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Statistical Incidence and Sales Tax Compliance: Evidence from *Wayfair*

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ABSTRACT:

Prior to 2018, the statutory burden of remitting sales taxes for out-of-state transactions typically fell on consumers. In its *Wayfair* judgement, the Supreme Court granted states the right to define their own remitting requirements, shifting the enforcement regime. States began enacting "nexus" legislation in August 2018 and continue to do so. Increasingly important in the internet age, we estimate the effect of this change on compliance behavior and tax revenue. Initial estimates using a difference-in-differences identification strategy with a novel hand-collected dataset on firm compliance, we show shifting the statutory burden to firms increases tax revenue by 1.6%.

Keywords: sales tax; compliance; state and local public finance; statutory incidence.

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Statutory Incidence and Sales Tax Compliance: Evidence from *Wayfair*

Introduction

The recent decision by the US Supreme Court in *Wayfair* expands the ability of states to require larger remote vendors to collect and remit the sales tax on behalf of destination states.[1] The case did not alter the sales taxability of transactions, since as discussed below buyers were already expected to remit tax in situations where the tax was not collected and remitted by sellers. The decision's effect was to alter compliance by allowing states to expect larger remote vendors to comply rather than buyers. This study exploits the natural experiment arising from the Supreme Court ruling to examine the effects of a discrete change in the compliance regime. Specifically, we exploit the variation in state statutes resulting from *Wayfair* that require certain remote firms to comply with the sales tax. The additional revenues collected by states evidence the benefits of compliance by vendors in the supply chain rather than by buyers and provide a lower bound on the previous extent of tax evasion. So, our analysis can be seen as a test of whether and the extent to which compliance is more effective at the seller rather than buyer level of transactions. Further, we examine firm-level impacts on the propensity to collect sales tax under an economic presence versus a physical presence basis to determine how responsive firms are to changes in the compliance regime.

State responses to *Wayfair* offer a unique opportunity to evaluate the effectiveness of vendor versus individual compliance. They also offer the chance to examine compliance responses to a new enforcement mechanism. Analysts frequently assert on faith that vendor compliance is more effective, but this is the first study to econometrically examine the degree to which it affects overall compliance. Vendor compliance could offer a number of advantages.

[1]*Wayfair v. South Dakota*, 585 U.S._____ (2018).

First, vendors are expected to remit more revenues than buyers, though additional revenue simply mean a greater transfer from the private to public sector. Slemrod (2017) observes that the marginal social benefits of reduced evasion are not well measured by the revenues gained. Still, greater revenues could in principle permit lower rates (or fewer rate increases), which could reduce efficiency losses.[2] Also, vendor compliance may lead to better enforcement of destination taxation, which can reduce the welfare losses of tax competition (Kanbur and Keen, 1993). Second, compliance by both remote and in-state vendors eliminates the tax wedge that has created incentives to purchase greater amounts remotely (see Fox, Luna and Schaur, 2014). Also, the propensity to purchase from further away causes remote firms to crowd out local firms and it also raises transportation costs (Kopczuk et al., 2016). Third, compliance by sellers rather than buyers is likely to reduce compliance and administrative costs since fewer returns must be filed and audits are more manageable.[3]

Compliance with State Sales Taxes

Sales tax structures differ by state but patterns can be found. Forty-five states and the District of Columbia impose a sales tax, usually on a destination basis.[4] Local governments in approximately 38 states (depending on the definition of a local tax) also impose a sales tax. Alaska is the only state where local but not state sales taxes exist. The tax generally applies to the purchase of tangible goods, unless otherwise exempted, and to specifically enumerated

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[2] States have frequently raised their sales tax rate during the past four decades. Thirty-three states raised their sales tax rate between 2000 and 2009 and 15 states increased their rate between 2010 and 2018. Some of these increases were temporary.

[3] Relatively little is known about sales tax compliance costs. PriceWaterhouseCoopers (2007) estimates that sales tax compliance costs were 13.5 percent of tax revenues for small retailers, 5.2 percent for medium retailers, and 2.2 percent for large retailers. Presumably, compliance costs for buyers would often parallel those for small retailers. Yetter and Crosby (2017) discuss the specific compliance costs borne by firms that collect and remit the sales tax, and how automation has made compliance much more efficient and has lowered compliance costs in recent years.

