

Consumption Taxes and Corporate Income Taxes: Evidence from Place-Based VAT

Jules Ducept – *EU Tax Observatory, Center for Economics at Paris-Saclay*

Evangelos Koumanakos – *Hellenic Open University*

Panayiotis Nicolaides – *EU Tax Observatory, Paris School of Economics*

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Motivation

Diamond and Mirrlees (1971) optimal taxation:

Transaction taxes are distortionary

Modern expert view:

VAT is a non-distortionary tax

*(Because firm inputs are fully credited against outputs,
VAT is a tax on final consumption)*

Empirical evidence shows that VAT is not fully passed on sometimes due to tax evasion and others due to price pass-through (Kosonen 2015; Benzarti et al., 2018; Benzarti and Carloni, 2019; Benzarti et al., 2020; Genakos and Pagliero, 2022)

In this paper: **evidence of real economic effects in response to VAT increase**

- ▶ Distortions in corporate activity (lower revenue/profits)
- ▶ Negative elasticity of corporate income tax

Institutional Background

We can compare corporate responses to a VAT change due to the existence of **place-based VAT rates** in Greece

Preferential VAT rate in some Aegean islands: 33% (8 p.p.) lower rate

To raise tax revenue, Troika (IMF, EC, ECB) asked for repeal in summer 2015

Unexpected repeal in October 2015 in 6 large touristic islands:

Santorini, Mykonos, Naxos, Skiathos, Rhodes, Paros

We use Ionian islands as control (similar activity, always at mainland rate):

Kefalonia, Zante, Lefkada, Meganisi, Corfu, Paxoi and Kythira



Treatment

In October 2015, corporations experienced a large VAT rate increase:

VAT Rate	% before	% after
Main	16	24
Reduced	9	13
Super-reduced	4	6.5

Products/services **sold** to treatment islands increase by the same percentage.

Corporations in treatment islands faced an increase in **both** inputs and outputs.

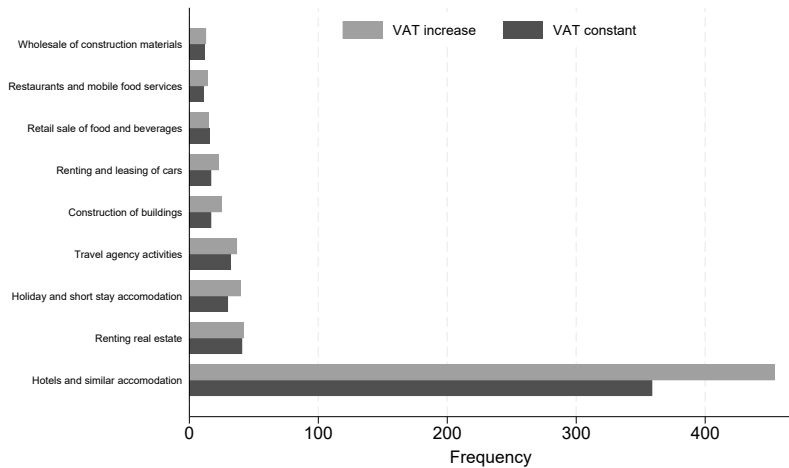
We compare corporate responses against those in islands not part of the reform

1. Corporate tax filings in Greece
 - ▶ Reported profits, losses, revenue, and taxes
 - ▶ Annual observations from 2011 to 2018
2. Postcodes of corporations using Tax ID matching in Orbis & ICAP
 - ▶ 1,042 corporations in control group, 1,152 in treatment group
 - ▶ Balanced panel over 8 years: 12,798 observations
3. Aggregate VAT revenue by island tax office
 - ▶ Monthly VAT tax return information
4. Time-varying control variables
 - ▶ Monthly number of hotel accommodation nights per island
 - ▶ Monthly hotel capacity booked

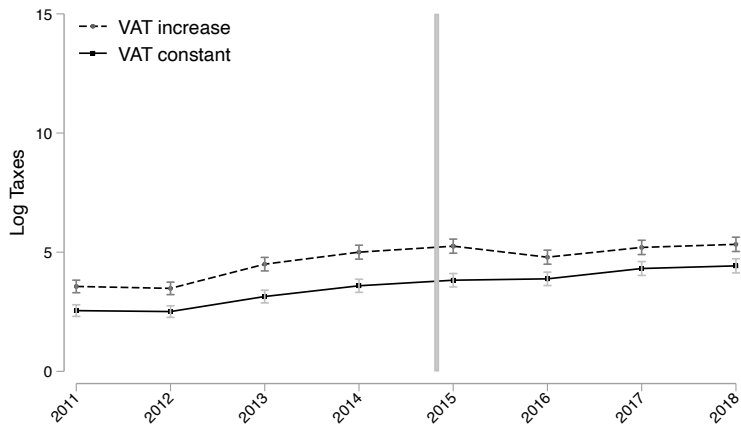
Sample Statistics

	VAT Constant Islands				VAT Increase Islands			
	Gross Revenues	Taxable Profits	Losses	CIT	Gross Revenues	Taxable Profits	Losses	CIT
Mean	971,780	74,441	114,697	21,588	1,726,187	166,564	182,837	48,213
Median	192,022	0	0	0	370,420	3,189	0	924
Sample	1,042	1,042	1,042	1,042	1,152	1,152	1,152	1,152

