

# A Temporary VAT Cut as Unconventional Fiscal Policy

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# Background

- In normal times: monetary (short-term interest rate) policy is stabilization policy of choice
- With effective lower bound: alternative measures
- Unconventional fiscal policy:
  - pre-announced increases or immediate, temporary cuts in consumption taxes: increasing price path
  - tries to mimic conventional monetary policy: works through the Euler equation and manipulating intertemporal trade-offs
  - very broad-based macroaggregate targeted
  - little micromanagement necessary
  - direct measure: people need to buy to benefit (unlike with transfers)
- Little empirical evidence about its efficacy

# What we do

Exploit a unique policy experiment during the Covid-19 pandemic in Germany:

- June 3rd, 2020: German government announced a surprise cut in the value added tax (VAT) becoming effective only one month later on July 1st, 2020, and lasting until December 31st, 2020.
- Cut: 3% regular rate, 2% for reduced rate.
- Temporary VAT cut expressly sold by politicians as stimulus to pull consumption forward.

# What we do

Did it work?

- 1 Was the VAT cut passed through to prices? This paper is not about that.  $\Rightarrow$  Literature says yes:
  - Fuest, Neumeier and Stöhlker (2020) for retail prices
  - Montag, Sagrimuldina and Schnitzer (2021) for gasoline prices
  - Deutsche Bundesbank (2020) and Egner (2021), from the German Federal Statistical Agency, for aggregate consumer prices
- 2 **Was consumption spending stimulated?** This is what the paper is about.

# Research challenge

- VAT affected every consumer in Germany. What is the control group?
- Other simultaneous policy measures and the (Covid-19) recession.
- Seasonality of consumption spending in a second half-year.

**Identification is key!**

# Empirical approach

Use surveys, proceeding in two steps:

- 1 **Ex-ante:** In July 2020, elicit level of informedness about VAT path.  
**Control group:** those that do not know that VAT will go up again at the end of 2021.
- 2 **Ex-post:** In January 2021, elicit perception of perceived pass-through. **Control group:** those that do not perceive substantive pass-through.

# Data sets

- ① **Ex-ante:** supplement to the Bundesbank Online Household Panel (BOP-HH) in July 2020.
- ② **Ex-post:**
  - supplement to the Bundesbank Online Household Panel in January 2021;
  - survey commissioned via the Gesellschaft für Konsumforschung (GfK) in January 2021;
  - scanner data from the GfK, used for semi-durable and non-durable consumption spending.

# Preview of Results

## 1 Ex-ante:

- Informed households are more likely to increase durable purchases.
- Heterogeneity, effect driven by: younger households in financially less favorable situations.

## 2 Ex-post:

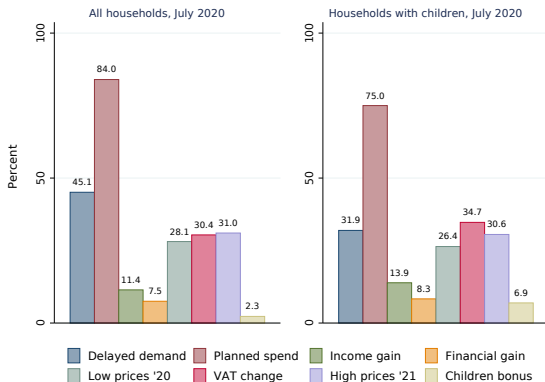
- Households with high perceived pass-through spent about 36% more on durables; semi- and non-durable spending are also higher (by less).
- Effect appears to be strongest in December 2020.
- Heterogeneity, effect driven by: bargain hunters, price-sensitive households; younger households in financially less favorable situations.
- No evidence of Covid-exposure mattering.
- Financial literacy does not seem to matter ⇒ contrast to unconventional monetary policy



# Literature

- **Unconventional fiscal policy:** Correira, Fahri, Nicolini and Teles (2013), D'Acunto, Hoang, Weber (2018, 2021)
- **Empirical evaluations of VAT changes:** Blundell (2009), Crossley, Low, and Sleeman (2014), Benzarti, Carloni, Harju and Kosonen (2020)
- **Reactiveness of durable purchases:** Erceg and Levin (2006), Monacelli (2009), McKay and Wieland (2021a/b)
- **Policy simplicity as a virtue:** Andre, Pizzinelli, Roth and Wohlfahrt (2021), Bianchi-Vimercati, Eichenbaum and Guerreiro (2021), D'Acunto, Hoang, Paloviita and Weber (2021)
- **Descriptive evidence on the German VAT cut:** Bachmann, Bayer, and Kornejew (2021), Behringer, Dullien and Gechert (2021), Fuest, Neumeier and Peichl