[4] See Fox (2016).

services. The breadth of taxable transactions differs widely across states. Both individual and business purchases can be taxed, though the exemptions often differ by type of buyer. States generally provide preferential treatment for certain consumer purchases, such as food, clothing and prescription drugs. Firms typically receive exemptions on purchases for resale, purchases where the intermediate purchase is directly embodied in the final product, and selected other categories of purchase. Tax is normally applied at the point of purchase when possession of the item is taken and otherwise at the point of delivery.

Compliance operates through two mechanisms. First, firms with nexus (minimum presence to Constitutionally support taxation) must collect and remit sales tax for the destination state for taxable business and individual sales. Two U.S. Supreme Court decisions determined nexus and drove enforcement of the sales tax on remote sales for 50 years by affirming that states could only require firms with substantial *physical* presence to collect the sales tax. Physical presence nexus was ruled on both due process and interstate commerce grounds in *National Bellas Hess v. Illinois Department of Revenue* and only on interstate commerce grounds in *Quill Corp. v. North Dakota*.[5] However, physical presence was often defined much more inclusively than operation or ownership of bricks and mortar stores. For example, some states defined physical presence based on factors such as a listing in a phone book or employees coming into the state. [6] More recently, a number of states enacted click through nexus, where nexus was established based on physical presence of an in state affiliate that directed sales to an out-of-state firm. These so called "Amazon Laws" were another step in extensively defining physical presence. Many firms responded to the nexus standards by not creating physical

[5] *National Bellas Hess v. Illinois Department of Revenue* 386 U.S. 753 (1967) and *Quill Corp v. North Dakota* 504 US 298 (1992).

[6] See Agrawal and Fox (2017) for some state efforts to define physical presence more extensively and for state efforts to enforce a destination tax on remote sales.

presence in their market states or stopping their affiliate programs to avoid a collection responsibility.

Second, all sales taxing states have a companion use tax,[7] which requires the buyer to remit the tax when the seller[8] does not have a compliance responsibility. Buyers are expected to calculate the tax liability based on purchases where the sales tax was not collected and remit the payments to state tax authorities. Both business purchasers of intermediate goods and services and individual purchasers are responsible for these payments if the sales tax was not collected. The tax liability can be reported on individual income tax returns, on sales tax returns if the business purchasers are also making taxable sales in the state, or on separate use tax returns.

Individuals may directly report use tax liabilities on forms made available by state revenue agencies on government websites. Also, 27 states have a use tax reporting line on their personal income tax form; most, though not all states provide use tax reporting instructions in the income tax instructions (Manzi, 2015). To simplify the reporting process, some states provide a lookup table that estimates use-tax liabilities based on taxpayer reported income. Vermont's income tax line item, for example, requires active engagement of the taxpayer to either report use tax or "…check here to certify that no use tax is due." Manzi (2015) reports that 14 states have such line items and these states have a higher share of returns with reported use tax liabilities and larger use tax revenues per return ($83 versus $56). Individual taxpayers may still lack clear understanding of their compliance responsibility, and this is particularly likely to be true in states that do not provide a line on the individual income tax return.

[7] The tax is frequently referred to as a use tax if an item is purchased outside the market state for use in the market state and in some other cases. We ignore the specific legal distinctions between sales and use taxes for this study.
[8] Sellers are not exclusively retail firms. A sales taxpayer is any seller making taxable sales, regardless of where they lie in the supply chain.

Familiarity with sales and use tax returns and their instructions, along with clarifying state information reports, examinations and audits (especially for larger firms that are commonly subject to detailed examination) should help promote voluntary firm compliance for business buyers but it also appears subject to significant noncompliance. Thus, the state responses to Wayfair are an attempt to shift from buyer compliance to vendor compliance with the expectation of collecting more revenue.

Buyer compliance is compromised by the self-assessment nature of the reporting process and the lack of taxpayer awareness about the need to comply and the mechanism for complying. Slemrod (2017) states a "fixed cost of filing may also induce some people to not file at all," though he was probably referring to income taxes. The need to maintain detailed records on potential tax liabilities and file the returns requires significant effort on the part of taxpayers. Further, states lack an effective enforcement mechanism, which would include third-party matching and audits, and taxpayers likely presume that states are unaware of a potential liability.[9] Thus, the econometric estimates below test for the improvement in enforcement with vendor compliance, but fail to evidence the full extent of non-compliance by buyers.

