The Impact of Online Sales Taxes for State and Local Economies

by

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ABSTRACT

States place a heavy reliance on sales tax revenues to finance government activities. The rise in e-commerce, coupled with constitutional restrictions on imposing sales tax nexus, has resulted in a decline in sales tax revenues in many states. States have responded by enacting legislation and reinterpreting existing statutes to curb these declining revenues. This study provides evidence that sales tax revenues are larger after states enforce some, but not all, sales tax measures aimed at imposing nexus on Internet retailers. Further evidence suggests a shift in consumer preferences to local consumption in states enforcing broadened nexus, as evidenced by greater state-level retail gross domestic product (GDP) after states enforce broadened sales tax nexus. Additionally, the number of physical establishments of Internet retailers is lower after states expand sales tax nexus, suggesting these retailers remove their physical presence in states to avoid collecting sales taxes. Finally, the increase in retail GDP has a spillover effect on corporate income taxes, with states enforcing broader sales tax nexus on Internet sales realizing larger corporate income tax revenues.

ACKNOWLEDGMENTS

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INTRODUCTION

Sales tax receipts are an important source of revenue at the state level. Currently, 45 states and the District of Columbia impose a general sales tax, and although reliance on sales taxes varies across states, on average general sales taxes account for roughly one-third of total state tax revenues.[1] Overall sales tax revenues have been declining over the past two decades (Bruce and Fox, 2000; Bruce, Fox, and Luna, 2009), in large part due to nexus constraints on imposing a sales tax collection responsibility on online retailers (e-tailers).[2,3] This study examines the impact of state enforcement initiatives broadening sales tax nexus to require e-tailers to collect sales taxes.[4] Specifically, I begin with the impact on state sales tax collections and then further explore spillover effects to state gross domestic product from retail, the number of retail establishments, and corporate income tax collections in states enforcing a broader scope of sales tax nexus.

It is widely accepted that e-tailers have a competitive advantage relative to traditional brick-and-mortar stores due to the inability of states to impose nexus on e-tailers (Hoopes, Thornock, and Williams, 2016). E-tailers, aware of this advantage,

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[1] For example, U.S. Census data shows that in 2015 sales tax revenues comprised 20% of tax revenues in D.C. and New York, but over 60% of total tax revenues in Washington.

[2] As Bruce and Fox (2000) note, an additional reason for declining sales tax revenues is a shift in consumer consumption away from tangible goods (generally subject to sales taxes) to services (in large part exempt from sales taxes), although the authors projected over $10 billion in sales tax revenue losses from online retail (e-tailing) alone.

[3] I refer to e-tailers throughout this manuscript as those classified as electronic retailers under the NAICS 4541 definition who transact business exclusively via the Internet. Examples include Amazon and Overstock, and exclude the online division of traditional brick-and-mortar stores such as Wal-Mart and Target.

[4] Nexus means a "threshold" connection between a state and a business that must be met before a state can impose tax requirements on a business. Nexus exists separately for corporate income taxes and sales tax collections, the latter of which is discussed in Section II of this study. Throughout the remainder of this study, when I refer to nexus, I specifically mean nexus as it relates to a sales tax collection responsibility of a business (unless noted otherwise), which is not necessarily the same type of connection that creates corporate income tax nexus.

balance proximity to their consumer base with activities that would create nexus in a state (Bruce, Fox, and Luna, 2015). For instance, e-tailer Amazon initially planned to establish headquarters on a Native American reservation in California to be "close to talent without all the tax consequences". However, once Amazon CEO Jeff Bezos realized this would not make Amazon immune to California nexus, the firm established its headquarters in Washington state to be close to California's large market but avoid collecting sales taxes in the state (New York Times, 2009).

Traditional brick-and-mortar businesses, concerned by the competitive nexus advantage of e-tailers, have also taken note. Big-box retailers such as Wal-Mart and Target have joined with small businesses in the Alliance for Main Street Fairness to lobby for federal legislation aimed at addressing the lack of e-tailing nexus (Bustillo and Woo, 2011). Municipalities have even lobbied Congress to address this inequity in nexus, with the city of Dallas, Texas alone spending nearly half a million dollars on lobbying this issue between 2011 and 2014 (Railey, 2014). Further, when Amazon settled a 53 million dollar lawsuit with Arizona in 2012 for unremitted sales tax collections, both the governor and the Arizona Retailers Association commented that requiring Amazon to collect sales taxes would "create an equal playing field" and give traditional brick-and-mortar retailers "a chance at a fair fight" (Fischer, 2012).

Limited by judicial interpretation and lack of federal legislation, states have, faute de mieux, only recently devised strategies to impose sales tax nexus on e-tailers. One approach, referred to as "click-through" nexus, involves enacting legislation requiring e-tailers to collect sales tax if these e-tailers pay commissions to third-parties who reside in the state and refer sales to the e-tailers via weblinks on the third-party's website (Bruce et

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al., 2015). Another approach, referred to as "look-through" nexus, involves disregarding the corporate structure of e-tailers to impose nexus on the parent entity (the entity through which the online sale is made) if the e-tailer has a physical subsidiary, generally a distribution center or warehouse, located in the state (Gordon, 2010). Both of the aforementioned strategies broaden the scope of sales tax nexus to encompass e-tail activity. As such, states likely realize larger sales tax collections after enforcing such broadened measures of sales tax nexus. However, e-tailers might cease their nexus creating activities after states broaden sales tax nexus, in which case states would not realize any change in sales tax collections.

I explore these competing arguments by first analyzing sales tax collections at the state level to investigate whether strategies used to enforce a broadened definition of nexus to encompass e-tail activities, such as click-through and look-through nexus, result in greater sales tax collections. I find no evidence that enactment of click-through nexus laws result in greater sales tax collections. This is a likely finding, given the fact that e-tailers have often ceased their click-through nexus creating activities following such legislation. However, I find that states enjoy 2.9 percent greater sales tax revenues when they enforce look-through nexus. This equates to an additional 27.1 million dollars in quarterly sales tax revenues in the average state.

Having provided evidence that sales tax revenues are larger after states enforce a broadened scope of nexus that includes e-tailing, I further investigate the source of these larger collections. Intuitively, if sales tax revenues are greater in periods after expanding nexus to include e-tailers, this likely results from additional taxes collected by e-tailers. Alternatively, an expansion of nexus to encompass e-tailers could cause e-tailers to lose

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their competitive advantage, causing consumers to shift their consumption preferences from e-tail and toward local consumption. If so, the larger sales tax revenues would stem from additional business at local retailers, equating to a stronger, local retail industry. I investigate this alternative by analyzing the state equivalent of gross domestic product (state GDP, or GSP) from the retail sector in the presence of enforcing broadened nexus on e-tail. I find that state retail GDP is 2.4 percent greater after enforcing broader nexus rules. This equates to an average of approximately 79.7 million dollars in larger quarterly state retail GDP. Using the average sales tax rate in my sample of 5.6 percent, this result suggests that sales tax collections from this larger retail GDP are roughly 4.5 million, around 17 percent of the sales tax collections previously discussed. This suggests a partial shift in consumer preferences to local retail consumption after e-tailers are required to collect sales taxes.

As further evidence of the impact to the retail industry in a state after enforcement of broader sales tax nexus rules aimed at e-tailers, I investigate the number of physical e-tailer establishments in states around the change in sales tax nexus. I find that the number of e-tailer establishments are approximately 7 percent lower after states enforce broader sales tax nexus rules.[5] This result suggests that some e-tailers move their physical establishments out of states that enforce broader sales tax nexus rules, a strategy aimed at avoiding new sales tax nexus rules.

Finally, if local retail GDP is larger after enforcing a broadened scope of sales tax nexus to capture e-tailers, this could have spillover effects on income-based sources of

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[5] In untabulated analysis, I find that the number of establishments of traditional brick-and-mortar retailers remain no different after enforcement of broader sales tax nexus rules on e-tailers.

tax revenues. This result would manifest if local retailers experience larger sales and are obligated to pay income taxes on larger revenues. I investigate this by analyzing corporate *income* tax receipts in the presence of enforcing a broadened scope of sales tax nexus. I find that corporate income tax collections are 5.5 percent greater after enforcing broader sales tax nexus rules, suggesting a spillover effect from sales tax nexus within the *corporate income tax* regime. This equates to roughly 36 million dollars in greater corporate income tax collections per year. Given an average corporate income tax rate of 7 percent, I would expect the larger state retail GDP to produce additional corporate income taxes of 22.3 million dollars. This amount accounts for over 60 percent of the larger corporate income tax collections I find. Additional evidence suggests that states more heavily emphasizing the sales factor in the corporate income tax apportionment formula realize even larger corporate income tax receipts after expanding the definition of sales tax nexus.

An emerging literature investigates the impact of tax authority monitoring on corporate income tax revenues at the federal (Hoopes, Mescall, and Pittman, 2016) and state (Gupta and Lynch, 2016) levels. I add to this literature by demonstrating that states enforcing broader sales tax nexus realize larger sales tax collections, arguably a more important revenue source for states (Robinson, 2012). Further, prior literature on consumer preferences in the presence of online sales tax collections tend to focus on only one retailer in only one state (Ellison and Ellison, 2009; Einav, Knoepfle, Levin, and Subdardesan, 2014). This study investigates the implications to preferences at the macro-state level. This study also adds to the literature debating the implications of requiring online retailers to collect sales tax (Bruce and Fox, 2000; Goolsbee, 2000) in two ways. I

first provide complimentary evidence to Hoopes et al. (2016) and Baugh, Ben-David, and Park (2016) that e-tailers have a competitive advantage due to their lack of nexus. I then provide evidence that expanding sales tax nexus to include e-tail leads to a shift in consumer preferences to local consumption, and that this shift in preferences spills over into larger corporate income tax collections.

This study could be of interest to state policy makers considering enhancing enforcement of sales tax nexus to include e-tail. The null results for click-through nexus suggest that e-tailers have great flexibility in avoiding nexus under these laws, and the enactment of these laws may have a negligible impact on state finances. These same policy makers, however, could find a positive benefit if e-tailers do not cease their nexus-creating activities under enforcement of broader nexus rules, as my results suggest that consumer preferences, in part, shift back to local, in-state consumption These results suggest that imposing a sales tax collection responsibility on e-tailers helps to "level the playing field" in regards to traditional brick-and-mortar businesses, which has a positive impact on local business revenues and a potential spillover effect on corporate income tax revenue. Finally, federal legislatures might find these results useful as they continue to debate legislation, such as the Marketplace Fairness Act, aimed at addressing online sales tax.

The next section provides an overview of sales and use tax in the U.S. along with sales tax issues created by the emergence of e-commerce. I then follow with motivation for the hypotheses in this study. After, I discuss the empirical designs used to tests these hypotheses and review the data used in my analyses. Following, I detail the results from

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my multivariate analyses and additional sensitivity testing. Finally, I end this study with a conclusion.

BACKGROUND

Historical Background

A sales tax, in its general form, is a tax on the intra-jurisdiction sale of goods and, in some instances, services. Typically, a sales tax is imposed on the consumer of final consumption. For this reason, purchases by business entities for goods that will be resold (i.e. inventory) or for items used in the manufacture of goods are exempt from a general sales tax. While the sales tax burden is generally borne by the end consumer, in the United States, the responsibility for collecting sales taxes and remitting the collections to state and local taxing jurisdictions is borne by the business entity selling the good.

Taxing jurisdictions can only impose the collection and remittance responsibility of a general sales tax on business entities that have nexus with the jurisdiction. The determination of nexus is a legal question, discussed in detail below, that varies by state. Absent nexus, the burden of the sales tax does not disappear, but the remittance responsibility generally shifts to the consumer in the form of a use tax.[6] The complement to a sales tax, a use tax is a tax on the consumption (i.e. "use" of) or storage of goods in the state, and is imposed by every state in the United States that imposes a sales tax (Fox, Luna, and Schaur, 2014). The use tax rate is equivalent to the sales tax rate. Compliance with the use tax is notoriously low, likely due to a lack of awareness of use tax

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[6] The theoretical basis of the use tax is to prevent the loss of sales tax revenues where consumers purchase goods and services from lower tax jurisdictions.

responsibility (Fox, Luna, Schaur, 2014). Due to limited auditing resources (Murray, 1995), coupled with the inefficiency of auditing every potential consumer for use tax liability, states prefer to implement broad nexus-creating activities that peg responsibility for collecting and remitting taxes on as many business entities as possible.

No federal statute defines what business activities create sales tax nexus. As such, the U.S. Supreme Court has ruled on numerous occasions that a state may impose sales tax nexus so long as doing so is not in violation of the Constitution's 14th Amendment Due Process Clause or Article 1's Commerce Clause (a non-exhaustive list is provided by Bruce et al., 2015). While the Court's interpretation within these two clauses has changed over the years (see Gordon 2010), the de facto case governing sales tax nexus as it currently stands is *Quill Corp v. North Dakota* (*Quill*).[7] Under *Quill*, a state may impose sales tax nexus on a business, and not violate the Due Process Clause, if the business has an economic presence in the state. However, given that Congress has the sole authority to regulate interstate commerce under the Commerce Clause, a business must have a physical presence within the state to create enough substantial nexus for the state to impose a sales tax collection burden.

The classic example of a business with an economic presence in a state, but without "physical" presence, is a mail-order business.[8] Notably, the Supreme Court specifically bars states from imposing nexus on mail-order businesses as long as their

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[7] *Quill Corp v. North Dakota*, 504 U.S. 298 (1992)
[8] The U.S. Census Bureau's 2012 NAICS definition of a mail-order business (industry code 4541) include businesses "engaged in retailing…using nonstore means, such as [via] catalogs, toll free telephone numbers, or electronic media…"

only "connection with customers in the state is by common carrier or by mail" (*National Bellas Hess*)[9].

Emergence of E-tail

Since the *Quill* decision, the mail-order industry has arguably changed in one significant way — the emergence of Internet retail (i.e. e-commerce). The U.S. Census Bureau's Annual Retail Trade Survey from 1998 through 2014 documents a substantial increase in the amount of e-commerce. In 1998, approximately 5% of the mail-order industry was estimated to be from e-commerce, whereas by 2014 that ratio had increased to 66%. Further, only 0.2% of the 2.6 trillion in retail trade in 1998 was from e-commerce; by 2014, e-commerce comprised nearly 6.5% of the 4.6 trillion in U.S. retail trade.[10]

Given the historical structure of e-tailers, most have the requisite physical presence to create substantial nexus as required by the Commerce Clause in only a few states. Researchers suggest that this lack of traditional nexus has contributed in part to declining sales tax bases among the states (Bruce and Fox, 2000; Goolsbee, 2000). Bruce et al. (2009) estimated that combined revenue losses from this decline totaled $7.7 billion in 2009 and projected it would reach $11.4 billion by 2012.

In 2008, New York enacted the first of its kind legislation aimed at curtailing revenue losses stemming from e-commerce. Termed click-through nexus, the New York statute established nexus for businesses that paid affiliates (i.e. independent contractors)

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[9] *National Bellas Hess v. Department of Revenue*, 386 U.S. 753 (1967)
[10] https://www.census.gov/retail/index.html

commissions for referring customers to them via weblinks, if all such referrals totaled more than $10,000 in aggregate sales (Gordon 2010).[11] For example, a tax blogger in New York who provides a link to Amazon for readers to use to purchase tax preparation software, and who receives commissions from each sale made by these "referrals", would create click-through nexus in New York for Amazon. If aggregate sales from all of these click-through referrals totaled more than $10,000, the e-tailer would be required to collect sales taxes on all of its sales (not just these referral sales) in New York.