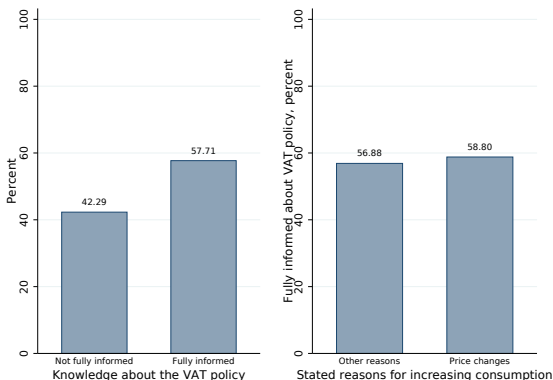
# Ex-ante: Reasons for increased durable spending plans



Price reasons dominate resource reasons, even for families with children.

## Ex-ante: Identification and reverse causality

Are those who plan to buy more durables for other reasons than the VAT cut are also better informed about the VAT policy?



## Ex-ante: Results

Planning to spend on durables in the second half of 2020 more, the same, or less than in a normal second half of a year?

Plans to buy durables 2020HY2 vs. typ. sec. half-year	All (1)	COVID-19 cases, low (2)	COVID-19 cases, high (3)
Fully informed	0.098*** (0.033)	0.096** (0.046)	0.099** (0.046)
Constant	-0.241*** (0.025)	-0.233*** (0.035)	-0.249*** (0.035)
Observations	1,794	902	892

- VAT policy makes households 10 pp more likely to increase durable purchases relative to the less informed.
- Covid-19 exposure does not seem to matter.
- Robustness with lots of controls

## Ex-ante approach: Heterogeneity

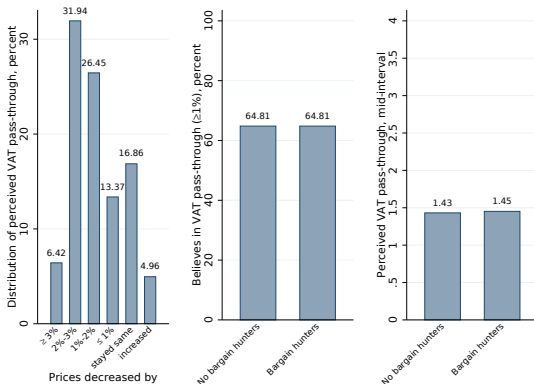
Plans to buy durables 2020HY2 vs. typical second half-year	Net Wealth			Expected income growth		Age			Expected inflation	
	All (1)	Low (2)	High (3)	Low (4)	High (5)	Young (6)	Mid (7)	Old (8)	Low (9)	High (10)
Fully informed	0.098*** (0.033)	0.163*** (0.048)	0.026 (0.044)	0.182*** (0.049)	0.024 (0.044)	0.153** (0.066)	0.097* (0.056)	0.078 (0.049)	0.039 (0.059)	0.109*** (0.042)
Constant	-0.241*** (0.025)	-0.378*** (0.034)	-0.112*** (0.035)	-0.364*** (0.035)	-0.134*** (0.034)	-0.146*** (0.048)	-0.246*** (0.044)	-0.304*** (0.038)	-0.159*** (0.047)	-0.256*** (0.031)
Observations	1,794	806	978	770	988	462	601	731	559	1,100

- Effects are driven by younger, financially less well-off households.
- Evidence of intertemporal substitution.
- Financial constraints don't seem to matter (only 3% of respondent could not borrow to cover expenses).

## Ex-post approach: Identification and the threat

- Belief about the actual decrease in prices due to VAT cut (survey)
- What if households that shop frequently and thus buy more goods are also the ones better informed about the pass-through?

# Ex-post approach: Identification



Reverse causality story- that price-sensitive shoppers know more about the pass-through—is not plausible.