In *Wayfair*, the Supreme Court radically altered compliance and enforcement by eliminating the physical presence nexus standard and allowed a significant step towards an economic presence standard. However, the Supreme Court fell well short of permitting states to require compliance by all out-of-state firms selling into a state, as the Court focused on the importance of keeping compliance costs low. Specifically, the Court noted that South Dakota would be permitted to require remote firms to collect the sales tax. The Court supported its decision in part by observing that South Dakota is a member of the Streamlined Governing

[9] There are some exceptions. For example, the registration of an automobile or boat is typically contingent on demonstrating that tax has been paid.

Board, which requires member states to make many compliance simplification steps. South Dakota imposed a minimum threshold of sales into the state (i.e., $100,000 or 200 transactions) before it required compliance from remote vendors. Thus, *Wayfair* has been interpreted as moving the required compliance standard from one depending only on physical presence to one that also requires compliance by larger firm that are not physically present in the state.

Most states lack the capacity to audit out-of-state vendors to determine which firms have nexus under new state statutes, such as determining whether they meet the sales threshold. States have access to general data, such as the Internet Retailer Top 1000, and have the potential to share taxpayer information with other states so they have some capacity to enforce the tax. But, Amazon has more than 50,000 global merchants that collect more than $500,000 of sales on that platform alone.[10] Slemrod (2017) argues that the standard deterrence model for taxation may not apply well to large corporations, which *should* be risk neutral rather than risk averse. This suggests that the larger firms to which *Wayfair* statutes apply may be more willing to take the risk that states will not identify them as having nexus than smaller firms would be if they were required to remit. Interestingly, Tennessee has observed that about 700 firms chose to voluntarily comply after the *Wayfair* decision, and before a Tennessee requirement was in place. These 700 companies remitted about $44 million on an annualized basis, or about $62,900 in sales tax collections per firm. This translates into the average firm selling about $900,000 per year in Tennessee compared with a $500,000 threshold that became effective July 1, 2019, suggesting that these firms are of modest size but exceed the new threshold.

We are unaware of any econometric studies of vendor versus buyer compliance but limited evidence suggests poor compliance with the use tax on the part of both businesses and

[10] See "Amazon Marketplace Sellers Rake in $160 billion in 2018" Internet Retailer (https:www.digitalcommerce360.com/marketplace-sellers-rake-in-160-billion-in-2018/)

individuals. A tax gap study conducted in 2002 in Minnesota (American Economics Group, 2002) estimated a $196.8 million use tax gap that accounted for underreporting and non-filing on the part of business; the estimated use tax gap exceeded the corresponding gap estimate for the sales tax suggesting significant increases in revenues from moving to greater vendor compliance. The consumer use tax gap in Minnesota was estimated to be $74.8 million in 2000 (American Economics Group, 2002). Washington State's most recent compliance study (2016) found that the business use tax had the largest noncompliance of all business taxes examined at 21.5 percent, which represented only slight improvement from the estimated 23.0 percent noncompliance for 2010. Both studies found variations across industry sectors; Washington also found variations by firm size and age. Murray (1995) empirically examined compliance with Tennessee's sales tax using one large subsector of business taxpayers and found that large variations in use tax reporting were associated with a larger degree of post-audit underreporting.

Manzi (2015) demonstrates that individuals comply to a very limited extent through personal income tax returns. Only $133.3 million was collected in 2012 across 27 states. To put this figure in perspective, general sales and gross receipts collections for all states totaled $249.2 billion in 2012.[11] Manzi's data show that only 2.1 percent of returns reported a use tax liability, with an average yield of only $77 per return.

The magnitude of remote sales suggests that current use tax gap estimates are much greater than any estimates to date. The U.S. Census Bureau estimates that e-commerce sales exceeded $5.7 trillion in 2015 plus more than $138.9 billion in consumer mail order purchases.[12] Amazon alone had worldwide web sales of $320 billion (including sales on Amazon's platform)

[11] U.S. Census Bureau, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk
[12] Based on authors' calculations using data taken from http://www.census.gov/data/tables/2015/econ/e-stats/2015-e-stats.html

and Apple, Dell, Walmart and Staples also had web sales exceeding $10 billion.[13] The top 500 retail companies each have web sales of greater than $28 million, but this still leaves many millions of firms that often collect sales tax for a limited number of states. More than 85 percent of e-commerce is intermediate transactions, but many of these purchases are taxable.

