the thresholds excluding those with incomes between 90% and 150%. In each regression, we control only for year fixed effects and a dummy for $t-2$ taxable income being below the threshold. We cluster our standard errors by individual. A transition into primary contracting status (the dependent variable in Panel A) occurs when Form 1099-MISC non-employee compensation (NEC) comprises more than 50% of labor income (NEC plus wages) at time t and less than 50% at time $t-1$. A transition into any contracting (the dependent variable in Panel B) occurs when NEC is positive at time t and zero at time $t-1$. A transition into filing Schedule C (the dependent variable in Panel C) occurs when Schedule C income is zero at $t-1$ and non-zero at t. The dependent variable in Panel D is the first difference of the ratio of NEC to NEC plus wages. The sample is restricted to those filing a tax return in t and $t-1$. All panels were created by the authors using data from the population of tax returns.

Table C1: New 2018 contractor Section 199A claiming

	Probability of Claiming 199A							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
New 2018 Primary Contractor (PC)	-0.082	-0.042	-0.092	-0.046	-0.041	-0.023	-0.047	-0.027
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)	(0.002)
Reference group	- - - - -PCs in 2017 and 2018- - - - -				- New PCs in 2017, continuing 2018 -			
Controls		X		X		X		X
Sample	All	All	Below	Below	All	All	Below	Below
New 2018 Any Contractor Income (ACI)	-0.116	-0.110	-0.127	-0.124	-0.054	-0.051	-0.064	-0.061
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Reference group	- - - - -ACI in 2017 and 2018- - - - -				- New ACI in 2017, continuing 2018 -			
Controls		X		X		X		X
Sample	All	All	Below	Below	All	All	Below	Below

Notes: This table reports coefficients from regressing an indicator for claiming the QBI deduction in 2018 on a measure of being a new contractor in 2018. Each cell is a separate regression. In the top row, the measure of being a new contractor is being a new *primary* contractor – that is, earning more than 60% of labor income from contracting in t and less than 40% in $t-1$. The reference group is comprised of individuals who were primary contractors (earning more than 60% of labor income from contracting) in both 2017 and 2018. In the next row, the measure of being a new contractor is having *any* contracting income in 2018 but not 2017. The reference group consists of individuals who had contracting income in both 2017 and 2018. Standard errors are shown below coefficient estimates. Odd columns have no controls while even columns have controls for contractor income, taxable income, and demographic characteristics. Columns 1-4 are as described, while columns 5-8 further limit the reference groups to those who were new contractors (new primary contractors in the top row, and new any contractors in the second row) in 2017 and continued in 2018. Columns 1-2 and 5-6 make no income exclusion, while columns 3-4 and 7-8 restrict the sample to individuals with income below the Section 199A limitations threshold. Standard errors are robust to heteroskedasticity. This table was created by the authors using data from the population of tax returns.

