DISCUSSION OF:

INFLATION EXPECTATIONS AND CONSUMPTION EXPENDITURE

BY D’ACUNTO, HOANG AND WEBER

Emi Nakamura

Columbia University

November 2015
What is this Paper About?

- How much does consumption respond to inflation expectations?
- Key issue for monetary policy (not just at ZLB)
- AKA: Estimating the Elasticity of Intertemporal Substitution
  
  \[ r = i - \pi^e \]

  If \( i \) is fixed, increase in \( \pi \) lowers \( r \)
Many papers attempt to estimate IES

Empirical challenge: Interest rates (and inflation) usually change for a reason

  e.g., During the Great Recession, the real rate and consumption both fell
  Did a lower real rate cause lower consumption? Or vice versa?
New twists:

- Survey Data on inflation expectations
- Plausibly exogenous variation in expected inflation
  - VAT shock
  - Introduction of Euro
- Implicit assumption: Nominal rates don’t respond to these shocks to $\pi^e$
- Household heterogeneity (microdata)
Main Empirical Result

Expected Inflation and Durable Goods
Germany

VAT Increase

Euro

Expected Inflation
Good Time to Buy Durable Goods

01jan2000 01jan2005 01jan2010 01jan2015

0 0.1 0.2 0.3 0.4 0.5

1.6 1.8 2 2.2 2.4

Good Time to Buy Durable Goods

Nakamura
Inflation Expectations
November 2015
Key Events in Sample

- Jan 2002: Introduction of the Euro; Widespread (unfulfilled) belief that firms would take opportunity to hike inflation
- Nov 2005: German government unexpectedly announced 3% increase in German VAT, effective Jan 2007
Where does identification come from?

- Survey vs. Actual
- Durable vs. Non-durable
WHERE DOES IDENTIFICATION COME FROM?
WHERE DOES IDENTIFICATION COME FROM?
## Where Does Identification Come From?

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) All</th>
<th>(2) Dropping VAT</th>
<th>(3) Dropping VAT/Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Inflation</td>
<td>0.924***</td>
<td>0.253*</td>
<td>-0.139</td>
</tr>
<tr>
<td></td>
<td>(0.0875)</td>
<td>(0.134)</td>
<td>(0.109)</td>
</tr>
<tr>
<td>Expected Income</td>
<td>2.362***</td>
<td>3.025***</td>
<td>0.899***</td>
</tr>
<tr>
<td></td>
<td>(0.326)</td>
<td>(0.312)</td>
<td>(0.311)</td>
</tr>
<tr>
<td>trend</td>
<td>6.33e-05***</td>
<td>7.36e-05***</td>
<td>0.000101***</td>
</tr>
<tr>
<td></td>
<td>(4.74e-06)</td>
<td>(4.54e-06)</td>
<td>(3.96e-06)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.460***</td>
<td>0.276***</td>
<td>0.0893</td>
</tr>
<tr>
<td></td>
<td>(0.103)</td>
<td>(0.0968)</td>
<td>(0.0733)</td>
</tr>
<tr>
<td>Observations</td>
<td>168</td>
<td>153</td>
<td>131</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.691</td>
<td>0.708</td>
<td>0.871</td>
</tr>
</tbody>
</table>

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
Summary

- Effect of inflation expectations on durable goods comes from two episodes:
  - VAT increase (people expected much more inflation than occurred)
  - Euro introduction
- Not necessarily a bad thing!
- Other variation may be endogenous
On the other hand...

- VAT announcements/ Euro introduction may be more salient than other ways of changing inflation expectations
- Magnitude might not carry over to other policies
EXPECTED VS. ACTUAL INFLATION

Expected Inflation Response to VAT increase

Actual Inflation

- Actual Inflation: Germany
- Inflation Major Durables: Germany
- Expected Inflation
My Comments

- Where does identification come from?
- Survey vs. Actual
- Durable vs. Non-durable
Authors use micro-data to match similar households in panel of Germans vs. other Europeans

- Concern: Perhaps common shock with heterogeneous treatment effects could explain results (Does not strike me as likely)

- Alternative approach: Run time series regressions

- Advantage:
  - Can use actual consumption data
Main Empirical Result

Expected Inflation and Durable Goods
Germany

VAT Increase
Euro

Expected Inflation
Good Time to Buy Durable Goods

01jan2000 01jan2005 01jan2010 01jan2015
SURVEY VS. ACTUAL DURABLE CONSUMPTION

Nakamura
Inflation Expectations
November 2015
Where does identification come from?

Survey vs. Actual

Durable vs. Non-durable
DURABLE VS. NON-DURABLE CONSUMPTION

- Recall: True durable consumption is service flow from durable good
- Change in durable consumption flow could be small even if expenditure is big
SURVEY VS. ACTUAL NON-DURABLE CONSUMPTION

VAT

Euro

Actual Nondurable Consumption: Germany
Expected Inflation
Good Time to Buy Durable Goods
### Actual vs. Survey, Durable vs. Non-Durable

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) Survey</th>
<th>(2) Actual Durable</th>
<th>(3) Actual Nondurable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Inflation</td>
<td>0.0569***</td>
<td>0.139</td>
<td>0.0566</td>
</tr>
<tr>
<td></td>
<td>(0.0176)</td>
<td>(0.0881)</td>
<td>(0.0415)</td>
</tr>
<tr>
<td>Expected Income</td>
<td>0.114*</td>
<td>-0.281</td>
<td>0.373**</td>
</tr>
<tr>
<td></td>
<td>(0.0613)</td>
<td>(0.351)</td>
<td>(0.159)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.0217</td>
<td>0.0550</td>
<td>-0.0989**</td>
</tr>
<tr>
<td></td>
<td>(0.0163)</td>
<td>(0.101)</td>
<td>(0.0468)</td>
</tr>
<tr>
<td>Observations</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.801</td>
<td>0.188</td>
<td>0.464</td>
</tr>
</tbody>
</table>

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Including Time Trend, Lagged dependent variable

(Relationship stronger with no lags)
Summary

- Survey inflation expectations (caused by impending VAT) have robust effect on survey preference for buying durables
- Effect less clear for actual durable purchases; small for non-durables

Interpretation:
- Small IES?
CONCLUSION

Creative paper, new approach to estimating IES

- Use shocks to inflation expectations
- Focus on variation from anticipated VAT

Questions:

- Could VAT changes be more salient than other inflation announcements?
- Are actual consumption responses smaller than survey?
- Are non-durable responses smaller than durable?