Methodology and Data

An unbalanced sample of state level monthly sales and use tax collections data were collected for months from January 2010 through April 2019. The Federation of Tax Administrators granted access to its detailed monthly data for 38 of the states, which serves as the main data source.[14] As noted above, 45 states impose a state sales tax. Additional data were collected from publicly available online state level reports, and some directly from state tax authorities, ensuring we have monthly data on all 45 states which impose the tax. Sales tax revenues are generally cash basis receipts that are collected in the month after the sale takes place.[15] *Wayfair* was decided on June 21, 2018, so August 2018 is the first time that a full month's sales tax activity could be affected by expectations after the decision was released. We also exploit primary data on firms' propensity to collect the sales tax for a sample of larger firms. The data were hand-collected by determining for which states individual firms collect tax by annually investigating whether tax would be imposed on hypothetical purchases. We analyze these data to determine how responsive individual firms have been to the new compliance regime.

Wayfair applies specifically to South Dakota, and other states must have statutes or regulations in place that require remote firms to collect the tax. We collected detailed data on the

[13] Internet Retailer, 2016 Top 500 and Second 500 Databases.

[14] We are very grateful to Ron Alt, Research Director of FTA, for graciously providing these data.

[15] Cash basis data generally contain any receipts during the month and can include late payments, penalties and other collections that link to sales in earlier months.

38 states with a minimum threshold with the effective date. The state provisions started as early as August 2017 (Rhode Island) and the latest current requirement will begin in October 2019 (Texas). All states include a minimum threshold that generally lies in the range of $100,000 to $500,000 of sales into the state. Many states have an alternative threshold based on the number of transactions into the state. In some cases both the revenue and transactions thresholds must be met, and in many other states, either threshold is sufficient.[16]

TABLE WITH THRESHOLDS AND ENACTMENT ABOUT HERE

Firms with activity below the threshold are not required to collect the sales tax. However, some states have also enacted legislation applying economic nexus standards to the aggregate activity of marketplace facilitators, essentially online platforms, in addition to thresholds for individual firms. Marketplace facilitator statutes generally have similar thresholds to those for individual firms. The sales of many smaller firms will be subject to a collection responsibility by virtue of the marketplace facilitator legislation. Many questions often remain unanswered in at least some states, such as what time period does the threshold comprise (the previous four quarters, the previous calendar year, and so forth), are taxable and exempt sales included in the threshold, do sales count both towards a marketplace facilitator and an individual firm threshold, does meeting the threshold once result in nexus in all future years or must nexus be re-established every year, and so forth.

Wayfair combined with state thresholds potentially create behavioral responses from buyers.[17] Consumers who were formerly shopping remotely from firms without nexus have several options to continue avoiding/evading the tax: do not purchase, purchase non-taxable

[16] Several states have subsequently retracted their transactions thresholds.
[17] *Wayfair* is generally discussed as applying to online transactions. However, it appears that the case supports nexus for any remote firms including mail order firms and companies along state borders.

items, or shift purchases to small vendors where the collection responsibility may not exist. A vendor collection responsibility exists if the buyer continues purchasing from the former supplier that now has nexus, shifts to local vendors or purchases another taxable transaction. Further, vendor compliance should reduce the need for buyer compliance and only represents new revenue to the extent that the buyer was not remitting the tax. Our analysis measures increased vendor compliance net of these behavioral changes, which combined is a lower bound of previous tax evasion and benefits of vendor compliance. We fail to measure the full extent of previous evasion because some vendors, and particularly remote vendors, may still be evading and buyers may have offset vendor evasion by remitting tax. We fail to measure the full extent of vendor compliance because small vendors are still not required to comply. Of course, marketplace facilitator requirements include compliance associated with some small vendors.

Research-to-date suggests some of these behavior responses could be very large. Several recent studies find that buyers are very sensitive to the after-tax price differences arising when sellers do not collect sales taxes on purchases.[18] Essentially this meant that many buyers shifted their purchases towards out-of-state e-commerce vendors who did not collect the tax and the same behavioral response would require shifting towards smaller or evading remote vendors. Einav et al. (2014) estimate that every one percent increase in the sales tax rate raises state residents' out-of-state e-commerce purchases by almost two percent. They determine that online purchases from in-state retailers fall by three to four percent with a one percent sales tax rate increase. Evidence from the markets for certain commodity products helps to isolate this effect. Ellison and Ellison (2009) find, for example, that a one percent increase in the sales tax rate increases buyers' propensity to purchase memory modules from a remote seller by about six

