A Temporary VAT Cut as Unconventional Fiscal Policy

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Background

Normal times: monetary (short-term interest rate) policy stabilization policy of choice

With ELB: unconventional monetary or fiscal policy

Unconventional fiscal policy:

- pre-announced increases or immediate, temporary cuts in consumption taxes
  $\rightarrow$ increasing price path
- tries to mimic conventional monetary policy
  $\rightarrow$ works through the Euler equation
  $\rightarrow$ manipulating intertemporal trade-offs

So far: little empirical evidence about its efficacy

What we do

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

- June 3rd, 2020: Government announced surprise cut in the value added tax (VAT)

  $\rightarrow$ cut regular rate by 3%, reduced rate by 2%

- Effective July 1st, 2020, and lasting until December 31st, 2020

  $\rightarrow$ strong political commitment for VAT to go back up on December 31st

- Expressly sold by politicians as stimulus to pull consumption forward

- Part of a larger stimulus package, including a "Kinderbonus"

What we do

Did it work?

Two parts to this question:

1. Was the VAT cut passed through to prices? This paper is not about that

→ 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

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 (2021).

Empirical approach

Research challenges

- VAT affected every consumer in Germany. What is the control group?
- There was the (Covid-19) recession and a stimulus package happening
- Seasonality of consumption spending in a second half-year
- How to get at phenomena such as "less of a spending cut" due to VAT policy?

Hopeless?

Identification is key!

Empirical approach

Use survey methods, proceeding in two steps:

1. **Ex-ante approach:** In July 2020, elicit level of informedness about VAT path. Down versus down-up. Identify lower bound for intertemporal substitution effect.

   Control group: those that don't know that VAT will go up again at end of 2021.

2. **Ex-post approach:** In January 2021, elicit perception of perceived pass-through. Identify the total consumption spending effect.

   Control group: those that do not perceive substantive pass-through.

Data sets

Ex-ante approach:

- supplement to the Bundesbank Online Household Panel (sometimes abbreviated as BOP-HH) in July 2020.

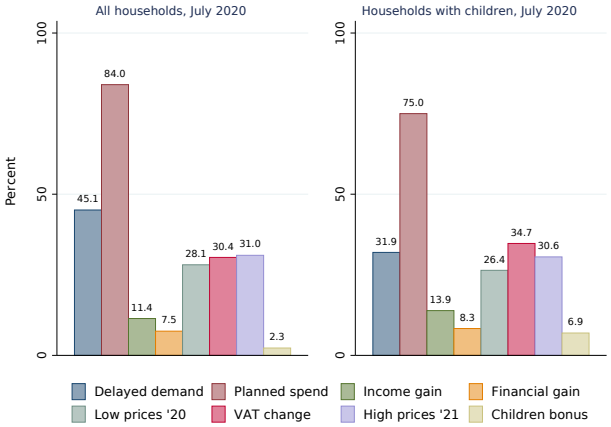
Ex-post approach:

- supplement to the Bundesbank Online Household Panel in January 2021
- survey via the Gesellschaft für Konsumforschung (GfK) in January 2021
- scanner data from GfK: semi-durable and non-durable consumption spending

Ex-ante approach: Left-hand side variable

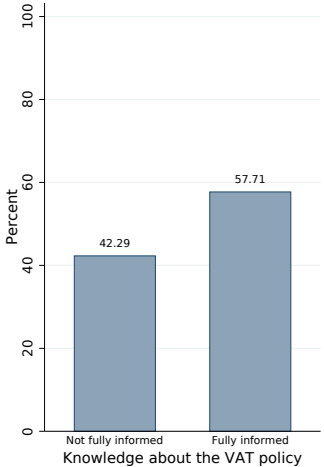
Ordinal variable: are you planning your durable consumption spending in the second half of 2020 to be more, the same, or less than in a normal second half of a year?