# Ex-post approach: Results—Durables, survey data

Euro spending on durables in 2020HY2, IHS	BOP-HH						GfK survey					
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	Tobit (5)	Tobit (6)	OLS (7)	OLS (8)	OLS (9)	OLS (10)	Tobit (11)	Tobit (12)
High perceived pass-through	0.418** (0.167)	0.553*** (0.210)			0.555** (0.233)	0.674** (0.273)	0.496*** (0.074)	0.357*** (0.082)			0.662*** (0.105)	0.470*** (0.114)
Pass-through percent			0.159** (0.069)	0.199** (0.087)					0.138*** (0.024)	0.088*** (0.027)		
Female		-0.702*** (0.229)		-0.710*** (0.229)		-0.959*** (0.295)		-0.122 (0.085)		-0.121 (0.085)		-0.182 (0.116)
Age: below 45		-0.109 (0.397)		-0.094 (0.397)		-0.137 (0.509)		-0.076 (0.138)		-0.081 (0.138)		-0.023 (0.188)
Age: 45-60		0.007 (0.362)		0.016 (0.362)		-0.006 (0.459)		-0.182 (0.113)		-0.186 (0.113)		-0.215 (0.157)
Education: Bachelor or above		-0.056 (0.221)		-0.044 (0.220)		-0.068 (0.283)		0.032 (0.091)		0.042 (0.091)		0.035 (0.122)
Employed full time		0.326 (0.296)		0.311 (0.297)		0.380 (0.385)		0.535*** (0.196)		0.534*** (0.197)		0.774*** (0.290)
Retired		-0.298 (0.387)		-0.305 (0.389)		-0.407 (0.495)		0.417** (0.209)		0.414** (0.209)		0.601* (0.307)
Has children		0.514** (0.257)		0.520** (0.257)		0.650* (0.344)		0.530*** (0.120)		0.526*** (0.120)		0.697*** (0.160)
Low income		-0.957*** (0.235)		-0.958*** (0.236)		-1.195*** (0.316)		-0.665*** (0.088)		-0.666 (0.088)		-0.823*** (0.120)
Low net wealth		0.277 (0.217)		0.268 (0.217)		0.396 (0.287)		-0.505*** (0.083)		-0.515 *** (0.083)		-0.634*** (0.114)
Constant	5.125*** (0.136)	6.055*** (0.670)	5.167*** (0.127)	6.106*** (0.671)	4.237*** (0.191)	5.621*** (0.906)	4.835*** (0.060)	5.168*** (0.275)	4.962*** (0.049)	5.283 *** (0.272)	3.952*** (0.093)	4.307*** (0.394)
Observations	2,242	1,401	2,242	1,401	2,242	1,401	10,243	7,916	10,243	7,916	10,243	7,916



# Ex-post approach: Back to data

Advantages of using two separate surveys:

- 1 Corroboration of our results across two very different surveys.
- 2 Can investigate a broader set of heterogeneities.
- 3 Through GfK, we gain access to their scanner data for semi- and non-durables.

# Ex-post approach: Results—Durables, survey data

A) BOP-HH, January 2021	Full Sample		Bargain Hunter		Net Wealth		Age		
	w/o controls (1)	controls (2)	Yes (3)	No (4)	Low (5)	High (6)	Young (7)	Mid (8)	Old (9)
Euro spending on durables in 2020HY2									
High perceived pass-through	0.418** (0.167)	0.553*** (0.210)	0.875*** (0.321)	0.238 (0.195)	0.710*** (0.245)	0.128 (0.265)	0.656** (0.322)	0.745** (0.306)	0.072 (0.254)
Constant	5.125*** (0.136)	6.055*** (0.670)	4.709*** (0.264)	5.288*** (0.157)	4.943*** (0.197)	5.489*** (0.222)	5.448*** (0.268)	5.258*** (0.249)	4.828*** (0.206)
Observations	2,242	1,401	637	1,605	911	981	550	668	982

B) GfK, January 2021	Full Sample		Price Sensitive		Public Servant		Financial Literacy			Planning in Advance	
	w/o controls (1)	controls (2)	Yes (3)	No (4)	Yes (5)	No (6)	Yes (7)	Somewhat (8)	No (9)	Yes (10)	No (11)
Euro spending on durables in 2020HY2											
High perceived pass-through	0.496*** (0.074)	0.357*** (0.082)	0.517*** (0.091)	0.277** (0.131)	0.589*** (0.167)	0.447*** (0.082)	0.278** (0.138)	0.554*** (0.116)	0.563*** (0.131)	0.452*** (0.101)	0.441*** (0.105)
Constant	4.835*** (0.060)	5.168*** (0.275)	4.691*** (0.073)	5.558*** (0.109)	5.183*** (0.140)	4.778*** (0.066)	5.160*** (0.114)	4.733*** (0.094)	4.731*** (0.104)	5.356*** (0.084)	4.385*** (0.083)
Observations	10,243	7,916	6,619	3,058	2,045	8,169	3,067	4,049	3,097	5,126	5,104

Results driven by bargain hunters and price sensitive households.