A separate avenue states have taken in an attempt to expand sales tax nexus to online retailers is to disregard the corporate structure of these businesses. Following *Quill*, brick-and-mortar businesses set up separate subsidiaries for the sole purpose of handling consumer Internet purchases, a term referred to as entity isolation (Gordon, 2010). These businesses argued that even though they had retail storefronts in the state, Internet purchases were not subject to sales taxes because the online subsidiary through which the purchases were made did not have the physical presence necessary to create nexus. California successfully challenged this model in *Borders Online, LLC v. State Board of Equalization*, where the California Court of Appeals for the Fourth Circuit determined that since Borders, Inc. accepted returns and gave cash back to consumers who returned purchases made from Borders Online, LLC (the Internet subsidiary of Borders, LLC), Borders Online, LLC had sales tax nexus with California.[12]

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[11] The terms affiliate nexus (based on related party activities), attributional nexus (based on third-party activities, and click-through nexus (attributional nexus via weblinks) are generally used interchangeably (Bruce et al., 2015). I refer to click-through nexus to specifically refer to nexus created via third-party weblink referrals.

[12] *Borders Online, LLC v. State Board of Equalization*, 129 Cal. App. 4th 1179 (2005)

E-tailers have pursued the reverse approach by structuring their distribution centers and research and development divisions in separate legal subsidiaries. Since e-tailers do not have physical storefronts, they claim the physical presence of the separate subsidiaries does not create nexus for the parent company under *Quill* (Gordon, 2010). However, as Gordon (2010) notes, such forms of entity isolation are little different than in the *Borders Online* setting, because the physical presence of the subsidiary in a state is integral to the overall business structure and afford these e-tailers due process.

It appears that most states have agreed. While Gordon (2010) notes that states need only to change their nexus statutes to "look through" the corporate structure of online retailers, states in general have argued that their statutes already provide for such look-through nexus. For instance, in 2010 Texas sued Amazon for unremitted sales tax collections of $269 million from 2005 through 2009, arguing that existing nexus laws established nexus for Amazon (Ramsey, 2011). Likewise, the Pennsylvania Department of Revenue issued a general sales and use tax bulletin on December 1, 2011 noting that its existing nexus laws already encompassed businesses that had "...within this Commonwealth, either directly or through a subsidiary...[a] distribution house, sales house, warehouse... (Pennsylvania Department of Revenue, 2011)."

HYPOTHESIS DEVELOPMENT

While it might seem obvious that sales tax collections should increase after states enforce a broadened scope of nexus (i.e. click-through or look-through), e-tailers can simply cease their nexus creating operations in a state. For instance, Amazon and Overstock joined in lawsuits against New York after enactment of its click-through nexus

law. Although Amazon initiated sales tax collections in New York while litigating its claim, Overstock cancelled its referral program in New York and never initiated sales tax collections in New York. Further, before settling with the state of Texas, Amazon closed its warehouse in Texas to avoid creating future nexus in the state. However, there is a limit to how much activity an e-tailer is willing to avoid (Bruce et al., 2015) before it risks losing business. Therefore, I expect on average sales tax revenues to increase with enforcement of expanded nexus.[13] My first hypothesis thus explores the impact of states enforcing an expanded definition of nexus to encompass e-tail activities. Specifically, I hypothesize:

H1:   Sales tax revenues are larger after states enforce a broadened scope of sales tax nexus to include e-tailers.

Whereas H1 relates to direct consequences of sales tax nexus issues, the remaining hypotheses look to potential indirect spillover effects from sales tax nexus. Given that consumers generally evade their use tax obligation from online purchases (Bruce and Fox, 2000; Bruce et al., 2015), all else equal, consumers should prefer to shop online if they do not have to pay sales tax. In fact, prior research documents that consumers are sensitive to e-tail sales tax collections. For example, Ellison and Ellison (2009) analyze sales for a single retailer with nexus only in California and find the retailer's online sales are greater to consumers in states with higher home sales tax rates

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[13] It remains an empirical question how many dollars are still left on the table due to e-tailers ceasing some nexus-creating activities.

(for which the retailer did not collect the sales tax). Anderson, Fond, Simester, and Tucker (2009) find that Internet purchases drop significantly once a traditional retailer opens a store and creates nexus for its online sales (i.e. once the retailer starts to collect sales tax). Einav, Knoepfle, Levin, and Subdaresan (2014) look at eBay transactions and document a preference away from sellers obligated to collect sales taxes and toward those with no such obligation. Goolsbee (2000) provides evidence that, as sales tax rates increase, consumers are more likely to shift to purchasing online. He further presents calculations suggesting that, if sales taxes had been collected on online purchases, around 30% of consumers would not have purchased online.[14]

More directly, Baugh, Ben-David, and Park (2016) use household-level data to investigate consumer spending after Amazon initiated sales tax collections in the states. The authors find a roughly 10% decrease in total Amazon purchases after Amazon initiates sales tax collections. This reduction is nearly tripled when examining large dollar item products only. While they find an increase in purchases at Newegg.com, an e-tail competitor, post-implementation, they are unable to detect a difference in purchasing at local Best Buy brick-and-mortar stores. The results suggest that consumers shift purchasing habits away from Amazon after Amazon initiates sales tax collections in the state of consumption, although it is unclear which other businesses (other e-tailers or traditional retailers) benefit.

While Baugh et al. (2016) find no difference in Best Buy purchases after Amazon initiates sales tax collections, their study is limited; they only study one retail sector (i.e.

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[14] Later studies by Alm and Melnik (2005) and Ballard and Lee (2007) temper the magnitude of these findings.

electronics) and only one brick-and-mortar store (i.e. Best Buy) after Amazon begins collecting sales tax.[15] However, if states are able to remove the competitive sales tax nexus advantage from e-tailers, consumer preferences potentially shift back across all levels of local retail consumption. If consumer preferences shift to local retail consumption after enforcing broadened nexus on e-tailers, this would be reflected in greater retail GDP at the state level. Therefore, I hypothesize that:

H2a: State GDP from the retail sector is larger after states enforce a broadened scope of sales tax nexus to include e-tailers.

Prior research also finds that e-tailers are sensitive to sales tax nexus. Bruce et al. (2015) find that although Internet retailers prefer to directly establish nexus in larger states in order to be closer to larger markets, this association diminishes as sales tax rates increase. Their results imply e-tailers face an inverse relation between the advantage of being physically close to consumers and the price advantage to not being obliged to collect sales tax. Hoopes et al. (2016) analyze stock returns around key dates related to the potential enactment of the Marketplace Fairness Act, which is designed to "level the playing field" between traditional retailers and e-tailers. They find a negative market response for e-tailers when the probability of legislative action increases, suggesting a previous competitive advantage for e-tailers that had been impounded into price. If e-

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[15] Baugh et al. (2016) made this design choice because many of Amazon's large competitors have a highly diversified product mix greater than that of Amazon (e.g. Target sells electronics, groceries, household goods, etc…). Analyzing only Best Buy and NewEgg allowed them to identify an effect on one comparative product line (i.e. electronics).

tailers are sensitive to collecting sales taxes from their customers, it is likely that e-tailers will flee states that impose a sales tax collection responsibility on them. Therefore, I hypothesize that:

H2b: The number of e-tail establishments is lower after states enforce a broadened scope of sales tax nexus to include e-tailers.

If, following enforcement of an expanded definition of nexus to include e-tailers, consumer preferences shift from e-tailer purchasing to in-state brick-and-mortar retail shopping, there is potential for spillover effects to other state-level taxes. Notably, if local retailers experience greater revenues from a shift in purchasing preferences, they are likely to have larger profits subject to state income taxes. I thus hypothesize that:[16]

H3: Corporate income tax revenues are larger after states enforce a broadened scope of sales tax nexus to include e-tailers.

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[16] It is possible that enforcement of a broader definition of sales tax nexus to include e-tailers could spillover to e-tailer corporate income tax nexus. However, sales tax nexus does not necessarily equate to corporate income tax nexus. For instance, The Interstate Commerce Act of 1959 (commonly referred to as Public Law 86-27) specifically exempts businesses from income tax nexus if their only activity in a state is the solicitation of sales via employees or third-party contractors. Further, I am unaware of any direct evidence of states targeting e-tailers from a corporate income tax aspect. Regardless, if there are spillover effects, these would not change a directional expectation of H3; corporate income tax collections to the state would increase either way.

DESIGN

Difference-in-difference Fixed Effect Model

Given that I am looking at policy changes, conventional wisdom suggests the use of a difference-in-difference (DID) design to test my hypotheses. A typical DID requires an indicator for treated states, a separate indicator for the treatment period, and an interaction of these two variables. The interaction is the variable of interest in such a model, denoting the impact of the policy in the treated states post-treatment. In my setting, states implement changes to sales tax nexus at different times. Thus, I am unable to create a single indicator for the treatment period.

To overcome this hurdle, I use a fixed effect model instead of a typical DID. This requires the inclusion of separate indicators for each state in my sample and separate indicators for each period (I use either quarterly or yearly data) in the sample. State and period fixed effects allow for staggered implementation of broadened e-tailer sales tax nexus policies across states, as suggested by Meyer (1995), Bertrand, Duflo, and Mullainathan (2004), Imbens and Wooldridge (2009), and Amiram, Bauer, and Frank (2016).[17] My variable of interest, which I denote in my models below as TREATED, is an indicator for periods in which states enforce broader nexus rules. This variable of interest is equivalent to the interaction term in a typical DID.

TREATED takes one of two specifications in my models. TREATED = CLICK is an indicator for periods in which states enforce click-through legislation. Ideally, I would use an ex-ante measure for look-through nexus, similar to CLICK. However, since look-

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[17] I obtain similar results to model 1 when using a model similar to a traditional difference-in-difference approach (i.e. using one indicator for all "treated" states).

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through nexus is a reinterpretation of existing law, I do not know the date in which states intend to enforce look-through nexus (i.e. there is no enactment date I can refer to). Thus, my next best option is to use an indicator for states that have required an e-tailer to collect sales tax if the e-tailer has a subsidiary (e.g. distribution center; warehouse; research and development center) with a physical location in the state. I use Amazon as this proxy, since Amazon is by far the largest e-tailer. Therefore, my second specification of TREATED is LOOK, an indicator for periods in which the state enforces look-through nexus, proxied for by states requiring Amazon to collect sales taxes due to Amazon having a subsidiary with a physical location in the state.[18]

A potential problem with my treated LOOK states arises from how I define my proxy using Amazon physical establishments in the states. What began as states imposing sales tax nexus on Amazon due to Amazon having a physical subsidiary in the state has, in recent years, morphed into Amazon expanding its physical distribution system into new states and simultaneously initiating sales tax collections *in anticipation* of states requiring them to do so. To address this, in all of my analyses, I run additional tests where I bifurcate my LOOK variable of interest into two components – those states where Amazon had a physical presence *prior* to the state imposing a sales tax collection responsibility on it (LOOKprior); and those states where Amazon initiated sales tax collections at the same time, or in anticipation of, establishing its first physical presence in a state (LOOKnoprior). LOOKprior is thus my best attempt at identifying those states where Amazon was exogenously required to initiate sales tax collections.

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[18] These two measures are not mutually exclusive; some states have both enacted click-through nexus laws and also impose look-through nexus on e-tailers.

My treated CLICK and LOOK states act as their own control in my fixed effect difference-in-difference estimations. However, a difference-in-difference estimation also requires the use of control states that never change treatment across the sample period. I identify these control states in one of two ways, as discussed below.

My first approach in identifying a suitable control group of states is to look at states that border my treatment groups. The benefit of this approach is that my control group is not arbitrarily chosen and that bordering states are likely similar in many aspects to my treatment states, such as demographic mix, length of statehood, and so forth (Lee, Pesaran, and Smith 1997; Goff, Lebedinsky, and Lile 2012). I implement this approach by matching all states that border my treated CLICK and LOOK states so long as any potential border state imposes a sales tax and does not change its sales tax nexus rules across the matching period (i.e. both CLICK and LOOK must be zero across the match period). I refer to this as my Border Assigned samples.

My second approach to identifying a suitable control group of states is to randomly assign a state to my samples for each treated state. The benefit of this approach is that I do not have to drop any treated states from my samples (which is possibility when matching on borders alone) and that randomized matching attempts to control for systematic differences within my control states. I implement this approach by assigning, for each treated state period, a control state that imposes a sales tax and does not change its sales tax nexus rules (both CLICK and LOOK must be zero across the match period), without replacement across each matching quarter-year. I refer to this as my Random Assigned samples.

Hypothesis 1

To test the impact on sales tax collections for states enforcing a broadened scope of sales tax nexus to encompass e-tail sales, I employ the following fixed effects model:

$$STC_{s,q} = \alpha + \beta TREATEDQ_{s,q} + \gamma TAX_{s,q} + \delta ECONOMY_{s,q-1} + FE_s + FE_q + \varepsilon_{s,q} \quad (1)$$

The dependent variable, STC, is the natural log of sales tax collections state s collects in quarter q. My variable of interest, TREATEDQ, is an indicator equal to 1 for all quarters q in which state s enforces a broadened scope of e-tail sales tax nexus, measured as either CLICK or LOOK as previously motivated. A positive coefficient on TREATEDQ would support H1 and indicate that sales taxes are larger after enforcing a broadened scope of e-tail nexus.

TAX is a vector of covariates related to state policies on sales taxes. I include the sales tax rate at the beginning of the quarter (SRATE), which I anticipate to be positively associated with STC given that higher tax rates should yield larger collections. My control for the sales tax base is an indicator equal to 1 if the state taxes groceries at the beginning of q, 0 otherwise (GROCERY) — a tax on groceries is indicative of a broader tax base, thus I expect GROCERY to be positively related to STC. Finally, I include two variables to control for tax programs states enter into to raise tax revenues. AMNESTY_S is an indicator equal to 1 if the state has a tax amnesty that includes sales taxes at any point during q, 0 otherwise. While prior literature is mixed on the long-term efficacy of tax amnesty programs (Malik and Schwab, 1991; Alm and Beck, 1993), I would still expect periods of amnesty to at least temporarily increase tax revenues. SSUTA is an

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indicator equal to 1 if the state is a member in the Streamlined Sales and Use Tax Agreement during quarter q, zero otherwise (Bruce et al., 2015).[19]

ECONOMY is a vector of covariates related to the economic environment of the state. I include the natural log of wage income in the state from the prior quarter (WAGES) to control for both the amount of income available for consumption and the size of the economy.[20] WAGES should be positively related to STC. Finally, I control for the health of the state economy by including the unemployment rate from the prior quarter (UNEMPLOY), which should be negatively related to STC (i.e. greater unemployment should indicate economic distress and thus a reduction in consumption).

In addition to allowing for my staggered implementation of different sales tax nexus policies, the inclusion of quarter fixed effects should also control for any time trends across my sample period and seasonality in sales tax collection. Given the large variability in total sales taxes across states, coupled with consistent total sales taxes within state, I expect the inclusion of state fixed effects to dominate regression findings (with high explanatory power related to the inclusion of these fixed-effects).[21]

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[19] The Streamlined Sales and Use Tax Agreement is a joint venture by member states to simplify the administration of sales and use taxes, in an effort to reduce the burden multijurisdictional business face in complying with these taxes.

[20] I considered including two additional control variables for the size of the economy – the number of workers (measured quarterly from Census data) in the state and the total state population (estimated yearly from Census data). Both of these variables are highly and positively correlated with WAGES, thus, due to multicollinearity concerns, I did not include these additional variables in the analyses presented in this study. In sensitivity, when separately included with WAGES, I obtain similar results to the findings I present in this paper.