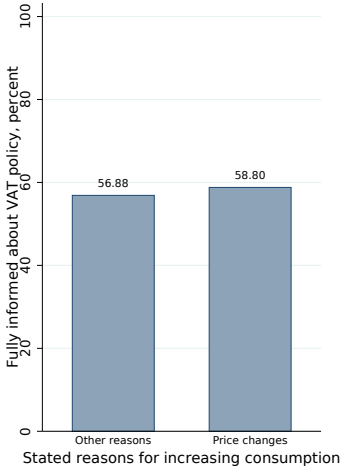
Ex-ante approach: Reasons for increased durable spending plans



Price reasons dominate resource reasons and "Children bonus" (child-related transfer), even for families with children.

Ex-ante approach: Identification





About 60% are fully informed, 40% are not (almost all knew about VAT cut). ▸ Thread

Ex-ante approach: Results

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***	0.096**	0.099**
	(0.033)	(0.046)	(0.046)
Constant	-0.241***	-0.233***	-0.249***
	(0.025)	(0.035)	(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		Net Wealth		Expected income growth		Age			Expected inflation	
2020HY2 vs. typical second half-year	All (1)	Low (2)	High (3)	Low (4)	High (5)	Young (6)	Mid (7)	Old (8)	Low (9)	High (10)
Fully informed	0.098***	0.163***	0.026	0.182***	0.024	0.153**	0.097*	0.078	0.039	0.109***
	(0.033)	(0.048)	(0.044)	(0.049)	(0.044)	(0.066)	(0.056)	(0.049)	(0.059)	(0.042)
Constant	-0.241***	-0.378***	-0.112***	-0.364***	-0.134***	-0.146***	-0.246***	-0.304***	-0.159***	-0.256***
	(0.025)	(0.034)	(0.035)	(0.035)	(0.034)	(0.048)	(0.044)	(0.038)	(0.047)	(0.031)
Observations	1,794	806	978	770	988	462	601	731	559	1,100

Effect driven by:

- younger, financially less well-off households
- direct evidence of intertemporal substitution

Ex-ante approach: Heterogeneity

Plans to buy durables 2020HY2 vs. typical second half-year	All	Young		Mid		Old	
		Net Wealth					
		Low (1)	High (2)	Low (3)	High (4)	Low (5)	High (6)
Fully informed	0.098***	0.269***	-0.014	0.139*	0.042	0.057	0.054
	(0.033)	(0.085)	(0.103)	(0.083)	(0.074)	(0.076)	(0.064)
Constant	-0.241***	-0.262***	0.024	-0.417***	-0.094	-0.453***	-0.196***
	(0.025)	(0.061)	(0.073)	(0.061)	(0.059)	(0.055)	(0.051)
Observations	1,794	275	186	264	334	267	458

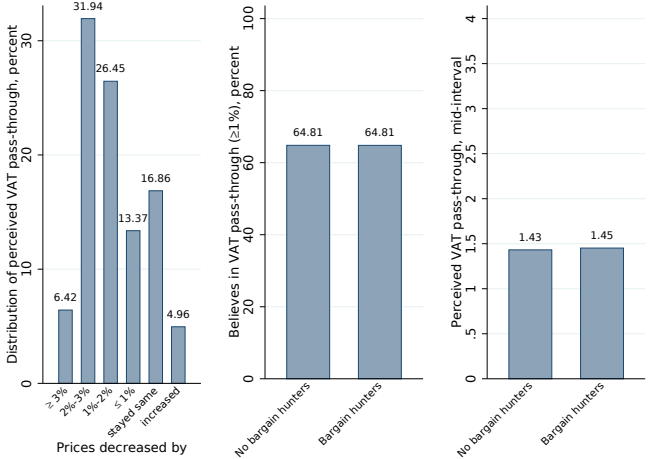
Plans to buy durables 2020HY2 vs. typical second half-year	All	Young		Mid		Old	
		Expected Income Change					
		Low (1)	High (2)	Low (3)	High (4)	Low (5)	High (6)
Fully informed	0.098***	0.159	0.095	0.293***	-0.121	0.085	0.081
	(0.033)	(0.099)	(0.089)	(0.074)	(0.083)	(0.086)	(0.062)
Constant	-0.241***	-0.269***	-0.010	-0.453***	-0.008	-0.343***	-0.287***
	(0.025)	(0.066)	(0.067)	(0.054)	(0.065)	(0.066)	(0.048)
Observations	1,794	204	253	313	280	253	455

Ex-ante approach: Summary

The Euler equation appears to be alive and well in Germany!