C.2 Distribution of Section 199A Benefits

Table C2: Section 199A deductions by income group: 2018

	Returns with positive potential QBI (thousands) (1)	Total positive potential QBI (millions) (2)	Returns with 199A deduction (thousands) (3)	Total 199A deduction (millions) (4)
AGI $\leqslant$ \$0	704	32,991	1	215
\$0 $<$ AGI $\leqslant$ \$5,000	1,500	5,556	33	17
\$5,000 $<$ AGI $\leqslant$ \$10,000	1,762	11,444	19	23
\$10,000 $<$ AGI $\leqslant$ \$15,000	2,720	26,574	465	173
\$15,000 $<$ AGI $\leqslant$ \$20,000	1,897	22,037	730	512
\$20,000 $<$ AGI $\leqslant$ \$25,000	1,383	18,006	692	716
\$25,000 $<$ AGI $\leqslant$ \$30,000	1,167	15,744	848	980
\$30,000 $<$ AGI $\leqslant$ \$40,000	2,001	29,096	1,511	2,570
\$40,000 $<$ AGI $\leqslant$ \$50,000	1,754	26,518	1,342	2,926
\$50,000 $<$ AGI $\leqslant$ \$75,000	3,735	59,867	2,879	7,819
\$75,000 $<$ AGI $\leqslant$ \$100,000	2,997	55,130	2,345	8,070
\$100,000 $<$ AGI $\leqslant$ \$200,000	5,963	169,030	4,910	26,457
\$200,000 $<$ AGI $\leqslant$ \$500,000	3,169	254,765	2,680	34,440
\$500,000 $<$ AGI $\leqslant$ \$1,000,000	755	172,280	532	15,269
\$1,000,000 $<$ AGI $\leqslant$ \$1,500,000	191	86,346	145	8,549
\$1,500,000 $<$ AGI $\leqslant$ \$2,000,000	80	55,369	63	5,711
\$2,000,000 $<$ AGI $\leqslant$ \$5,000,000	120	134,445	96	15,443
\$5,000,000 $<$ AGI $\leqslant$ \$10,000,000	31	68,594	25	8,381
AGI $\geqslant$ \$10,000,000	20	121,251	15	16,107
All taxpayers	31,949	1,365,041	19,331	154,377

Notes: This table reports Section 199A claiming behavior by income group in 2018. "Positive potential QBI" for tax unit i is defined as the sum across income sources (k) of $\max(0, PQBI_{ik})$, where $PQBI_{ik}$ is the potential QBI from income source k. In this table, we consider the following as separate income sources: Schedule F, Schedule E rental income/loss, REIT dividends, each Schedule K-1, and each Schedule C. All dollar values in this table are in nominal dollars. The underlying data are derived from administrative records of individual tax returns and information returns processed by the Internal Revenue Service.

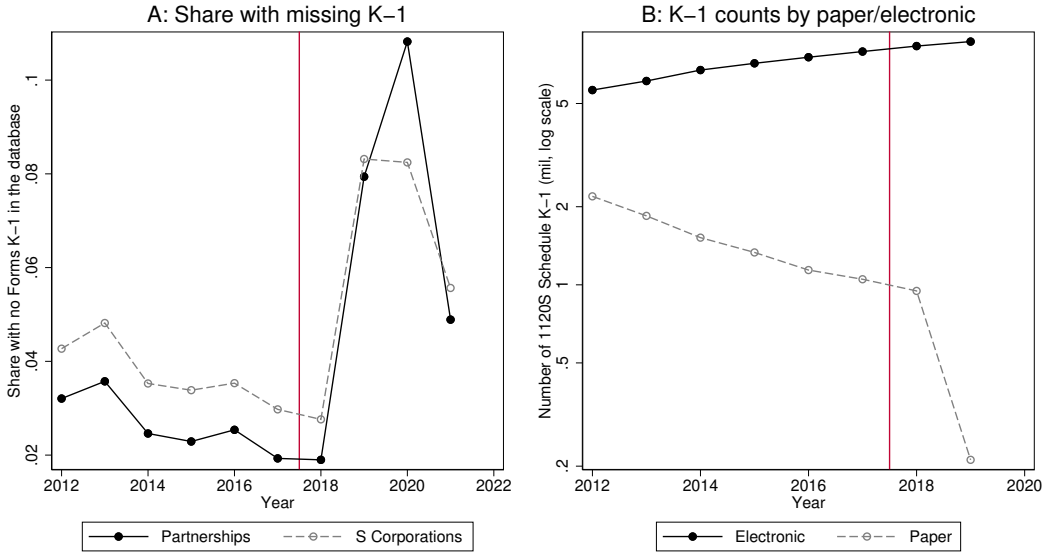
Table C3: Section 199A deductions by income group: 2019