[18] See Besley and Rosen (1999), for example, for research evidencing that the sales tax is at least fully forward shifted to buyers.

percent. They note that a 5.7 percent average state sales tax rate translates into about a 30 percent increase in purchases from remote sellers. Eliminating the tax wedge could result in significant sales increases for in-state online and bricks and mortar retailers. Conversely, Baugh, Ben-David, and Park (2018) found that purchases from Amazon fell significantly when Amazon began to collect sales taxes for Ohio, evidencing the type of movement away from vendors that could take place as only larger vendors collect the tax. Of course, finding a vendor not remitting the tax may be more difficult in the future.

Collections may improve both for firms that formerly had nexus as well as those without nexus if taxes were previously regarded as less legitimate because the enforcement mechanisms were regarded as poor prior to *Wayfair* and are now seen as improved so that taxpayers are more willing to comply (Tyler, 2006).

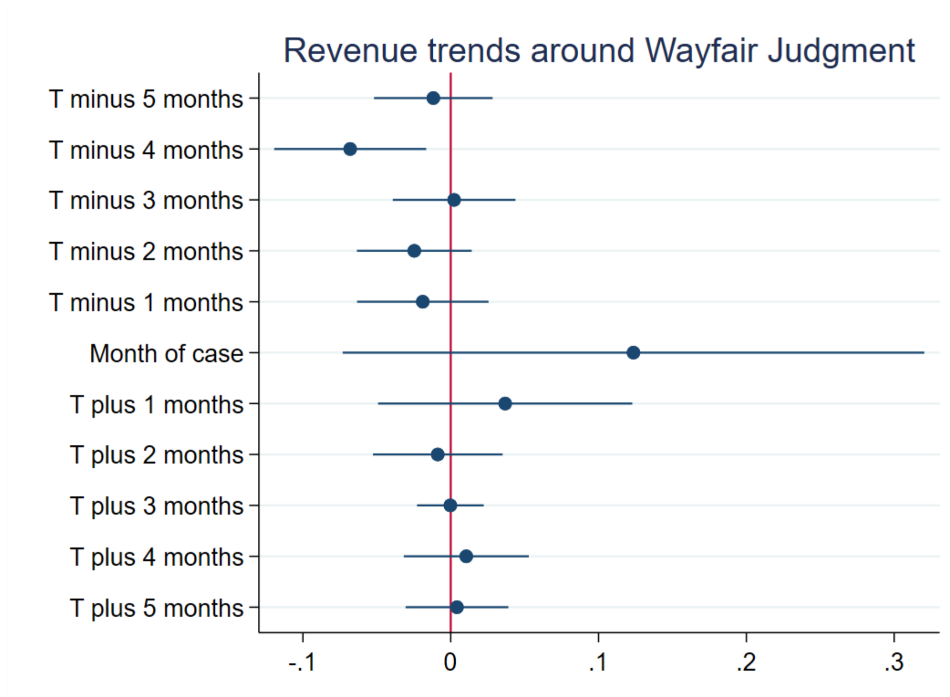
Table 1 displays the summary statistics of the main data used in the paper. The principal research question is how state sales tax revenue responded to voluntary compliance, the Wayfair judgement, and subsequent state-level legislative responses. For scaling, and interpretation of regressive coefficients as percent increases, we log-transform revenues. Four state-month observations reported negative revenue and were not included in the analysis.[19]

[19] These cases include Maine in 8/2012, New Jersey in 4/2016, and Wisconsin in 8/2015 and again in 7/2018. Negative revenues must either be a mistake in the data or the result of large refund(s) contained in a single month.

Table 1: Summary statistics

	Mean	Std.Dev	N	Min	Max
Monthly revenue ($m)	455.24	541.96	4857	-12	3403
Log of revenue	19.51	0.94	4724	13	22
State ID	22.95	13.10	4859	1	45
Year	2014.11	2.64	4859	2010	2019
Month	6.41	3.48	4859	1	12
Sales tax rate	5.61	1.07	4859	3	8
Population (millions)	6.82	7.25	4859	1	40
Member of SSTP	0.50	0.50	4859	0	1
Post-Wayfair dummy	0.06	0.24	4859	0	1
Compliant firms	150.88	72.14	4243	44	358

Membership of SSTP records whether a state participates in the Streamlined Sales Tax Project, which is a voluntary association of states that collaborate on sales tax administration to reduce compliance burdens and collect a limited amount of voluntary remittance. Membership of SSTP could in theory make it easier for firms to comply with sales tax law in different states. We include membership to measure the extent to which this works in practice.