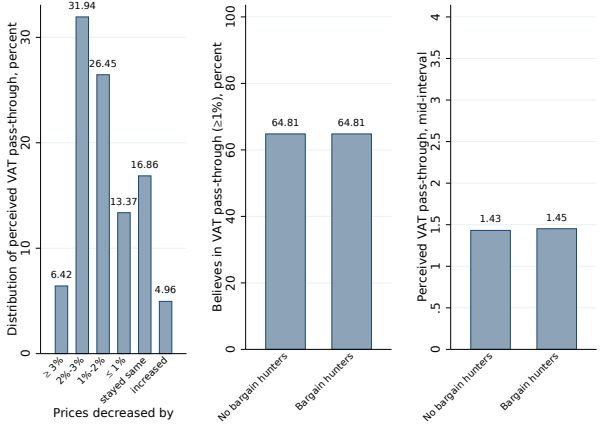
- Sizeable intertemporal substitution in the extensive margin of durable purchases (29% of the respondents of the Bundesbank Online Household Panel in January 2021 did not buy any durables at all in the second half of 2020).
- Heterogeneity, effect driven by: younger households in financially less favorable situations, making the temporary VAT cut a *progressive* policy.
- Ex-ante results make it less likely that in our ex-post identification consumers justify higher durable purchases with perceived lower prices ex post.
- No evidence of Covid-exposure mattering.
- No evidence of financial constraints mattering.

Ex-post approach: Identification



Classify about 65% of respondents as perceiving a high pass-through.

Ex-post approach: Threat to identification



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

▸ Aggregate Effects

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: Heterogeneity (durables, survey data)

A) BOP-HH, January 2021	Full Sample		Bargain Hunter		Net Wealth		Age		
Euro spending on durables in 2020HY2	w/o controls (1)	controls (2)	Yes (3)	No (4)	Low (5)	High (6)	Young (7)	Mid (8)	Old (9)
High perceived pass-through	0.418**	0.553***	0.875***	0.238	0.710***	0.128	0.656**	0.745**	0.072
	(0.167)	(0.210)	(0.321)	(0.195)	(0.245)	(0.265)	(0.322)	(0.306)	(0.254)
Constant	5.125***	6.055***	4.709***	5.288***	4.943***	5.489***	5.448***	5.258***	4.828***
	(0.136)	(0.670)	(0.264)	(0.157)	(0.197)	(0.222)	(0.268)	(0.249)	(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	
Euro spending on durables in 2020HY2	w/o controls (1)	controls (2)	Yes (3)	No (4)	Yes (5)	No (6)	Yes (7)	Somewhat (8)	No (9)	Yes (10)	No (11)
High perceived pass-through	0.496***	0.357***	0.517***	0.277**	0.589***	0.447***	0.278**	0.554***	0.563***	0.452***	0.441***
	(0.074)	(0.082)	(0.091)	(0.131)	(0.167)	(0.082)	(0.138)	(0.116)	(0.131)	(0.101)	(0.105)
Constant	4.835***	5.168***	4.691***	5.558***	5.183***	4.778***	5.160***	4.733***	4.731***	5.356***	4.385***
	(0.060)	(0.275)	(0.073)	(0.109)	(0.140)	(0.066)	(0.114)	(0.094)	(0.104)	(0.084)	(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.
- Confirm ex-ante result for younger, financially less fortunate households.
- Using "public servant" as a proxy for income risk, we see little difference.
- No evidence that the results are concentrated in "sophisticated" households.