[21] Multicolinearity might also be a concern. I compute variance inflation factors (VIFs) for the variable of interest and covariates when I run model (1), and indeed find large VIFs (greater than 10) on the state fixed-effects in many instances. This alone should not be an issue given that I never find a VIF on my variable(s) of interest greater than 3 (O'brien, 2007). I will discuss this in greater detail when reporting regression results.

In addition to the fixed effects Model 1, I also utilize a changes model to test which quarter (if any) the impact of broadening sales tax nexus has on sales tax collections, as follows:

$$\Delta STC_{s,q \text{ to } q\text{-}8} \quad = \alpha + \beta(TREATEDQ1_{s,q} \ldots TREATEDQ8_{s,q}) + \gamma\Delta TAX_{s,q \text{ to } q\text{-}8}$$
$$+ \delta\Delta ECONOMY_{s,q\text{-}1 \text{ to } q\text{-}9} + FE_s + FE_q + \varepsilon_{s,q} \qquad (2)$$

STC and the vector TAX (vector ECONOMY) are as defined in Model 1, but instead of quarterly levels, these variables are the two-year change from q (q-1 for vector ECONOMY) to q-8 (q-9 for vector ECONOMY). My variables of interest are the eight quarterly indicators TREATEDQ1 to TREATEDQ8, which are individual indicators for the period since state s began enforcing the respective broadened scope of sales tax nexus. For instance, TREATEDQ1 is an indicator for the initial quarter of enforcing broadened sales tax nexus, TREATEDQ2 is an indicator for the quarter after the quarter of initiation of enforcing broadened sales tax nexus, and so forth. As in Model 1, TREATEDQ is separately specified in one of two ways – CLICK or LOOK.

Hypothesis 2a

I utilize a regression similar to Model 1 to explore the H2a impact on the state retail industry for a state enforcing a broadened scope of e-tailer sales tax nexus. This fixed effects Model 3 is as follows:

$$GSP_{s,q} \quad = \alpha + \beta TREATEDQ_{s,q} + \delta ECONOMY_{s,q\text{-}1} + FE_s + FE_q + \varepsilon_{s,q} \qquad (3)$$

The dependent variable GSP takes one of two values: GSP = RETAIL is the natural log of the quarterly state gross domestic product from the retail sector in state s, while GSP = MANUFACTURE is the natural log of the quarterly state gross domestic from the manufacturing sector (used to test the counterfactual that all industries are larger after enforcing broader sales tax nexus). TREATEDQ is as previously defined. A positive coefficient on TREATEDQ would support H2a and indicate that retail GDP is larger after states enforce broadened e-tail nexus. The vector ECONOMY still includes WAGES, now a control for the amount of employment income in the economy and UNEMPLOYMENT (as previously motivated).

Further, I utilize a changes model similar to Model 2 to test which quarter (if any) the impact of broadened sales tax nexus has on the retail sector, as follows:

$$\Delta RETAIL_{s,q \text{ to } q-8} = \alpha + \beta(TREATEDQ1_{s,q} \ldots TREATEDQ8_{s,q}) + \delta\Delta ECONOMY_{s,q-1 \text{ to } q-9}$$

$$+ FE_s + FE_q + \varepsilon_{s,q} \tag{4}$$

RETAIL is as defined in Model 3, but instead of quarterly levels, it is the two-year change from q to q-8. My variables of interest TREATEDQ1 through TREATEDQ8 and vector ECONOMY are as defined in Model 2. As in all other models, TREATEDQ is separately specified in one of two ways – CLICK or LOOK.

Hypothesis 2b

I utilize a regression similar to Model 3 to explore the H2b impact on the number of mail-order and e-tail establishments for a state enforcing a broadened scope of e-tailer sales tax nexus. This fixed effects Model 5 is as follows:

$$\text{ESTAB}_{s,q} = \alpha + \beta \text{TREATEDQ}_{s,q} + \delta \text{ECONOMY}_{s,q-1} + FE_s + FE_q + \varepsilon_{s,q} \tag{5}$$

The dependent variable ESTAB is the natural log of the quarterly number of establishments in the NAICS subsector code 454 (mail-order and electronic realtors). TREATEDQ is as previously defined. A negative coefficient on TREATEDQ would support H2b and indicate that the number of e-tail physical locations is lower after states enforce broadened e-tail nexus. The vector ECONOMY still includes WAGES and UNEMPLOYMENT (both as previously motivated), along with PERC_RET, the ratio of state retail GDP as a percent of total state GDP. This latter variable controls for the likely positive relation of the total number of retail establishments in a state if the state's economy relies more heavily on the retail sector.

Further, I utilize a changes model similar to Model 4 to test which quarter (if any) the impact of broadened sales tax nexus has on the retail sector, as follows:

$$\Delta \text{ESTAB}_{s,q \text{ to } q-8} = \alpha + \beta(\text{TREATEDQ1}_{s,q} \ldots \text{TREATEDQ8}_{s,q}) + \delta \Delta \text{ECONOMY}_{s,q-1 \text{ to } q-9}$$
$$+ FE_s + FE_q + \varepsilon_{s,q} \tag{6}$$

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ESTAB is defined as in Model 5, but instead of quarterly levels, it is the two-year change from q to q-8. My variables of interest TREATEDQ1 through TREATEDQ8 and vector ECONOMY are as defined in Model 5, but now as two-year changes instead of levels. As in all other models, TREATEDQ is separately specified in one of two ways – CLICK or LOOK.

Hypothesis 3

I utilize a regression similar to Model 1 to explore the H3 impact on corporate income tax collections for states enforcing a broadened scope of e-tail sales tax nexus. Whereas I utilized quarterly data in Model 1 through 6, I use yearly data for my corporate income tax tests due to volatility in corporate income tax collection measures related to differences in how corporate entities choose to make their quarterly estimated tax payments.[22] The fixed effects Model 7 is as follows:

$$CITC_{s,y} = \alpha + \beta TREATEDY_{s,y} + \gamma TAX_{s,y} + \delta ECONOMY_{s,y-1} + FE_s + FE_y + \varepsilon_{s,y} \quad (7)$$

CITC is the natural log of yearly corporate income tax collections for state s. TREATEDY and ECONOMY are as previously defined in Model 1 except on a yearly basis. A positive coefficient on TREATEDY would support H3 and indicate that corporate income taxes are larger following enforcement of broadened e-tail sales tax nexus. The vector TAX now contains the following covariates: the highest marginal corporate income tax rate for the year (CRATE), which should be positively associated

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[22] When I test results using quarterly data, I find similar inferences to those I find using yearly measures.

with CIT — higher tax rates should raise greater taxes; the highest marginal corporate income tax bracket (BRACKET), which should be negatively associated with CIT — a higher marginal bracket denotes income in lower brackets taxed at lower marginal rates; an indicator for states with a sales apportionment factor greater than 0.50 (SFACTOR), which is likely positively associated with CITC — this is a control for the origin- versus destination-based factors of the corporate income tax (Goolsbee and Maydew, 2000); and an indicator equal to one if the state had a tax amnesty that included corporate income taxes at any point during the year (AMNESTY_C), zero otherwise – likely positively related to CIT.

Further, I utilize a changes model similar to Model 1 to test which year (if any) the impact of broadened sales tax nexus has on corporate income tax collections, as follows:

$$\Delta CITC_{s,y \text{ to } y\text{-}2} = \alpha + \beta(TREATEDY1_{s,y} \ldots TREATEDy3_{s,y}) + \gamma \Delta TAX_{s,y \text{ to } y\text{-}2}$$

$$+ \delta \Delta ECONOMY_{s,y\text{-}1 \text{ to } y\text{-}3} + FE_s + FE_y + \varepsilon_{s,y} \qquad (8)$$

CITC and the vector TAX (vector ECONOMY) are as defined in Model 7, but instead of yearly levels, these variables are the two-year change from y (y-1 for vector ECONOMY) to y-2 (y-3 for vector ECONOMY). My variables of interest are the three yearly indicators TREATEDY1 to TREATEDY3, which are individual indicators for the period since state s began enforcing the respective broadened scope of sales tax nexus. For instance, TREATEDY1 is an indicator for the initial year of enforcing broadened sales tax nexus, TREATEDY2 is an indicator for the year after the year of initiation of enforcing

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broadened sales tax nexus, and so forth. As in all other models, TREATEDY is separately specified in one of two ways – CLICK or LOOK.

DATA

The Appendix defines all variables used in this study and indicates the data sources used to construct each variable. In general, I obtain state level tax collections from the U.S. Census Bureau. This state level tax collection data is directly provided by each state's revenue agency and is verified by the Census using each state's comprehensive annual financial reports when necessary. State-level GDP data is from the U.S. Bureau of Economic Analysis (BEA).[23] I generally hand collect the TAX control variables and verify, when available, by using third-party sources found in prior literature. I obtain ECONOMY control variables from the BEA and U.S. Bureau of Labor Statistics.

Column 1 of Table 1 shows that, starting with New York in the second quarter of 2008, 20 states have adopted click-through sales tax nexus rules as of the end of 2015. I require two years of treatment observations in my analyses to allow the potential impact of click-through nexus rules a chance to materialize in the data. Thus, only states that adopted click-through nexus through 2013 are considered "treated" in my analyses where CLICK is my variable of interest, which are the first 12 states reported in column 1.

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[23] The BEA computes state-level retail GDP using the income approach. Specifically, this number includes wages and salaries from NAICS industries 44 and 45 (retailers) compiled by the BEA, business taxes (excluding corporate income taxes) compiled by the Census, self-employment retailer gross operating surplus (in essence, net income before taxes) compiled by the BEA, and an allocation of national non-self employment retailer operating surplus using both BEA and Census data.

Column 2 of Table 1 shows that, starting with Texas in the third quarter of 2012, 19 states have adopted look-through sales tax nexus rules as of the end of 2015.[24] Similar to my click-through nexus identification, I require two years of treatment observations in my analyses to allow the potential impact of look-through nexus rules a chance to materialize in the data. Thus, only states that adopted look-through nexus through 2013 are considered "treated" in my analyses where LOOK is my variable of interest, which are the first ten states reported in column 2.

Table 2 reports the average percent of total tax revenues each state relied on from 2005 to 2015. The results underlie one of the motivations of this study. The average state collects nearly one-third of its total taxes from a general sales tax, and this number jumps to nearly one-half of total taxes if excise taxes are included.[25] Conversely, the average state only relies on the corporate income tax for roughly 6% of total tax revenues. Not tabulated, I further find that the individual yearly state breakouts of tax revenues are largely consistent across my sample period. There is, however, a noticeable decrease in sales tax collections across the sample period, in line with expectations from prior research on declining sales taxes (Bruce and Fox, 2000; Bruce et al., 2009).

Table 2 shows that 5 states (Alaska, Delaware, Montana, New Hampshire, and Oregon) did not impose a general sales tax across my sample period, leaving 46 states (including the District of Columbia) with potential sales tax data for this study. Further,

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[24] This table only lists states that changed their sales tax nexus during my potential sample period for which data is available – 2005 through 2015. Amazon has collected sales taxes in four states (Kansas, Kentucky, North Dakota, and Washington) prior to my sample period.

[25] An excise tax is simply a specific sales tax rate on a designated item (common examples are alcohol taxes, cigarette taxes, motor fuel taxes, and hotel room taxes) in lieu of the normal general sales tax rate. I do not include excise taxes in my analyses, although use tax avoidance can occur on any tangible item subject to an excise tax (Asplund, Friberg, and Wilander, 2007; Goolsbee, Lovenheim, and Slemrod, 2010).

four states (Nevada, Texas, Washington, and Wyoming) do not impose a corporate income tax based on net income across my sample period.[26] Thus, I remove Texas and its control state from my look-through sample and disallow the other three states as potential controls for my tests where CITC is my variable of interest. In addition, I remove Michigan and Ohio as potential CITC control states because at certain points in my sample period these two states did not impose a corporate income tax based on net income.

Table 3 reports univariate statistics for the samples used in my multivariate analyses. The first columns of statistics reported in both panels are for the Border Assigned sample, while the second columns of statistics reported in both panels are for the Random Assigned sample. Panel A reports the statistics for my tests where CLICK is my variable of interest. Both samples appear to be descriptively similar. The potential number of quarterly (yearly) observations for Random Assigned is 384 (120). The actual sample is slightly smaller due to the random inclusion of South Carolina as a control state for two separate treated states (i.e. part of South Carolina overlaps with two different treatment periods). Panel B reports the statistics for my tests where LOOK is my variable of interest. Both samples appear to be descriptively similar, although the average state in my Random Assigned sample is slightly larger than in the Border Assigned sample (the difference in quarterly WAGES is roughly four billion dollars). The potential number of quarterly (yearly) observations for Random Assigned is 320 (100). Because there is no

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[26] South Dakota does not have a general corporate income tax. However, the Census treats some of South Dakota's taxes (i.e. bank franchise tax) as corporate income tax because the tax base is net income. I include South Dakota in my corporate income tax tests. Inferences remain unchanged if I exclude South Dakota.

overlap in the random inclusion of the control states, my quarterly observations are 320. The yearly observations used for my CITC tests are only 90 because Texas does not have a corporate income tax based on net income, thus it and its random control state are removed from the CITC analyses.

Table 4 reports the Pearson correlation matrices for the samples used in my analyses. Panel A reports the correlations for the samples where CLICK is my variable of interest, while Panel B reports the correlations for the samples where LOOK is my variable of interest. The upper right corner of each matrix in both panels is for the Border Assigned sample, while the lower left corner of each matrix in both panels is for the Random Assigned sample. Unsurprisingly, levels data associated with state size have positively high correlations (i.e. the levels variables of STC, WAGES, RETAIL, ESTAB, and CITC) across all panels. In Panel A, CLICK is positively associated with STC (potential support for H1), RETAIL (potential support for H2a), ESTAB (opposite support for H2ba, although this test is based on physical presence of the e-tail and thus is unlikely to be associated with changes in number of e-tail establishments in a state), and CITC (potential support for H3). In Panel B, LOOK is positively associated with STC (potential support for H1), RETAIL (potential support for H2a), ESTAB, although this correlation is insignificantly different from zero (potential support for H2b), and CITC (potential support for H3).

EMPIRICAL RESULTS

H1 – Impact of broadened sales tax nexus on sales tax collections

Table 5 reports the results of Model 1, which tests my hypothesized (H1) association between sales tax collections and states enforcing a broadened scope of e-tail sales tax nexus. The sample identification strategy in column 1 across all panels is Border Assigned, while the sample identification strategy in column 2 across all panels is Random Assigned. The variable of interest in Panel A is the indicator for periods in which states enforce click-through nexus (CLICK). Neither of the coefficients on CLICK in either sample are significant. This is consistent with anecdotes that many e-tailers abandoned their nexus creating activities (i.e. soliciting sales through third-party affiliate websites) after enactment of click-through nexus laws. Thus, I find no support for H1 when I define enforcement of broader e-tail sales tax nexus as enactment of click-through nexus laws.

The variable of interest in Panel B is the indicator for periods in which states enforce look-through nexus (LOOK). LOOK is marginally significant in both samples, providing some evidence in support of H1 that sales tax collections are larger for periods in which states enforce look-through nexus. I explore this finding further in Panel C, where the LOOK variable of interest is bifurcated into its two components: an indicator for those states where Amazon had a physical presence *prior* to the state imposing a sales tax collection responsibility on it (LOOKprior); and an indicator for those states where Amazon initiated sales tax collections concurrent with, or in anticipation of, establishing its first physical presence in a state (LOOKnoprior).