As an initial test of the effect of the Wayfair judgment, we perform an event study of revenue in the months around the case. This constitutes a regression of revenue as a function of a series of dummy variables, measuring revenue over and above that accounted for by state, year, and month dummies. The point estimates (and 95% confidence intervals) of ten months around the case are plotted in the figure above. We see the effects are centered around zero and are, in general, not statistically significant. The point estimate on the actual month of the case is quite high, though as revenues payments would not increase at the earliest until the month *after* the judgment, we suspect this is spurious. We conclude that there was no immediate revenue impact of the judgment. This is unsurprising as the judgment gave states the legal right to enforce nexus, it did not immediately change states rules regarding implementation.

What then did affect states sales tax revenue? Table 2 provides some insight. The first column is a regression of log revenue on tax rate, population, and membership of SSTP, controlling for year and month fixed effects. Standard errors are clustered at the state level. We see that a one percentage point increase in the sales tax rate increases revenue by 9.6 per cent, though this estimate is measured imprecisely. An increase in state population of one-million people increases sales tax revenue by about 10 per cent, and this is quite precisely estimated. This is entirely intuitive, as an increase in people will in general increase economic activity. Membership of SSTP is associated with lower revenues, again imprecisely measured, though we cannot interpret this coefficient causally. It seems likely that states non-randomly select into SSTP membership, and it is impossible to disentangle this selection effect from the causal effect.

Table 2: Determinants of state sales tax revenue

	(1)	(2)	(3)	(4)
Sales tax rate	0.096	0.080	0.11**	0.081
	(0.062)	(0.065)	(0.051)	(0.064)
Population	0.095***	0.10***		0.099***
	(0.020)	(0.020)		(0.020)
Member of SSTP	-0.21			
	(0.14)			
After implementation		-0.0079	0.013	
		(0.14)	(0.017)	
After implementation				-0.47**
				(0.19)
After implementation x Population				0.082***
				(0.027)
Constant	18.4***	18.3***	18.8***	18.3***
	(0.39)	(0.40)	(0.28)	(0.39)
Year and Month FE	Yes	Yes	Yes	Yes
State FE			Yes	
N	4724	4724	4724	4724

Column 2 of the table shows a similar specification but shifting focus away from SSTP and towards the effects of implementing nexus legislation in the post-Wayfair environment. The Wayfair judgment gave state legislatures flexibility to enforce compliance with out-of-state firms, but there was a lag in statutory implementation of these rights in most states. We see that holding the tax rate and population constant, implementation of post-Wayfair nexus legislation is associated with a very small decrease in revenues though, again, this is measured with large standard errors. Column 3 presents the same specification as Column 2 but includes state fixed

effects. Accounting for any time-invariant features of the state changes the sign and magnitude of this effect, with the point estimate indicating a 1.3 per cent increase.

Column 4 of Table 2 distinguishes between implementation in small and large states. This is achieved through an interaction term of implementation with state population. We see the base category indicates that implementation is associated with 47 per cent lower revenues. However, the coefficient on the interaction term is positive: larger states have a positive implementation effect. Adding six million people to a state results in a 2.2 per cent (-0.47+6*0.082=0.022) increase in revenues post-implementation. This is consistent with firms more likely to satisfy nexus criteria in larger states.

An important feature of the data is remitting behavior before and after the Wayfair decision. Several large firms, including Amazon, appeared to be compliant with state tax remittance requirements even under the pre-judgement ambiguity. Table 3 provides some rigorous analysis on this. We manually generated this dataset of firm compliance by "shopping" on firms' websites, annually, using addresses from each of the states. Using the physical presence nexus standard, compliance varied considerably across firms, across states, and across time.[20] For example, Overstock.com posted revenues of $1.7 billion in 2017, and our nexus analysis suggests they were remitting in just seven states that year. IKEA was compliant in 26 states. Amazon remitted in all 45 states with positive sales taxes. The dependent variable is the number of firms remitting sales tax revenue to the states, what we term physical presence compliance.