Ex-post approach: Semi-durables and non-durables (scanner data)

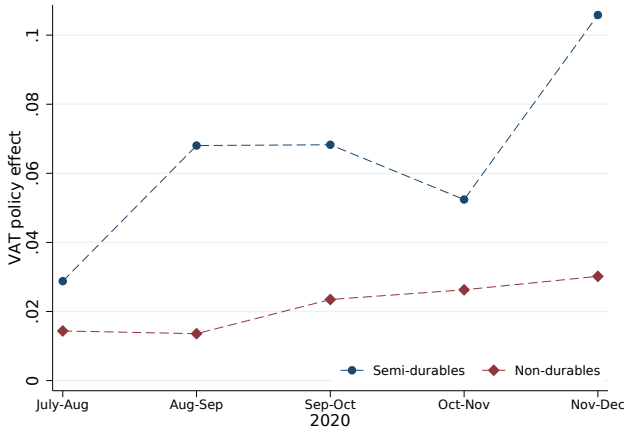
Euro spending in 2020HY2	Semi-durables (1)	(2)	Non-durables (3)	(4)
High perceived pass-through	0.131***	0.107***	0.047***	0.022**
	(0.035)	(0.039)	(0.010)	(0.011)
Constant	6.616***	6.689***	7.962***	8.047***
	(0.028)	(0.139)	(0.008)	(0.034)
Controls	No	Yes	No	Yes
Observations	8,342	6,477	9,742	7,517

▸ Durability: Theory

Ex-post approach: Dynamic profile

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

External Evidence



Ex-post approach: Summary

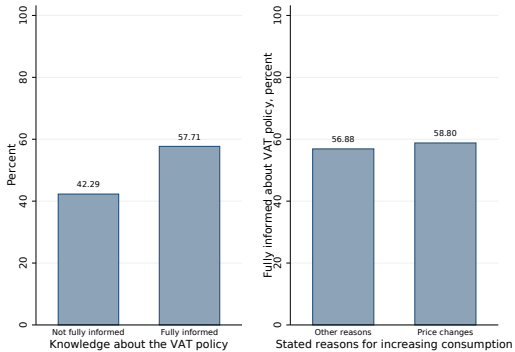
- Households with high perceived pass-through spent about 36% more on durables relative to those that perceive low pass-through
- Semi- and non-durable spending higher by 11% and 2%
- Back-of-the-envelope calculation: aggregate consumption effect of 34 billion Euros
- Revenue short-fall for fiscal authorities of [11, 14]-billion Euros
- Heterogeneity: bargain hunters, price sensitive households.
- Confirm ex-ante heterogeneity result: younger, financially less fortunate HHs.
- Key to success: simplicity. HHs with financial literacy do not benefit more.
- Increasing effect over time, especially for semi-durables.

Conclusion

- The VAT policy worked as a measure of unconventional fiscal policy.
- It stimulated consumption spending substantially, especially on durable goods.
- Its distributional impact was likely propitious.
- Its directness and simplicity appeared to have helped.
- We make no claims on optimality or appropriateness.

Ex-ante approach: Threat to identification

What if households that plan to buy more durables for other reasons than the VAT cut are also better informed about the VAT policy (think: rational inattention)?



Reverse causality story—those that buy more durables for other reasons than VAT know more about the VAT path—is not plausible. back

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 δ, 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 $\frac{C}{D}$.

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

Let's do some back-of-the-envelope aggregate calculations!

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 [11, 14]-billion Euros, depending on what we assume about how government consumptive purchases *(Vorleistungen)* and residential investment were affected by the VAT policy.

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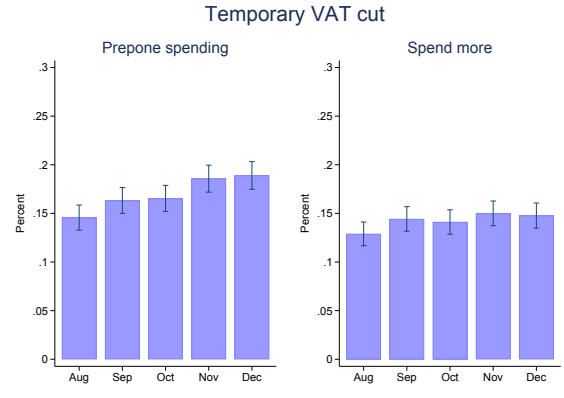
Ex-post approach: Results—Dynamic Profile

External evidence from another monthly consumption survey commissioned by the Federal Statistical Agency in the second half of 2020:



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