
The Effect of State Tax Policies on Where E-Tailers Collect Sales Tax

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Policy Background

- States with sales taxes also have *use taxes*
 - due on taxable items purchased remotely
- A state can only require sellers with *nexus* to collect sales taxes
- Use tax compliance is very, very low
- Revenue losses due to e-commerce: \$11.4b
 - (Bruce, Fox, and Luna, 2009)

What is *Nexus*?

- Quill Corp. vs. North Dakota (504 US 298, 1992):
Physical Presence
- Varies by state
 - Owning/leasing tangible property
 - Storing goods in public warehouse
 - Owning display racks
 - Shipping in-process inventory for processing
 - Using company-owned vehicles or third-party distributors
 - Having a local phone number, bank account, or P.O. Box
 - Out-of-state employees providing in-state services

State Creativity

- Affiliate or attributional relationships
 - Nexus of one entity can extend to affiliates
- “Amazon Laws” or click-through
 - Small in-state sellers who receive commissions for having an Amazon link on their websites can create nexus for Amazon
- These efforts to assert nexus are being challenged in the courts

Theory

- Representative firm decides whether to establish nexus in a state
- Nexus impacts revenues through *price* and *quantity-sold* channels
 - These may be positive or negative effects!
- Nexus impacts costs through per-unit *transaction costs*
 - Transportation costs fall (proximity to markets)
 - Tax collection and compliance costs rise
- Firms establish nexus when marginal revenue gains exceed marginal costs

Theory II

- Case 1: If quantity is unchanged, the firm will establish nexus if:
 - it will be able to charge a higher price, or
 - the transaction cost savings exceed the revenue loss from a price reduction
- Case 2: If price is unchanged, the firm will establish nexus if:
 - the revenue gain from additional sales and reduced transportation costs exceeds additional production and tax collection/compliance costs, or
 - the transaction and production cost savings from lower sales offset revenue losses

Link to Empirics

- Firm-level nexus decisions are likely to be impacted by state economic *and* policy environment
 - Sales tax rate
 - Breadth of sales tax base
 - Size of market (personal income)
 - Additional sales tax compliance costs
 - Other factors

Empirical Strategy

- Would ideally consider firm-level decisions
 - Each firm has 45 interrelated nexus decisions
 - Complex multinomial logit framework
- We instead condense firm-level data to state-level aggregates for empirical work

$$\begin{aligned} \text{Nexus}_{i,t} = & \beta_0 + \beta_1 \text{SPI}_{i,t} + \beta_2 (\text{SPI}_{i,t} * \text{Rate}_{i,t}) + \\ & \beta_3 (\text{SPI}_{i,t} * \text{Base}_{i,t}) + \beta_4 \text{Rate}_{i,t} + \beta_5 \text{Base}_{i,t} + \\ & \alpha_i + \gamma_t + \epsilon_{i,t} \end{aligned}$$

Nexus Data

- Hand-collected data for large sample of online retailers (drawn for prior research projects)
- Indicators for whether sales tax was collected on a hypothetical order from each sales-taxing state
- 2006: 100 largest firms as of 2005
- 2008: 50 largest firms plus 50 others in Top 500
- 2010: Any firm in 2006 and 2008 data plus several more (total of 179)
- 2011: Slightly expanded to 182 firms

Nexus Variables

- Nexus 1: Count of companies with nexus in that state
- Nexus 2: Share of total web sales occurring at firms with nexus in that state
- Nexus 3: Nexus 2 pre-multiplied by that state's share of total national state and local sales tax collections

Control Variables

- State Personal Income (SPI, in \$b)
- State general sales tax rate (%)
- Sales tax breadth (collections/rate in \$b)
- Streamlined Sales Tax Project “age”
- Amazon law indicator
- Corporate tax policies
 - Top tax rate, sales factor weight, and indicators for combined reporting, throwback, LLC/LLP withholding, and LLC/LLP entity-level tax

Summary Statistics

	2006	2008	2010	2011
Variable	Mean	Mean	Mean	Mean
Nexus 1: Count of Companies	49.089	48.044	69.556	73.067
Nexus 2: Share of Online Sales	65.836	63.345	56.353	60.904
Nexus 3: Tax-Weighted Share of Online Sales	1.504	1.482	1.320	1.403
Personal Income (\$ billions)	243.344	269.119	266.921	280.494
Sales Tax Rate (%)	5.327	5.433	5.597	5.596
Sales Tax Base (\$ billions)	93.158	97.386	87.245	87.245
Years of SSTP Membership	0.356	1.111	2.111	2.622
Amazon Law (0/1)	0.000	0.022	0.089	0.244
Top Corporate Tax Rate (%)	6.240	6.212	6.087	6.097
Sales Factor Weight (%)	51.511	56.440	54.667	55.327
Combined Reporting (0/1)	0.400	0.444	0.578	0.578
Throwback Rule (0/1)	0.444	0.422	0.533	0.533
Withholding for LLCs/LLPs (0/1)	0.644	0.711	0.756	0.756
Entity-Level LLC/LLP Tax (0/1)	0.400	0.378	0.356	0.333