	Returns with positive potential QBI (thousands) (1)	Total positive potential QBI (millions) (2)	Returns with 199A deduction (thousands) (3)	Total 199A deduction (millions) (4)
AGI $\leqslant$ \$0	728	35,989	1	11
\$0 $<$ AGI $\leqslant$ \$5,000	1,790	8,224	33	26
\$5,000 $<$ AGI $\leqslant$ \$10,000	1,818	11,268	28	22
\$10,000 $<$ AGI $\leqslant$ \$15,000	2,712	25,498	449	721
\$15,000 $<$ AGI $\leqslant$ \$20,000	2,072	23,148	805	527
\$20,000 $<$ AGI $\leqslant$ \$25,000	1,469	17,998	771	747
\$25,000 $<$ AGI $\leqslant$ \$30,000	1,278	16,154	915	1,053
\$30,000 $<$ AGI $\leqslant$ \$40,000	2,205	28,802	1,659	2,544
\$40,000 $<$ AGI $\leqslant$ \$50,000	1,929	26,045	1,471	2,960
\$50,000 $<$ AGI $\leqslant$ \$75,000	4,244	60,231	3,301	7,999
\$75,000 $<$ AGI $\leqslant$ \$100,000	3,445	55,960	2,738	8,204
\$100,000 $<$ AGI $\leqslant$ \$200,000	6,902	169,706	5,875	26,963
\$200,000 $<$ AGI $\leqslant$ \$500,000	3,697	256,696	3,337	35,655
\$500,000 $<$ AGI $\leqslant$ \$1,000,000	857	175,894	700	15,960
\$1,000,000 $<$ AGI $\leqslant$ \$1,500,000	208	86,743	177	10,018
\$1,500,000 $<$ AGI $\leqslant$ \$2,000,000	88	55,311	75	6,003
\$2,000,000 $<$ AGI $\leqslant$ \$5,000,000	126	133,917	110	15,924
\$5,000,000 $<$ AGI $\leqslant$ \$10,000,000	32	67,367	28	8,504
AGI $\geqslant$ \$10,000,000	20	116,612	16	16,036
All taxpayers	35,622	1,371,562	22,491	159,877

Notes: This table reports Section 199A claiming behavior by income group in 2019. "Positive potential QBI" for tax unit i is defined as the sum across income sources (k) of $\max(0, PQBI_{ik})$, where $PQBI_{ik}$ is the potential QBI from income source k. In this table, we consider the following as separate income sources: Schedule F, Schedule E rental income/loss, REIT dividends, each Schedule K-1, and each Schedule C. All dollar values in this table are in nominal dollars. The underlying data are derived from administrative records of individual tax returns and information returns processed by the Internal Revenue Service.

C.3 Additional information on missing K-1s

Figure C2: Share of partnerships and S corporations without Forms K-1 in the database.



Notes: Panel A plots the share of Forms 1120S (S corporations) and 1065 (partnerships) where we are unable to find any Schedules K-1 in the database of administrative tax returns. We restrict to firms whose tax year follows the calendar year. Panel B plots counts of distinct S corporations or partnerships with an electronically-filed or paper-filed Schedule K-1 in the database, by year. The y axis in Panel B uses a log scale. Note that the lack of a Schedule K-1 in the database does not imply that the firm did not file Schedule K-1. This figure was created by the authors using data from the population of tax returns.

Table C4: Summary statistics for S corporations with and without missing Schedule K-1 in 2019

	K-1 found (1)	K-1 not found (2)
Gross receipts (median)	192,963	114,270
Shareholders in t-2	1.571	1.216
E-files Form 1120S	0.976	0.193
SSTB	0.157	0.141
Industry treatment measure	0.680	0.677
Income treatment measure	0.833	0.883
Number of observations	4,746,400	456,400

Notes: This table presents some summary statistics for S corporations where we do (column 1) or do not (column 2) find any Schedules K-1 in 2019. The industry treatment measure and income treatment measure refer to the treatment proxies discussed in Section 3; see text for further information. To protect taxpayer privacy, the median in row 1 is computed as the mean of the 20 observations nearest the true median. The underlying data are derived from administrative records of individual tax returns and information returns processed by the Internal Revenue Service.