The coefficient on LOOKprior is positive and significant across both samples, while the coefficient on LOOKnoprior is positive but insignificant in both. This result suggests that sales tax collections are larger in states that enforce look-through nexus, but only if the state has e-tailers with a physical presence in the state prior to enforcement. When considering my proxy for LOOK (i.e. Amazon's physical presence), a possible explanation for this finding could be that the threat of enforcement of expanded sales tax nexus is only credible if Amazon is subsequently compelled by the state to collect sales taxes (i.e. the state is actively pursuing enforcement of broader nexus). Conversely, for LOOKnoprior, the threat of enforcement is likely not credible because Amazon might have initiated sales tax collections without compulsion from the state (i.e. the state may not being acting on this). In economic magnitude, when looking at the result for the Random Assigned sample, the coefficient of 0.029 on LOOKprior suggests that quarterly sales tax collections are approximately 2.9 percent larger when credibly enforcing look-through nexus. This implies approximately 27.1 million dollars in larger sales tax collections per quarter.[27]

Together, the results from Table 5 suggest that the passage of click-through nexus laws, on their own, is not enough for states to see larger sales tax revenues. This is likely due to the relative ease of e-tailers to abandon their third-party solicitations creating click-through nexus (a common strategy e-tailers such as Amazon and Overstock employed in many states initiating click-through nexus laws). However, sales tax revenues are larger for states successful in credibly imposing a sales tax collection responsibility on e-tailers via look-through nexus.

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[27] $(e^{0.029} - 1) * 934$ million in average quarterly sales tax collections in the sample

Table 6 reports the results of Model 2, which explores the timing of the results previously presented in Table 5. Similar to Table 5, the sample utilized in column 1 across all panels is Border Assigned, while the sample utilized in column 2 across all panels is Random Assigned. The variables of interest in panel A are the eight quarterly indicators for click-through nexus (CLICKQ1 through CLICKQ8), where CLICKQ1 is the first quarter of enforcing click-through nexus, CLICKQ2 is the second quarter of enforcing click-through nexus, and so forth. Across both samples, I only find positively marginal significance once in each sample, consistent with the null results in my levels analysis for click-through nexus.

The variables of interest in Panel B are the eight quarterly indicators for look-through nexus (LOOKQ1 through LOOKQ8), where LOOKQ1 is the first quarter of enforcing look-through nexus, LOOKQ2 is the second quarter of enforcing look-through nexus, and so forth. The results between the two samples are consistent with the findings from the levels analyses, but are somewhat mixed on the timing of the significant larger sales tax collections. However, the results when bifurcating LOOK into its two components LOOKprior and LOOKnoprior in Panel C are more consistent in the timing of the impact of look-through nexus on sales tax collections. Specifically, the coefficients on the eight LOOKQprior indicators suggest that sales tax collections are larger in a couple of the quarters (Q1 through Q4) of the first year of enforcing look-through nexus, while consistently showing that sales tax collections are larger in the latter quarters (Q5 through Q8) of enforcing look-through nexus. I do not find consistently compelling results on LOOKQnoprior, and thus suppress the coefficients in Table 6 for brevity. In short, the results for look-through nexus are consistent with H1, suggesting that states

credibly enforcing look-through nexus have somewhat larger sales tax collections in the first four quarters of enforcement, and consistently larger sales tax collections in the next four quarters of enforcement.

H2a – Impact of broadened sales tax nexus on gross state product

The results on LOOK in Tables 5 and 6 could be due to e-tailers collecting and remitting sales taxes, or it could be due to consumers shifting consumption preferences to local consumption after e-tailers lose their competitive sales tax nexus advantage (and as such, the larger sales tax collections are from local retailers remitting larger sales taxes from an increase in sales). Tables 7 and 8 investigate these competing explanations, reporting the tests of H2a.

Table 7 reports the results of Model 3, which tests my hypothesized (H2a) association between state level GDP from the retail sector and states enforcing a broadened scope of e-tail sales tax nexus. The sample identification strategy in columns 1 and 3 across all panels is Border Assigned, while the sample identification strategy in columns 2 and 4 across all panels is Random Assigned. The dependent variable in columns 1 and 2 across all panels is the natural log of quarterly state GDP from the retail sector (RETAIL). A positive and significant coefficient on the variables of interest would suggest that the local retail industry is stronger after enforcing broader sales tax nexus encompassing e-tailers. This would suggest a potential shift in consumer preferences towards local consumption, implying that at least part of the larger sales tax collections after expanding sales tax nexus is attributed to local retailers experience larger sales and remitting a greater level of sales taxes on these sales. The dependent variable in columns

3 and 4 across all panels is the natural log of quarterly state GDP from the manufacturing industry (MANUFACTURE). An insignificant result on this variable of interest would support H2a, suggesting that the retail industry is stronger due to enforcing broader sales tax nexus, and not due to a stronger economic environment overall.

The variable of interest in Panel A is CLICK. Consistent with the null results from my H1 tests, I do not find significance across any specification on this variable. Further, the variable of interest in Panel B is LOOK. Similar to Panel A, I do not find significance on this variable of interest, a surprising result given the significance I find on LOOK for H1. However, in Panel C, where I bifurcate LOOK into LOOKprior and LOOKnoprior, I find significance across both samples on LOOKprior only when my dependent variable is RETAIL. This result is consistent with H2a and aids in interpreting the results from H1. Specifically, this finding suggests that the local retail industry is larger after states credibly enforce look-through nexus on e-tail. In economic magnitude, when looking at the Random Assigned sample where the dependent variable is RETAIL, the positive coefficient of 0.024 on LOOKprior suggests that the state retail GDP is 2.4 percent larger after credibly enforcing look-through nexus. This implies approximately 79.7 million dollars in greater retail GDP.[28] Using the average sales tax rate of 5.6 percent for this sample specification, I would expect the sales tax collections from this larger retail GDP to be 4.5 million dollars, roughly 17 percent of the larger sales tax collections inferred from my Model 1. My result suggests a partial shift in consumer preferences towards local consumption after e-tailers are required to collect sales taxes. My 17 percent finding is higher than the 6 to 10 percent decrease in online purchasing

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[28] $(e^{0.024} - 1) * 3,319.2$ million in average quarterly state GDP from retail in the sample.

estimated to occur if e-tailers were required to collect sales taxes (Alm and Melnik 2005), but smaller than the 24 to 30 percent estimate suggested by Goolsbee (2000).

It could be that the result of increasing state retail GDP following enforcement of a broadened scope of e-tailer sales tax nexus is due to a healthier state economy in general and not from a shift in consumer preferences to local consumption. The results from columns 3 and 4 of Panel C, where the dependent variable is MANUFACTURE, contrasts with this explanation. Specifically, the insignificant coefficient on MANUFACTURE in both sample specifications suggest that the results in column 1 and 2 are not driven by overall better economies in states that broaden the scope of sales tax nexus to include e-tailers, strengthening the likelihood that consumers are shifting from online shopping to traditional brick-and-mortar local consumption. Overall, my results are consistent with the findings from Baugh et al. (2016); consumer preferences partially shift to local consumption after states enforce look-through nexus. I therefore find support for H2a, but only when states credibly enforce look-through nexus.

Table 8 reports the results of Model 4, which explores the timing of the results previously presented in Table 7. Given that I did not previously find significant results on MANUFACTURE (further confirming H2a), my dependent variable across Table 8 is only RETAIL. Similar to Table 7, the sample utilized in column 1 across all panels is Border Assigned, while the sample utilized in column 2 across all panels is Random Assigned. The variables of interest in Panel A are the eight quarterly indicators for click-through nexus (CLICKQ1 through CLICKQ8). Across both samples, I only find positively marginal significance once in only my Border Assigned sample, consistent with the null results in my levels analysis for click-through nexus.

The variables of interest in Panel B are the eight quarterly indicators for look-through nexus (LOOKQ1 through LOOKQ8). Similar to Table 7, I do not find compelling results on these variables across either sample. However, when bifurcating LOOK into its two components LOOKprior and LOOKnoprior in Panel C, I find results consistent with my previous results. Specifically, the coefficients on the eight LOOKQprior indicators suggest that state GDP from retail is almost immediately larger (LOOKQ2prior and on report significance) when states credibly enforce look-through nexus. Similar to my H1 tests, I do not find consistently compelling results on LOOKQnoprior, and thus suppress the coefficients in Table 8 for brevity. Overall, the results for look-through nexus are consistent with H2a, suggesting that states credibly enforcing look-through nexus have larger retail GDP and that they experience these results relatively quickly.

H2b – Impact of broadened sales tax nexus on e-tail establishments

As further evidence on the relation of expanding sales tax nexus for e-tailers, I examine the potential impact to e-tail establishments in a state enforcing broader nexus rules. Table 9 reports the results of Model 5, which tests the H2b association between the number of NAICS subsector code 454 (which includes mail-order and electronic retailers) establishments and states enforcing a broadened scope of e-tail sales tax nexus. The sample identification strategy in column 1 across all panels is Border Assigned, while the sample identification strategy in column across all panels is Random Assigned. The dependent variable is the natural log of the number of quarterly mail-order and electronic retail establishments (ESTAB). A negative and significant coefficient on the

variables of interest would suggest that the number of physical e-tail establishments is lower after enforcing broader sales tax nexus on e-tailers. This would suggest that e-tailers shift their physical locations out of states when states attempt to impose a sales tax collection responsibility on them.

The variable of interest in Panel A is CLICK. Consistent with the null results from the previous four tests, I do not find significance across any specification on this variable. This is not surprising, since this test is meant to test the relation for physical locations in a state and sales tax nexus, a relation that likely does not exist for the affiliate programs implied with CLICK. This null result provides support for H2b – I do not find results in a setting where I do not expect this relationship to exist.

The variable of interest in Panel B is LOOK. I find a negative and significant relation between LOOK and ESTAB across both sample identifications. This suggests that e-tailers reduce their physical locations in states imposing a sales tax collection responsibility on them due to having a physical presence in the state. I interpret this as suggesting that e-tailers are sensitive to having to collect sales taxes from their consumers. As further evidence of this finding, I bifurcate LOOK into its two components, LOOKprior and LOOKnoprior, in Panel C. I find highly significant and negative results on LOOKprior in both samples, and only a marginally significant and negative result in one sample for LOOKnoprior. This result suggests that e-tailers abandon their physical presence in a state when the state credibly imposes look-through nexus on them. The coefficient of -0.073 on LOOKprior in the Random Assigned sample suggests that NAICS subsector 454 physical establishments are 7 percent lower after

states credibly enforce look-through nexus.[29] Overall, these results are consistent with H2b for look-through nexus rules.

Table 10 reports the results of Model 6, which explores the timing of the results previously present in Table 9. Similar to Table 9, the sample utilized in column 1 across all panels is Border Assigned, while the sample utilized in column 2 across all panels is Random Assigned. The variables of interest in Panel A are the eight quarterly indicators for click-through nexus (CLICKQ1 through CLICKQ8). For my Border Assigned sample, I find a marginally negative result on CLICKQ1 only, while for my Random Assigned sample I find marginally *positive* results on CLICKQ7 and CLICKQ8. These results do not provide compelling evidence in support of H2b, consistent with the previous results presented for CLICK.

The variables of interest in Panel B are the eight quarterly indicators for look-through nexus (LOOKQ1 through LOOKQ8). Similar to Table 9, I find compelling results on these variables across both samples. The timing and significance of these results, however, vary. When bifurcating LOOK into its two components LOOKprior and LOOKnoprior in Panel C, I find results consistent with my previous results. Specifically, the coefficients on the eight LOOKQprior indicators suggest that the number of e-tailer physical establishments is almost immediately lower (LOOKQ2prior and after) when states credibly enforce look-through nexus. Similar to my H1 and H2a tests, I suppress the results for LOOKnoprior, although I find varying marginally negative results across several quarters on these coefficients. In short, the results for look-through nexus are

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[29] Given that my proxy is Amazon having and in many instances increasing (i.e. not reducing) a physical presence in states enforcing look-through nexus, this result should be interpreted as an overall net decrease in e-tail establishments.

consistent with my prior findings, suggesting that e-tailers relatively immediately shift their physical locations out of states credibly enforcing look-through nexus.

H3 – Spillover effect on corporate income tax

Table 10 reports the results of Model 7, which explores the hypothesized (H3) association between corporate income tax collections with respect to states enforcing a broadened scope of e-tailer sales tax nexus. The dependent variable across all panels is yearly corporate income tax collections in the state (CITC). The sample identification in columns 1 and 2 is Border Assigned, while the sample identification in columns 3 and 4 is Random Assigned. The variable of interest in Panel A is the indicator for *years* when a state enforces click-through nexus (CLICK). Given the null results from all of my previous tests on this variable, I do not expect, nor do I find, significant results anywhere on CLICK in Panel A.

The variable of interest in Panel B is the indicator for years when a state enforces look-through nexus (LOOK). The positive and significant coefficients in both sample identifications in columns 1 and 3 suggest that corporate income tax collections are larger after states enforce look-through nexus. Given that there is variation in how states arrive at corporate income that is subject to income tax, I explore a supplemental analysis of these results. In general, states do not require business entities to keep separate accounting records for operations in every state. Rather, states determine the amount of business income taxable in the state by using a formula that compares the amount of property, payroll, and sales in a state to the total business property, payroll, and sales (see Goolsbee and Maydew, 2000). States are free to emphasize each of these three "factors"

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differently. Therefore, states that place a heavier weight on the sales factor "apportion" total business income more so on the basis of revenues in the state as opposed to investment in the state (business property and employment). Thus, it is probable that states that emphasize the sales factor will see a significantly larger amount of corporate income taxes due to an increase in the in-state retail sector.

To test this, I interact LOOK with SFACTOR, my control indicator for states that have a sales apportionment factor above 0.50. A positive and significant result on the interaction would suggest that states with a sales factor in excess of 50 percent see even larger corporate income tax collections due to an increase in in-state retail GDP. The results of these augmented tests are reported in columns 2 and 4. As expected, I find a positive and significant coefficient on the interaction, along with a positive and significant coefficient on the main variable of interest, across both samples. This suggests that states that more heavily emphasize the sales factor when apportioning corporate income taxes realize even larger corporate income tax collections when enforcing look-through nexus.

As with my other tests, I further bifurcate LOOK into its two components – LOOKprior and LOOKnoprior. The results of this supplement test are reported in Panel C. I find a positive and significant coefficient on LOOKprior in both sample identifications. When analyzing my Random Assigned sample, the significant 0.054 coefficient on LOOKprior suggests that yearly corporate income tax collections are 5.5 percent larger in states that credibly enforce look-through nexus. This implies larger

corporate income tax collections of 36 million dollars each year in such states.[30] Given the 79.7 million dollar for retail GDP for H2a, and the average corporate income tax rate of 7 percent in this sample, I would expect corporate income tax collections from larger retail sales to be roughly 22.3 million dollars each year. Thus, my result implies that approximately 62 percent of the larger corporate income tax collections I find are due to states credibly enforcing look-through nexus.

Table 12 reports the results of Model 8, which explores the timing of the results previously present in Table 11. Similar to Table 11, the sample utilized in column 1 across all panels is Border Assigned, while the sample utilized in column 2 across all panels is Random Assigned. The variables of interest in Panel A are the three yearly indicators for click-through nexus (CLICKY1 through CLICKY3). As expected, I do not find significant results.

The variables of interest in Panel B are the three yearly indicators for look-through nexus (LOOKY1 through LOOKY3). Across both sample identifications, I find positive and significant results only on LOOKY3, suggesting that it is not until the second year after enforcing look-through nexus that states realize larger corporate income tax collections. Further, when bifurcating these variables of interest into LOOKYprior and LOOKYnoprior in Panel C, I only find significant results on LOOKY3prior, suggesting that it is only when states credibly enforce look-through nexus that they eventually realize a spillover effect in the corporate income tax regime.

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[30] $(e^{0.054} - 1) * 654.9$ million in average yearly corporate income tax collections in the sample.

