DISCUSSION:
SHOPPING FOR LOWER SALES TAX RATES
BY: BAKER, JOHNSON, KUENG

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Yale Junior Finance
September 23, 2017
Overview

1. Review and comment on main findings.

2. Discuss negative contribution.

3. Discuss positive contribution.
Main empirical findings

1. Spending lower in month sales tax takes effect.

2. Effect roughly half higher purchases in month $-1$ and half lower purchases in month 0.

3. Similar short run response for both non-exempt and exempt goods.

4. Number of shopping trips falls.

5. Larger effects on more durable goods.

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Model results

- Four prices facing consumer: \((1 + \tau_-) P^n_-, (1 + \tau_+) P^n_+, P^e_-, P^e_+\).
- Anticipated shock: \(\tau_+ > \tau_-\).
- Full pass-through assumption: \(P^e_- = P^e_+, P^n_- = P^n_+\).

- No long-run responses of spending/consumption imply small elasticities of substitution over time and across goods.
- Short-run then driven by inventory accumulation.
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- Anticipated shock: $\tau_+ > \tau_-.$
- Full pass-through assumption: $P^n_+ = P^e_+, P^n_- = P^n_+$.
  - Crucial to equate long-run spending with consumption.
  - Theory and previous evidence consistent with $P^n_+ \leq P^n_-.$
  - Testable using KNCP. Discuss and report it.

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  - Spending by agents far away?
    - Maybe? Endogeneity of sales tax changes. Also an issue here...
      * Unemployment rate control helpful but not perfect.

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EXEMPT VERSUS NONEXEMPT

Figure 3: Spending Dynamics around a Sales Tax Increase: Estimation and Model

(a) Estimation: $\beta$ coefficients from log-level regression

(b) Model: Log-levels in discrete time (monthly)

Notes: Left panel plots coefficients of a regression of the logged amount of pre-tax household retail spending on taxable and exempt products on leads and lags of total sales tax rate increases. All coefficients are scaled to an increase in sales taxes of 1%. Dashed lines represent 95% confidence intervals from standard errors clustered at the zipcode level. Periods -1, 0 and 1 reflect the three months around the tax increase and periods -2, 2 3 reflect the surrounding three quarters. Coefficients are normalized to be zero in period -2. The right panel shows the corresponding monthly series of the log-levels of taxable and tax-exempt spending generated by the continuous-time model in Section 5.
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<table>
<thead>
<tr>
<th>Period</th>
<th>( \ln(\text{taxable}) )</th>
<th>( \ln(\text{tax-exempt}) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>-2</td>
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<td>-0.03</td>
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<td>-0.74</td>
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- $\beta$ coefficients range from $-2.5$ to $2.5$.

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QUANTITATIVE MAGNITUDE

- Spending per household per month:
  
  KNCP: $350

About 5% of total expenditure. Mostly nondurable goods. Expect (and paper shows) substitution increasing in durability. Total spending response could be larger and more persistent. Broader data sets: Polk (auto spending, zipcode), CE (total spending, public state or confidential zipcode).
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- Spending per household per month:
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    - Nondurable goods: $1,530
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Pricing and Advertising

- Dorfman and Steiner (1954) model:

\[
\max_{P_i, A_i} \left\{ P_i Y_i - C(Y_i) - \kappa A_i \right\}
\]

s.t.

\[
Y_i = \xi(A_i) \left( \frac{P_i}{P} \right)^{-\sigma} Y
\]

and where:

\[
Y = \left[ \int_0^1 \xi_i^{\frac{1}{\sigma}} Y_i^{\frac{\sigma-1}{\sigma}} di \right]^{\frac{\sigma}{\sigma-1}},
\]

\[
P = \left[ \int_0^1 \xi_i P_i^{1-\sigma} di \right]^{\frac{1}{1-\sigma}},
\]

\[
\xi_i = \xi(A_i) = A_i^\gamma.
\]
**Implications of Dorfman-Steiner**

\[ P_i = \frac{\sigma}{\sigma - 1} C'(Y_i). \]

\[ A_i = \left( \frac{\gamma\sigma^{-1}}{\kappa} \right) P_i Y_i. \]

- Suppose \( Y \) up due to expenditure shifting before tax increase:
  - \( \partial P_i / \partial Y_i > 0 \) (if convex costs).
  - \( \partial A_i / \partial (P_i Y_i) > 0 \).

- Price response may undo part of tax jump.
- Advertising may amplify response of exempt items.
- Complications if sales used for advertising purpose.
NO SALES TAX HOLIDAY!

Sat. Aug. 15 & Sun. Aug. 16

Order Now & Beat the Crowds!
Nitpicking/Questions

- Interpretation of Google Trends difficult. More search could mean less available information.
- Store advertising and newspaper articles could be complements or substitutes.
- Hard to interpret interaction with newspaper coverage. News articles could be about anticipatory spending responses (reverse causality).
- Allocating income effects to date of law passage possibly internally inconsistent. Ricardian equivalence implies no income effects. Salience implies income effects emerge at implementation.
- Endogeneity: stack into event time and control for unemployment rate, consumption growth at passage.
- Description of data in paper incomplete:
  - Thomson OneSource reports exempt categories? What about hand-collected data?
  - KNCP item spending is net of tax. What about total trip amount?
**Conclusion**

- Interesting results.

- Negative and positive contribution.

- Policy? Depends on wealth effects at announcement. Large deficit-financed local government spending multipliers (Chodorow-Reich, 2017). Suggestive that temporary sales taxes are effective financing.
Appendix slides