Contemporaneous Models

	Nexus 1	Nexus 2	Nexus 3
Personal Income	0.304	0.153	0.010
	(5.50)**	(3.22)**	(3.45)**
Sales Tax Rate* Personal Income	-0.010	-0.008	-0.001
	(3.35)**	(2.93)**	(5.15)**
Sales Tax Base* Personal Income	-0.000	-0.000	-0.000
	(3.80)**	(2.38)*	(2.90)**
Sales Tax Rate	4.690	1.733	0.282
	(2.63)**	(1.13)	(3.14)**
Sales Tax Base	0.072	0.071	0.016
	(0.95)	(1.09)	(4.16)**
Years of SSTP Membership	-0.752	0.497	0.012
	(2.27)*	(1.75)	(0.69)
Amazon Law	0.843	1.444	0.157
	(0.59)	(1.17)	(2.17)*
Constant	-25.473	32.035	-2.106
	(1.47)	(2.15)*	(2.42)*
R ²	0.94	0.65	0.50
N	180	180	180

Key Results

- Size matters: firms drawn to high SPI
- SPI effect falls as sales tax rate rises or base broadens
- Firms tend to avoid SSTP members
- Amazon laws have little effect
- Corporate tax variables have no impact (not shown)
- *A note about Nexus 2: most of the results driven by Amazon (see App. Table 2)*

Potential Concerns

- Policy endogeneity: nexus drives policy?
 - Try first-lagged models (Table 3)
- Spatial correlations: nexus in one state related to nexus in neighboring states
 - Try Spatial Autoregressive models (Table 4)

Lagged Models

	Nexus 1	Nexus 2	Nexus 3
Personal Income	0.311	-0.076	-0.001
	(5.01)**	(2.29)*	(0.40)
Sales Tax Rate* Personal Income	-0.009	0.002	-0.000
	(1.80)	(0.74)	(3.21)**
Sales Tax Base* Personal Income	-0.000	0.000	0.000
	(1.52)	(1.39)	(0.29)
Sales Tax Rate	7.684	-4.393	0.087
	(1.93)	(2.05)*	(0.90)
Sales Tax Base	-0.142	-0.055	0.006
	(1.04)	(0.76)	(1.71)
Years of SSTP Membership	2.069	-1.231	-0.021
	(3.12)**	(3.45)**	(1.30)
Amazon Law	11.691	1.487	0.323
	(2.47)*	(0.59)	(2.81)**
Constant	-31.407	103.777	1.110
	(1.18)	(7.28)**	(1.73)
R ²	0.64	0.23	0.35
N	180	180	180

SAR Models

	Nexus 1	Nexus 2	Nexus 3
Personal Income	0.208	0.151	0.006
	(2.42)*	(2.85)**	(2.02)*
Sales Tax Rate* Personal Income	-0.004	-0.009	-0.001
	(0.90)	(3.00)**	(4.29)**
Sales Tax Base* Personal Income	-0.000	-0.000	-0.000
	(1.74)	(1.70)	(1.22)
Sales Tax Rate	3.437	1.102	0.236
	(1.25)	(0.65)	(2.48)*
Sales Tax Base	-0.057	0.006	0.007
	(0.49)	(0.09)	(1.80)
Years of SSTP Membership	-1.133	0.879	0.008
	(2.18)*	(2.73)**	(0.45)
Amazon Law	2.061	1.412	0.109
	(0.93)	(1.03)	(1.43)
ρ	0.286	0.290	0.292
	(71.37)**	(54.29)**	(51.78)**
σ_e^2	33.025	12.663	0.040
	(9.18)**	(9.27)**	(9.30)**
R^2	0.02	0.01	0.00
N	176	176	176

Conclusions

- Firms are more likely to establish nexus in large-market states (i.e., with higher SPI)
- The large-market effect falls as the sales tax rate rises or the base broadens
- Recent state efforts to expand nexus have a lagged, positive effect (e.g., Amazon Laws)
- Corporate tax policies don't seem to matter for sales tax nexus decisions
- ***In sum, economic environment matters more than tax policies***
 - Evidence: Amazon's decision to support the Marketplace Fairness Act