SENSITIVITY

Whereas I separately analyze the impact of click-through nexus legislation and enforcement of look-through nexus as different attempts to impose sales tax nexus on e-tailers, I also consider instances where states were successful in collecting sales tax from e-tailers via both methods. To analyze this, I include both LOOK and CLICK in the same models presented in this paper. My inferences with this proxy are similar to my inferences obtained from my look-through nexus analyses – I find my hypothesized results only on credible enforcement of look-through nexus.

A concern with my Border Assigned sample is that is does not properly identify states with the same economic size, while a concern with my Random Assigned sample is that it does not properly identify control states with similar economic conditions. To assuage these concerns, I create an additional sample that combines the logic from these two separate samples. Specifically, I implement this approach by assigning, for each treated state period, a control state that imposes a sales tax and does not change is sales tax nexus (both CLICK and LOOK must be zero across the match period), that borders the treated state, and is within the same interquartile size as the treated state, similar to the approach utilized by Goff et al. (2012). Under this approach, California, Connecticut, and Maine for my CLICK analyses do not have suitable control states, while California and Texas do not have suitable control states for my LOOK analyses. Even so, when utilizing this sample in sensitivity analyses, I obtain similar results (albeit somewhat weaker) to those presented in this study.

My findings for sales taxes and corporate income taxes could be related to the overall health or growth of states that enforce a broadened scope of e-tailer sales tax

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nexus. If so, I should expect to see increases in other state taxes. I analyze gasoline excise taxes as a dependent measure in the models presented in this paper, with the same ECONOMY controls and TAX controls aimed specifically at the gas excise tax (namely, the excise tax rate). I do not find any significance on my LOOK variables of interest when analyzing gas excise taxes in the presence of a enforcing an expanded definition of nexus to include e-tailers, mitigating concerns that my results reflect an increasing trend in all tax collections.

The results for my corporate income tax tests could be due to changes to the corporate income tax regime in a state after also enhancing the scope of sales tax nexus to include e-tailers. If so, the increases to corporate income taxes I report could be to states more heavily taxing corporations, and not from increases in in-state consumption as I suggest. To investigate this potential alternative explanation, I replace CITC as the dependent variable in models 7 and 8 and replace with the TAX measures CRATE, BRACKET, and SFACTOR. This allows me to test whether changes in enforcement of broader e-tailer sales tax nexus are related to changes in the structure of the state's corporate tax system. I do not find a positive association between these measures and my LOOK variables of interest, suggesting that the corporate income tax regime is not differentially changing for states enhancing their sales tax nexus to include e-tailers to those that are not.

CONCLUSION

The past two decades have seen explosive growth in e-commerce — from roughly 5 billion at the turn of the century to over 300 billion in 2015. At the same time, the

limitations of *Quill* on the ability of states to impose a sales tax collection responsibility on much of this e-commerce, coupled with low consumer use tax compliance has contributed to a decline in sales tax revenues — an estimated 11.4 billion dollars were lost to e-commerce in 2012 alone. This study investigates the impact of recent enforcement of broadened sales tax nexus meant to impose a sales tax collection responsibility on e-tailers.

My results suggest that sales tax revenues are larger when states credibly enforce broader sales tax nexus rules that include e-tailing (as evidenced by my significant results for states enforcing look-through nexus on e-tailers) but only if e-tailers do not abandon the nexus-creating activities under the broader scope (as evidenced by my null results for states enacting click-through nexus laws). Additional tests find that state GDP from retail is larger after the credible enforcement of broadened sales tax nexus that encompasses e-tailing, suggesting that consumers shift their preferences to in-state consumption after e-tailers lose their competitive advantage by not collecting sales taxes on behalf of their consumers. Further, the number of e-tail establishments in a state credibly enforcing look-through nexus is lower, implying that e-tailers are sensitivity to collecting sales taxes and will abandon physical locations in an attempt to not collect these taxes. Finally, I offer evidence that this shift in preferences has a positive spillover effect on in-state business receipts, where larger local business leads to larger corporate income tax revenues in states credibly enforcing expanded sales tax nexus.

These results are subject to a couple caveats. First, my results for enforcing look-through nexus on e-tailers are based on dates that states require Amazon to collect sales tax due to a subsidiary with a physical location in the state. There may be other treatment

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dates where states required other e-tailers to collect sales tax for similar reasons, thus adding noise to my analyses and reducing the precision of my inferences. Second, I use aggregated state-level data, which coupled with a relatively few number of states (only 46 states impose a general sales tax), creates extreme variability between state observations due to the variation in states' economic sizes.

The implications from this study extend to state-policy makers wishing to impose sales tax nexus on e-tailing. My null result using click-through nexus suggests that states may need to find a way to compel e-tailers to cease abandonment of click-through nexus activities. However, my results that sales tax revenues increase within a year highlight a quick revenue turn around from a tax enforcement standpoint. Federal legislators may find these results useful as they debate legislation regarding online sales tax collections.

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APPENDIX A

VARIABLE DEFINITIONS

Variable	Description
	Dependent Variables
STC	Natural log of quarterly sales tax remittances to the state taxing authority. Source: Census Bureau Quarterly State & Local Tax Revenues
RETAIL	Natural log of state GDP from the retail sector in the state. This number is deannualized as follows: Q1 = (raw number / 4); Q2 = Q1 = (raw number * 1/4); Q2 = (raw number * 1/2) - Q1 ; Q3 = (raw number * 3/4) - (Q1 + Q2); Q4 = (raw number / 4) - (Q1 + Q2 + Q3). Source: Bureau of Economic Analysis Regional Economic Account
MANUFACTURE	Natural log of state GDP from the manufacturing sector in the This number is deannualized as follows: Q1 = (raw number * 1/4); Q2 = (raw number * 1/2) - Q1 ; Q3 = (raw number * 3/4) - (Q1 + Q2); Q4 = (raw number / 4) - (Q1 + Q2 + Q3). Source: Bureau of Economic Analysis Regional Economic Account
ESTAB	Natural log of the number of NACIS subsector code 454 (mail-order and electronic retail) establishments in the state. Source: Bureau of Labor Statistics
CITC	Natural log of yearly corporate income tax remittances to the state taxing authority. Source: Census Bureau Quarterly State & Local Tax Revenues
	Variables of Interest
CLICK (see endnote a)	Indicator equal to one for all quarters (years in CITC analyses) that the state enforces click-through nexus on online retailers, inclusive of the period of change, zero otherwise. Source: Baugh et al. (2016); Hand Collection.

Variable	Description
LOOK	Indicator equal to one for all quarters (years in CITC analyses) that the state enforces look-though nexus on online retailers, inclusive of the period of change, zero otherwise. This indicator is proxied for by states that require Amazon to collect sales tax based on a subsidiary's physical location in the state. Source: Baugh et al. (2016); Hand Collection.
CLICKQ	Indicator equal to one for the specifc quarter since the state began enforcing click-through nexus, where CLICKQ1 is an indicator for the quarter of initiation, CLICKQ2 is an indicator for the quarter following initiation, and so forth.
LOOKQ	Indicator equal to one for the specifc quarter since the state began enforcing look-through nexus, where LOOKQ1 is an indicator for the quarter of initiation, LOOKQ2 is an indicator for the quarter following initiation, and so forth.
CLICKY	Indicator equal to one for the specifc year since the state began enforcing click-through nexus, where CLICKY1 is an indicator for the year of initiation, CLICKY2 is an indicator for the year following initiation, and so forth.
LOOKY	Indicator equal to one for the specifc year since the state began enforcing look-through nexus, where LOOKY1 is an indicator for the year of initiation, LOOKY2 is an indicator for the year following initiation, and so forth.
LOOKprior	Subset of LOOK, where the indicator for look-through nexus is one only if Amazon had a subsidiary with a physical presence in the state *prior* to Amazon initiating sales tax collections, zero otherwise.
LOOKnoprior	Subset of LOOK, where the indicator for look-through nexus is one only if Amazon did not have a subsidiary with a physical presence in the state prior to Amazon initiating sales tax collections due to look-through nexus, zero otherwise.

Variable	Description

TAX control vector - Sales Tax

SRATE	Sales tax rate at the beginning of the quarter in the state. Source: Tax Foundation; Hand Collection.
GROCERY	Indicator equal to one if the state taxed groceries as of the beginning of the quarter, zero otherwise. Source: Hand Collection.
AMNESTY_S	Indicator equal to one if the state offered a sales tax amnesty at any point during the quarter for prior unremmitances of sales taxes, zero otherwise. Source: Tax Foundation / Hand Collection.
SSUTA	Indicator equal to one if the state is a member of the streamlined sales and use tax agreement during the quarter, zero otherwise. Source: http://www.streamlinedsalestax.org/

TAX control vector - Corporate Income Tax

CRATE	The highest marginal corporate income tax rate in the state during the year. Source: Tax Foundation; Hand Collection.
BRACKET	The highest marginal corporate income tax bracket in the state during the year. Source: Tax Foundation; Hand Collection.
SFACTOR	Indicator equal to 1 if the state weights the apportionment factor on sales by more then 50%, zero otherwise. Source: Hand Collection.
AMNESTY_C	Indicator equal to one if the state offerd a corporate income tax amnesty at any point during the quarter for prior unremittances of corporate income taxes, zero otherwise. Source: Tax Foundation / Hand Collection.

Variable	Description
ECONOMY control vector	
WAGES	The natural log of employment wages from the prior quarter (year in CITC analyses). This number excludes earnings from self-employment. Source: Bureau of Labor Statistics.
PERC_RET	State GDP from the retail sector as a percentage of total state GDP.
UNEMPLOY	The average unemployment rate from the prior quarter (year in CITC analyses). Source: Census Bureau.

(a) Click-through nexus refers to state legislation that establishes sales tax nexus for e-tailers if the e-tailer pays commissions to third-party affiliates that reside in the state for referring customers to the e-tailer's website via weblinks on the third-party affiliates' websites.

(b) Look-through nexus refers to states that disregard the corporate structure of e-tailers and impose sales tax nexus on e-tailers if the e-tailer has a physical subsidiary (e.g. distribution center; warehouse; research and development center) located in the state.

Table 1
Change in Enforcement Dates

(1) Click-through Nexus		(2) Look-through Nexus		
State	**Date**	**State**	**Prior Presence**	**Date**
New York	04/23/08	Texas	x	07/01/12
Rhode Island	07/01/09	Pennsylvania	x	09/02/12
North Carolina	08/07/09	California	x	09/16/12
Connecticut	07/01/11	Arizona	x	02/01/13
Arkansas	10/27/11	New Jersey		07/01/13
Pennsylvania	12/01/11	Virginia	x	09/01/13
Georgia	07/18/12	West Virginia	x	10/01/13
California	09/15/12	Connecticut		11/01/13
Kansas	07/01/13	Massachusetts	x	11/01/13
Maine	07/01/13	Wisconsin		11/01/13
Minnesota	07/01/13			
Missouri	08/18/13	**After 2013**		
		Indiana		01/01/14
After 2013		Nevada	x	01/01/14
New Jersey	07/01/14	Tennessee	x	01/01/14
Illinois	01/01/15	Florida		05/01/14
Ohio	07/01/15	Maryland		10/01/14
Tennessee	07/01/15	Minnesota		10/01/14
Washington	09/01/15	Illinois		02/01/15
Michigan	10/01/15	Ohio		06/01/15
Nevada	10/01/15	Michigan	x	10/01/15
Vermont	12/01/15			

Column 1 lists states that enacted click-through nexus legislation or clarified existing statutes to include click-through nexus, along with dates of enactment or clarifications. Column 2 lists states that initiated enforcement of look-through nexus, proxied for by states that required Amazon to initiate sales tax collections due to a physical location (e.g. distribution center; warehouse; research & development center) in the state, along with dates enforcement initiated. Prior Presence indicates states in which Amazon had already established a physical presence before states required Amazon to initiate sales tax collections.

State and date information is obtained from Baugh, Ben-David, and Park (2016) and Internet search of all 50 states for the respective enforcement proxies.

Table 2
2005 to 2015 Average State Revenue Sources - Percent of Total Taxes

| State | Property | Sales | | | Income | | |
		General	Excises	Licenses	Personal	Corporat	Other
AL	3.2%	26.3%	24.7%	6.0%	32.9%	4.7%	2.2%
AK	2.9%	0.0%	6.6%	3.9%	0.0%	18.0%	68.5%
AZ	5.2%	45.2%	14.2%	3.7%	25.1%	6.0%	0.6%
AR	8.8%	36.6%	13.8%	4.3%	30.2%	4.7%	1.5%
CA	2.6%	29.3%	8.3%	6.4%	44.6%	8.2%	0.4%
CO	0.0%	24.7%	14.2%	4.9%	49.7%	4.6%	1.8%
CT	0.0%	28.1%	16.7%	3.1%	44.4%	4.7%	3.0%
DE	0.0%	0.0%	14.7%	37.4%	35.2%	8.9%	3.9%
DC	28.8%	19.0%	8.5%	2.4%	27.0%	6.4%	8.0%
FL	1.2%	56.7%	22.6%	5.9%	0.0%	5.6%	8.0%
GA	1.0%	32.7%	9.7%	3.4%	47.5%	5.0%	0.5%
HI	0.0%	48.3%	15.1%	3.3%	30.4%	1.9%	1.0%
ID	0.0%	35.0%	12.8%	8.2%	38.1%	5.2%	0.7%
IL	0.4%	26.0%	19.5%	7.6%	35.8%	9.5%	1.2%
IN	0.0%	39.7%	16.2%	3.7%	32.8%	6.5%	1.1%
IA	0.0%	31.2%	14.8%	10.1%	38.4%	4.1%	1.5%
KS	1.5%	36.1%	12.5%	4.8%	37.2%	5.4%	2.6%
KY	5.4%	29.9%	16.4%	5.0%	34.2%	5.5%	3.5%
LA	0.4%	32.6%	22.2%	4.5%	27.4%	4.6%	8.3%
ME	1.3%	30.8%	16.2%	6.2%	39.1%	4.6%	1.9%
MD	3.7%	23.4%	18.1%	4.3%	42.8%	4.8%	2.9%
MA	0.0%	21.7%	9.4%	3.7%	54.1%	8.6%	2.5%
MI	8.3%	35.2%	12.8%	5.6%	29.5%	7.3%	1.2%
MN	2.9%	25.7%	17.0%	6.1%	40.7%	5.6%	2.0%
MS	0.5%	45.6%	18.5%	6.8%	21.4%	5.8%	1.4%
MO	0.2%	30.9%	14.9%	6.2%	43.8%	3.4%	0.6%
MT	11.8%	0.0%	22.6%	12.4%	36.3%	5.9%	10.9%
NE	0.0%	36.2%	13.1%	4.8%	39.9%	5.2%	0.7%
NV	3.3%	50.7%	29.3%	12.6%	0.0%	0.0%	4.2%
NH	15.9%	0.0%	37.7%	12.3%	4.3%	23.2%	6.5%
NJ	0.0%	29.5%	14.5%	5.1%	38.8%	8.5%	3.6%
NM	1.1%	38.1%	13.4%	5.2%	22.4%	4.8%	15.0%
NY	0.0%	18.9%	12.0%	2.4%	56.0%	6.8%	3.8%
NC	0.1%	24.8%	16.9%	6.2%	45.2%	5.9%	0.9%
ND	0.1%	25.8%	14.0%	5.6%	12.7%	4.9%	36.9%
OH	0.1%	32.7%	16.8%	9.8%	36.9%	3.2%	0.4%

STATE	Property	Sales			Income		Other
		General	Excises	Licenses	Personal	Corporat	
OK	0.0%	26.5%	13.9%	10.0%	34.6%	4.1%	10.8%
OR	0.2%	0.0%	12.5%	10.4%	69.8%	5.5%	1.6%
PA	0.3%	29.3%	19.9%	8.8%	30.7%	6.7%	4.3%
RI	0.1%	31.1%	20.5%	4.1%	38.1%	4.5%	1.6%
SC	0.2%	38.2%	14.7%	6.0%	36.3%	3.7%	0.9%
SD	0.0%	55.4%	24.6%	14.5%	0.0%	3.9%	1.6%
TN	0.0%	58.8%	17.3%	10.5%	1.9%	8.7%	2.8%
TX	0.0%	51.8%	28.2%	12.9%	0.0%	0.0%	7.2%
UT	0.0%	34.5%	12.7%	4.4%	41.9%	5.0%	1.7%
VT	29.1%	14.3%	20.7%	4.4%	25.5%	3.7%	2.2%
VA	0.2%	20.1%	14.3%	4.1%	54.1%	4.1%	3.1%
WA	11.9%	60.8%	17.2%	5.5%	0.0%	0.0%	4.6%
WV	0.1%	25.2%	24.7%	4.0%	30.5%	7.1%	8.3%
WI	0.8%	28.5%	15.3%	6.5%	42.2%	5.7%	1.0%
WY	12.8%	34.5%	6.9%	7.0%	0.0%	0.0%	38.8%
US Ave	2.0%	32.0%	15.5%	6.4%	34.8%	5.9%	3.4%

Data compiled from the U.S. Census Bureau's Quarterly Summary of State and Local Tax Revenue (http://www.census.gov/govs/qtax/historical_data.html).