# Ex-post approach: Results—Durables, survey data

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Confirm ex-ante result for younger, financially less fortunate households.

# Ex-post approach: Results—Durables, survey data

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Using “public servant” as a proxy for income risk during the Covid-pandemic, we see little difference.

# Ex-post approach: Results—Durables, survey data

A) BOP-HH, January 2021	Full Sample		Bargain Hunter		Net Wealth		Age		
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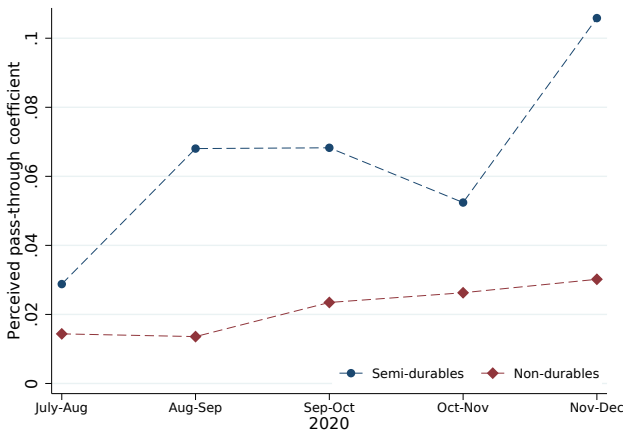
No evidence that the results are concentrated in “sophisticated” households.

# Ex-post: Results—Semi-durables and non-durables, scanner data

Euro spending in 2020HY2	Semi-durables		Non-durables	
	(1)	(2)	(3)	(4)
High perceived pass-through	0.131*** (0.035)	0.107*** (0.039)	0.047*** (0.010)	0.022** (0.011)
Constant	6.616*** (0.028)	6.689*** (0.139)	7.962*** (0.008)	8.047*** (0.034)
Controls	No	Yes	No	Yes
Observations	8,342	6,477	9,742	7,517

## Ex-post approach: Results—Dynamic Profile

Effects tend to get stronger towards December; GfK scanner data for semi-durables and non-durables:



# Conclusion

- VAT change had a strong effect on households' spending on durables (36% for high vs. low pass-through hhs).
- Semi- and non-durable spending higher by 11% and 2%.
- Heterogeneity: younger, less wealthy, bargain hunters, price sensitive households.
- Success as stabilization policy: simplicity. Households with financial literacy do not benefit more.
- Effect seem to be Covid-unrelated (income uncertainty or cases)
- Increasing effect over time, especially for semi-durables.



## Ex-post approach: Results—Durability of goods

Intratemporal Euler equation:

$$\frac{U_D(C_t, D_t)}{U_C(C_t, D_t)} = \left( 1 - (1 - \delta) \frac{1 + \tau_{t+1}}{1 + \tau_t} \frac{\Pi_{t+1}}{R_{t+1}} \right) .$$

The higher  $\delta$ , that is, the less durable a consumption good is, the less a given change in the consumption tax,  $\frac{1+\tau_{t+1}}{1+\tau_t}$ , will impact  $\frac{U_D(C_t, D_t)}{U_C(C_t, D_t)}$  which under standard specifications behaves like  $\frac{C}{D}$ .

# Ex-post approach: Results—Back-of-the-envelope calculation

Assume that the actual aggregate durable, semi-durable, non-durable consumption expenditures from the VGR in the second half of 2020 were produced by two groups: those that perceived high pass-through and those that perceived low pass-through.

Counterfactual: assume that high pass-through group spent like low pass-through group in the second half of 2020.

Aside: To compute aggregate consumption, we need to compute the results for services as well, and so we use the same estimate as for non-durables.

# Ex-post approach: Results—Back-of-the-envelope calculation

- 34 billion Euros of additional aggregate consumption spending.
- Revenue short-fall for fiscal authorities of 7 billion Euros.