[20] The data measure states where firms were collecting sales tax and are not a direct test of whether physical presence existed in the state. In a few cases, such as Amazon near the end of the data series, firms voluntarily collect the tax. In other cases, many firms likely have various forms of physical presence in states for which they were not collecting the tax.

Table 3: Determinants of firm compliance

	(1)	(2)
Sales tax rate	0.77	-7.32
	(2.42)	(4.92)
Population	2.64***	
	(0.44)	
Member of SSTP	-2.50	
	(4.53)	
Constant	48.5***	110.1***
	(13.3)	(27.0)
Year FE	Yes	Yes
State FE		Yes
N	4243	4243

Column 1 shows the determinants of how many firms were compliant in any given state. Excluding state fixed effects, it appears that higher taxes are associated with higher compliance. This is counter-intuitive, and suggests non-random selection into states having higher rates. States with higher populations have greater compliance: an additional one-million people is associated with 2.6 more compliant firms. This may reflect the greater capacity to audit that exists in many states but also the greater propensity of larger retailers to be in big states. Membership of SSTP was negatively associated with compliance though, again, this cannot be disentangled from a selection effect.

Column 2 repeats the analysis but includes state fixed effects. State fixed effects capture membership of SSTP, the vast majority of population differences, and indeed any other time-invariant features of states. Controlling for these factors we find lower compliance in higher tax rates states. Increasing the sales tax rate by one percentage point is associated with about seven fewer firms accepting nexus and being compliant with remittance requirements. This is

consistent with firms attempting to keep their after tax prices lower to avoid the buying responses noted in previous research above.

Conclusions and Further Work

- A complete diff-in-diff analysis where timing of treatment varies

References

Agrawal, David, and William F. Fox. 2017. “Sales Taxes in an E-Commerce Generation,” *International Tax and Public Finance*, 24(5):903-926.

Baugh, Brian, Itzhak Ben-David and Hoonsuk Park. 2018. “The Amazon Tax: Empirical Evidence from Amazon and Main Street Retailers,” *Journal of Finance*.

Besley, Timothy J. and Harvey S. Rosen, 1999. “Sales Taxes and Prices: An Empirical Analysis,” *National Tax Journal*, 52(2): 157-178.

Einav, Liran, Dan Knoepfle, Jonathan D. Levin, and Neel Sundaresan. 2014. “Sales Taxes and Internet Commerce,” *American Economic Review* 104(1): 1-26.

Ellison, Glenn, and Sara Fisher Ellison. 2009. “Tax Sensitivity and Home State Preferences in Internet Purchasing,” *American Economic Journal: Economic Policy*, 1, 53-71.

Fox, William F. 2016. “Economic Importance and Conceptual Framework of the Sales Tax,” in *Sales Taxation*, edited by William F. Fox, Institute for Professionals in Taxation.

Fox, William, LeAnn Luna and Georg Schaur. 2014. “Destination Taxation and Evasion: Evidence from U.S. Inter-State Commodity Flows” *Journal of Accounting and Economics*, February.

Kanbur, Ravi and Michael Keen. 1993. “Jeux Sons Frontieres: Tax Competition and Tax Coordination When Countries Differ in Size,” *The American Economic Review*, 83, 877-892.

Kopczuk, Wojciech, Justin Marion, Erich Muehlegger, and Joel Slemrod. 2016. "Does Tax-Collection Invariance Hold? Evasion and Pass-Through of State Diesel Taxes," *American Economic Journal: Economic Policy*, 8, 251-286.

Manzi, Nina. 2015. "Use Tax Collection on Income Tax Returns in Other States," Policy Brief, Minnesota Department of Representative, Research Department, April.

PriceWaterhouseCoopers. 2007. "Retail Sales Tax Compliance Costs: A National Study," Joint Cost of Collection Study, June 1.

Slemrod, Joel. 2017. "Tax Compliance and Enforcement: New Research and its Policy Implications," in The Economics of Tax Policy, ed. By A. Auerbach and K. Smetters, 81-102.

State of Washington, "2016 Compliance Study," June 1, 2016. Available at https://dor.wa.gov/sites/default/files/legacy/Docs/Reports/Compliance_Study/compliance_study_2016.pdf

Tyler, Tom R. 2006. *Why People Obey the Law*. Princeton: Princeton University Press.

Yetter, Diane L. and Joe Crosby. 2017. "No Excuses: Automation Advances Make Sales Tax Collection Easier for Everyone," *State Tax Notes*, 571-586, August 7.