Table 3
Univariate Statistics

Panel A: Click-through Nexus Sample

	Border Assigned			Random Assigned		
	Mean	Median	Std Dev	Mean	Median	Std Dev
	(N = 522)			(N = 374)		
STC	20.599	20.545	0.741	20.590	20.443	0.883
SRATE	0.054	0.060	0.011	0.052	0.051	0.012
GROCERY	0.280	0.000	0.449	0.283	0.000	0.451
AMNESTY_S	0.021	0.000	0.144	0.025	0.000	0.156
SSUTA	0.421	0.000	0.494	0.415	0.000	0.493
WAGES	23.910	23.992	0.856	23.873	23.881	1.059
UNEMPLOY	0.070	0.071	0.022	0.072	0.072	0.021
RETAIL	21.995	22.089	0.765	21.983	21.976	0.969
ESTAB	6.499	6.650	0.770	6.554	6.680	0.915
	(N = 145)			(N = 117)		
CITC	20.169	20.030	0.892	20.277	19.890	1.201
SFACTOR	0.407	0.000	0.493	0.459	0.000	0.502
CRATE	0.076	0.069	0.036	0.072	0.071	0.018
BRACKET	4.008	0.000	5.501	3.615	0.000	5.593
AMNESTY_C	0.103	0.000	0.306	0.131	0.000	0.340

Panel B: Look-through Nexus Sample

	Border Assigned			Random Assigned		
	Mean	Median	Std Dev	Mean	Median	Std Dev
	(N = 398)			(N = 320)		
STC	20.583	20.516	0.932	20.655	20.587	1.117
SRATE	0.054	0.055	0.008	0.056	0.060	0.011
GROCERY	0.242	0.000	0.429	0.200	0.000	0.400
AMNESTY_S	0.040	0.000	0.197	0.034	0.000	0.182
SSUTA	0.386	0.000	0.487	0.472	0.000	0.500
WAGES	23.736	23.721	1.050	23.903	24.065	1.109
UNEMPLOY	0.068	0.068	0.016	0.069	0.068	0.018
RETAIL	21.912	22.026	1.004	21.923	22.146	1.151
ESTAB	6.361	6.556	0.963	6.334	6.694	1.100
	(N = 114)			(N = 90)		
CITC	20.212	20.244	0.982	20.300	20.320	1.131
SFACTOR	0.368	0.000	0.484	0.380	0.000	0.488
CRATE	0.082	0.076	0.043	0.070	0.063	0.029
BRACKET	3.878	0.000	5.768	3.263	0.000	5.159
AMNESTY_C	0.120	0.000	0.326	0.110	0.000	0.314

Table 3, continued
Univariate Statistics

Univariate statistic analyses. Variables are defined in Appendix A.

Panel A includes the statistics for the samples used in click-through nexus analyses. Panel B includes the statistics for the samples used in look-though nexus analyses. Across both panels, the first set of statistics include the sample of states that changed the respective sales tax nexus and all bordering "control" states (Border Assigned), while second set of statistics include the sample of states that changed the respective sales tax nexus and a randomly assigned "control" state (Random Assigned).

Table 4

Pearson Correlations

Panel A: Click-through Nexus Sample

Upper triangle: Border Assigned Sample. Lower triangle: Random Assigned Sample.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) CLICK		0.22	-0.06	-0.06	-0.04	0.08	0.23	0.19	0.22	0.28	0.31	0.01	-0.02	-0.23	-0.01
(2) STC	0.30		-0.07	-0.07	0.00	-0.38	0.91	0.19	0.93	0.80	0.80	0.29	0.21	-0.27	-0.01
(3) SRATE	0.14	0.21		0.06	-0.03	0.08	-0.30	0.06	-0.30	-0.26	-0.07	-0.08	0.18	0.22	-0.06
(4) GROCERY	-0.14	-0.08	0.05		-0.06	-0.06	-0.18	0.05	-0.09	-0.21	-0.14	-0.37	-0.26	-0.06	-0.03
(5) AMNESTY_S	-0.08	0.02	-0.04	-0.06		-0.04	0.03	0.06	0.02	0.03	0.05	-0.03	-0.01	0.04	0.96
(6) SSUTA	0.06	-0.30	0.06	0.00	-0.13		-0.40	-0.25	-0.41	-0.43	-0.24	-0.18	-0.03	0.23	-0.08
(7) WAGES	0.28	0.96	0.05	-0.11	0.02	-0.32		0.15	0.98	0.94	0.82	0.27	0.20	-0.43	0.06
(8) UNEMPLOY	0.18	0.35	0.29	-0.16	0.05	-0.32	0.34		0.21	0.18	0.03	0.08	0.06	-0.17	-0.06
(9) RETAIL	0.27	0.96	0.05	-0.06	0.02	-0.34	0.99	0.34		0.91	0.69	0.34	0.19	-0.40	-0.02
(10) ESTAB	0.30	0.85	0.02	-0.07	-0.03	-0.32	0.93	0.28	0.92		0.73	0.32	0.22	-0.42	0.07
(11) CITC	0.32	0.89	-0.01	-0.02	0.03	-0.11	0.88	0.20	0.86	0.83		0.12	-0.07	-0.42	0.07
(12) SFACTOR	-0.10	0.27	-0.08	-0.32	-0.02	-0.27	0.35	-0.09	0.42	0.39	0.32		0.20	0.02	-0.14
(13) CRATE	0.32	0.27	0.56	-0.14	0.07	-0.12	0.19	0.17	0.35	0.13	0.23	0.25		0.31	-0.02
(14) BRACKET	-0.21	-0.44	0.03	0.06	0.11	-0.10	-0.59	-0.30	-0.53	-0.62	-0.49	-0.18	0.14		0.03
(15) AMNESTY_C	-0.10	0.01	-0.28	-0.01	0.91	-0.21	0.06	-0.05	0.04	0.02	-0.14	-0.16	-0.03	0.16	

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Table 4, continued
Pearson Correlations

Panel B: Look-through Nexus Sample

Upper right (above diagonal): Border Assigned Sample — Lower left (below diagonal): Random Assigned Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) LOOK		***0.25***	***0.28***	-0.02	***0.13***	-0.05	***0.28***	***-0.13***	***0.24***	0.10	***0.52***	***0.21***	***-0.20***	***-0.35***	0.15
(2) STC	***0.31***		***-0.14***	***-0.24***	0.03	***-0.26***	***0.93***	***0.24***	***0.94***	***0.82***	***0.81***	***0.58***	-0.02	-0.15	0.13
(3) SRATE	***0.29***	***0.39***		***-0.26***	***0.10***	***0.13***	-0.04	***0.18***	***-0.20***	***-0.18***	-0.12	-0.07	0.12	0.02	0.00
(4) GROCERY	0.00	***-0.24***	***-0.26***		-0.06	-0.01	***-0.40***	***-0.33***	***-0.10***	***-0.10***	***-0.22***	***0.35***	***-0.22***	***-0.31***	-0.17
(5) AMNESTY_S	***0.17***	0.08	0.07	-0.09		-0.07	0.01	0.03	0.02	0.02	0.00	-0.07	-0.05	0.01	***0.99***
(6) SSUTA	***-0.20***	***-0.30***	-0.04	***-0.11***	-0.11		***-0.14***	-0.05	***-0.20***	***-0.14***	***-0.23***	0.06	-0.07	0.12	-0.14
(7) WAGES	***0.35***	***0.92***	***0.42***	***-0.28***	***0.11***	***-0.42***		***0.30***	***0.92***	***0.84***	***0.87***	***0.54***	0.00	***-0.25***	0.10
(8) UNEMPLOY	-0.07	***0.49***	***0.40***	***-0.21***	-0.02	***-0.27***	***0.51***		***0.13***	0.04	0.14	0.07	0.15	-0.05	0.13
(9) RETAIL	***0.35***	***0.93***	***0.36***	***-0.19***	***0.11***	***-0.27***	***0.92***	***0.40***		***0.92***	***0.63***	***0.62***	-0.03	***-0.23***	0.04
(10) ESTAB	0.09	***0.78***	***0.25***	***-0.23***	***0.11***	***-0.29***	***0.84***	***0.24***	***0.92***		***0.75***	***0.49***	-0.03	***-0.24***	0.06
(11) CITC	***0.38***	***0.86***	***0.48***	***-0.45***	0.09	***-0.24***	***0.95***	***0.52***	***0.78***	***0.79***		***0.40***	***-0.21***	***-0.35***	0.13
(12) SFACTOR	0.14	***0.37***	-0.15	***-0.39***	0.05	0.07	***0.40***	0.00	***0.37***	***0.40***	***0.31***		***0.26***	0.11	-0.01
(13) CRATE	0.18	-0.09	***0.32***	-0.03	-0.01	-0.18	0.09	0.16	-0.06	-0.10	***0.34***	0.10		***0.45***	-0.09
(14) BRACKET	***-0.30***	***-0.29***	0.01	-0.04	-0.04	***0.49***	***-0.45***	***-0.24***	***-0.33***	***-0.38***	***-0.36***	0.02	0.12		0.09
(15) AMNESTY_C	0.18	0.18	0.05	-0.18	***1.00***	-0.08	0.18	0.18	0.00	0.18	0.15	0.05	-0.05	0.02	

Table 5
Sales Tax Nexus Impact on Sales Tax Collections - Levels

$$STC_{s,q} = \alpha + \beta TREATEDQ_{s,q} + \gamma TAX_{s,q} + \delta ECONOMY_{s,q-1} + FE_{state} + FE_{quarter} + \varepsilon_{s,q}$$

Panel A: TREATEDQ = CLICK

	(1) Border Assigned	(2) Random Assigned
Intercept	9.708 (12.063)	27.340 (17.608)
CLICK	-0.015 (0.011)	0.011 (0.219)
SRATE	13.885 (1.888)***	9.391 (5.150)*
GROCERY	-0.120 (0.025)***	0.096 (0.092)
AMNESTY_S	0.038 (0.028)	0.028 (0.042)
SSUTA	-0.074 (0.074)***	-0.069 (0.027)**
WAGES	0.429 (0.429)	-0.187 (0.668)
UNEMPLOY	-0.041 (0.692)	-2.134 (0.947)**
State & Quarter Fixed Effects	Yes	Yes
N	522	374
Adj R^2	97.57%	98.36%

Panel B: TREATEDQ = LOOK

	(1) Border Assigned	(2) Random Assigned
Intercept	-4.530 (8.538)	-25.907 (9.470)**
LOOK	0.020 (0.014)*	0.038 (0.029)*
SRATE	-3.858 (4.214)	-0.351 (3.373)
GROCERY	-0.736 (0.136)***	4.157 (1.295)***
AMNESTY_S	-0.017 (0.017)	-0.036 (0.053)
SSUTA	-0.027 (0.066)	-0.140 (0.040)***
WAGES	1.065 (0.343)***	1.913 (0.361)***
UNEMPLOY	0.115 (1.682)	0.568 (1.862)
State & Quarter Fixed Effects	Yes	Yes
N	398	320
Adj R^2	98.02%	98.36%

Table 5, continued
Sales Tax Nexus Impact on Sales Tax Collections - Levels

Panel C: TREATEDQ = LOOK; Bifurcated (LOOKprior & LOOKnoprior)

	(1) Border Assigned	(2) Random Assigned
Intercept	-4.260 (8.816)	-27.051 (9.473)***
LOOKprior	0.022 (0.013)**	0.029 (0.017)**
LOOKnoprior	0.013 (0.071)	0.044 (0.028)
SRATE	3.686 (4.159)	-0.472 (4.891)
GROCERY	0.083 (1.018)	4.174 (2.299)**
AMNESTY_S	-0.176 (0.041)	-0.036 (0.214)
SSUTA	-0.028 (0.066)	-0.140 (0.032)***
WAGES	1.062 (0.034)***	1.918 (0.643)***
UNEMPLOY	0.049 (1.672)	0.636 (1.394)
State & Quarter Fixed Effects	Yes	Yes
N	398	320
Adj R^2	98.01%	97.73%

Presentation of Model 1A results for test of Hypothesis 1. Variables are defined in Appendix A.

The variable of interest in Panel A is the indicator for quarters where the state enforces click-through nexus (CLICK). The variable of interest in Panel B is the indicator for quarters where the state enforces look-through nexus (LOOK). The variable of interest Panel C is LOOK, bifurcated into proxy indicators where Amazon had a physical presence prior to enforcement of look-through nexus (prior) and did not have a physical presence prior to enforcement (noprior).

The dependent variable across all panels is the natural log of sales tax collections (STC). The sample in column 1 across all panels includes states that changed the respective sales tax nexus and all bordering "control" states (Border Assigned). The sample in column 2 across all panels includes states that changed the respective sales tax nexus and a randomly assigned "control" state (Random Assigned).

Standard errors clustered by state are reported in parentheses. One-tailed (two-tailed) statistical significance at 1%, 5%, and 10% for hypothesized (non-hypothesized) results are denoted by ***, **, and *, respectively.

Table 6
Sales Tax Nexus Impact on Sales Tax Collections - Changes

$$\Delta STC_{s,q \text{ to } q-8} = \alpha + \beta(TREATEDQ1_{s,q} \dots TREATEDQ8_{s,q}) + \gamma(\Delta TAX_{s,q \text{ to } q-8})$$
$$+ \delta(\Delta ECONOMY_{s,q-1 \text{ to } q-9}) + FE_{state} + FE_{quarter} + \varepsilon_{s,q}$$

Panel A: TREATEDQ = CLICK

	(1) Border Assigned	(2) Random Assigned
Intercept	0.117 (0.078)	-0.044 (0.077)
CLICKQ1	0.004 (0.013)	0.006 (0.016)
CLICKQ2	0.009 (0.022)	0.007 (0.019)
CLICKQ3	0.023 (0.016)*	0.010 (0.016)
CLICKQ4	0.032 (0.032)	0.035 (0.021)*
CLICKQ5	-0.004 (0.028)	-0.011 (0.031)
CLICKQ6	0.050 (0.038)	0.037 (0.032)
CLICKQ7	-0.070 (0.058)	-0.053 (0.048)
CLICKQ8	-0.004 (0.032)	-0.001 (0.022)
SRATE	14.705 (3.103)***	14.042 (3.511)***
GROCERY	-0.118 (0.037)***	0.176 (0.066)**
AMNESTY_S	0.043 (0.038)	0.049 (0.056)
SSUTA	-0.024 (0.038)	-0.045 (0.024)*
WAGES	0.962 (0.639)	0.454 (0.185)**
UNEMPLOY	-0.005 (0.659)	-1.583 (1.096)
State & Quarter Fixed Effects	Yes	Yes
N	522	374
Adj R^2	55.14%	42.41%

Table 6, continued
Sales Tax Nexus Impact on Sales Tax Collections - Changes

Panel B: TREATEDQ = LOOK

	(1) Border Assigned	(2) Random Assigned
Intercept	0.005 (0.077)	-0.058 (0.064)
LOOKQ1	0.068 (0.019)***	0.036 (0.026)*
LOOKQ2	0.040 (0.020)**	0.009 (0.027)
LOOKQ3	0.028 (0.029)	0.007 (0.027)
LOOKQ4	0.087 (0.057)*	0.051 (0.035)*
LOOKQ5	0.042 (0.039)	0.016 (0.007)**
LOOKQ6	0.057 (0.030)**	0.054 (0.032)**
LOOKQ7	0.014 (0.038)	0.031 (0.032)
LOOKQ8	0.077 (0.058)*	0.079 (0.045)**
SRATE	-1.017 (3.239)	-0.051 (3.010)
GROCERY	-0.043 (0.080)	0.024 (0.044)
AMNESTY_S	0.007 (0.016)	0.001 (0.018)
SSUTA	-0.020 (0.076)	-0.175 (0.035)***
WAGES	0.582 (0.297)*	1.084 (0.895)
UNEMPLOY	-1.773 (1.100)*	-0.633 (1.372)
State & Quarter Fixed Effects	Yes	Yes
N	398	320
Adj R^2	40.42%	25.96%

Table 6, continued
Sales Tax Nexus Impact on Sales Tax Collections - Changes

Panel C: TREATEDQ = LOOK; Bifurcated (LOOKprior & LOOKnoprior)		
	(1)	(2)
	Border Assigned	Random Assigned
Intercept	0.040 (0.079)	-0.053 (0.066)
LOOKQ1prior	0.064 (0.024)***	0.053 (0.037)*
LOOKQ2prior	0.052 (0.023)**	0.021 (0.032)
LOOKQ3prior	0.027 (0.029)	0.022 (0.008)**
LOOKQ4prior	0.088 (0.089)	0.056 (0.030)**
LOOKQ5prior	0.038 (0.023)**	0.039 (0.039)
LOOKQ6prior	0.057 (0.040)*	0.065 (0.037)**
LOOKQ7prior	0.045 (0.021)**	0.061 (0.037)**
LOOKQ8prior	0.107 (0.072)*	0.055 (0.031)**
SRATE	-0.487 (3.437)	-0.140 (3.023)
GROCERY	-0.084 (0.084)	0.027 (0.046)
AMNESTY_S	0.003 (0.018)	-0.007 (0.020)
SSUTA	-0.022 (0.077)	-0.168 (0.036)***
WAGES	0.535 (0.298)*	-0.959 (0.432)**
UNEMPLOY	-2.680 (1.112)**	-1.562 (1.269)
LOOKQ1…LOOKQ8noprior	Yes	Yes
State & Quarter Fixed Effects	Yes	Yes
N	398	320
Adj R^2	39.75%	24.94%

Table 6, continued
Sales Tax Nexus Impact on Sales Tax Collections - Changes

Presentation of Model 1B results for test of Hypothesis 1. Variables are defined in Appendix A.

The variables of interest in Panel A are the eight quarterly indicators after the state enforces click-through nexus (CLICKQ1 through CLICKQ8). The variables of interest in Panel B are the eight quarterly indicators after the state enforces look-through nexus (LOOKQ1 through LOOKQ8). The variables of interest in Panel C are LOOKQ1 through LOOKQ8, bifurcated into proxy indicators where Amazon had a physical presence prior to enforcement of look-through nexus (prior) and did not have a physical presence prior to enforcement (noprior).

The dependent variable across all panels is the natural log of sales tax collections (STC). The sample in column 1 across all panels includes states that changed the respective sales tax nexus and all bordering "control" states (Border Assigned). The sample in column 2 across all panels includes states that changed the respective sales tax nexus and a randomly assigned "control" state (Random Assigned).

Standard errors clustered by state are reported in parentheses. One-tailed (two-tailed) statistical significance at 1%, 5%, and 10% for hypothesized (non-hypothesized) results are denoted by ***, **, and *, respectively.

Table 7
Sales Tax Nexus Impact on Gross State Product - Levels

$$GSP_{s,q} = \alpha + \beta TREATEDQ_{s,q} + \delta ECONOMY_{s,q-1} + FE_{state} + FE_{quarter} + \varepsilon_{s,q}$$

Panel A: TREATEDQ = CLICK

	(1)	(2)	(3)	(4)
	GSP = RETAIL		**GSP = MANUFACTURE**	
	Border Assigned	**Random Assigned**	**Border Assigned**	**Random Assigned**
Intercept	20.268 (1.236)***	24.407 (0.999)***	16.661 (3.570)***	22.868 (2.451)***
CLICK	0.004 (0.004)	0.001 (0.882)	-0.019 (0.019)	0.026 (0.018)
WAGES	0.067 (0.052)	-0.011 (0.039)	0.267 (0.152)*	0.083 (0.094)
UNEMPLOY	-0.378 (0.230)*	-0.912 (0.319)***	-2.009 (0.944)**	-2.522 (0.919)**
State & Quarter Fixed Effects	Yes	Yes	Yes	Yes
N	522	374	522	374
Adj R²	99.90%	99.92%	99.31%	99.67%

Panel B: TREATEDQ = LOOK

	(1)	(2)	(3)	(4)
	GSP = RETAIL		**GSP = MANUFACTURE**	
	Border Assigned	**Random Assigned**	**Border Assigned**	**Random Assigned**
Intercept	22.057 (1.232)***	19.920 (2.650)***	25.577 (2.906)***	24.593 (3.055)***
LOOK	0.003 (0.004)	0.002 (0.014)	0.018 (0.024)	0.032 (0.024)
WAGES	0.072 (0.048)	0.167 (0.101)	-0.028 (0.096)	0.019 (0.115)
UNEMPLOY	-0.674 (0.410)*	-1.443 (0.822)*	-3.598 (1.324)**	-1.951 (1.966)
State & Quarter Fixed Effects	Yes	Yes	Yes	Yes
N	398	320	398	320
Adj R²	99.08%	99.07%	99.70%	99.72%

Table 7, continued
Sales Tax Nexus Impact on Gross State Product - Levels

Panel C: TREATEDQ = LOOK; Bifurcated (LOOKprior & LOOKnoprior)

	(1)	(2)	(3)	(4)
	GSP = RETAIL		GSP = MANUFACTURE	
	Border Assigned	Random Assigned	Border Assigned	Random Assigned
Intercept	21.525 (2.020)***	19.187 (2.598)***	25.951 (2.388)***	25.126 (3.052)***
LOOKprior	0.029 (0.006)***	0.024 (0.012)**	0.029 (0.028)	0.040 (0.029)
LOOKnoprior	0.012 (0.019)	-0.012 (0.017)	0.003 (0.027)	0.013 (0.028)
WAGES	0.092 (0.079)	0.194 (0.099)*	-0.042 (0.094)	-0.001 (0.115)
UNEMPLOY	-0.356 (0.703)	-1.147 (0.794)	-3.821 (1.349)***	-2.167 (1.980)
State & Quarter Fixed Effects	Yes	Yes	Yes	Yes
N	398	320	398	320
Adj R²	99.10%	99.17%	99.07%	99.20%

Presentation of Model 2A results for test of Hypothesis 2a. Variables are defined in Appendix A.

The variable of interest in Panel A is the indicator for quarters where the state enforces click-through nexus (CLICK). The variable of interest in Panel B is the indicator for quarters where the state enforces look-through nexus (LOOK). The variable of interest in Panel C is LOOK, bifurcated into proxy indicators where Amazon had a physical presence prior to enforcement of look-through nexus (prior) and did not have a physical presence prior to enforcement (noprior).

Across all panels, the dependent variable in columns 1 and 2 is the natural log of gross state product from retail (RETAIL), while the dependent variable in columns 2 and 4 is the natural log of gross state product from manufacturing (MANUFACTURE).

Across all panels, the sample in columns 1 and 3 includes states that changed the respective sales tax nexus and all bordering states (Border Assigned), while the sample in columns 2 and 4 includes states that changed the respective sales tax nexus and a randomly assigned "control" state (Random Assigned).

Standard errors clustered by state are reported in parentheses. One-tailed (two-tailed) statistically significance at 1%, 5%, and 10% for hypothesized (non-hypothesized) results are denoted by ***, **, and *, respectively.

Table 8
Sales Tax Nexus Impact on Sales Tax Collections - Changes

$$\Delta RETAIL_{s,q \text{ to } q-8} = \alpha + \beta(TREATEDQ1_{s,q} \dots TREATEDQ8_{s,q})$$
$$+ \delta(\Delta ECONOMY_{s,q-1 \text{ to } q-9}) + FE_{state} + FE_{quarter} + \varepsilon_{s,q}$$

Panel A: TREATEDQ = CLICK

	(1) Border Assigned	(2) Random Assigned
Intercept	-0.059 (0.017)***	-0.048 (0.030)
CLICKQ1	0.006 (0.010)	0.002 (0.011)
CLICKQ2	0.010 (0.012)	-0.011 (0.023)
CLICKQ3	0.008 (0.011)	0.001 (0.011)
CLICKQ4	0.020 (0.010)*	0.018 (0.012)
CLICKQ5	0.020 (0.013)	0.005 (0.015)
CLICKQ6	-0.001 (0.012)	0.007 (0.014)
CLICKQ7	0.004 (0.009)	-0.003 (0.009)
CLICKQ8	-0.006 (0.008)	-0.004 (0.010)
WAGES	0.474 (0.190)**	0.585 (0.305)*
UNEMPLOY	-1.030 (0.325)***	-0.825 (0.678)
State & Quarter Fixed Effects	Yes	Yes
N	522	374
Adj R^2	70.48%	48.70%

Panel B: TREATEDQ = LOOK

	(1) Border Assigned	(2) Random Assigned
Intercept	-0.074 (0.039)*	0.014 (0.047)
LOOKQ1	0.012 (0.014)	0.013 (0.015)
LOOKQ2	0.012 (0.015)	0.005 (0.022)
LOOKQ3	0.004 (0.013)	0.008 (0.014)
LOOKQ4	-0.024 (0.043)	-0.018 (0.047)
LOOKQ5	0.004 (0.019)	0.004 (0.002)*
LOOKQ6	0.007 (0.016)	0.019 (0.021)
LOOKQ7	0.002 (0.014)	0.003 (0.018)
LOOKQ8	0.004 (0.016)	-0.007 (0.019)
WAGES	0.807 (0.288)***	1.369 (0.410)***
UNEMPLOY	-0.366 (0.585)	0.374 (0.783)
State & Quarter Fixed Effects	Yes	Yes
N	398	320
Adj R^2	24.57%	22.51%

Sales Tax Nexus Impact on Sales Tax Collections - Changes

Panel C: TREATEDQ = LOOK; Bifurcated (LOOKprior & LOOKnoprior)

	(1) Border Assigned	(2) Random Assigned
Intercept	-0.059 (0.040)	0.006 (0.047)
LOOKQ1prior	-0.007 (0.017)	0.008 (0.019)
LOOKQ2prior	0.038 (0.021)**	0.042 (0.019)**
LOOKQ3prior	0.032 (0.010)***	0.037 (0.20)*
LOOKQ4prior	0.033 (0.016)**	0.034 (0.011)***
LOOKQ5prior	0.028 (0.028)	0.050 (0.019)***
LOOKQ6prior	0.034 (0.022)*	0.029 (0.036)
LOOKQ7prior	0.032 (0.018)**	0.033 (0.020)**
LOOKQ8prior	0.027 (0.016)**	0.034 (0.024)*
WAGES	0.801 (0.290)***	1.343 (0.420)***
UNEMPLOY	0.030 (0.553)	0.689 (0.796)
LOOKQ1…LOOKQ8noprior	Yes	Yes
State & Quarter Fixed Effects	Yes	Yes
N	398	320
Adj R^2	26.30%	22.47%

Presentation of Model 2B results for test of Hypothesis 2a. Variables are defined in Appendix A.

The variables of interest in Panel A are the eight quarterly indicators after the state enforces click-through nexus (CLICKQ1 through CLICKQ8). The variables of interest in Panel B are the eight quarterly indicators after the state enforces look-through nexus (LOOKQ1 through LOOKQ8). The variables of interest in Panel C are LOOKQ1 through LOOKQ8, bifurcated into proxy indicators where Amazon had a physical presence prior to enforcement of look-through nexus (prior) and did not have a physical presence prior to enforcement (noprior).

The dependent variable across all panels is the natural log of gross state product from retail (RETAIL).

The sample in column 1 across all panels includes states that changed the respective sales tax nexus and all bordering "control" states (Border Assigned). The sample in column 2 across all panels includes states that changed the respective sales tax nexus and a randomly assigned "control" state (Random Assigned).

Standard errors clustered by state are reported in parentheses. One-tailed (two-tailed) statistical significance at 1%, 5%, and 10% for hypothesized (non-hypothesized) results are denoted by ***, **, and *, respectively.

<div align="center">

Table 9
Sales Tax Nexus Impact on Retail Establishments - Levels

</div>

$$\text{ESTAB}_{s,q} = \alpha + \beta\text{TREATEDQ}_{s,q} + \delta\text{ECONOMY}_{s,q-1} + \text{FE}_{state} + \text{FE}_{quarter} + \varepsilon_{s,q}$$

Panel A: TREATEDQ = CLICK

	(1) Border Assigned	(2) Random Assigned
Intercept	5.934 (1.723)***	3.371 (2.020)
CLICK	-0.003 (0.017)	-0.030 (0.019)
PERC_RET	-1.262 (1.545)	0.728 (1.385)
WAGES	0.013 (0.074)	0.180 (0078)**
UNEMPLOY	-0.857 (0.612)	-3.561 (0.935)***
State & Quarter Fixed Effects	Yes	Yes
N	522	374
Adj R^2	99.69%	99.70%

Panel B: TREATEDQ = LOOK

	(1) Border Assigned	(2) Random Assigned
Intercept	3.621 (2.374)	9.829 (2.340)***
LOOK	-0.044 (0.021)**	-0.051 (0.023)**
PERC_RET	-0.414 (1.315)	-1.416 (1.311)
WAGES	0.170 (0.092)*	-0.053 (0.092)
UNEMPLOY	-2.324 (1.218)*	-3.688 (1.219)***
State & Quarter Fixed Effects	Yes	Yes
N	398	320
Adj R^2	99.82%	99.81%

Panel C: TREATEDQ = LOOK; Bifurcated (LOOKprior & LOOKnoprior)

	(1) Border Assigned	(2) Random Assigned
Intercept	3.972 (2.405)	10.510 (2.401)***
LOOKprior	-0.067 (0.022)***	-0.073 (0.024)***
LOOKnoprior	-0.032 (0.023)	-0.042 (0.024)*
PERC_RET	0.166 (1.322)	-0.981 (1.406)
WAGES	0.155 (0.094)	-0.079 (0.094)
UNEMPLOY	-2.588 (1.266)*	-3.937 (1.277)***
State & Quarter Fixed Effects	Yes	Yes
N	398	320
Adj R^2	99.81%	99.86%

Table 9, continued
Sales Tax Nexus Impact on Retail Establishments - Levels

Presentation of Model 3A results for test of Hypothesis 2b. Variables are defined in Appendix A.

The variable of interest in Panel A is the indicator for quarters where the state enforces click-through nexus (CLICK). The variable of interest in Panel B is the indicator for quarters where the state enforces look-through nexus (LOOK). The variable of interest Panel C is LOOK, bifurcated into proxy indicators where Amazon had a physical presence prior to enforcement of look-through nexus (prior) and did not have a physical presence prior to enforcement (noprior).

The dependent variable across all panels is the natural log of the number of NAICS subsector code 454 mail-order and e-tail establisthments (ESTAB).

The sample in column 1 across all panels includes states that changed the respective sales tax nexus and all bordering "control" states (Border Assigned). The sample in column 2 across all panels includes states that changed the respective sales tax nexus and a randomly assigned "control" state (Random Assigned).

Standard errors clustered by state are reported in parentheses. One-tailed (two-tailed) statistical significance at 1%, 5%, and 10% for hypothesized (non-hypothesized) results are denoted by ***, **, and *, respectively.

Table 10
Sales Tax Nexus Impact on Retail Establishments - Changes

$$\Delta ESTAB_{s,q\ to\ q-8} = \alpha + \beta(TREATEDQ1_{s,q} \ldots \beta_8 TREATEDQ2_{s,q})$$

$$+ \delta(\Delta ECONOMY_{s,q-1\ to\ q-8}) + FE_{state} + FE_{quarter} + \varepsilon_{s,q}$$

Panel A: TREATEDQ = CLICK

	(1) Border Assigned	(2) Random Assigned
Intercept	0.015 (0.129)	-0.433 (0.189)**
CLICKQ1	-0.022 (0.013)*	-0.019 (0.017)
CLICKQ2	-0.022 (0.017)	-0.017 (0.021)
CLICKQ3	-0.002 (0.013)	0.003 (0.019)
CLICKQ4	-0.004 (0.017)	0.013 (0.016)
CLICKQ5	0.009 (0.016)	0.021 (0.020)
CLICKQ6	0.004 (0.016)	0.018 (0.021)
CLICKQ7	0.015 (0.025)	0.042 (0.025)*
CLICKQ8	0.016 (0.027)	0.041 (0.028)*
%RET	-0.468 (1.671)	5.008 (2.451)*
WAGES	-0.429 (0.296)	-0.013 (0.184)
UNEMPLOY	-1.252 (0.677)*	-0.536 (0.894)
State & Quarter Fixed Effects	Yes	Yes
N	522	374
Adj R^2	25.00%	57.35%

Table 10, continued
Sales Tax Nexus Impact on Retail Establishments - Changes

Panel B: TREATEDQ = LOOK

	(1) Border Assigned	(2) Random Assigned
Intercept	0.137 (0.134)	0.036 (0.226)
LOOKQ1	-0.028 (0.013)**	-0.034 (0.017)**
LOOKQ2	-0.045 (0.021)**	-0.049 (0.022)**
LOOKQ3	-0.048 (0.025)**	-0.045 (0.025)**
LOOKQ4	-0.056 (0.027)**	-0.047 (0.029)*
LOOKQ5	-0.054 (0.029)**	-0.050 (0.031)*
LOOKQ6	-0.060 (0.031)**	-0.054 (0.033)*
LOOKQ7	-0.045 (0.037)	-0.045 (0.039)
LOOKQ8	-0.028 (0.037)	-0.021 (0.038)
%RET	0.354 (1.700)	0.154 (2.654)
WAGES	-0.096 (0.207)	-0.396 (0.234)
UNEMPLOY	0.154 (1.236)	-0.460 (1.232)
State & Quarter Fixed Effects	Yes	Yes
N	398	320
Adj R^2	62.60%	61.77%

Table 10, continued
Sales Tax Nexus Impact on Retail Establishments - Changes

Panel C: TREATEDQ = LOOK; Bifurcated (LOOKprior & LOOKnoprior)

	(1) Border Assigned	(2) Random Assigned
Intercept	0.098 (0.130)	0.020 (0.228)
LOOKQ1prior	-0.024 (0.014)**	-0.016 (0.023)
LOOKQ2prior	-0.034 (0.017)**	-0.050 (0.029)**
LOOKQ3prior	-0.038 (0.040)	-0.061 (0.030)**
LOOKQ4prior	-0.042 (0.025)**	-0.063 (0.046)*
LOOKQ5prior	-0.054 (0.052)	-0.073 (0.035)**
LOOKQ6prior	-0.060 (0.026)**	-0.082 (0.036)**
LOOKQ7prior	-0.060 (0.036)**	-0.085 (0.057)*
LOOKQ8prior	-0.037 (0.049)	-0.054 (0.041)
%RET	0.765 (1.668)	0.432 (2.663)
WAGES	-0.097 (0.198)	-0.418 (0.240)*
UNEMPLOY	0.109 (1.375)	-0.730 (1.333)
LOOKQ1…LOOKQ8noprior	Yes	Yes
State & Quarter Fixed Effects	Yes	Yes
N	398	320
Adj R^2	60.20%	61.26%

Presentation of Model 3B results for test of Hypothesis 2b. Variables are defined in Appendix A.

The variables of interest in Panel A are the eight quarterly indicators after the state enforces click-through nexus (CLICKQ1 through CLICKQ8). The variables of interest in Panel B are the eight quarterly indicators after the state enforces look-through nexus (LOOKQ1 through LOOKQ8). The variables of interest in Panel C are LOOKQ1 through LOOKQ8, bifurcated into proxy indicators where Amazon had a physical presence prior to enforcement of look-through nexus (prior) and did not have a physical presence prior to enforcement (noprior).

The dependent variable across all panels is the natural log of gross state product from retail (RETAIL).

The sample in column 1 across all panels includes states that changed the respective sales tax nexus and all bordering "control" states (Border Assigned). The sample in column 2 across all panels includes states that changed the respective sales tax nexus and a randomly assigned "control" state (Random Assigned).

Standard errors clustered by state are reported in parentheses. One-tailed (two-tailed) statistical significance at 1%, 5%, and 10% for hypothesized (non-hypothesized) results are denoted by ***, **, and *, respectively.

Table 11
Sales Tax Nexus Impact on Corporate Income Tax Collections - Levels

$$CITC_{s,y} = \alpha + \beta TREATEDY_{s,y} + \gamma TAX_{s,y} + \delta ECONOMY_{s,y-1} + FE_{state} + FE_{year} + \varepsilon_{s,y}$$

Panel A: TREATEDY = CLICK

	(1)	(2)	(3)	(4)
	Border Assigned		Random Assigned	
Intercept	23.290 (17.840)	22.623 (17.954)	13.350 (55.419)	6.391 (55.623)
CLICK	0.002 (0.062)	0.047 (0.079)	0.010 (0.096)	0.071 (0.132)
SFACTOR	0.209 (0.096)**	0.207 (0.098)	-0.256 (0.103)**	-0.230 (0.098)**
CLICK*SFACTOR		-0.065 (0.089)		-0.125 (0.111)
CRATE	13.883 (7.112)*	14.363 (7.338)*	-0.420 (5.683)	0.120 (5.577)
BRACKET	-1.456 (0.595)**	-1.495 (0.614)**	0.005 (0.014)	0.007 (0.014)
AMNESTY_C	0.108 (0.073)	0.105 (0.075)	0.060 (0.122)	0.054 (0.121)
WAGES	-0.169 (0.078)	-0.143 (0.712)	0.275 (2.323)	0.568 (2.332)
UNEMPLOY	0.864 (3.964)	-1.079 (4.082)	-14.458 (11.789)	-15.347 (12.143)
State & Quarter Fixed Effects	Yes	Yes	Yes	Yes
F-stat				
CLICK + CLICK*SFACTOR		0.07		0.42
N	145	145	117	117
Adj R^2	95.66%	95.63%	92.68%	92.63%

Table 11, continued
Sales Tax Nexus Impact on Corporate Income Tax Collections – Levels

Panel B: TREATEDY = LOOK

	(1)		(2)		(3)		(4)	
	Border Assigned				**Random Assigned**			
Intercept	-25.800	(36.014)	-20.231	(35.847)	-68.040	(44.450)	-52.945	(39.474)
LOOK	0.091	(0.059)*	0.088	(0.061)*	0.106	(0.055)**	0.072	(0.047)*
SFACTOR	0.165	(0.097)*	0.115	(0.098)	-0.016	(0.074)	-0.093	(0.120)
LOOK*SFACTOR			0.021	(0.013)**			0.021	(0.043)**
CRATE	8.338	(7.790)	3.420	(8.224)	23.043	(9.849)**	16.682	(7.189)**
BRACKET	-0.006	(0.013)	-0.010	(0.014)	0.021	(0.013)*	0.016	(0.012)
AMNESTY_C	0.162	(0.070)**	0.178	(0.072)**	-0.009	(0.048)	0.012	(0.048)
WAGES	1.865	(1.554)	1.644	(1.547)	3.221	(1.611)**	2.693	(1.431)*
UNEMPLOY	0.367	(5.675)	0.332	(5.579)	6.118	(4.708)	6.322	(4.415)
State & Quarter Fixed Effects	Yes		Yes		Yes		Yes	
F-stat								
LOOK + LOOK*SFACTOR			4.21**				6.33**	
N	114		114		90		90	
Adj R^2	97.41%		97.52%		94.72%		95.72%	

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Table 11, continued
Sales Tax Nexus Impact on Corporate Income Tax Collections – Levels
Panel C: TREATEDY = LOOK; Bifurcated (LOOKprior & LOOKnoprior)

	Border Assigned		Random Assigned	
	(1)	(2)	(3)	(4)
Intercept	-23.849 (36.156)	-12.561 (36.331)	-72.389 (41.085)*	-53.680 (43.510)
LOOKprior	0.082 (0.051)*	0.066 (0.063)	0.054 (0.038)*	0.076 (0.049)*
LOOKnoprior	-0.123 (0.114)	-0.079 (0.265)	0.032 (0.072)	-0.032 (0.100)
SFACTOR	0.163 (0.095)*	0.132 (0.092)	-0.010 (0.071)	-0.066 (0.078)
LOOKprior*SFACTOR		0.033 (0.011)***		0.022 (0.010)**
LOOKnoprior*SFACTOR		0.021 (0.026)		0.034 (0.014)**
CRATE	7.617 (7.093)	5.740 (6.738)	18.920 (9.966)*	17.354 (10.430)*
BRACKET	-0.006 (0.013)	-0.010 (0.013)	0.020 (0.012)	0.017 (0.013)
AMNESTY_C	0.168 (0.068)**	0.199 (0.070)***	-0.007 (0.048)	0.013 (0.049)
WAGES	1.780 (1.560)	1.303 (1.568)	3.390 (1.486)**	2.718 (1.573)*
UNEMPLOY	1.431 (5.631)	0.735 (5.542)	7.438 (4.632)	6.827 (4.530)
State & Quarter Fixed Effects	Yes	Yes	Yes	Yes
F-stat				
LOOKprior + LOOKprior*SFACTOR		2.96*		3.28**
N	114	114	90	90
Adj R²	97.52%	97.62%	94.89%	94.77%

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Table 12
Sales Tax Nexus Impact on Corporate Income Tax Collections - Changes

$$\Delta CITC_{s,y \text{ to } y\text{-}2} = \alpha + \beta(TREATEDY1_{s,y} \ldots + TREATEDY3_{s,y}) + \gamma(\Delta TAX_{s,y \text{ to } y\text{-}2})$$
$$+ \delta(\Delta ECONOMY_{s,y\text{-}1 \text{ to } y\text{-}3}) + FE_{state} + FE_{year} + \varepsilon_{s,y}$$

Panel A: TREATEDY = CLICK

	(1) Border Assigned	(2) Random Assigned
Intercept	-0.464 (0.079)***	-0.624 (1.017)
CLICKY1	0.056 (0.123)	-0.004 (0.138)
CLICKY2	0.072 (0.089)	-0.017 (0.110)
CLICKY3	-0.069 (0.106)	0.126 (0.198)
SFACTOR	-0.153 (0.283)	-0.135 (0.240)
CRATE	-3.254 (0.755)***	-18.299 (9.239)*
BRACKET	0.066 (0.051)	0.045 (0.067)
AMNESTY_C	0.165 (0.153)	-0.048 (0.138)
WAGES	3.922 (1.014)***	0.952 (7.835)
UNEMPLOY	-0.671 (3.972)	-1.252 (7.212)
State & Quarter Fixed Effects	Yes	Yes
N	145	117
Adj R^2	41.58%	5.98%

Panel B: TREATEDY = LOOK

	(1) Border Assigned	(2) Random Assigned
Intercept	-0.971 (0.257)***	-0.143 (0.411)
LOOKY1	-0.092 (0.150)	-0.183 (0.203)
LOOKY2	0.038 (0.168)	-0.001 (0.163)
LOOKY3	0.039 (0.017)**	0.119 (0.075)*
SFACTOR	0.389 (0.251)	0.289 (0.272)
CRATE	-1.566 (0.995)	0.071 (9.098)
BRACKET	-0.001 (0.006)	0.012 (0.014)
AMNESTY_C	0.204 (0.227)	-0.004 (0.083)
WAGES	-0.562 (3.599)	-0.153 (4.217)
UNEMPLOY	-5.741 (5.770)	2.462 (5.340)
State & Quarter Fixed Effects	Yes	Yes
N	114	90
Adj R^2	32.49%	6.93%

Table 12, continued
Sales Tax Nexus Impact on Corporate Income Tax Collections - Changes
Panel C: TREATEDY = LOOK; Bifurcated (LOOKprior & LOOKnoprior)

	(1) Border Assigned	(2) Random Assigned
Intercept	-0.967 (0.297)***	0.036 (0.491)
LOOKY1prior	-0.111 (0.118)	-0.135 (0.124)
LOOKY2prior	0.040 (0.229)	-0.056 (0.189)
LOOKY3prior	0.031 (0.021)*	0.125 (0.056)**
SFACTOR	0.379 (0.279)	0.258 (0.285)
CRATE	-1.447 (1.078)	-1.756 (9.249)
BRACKET	-0.003 (0.007)	-0.007 (0.013)
AMNESTY_C	0.220 (0.238)	-0.001 (0.076)
WAGES	-0.690 (3.682)	-0.285 (4.135)
UNEMPLOY	-6.615 (5.458)	2.132 (5.170)
LOOKY1…LOOKY3noprior	Yes	Yes
State & Quarter Fixed Effects	Yes	Yes
N	114	90
Adj R^2	31.34%	5.27%

Presentation of Model 4B results for test of Hypothesis 2. Variables are defined in Appendix A.

The variables of interest in Panel A are the three yearly indicators after the state enforces enforces click-through nexus (CLICKY1 through CLICKY8). The variables of interest in Panel B are the three yearly indicators after the state enforces look-through nexus (LOOKY1 through LOOKY3). The variables of interest in Panel C are LOOKY1 through LOOKY3, bifurcated into proxy indicators where Amazon had a physical presence prior to enforcement of look-through nexus (prior) and did not have a physical presence prior to enforcement (noprior).

The dependent variable across all panels is the natural log of corporate income tax collections (CITC).

The sample in column 1 across all panels includes states that changed the respective sales tax nexus and all bordering "control" states (Border Assigned). The sample in column 2 across all panels includes states that changed the respective sales tax nexus and a randomly assigned "control" state (Random Assigned).

Standard errors clustered by state are reported in parentheses. One-tailed (two-tailed) statistical significance at 1%, 5%, and 10% for hypothesized (non-hypothesized) results are denoted by ***, **, and *, respectively.