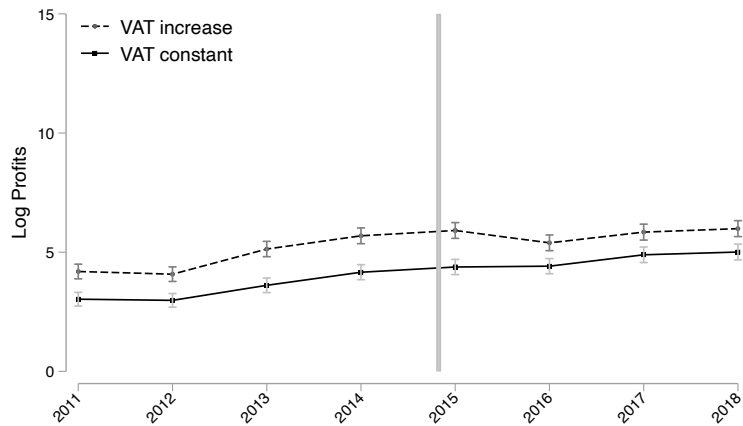
Corporate Activity



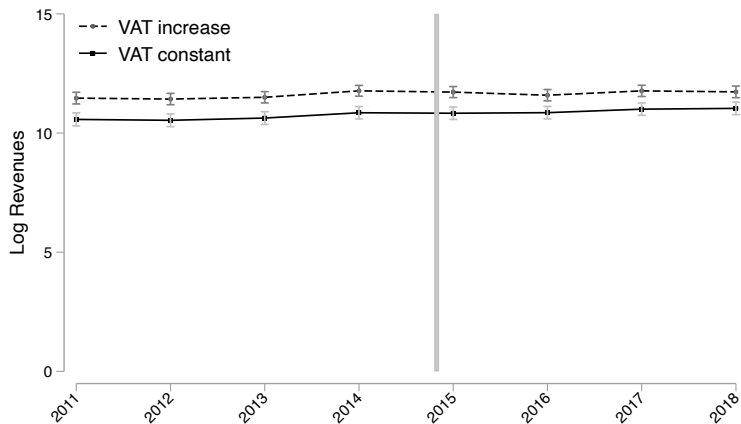
Unconditional Differences in CIT



Unconditional Differences in Profits



Unconditional Differences in Revenue



Specification

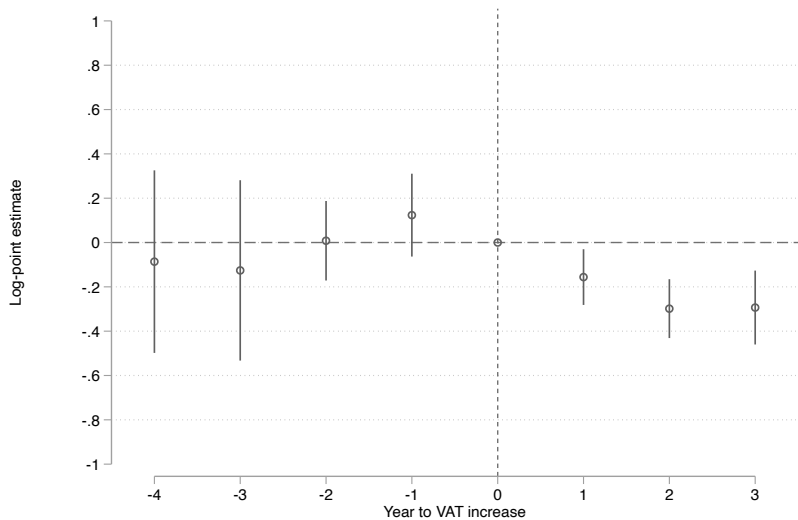
Investigate responses by comparing before and after VAT change:

- ▶ Corporations located in islands of VAT change (treatment)
- ▶ Corporations located in islands with no VAT change (control)

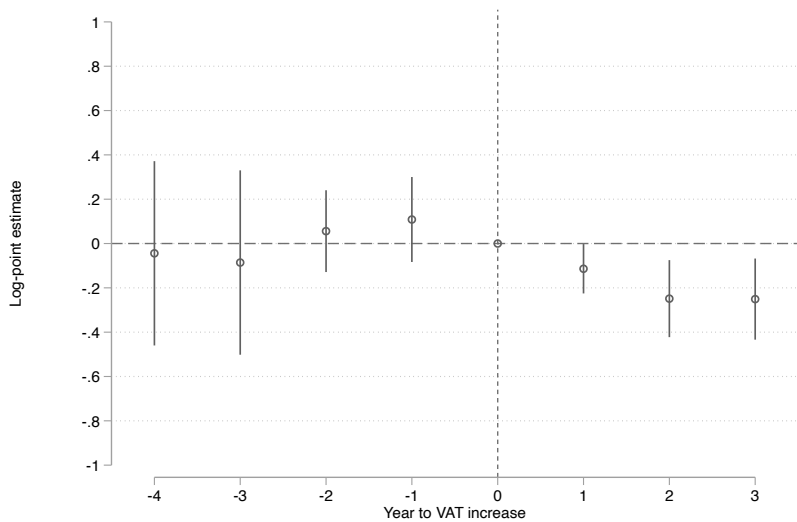
Specification:

$$\underbrace{Y_{i,z,t}}_{\text{Outcome variable}} = \alpha + \overbrace{\beta \text{Post}_t \times \text{VAT}_{i,z}}^{\text{VAT increase indicator}} + \underbrace{X_{i,t}}_{\text{Time-varying corporate variables}} + \overbrace{W_{z,t}}^{\text{Time-varying island variables}} + \delta_i + \lambda_z + \zeta_t + \epsilon_{i,z,t}$$

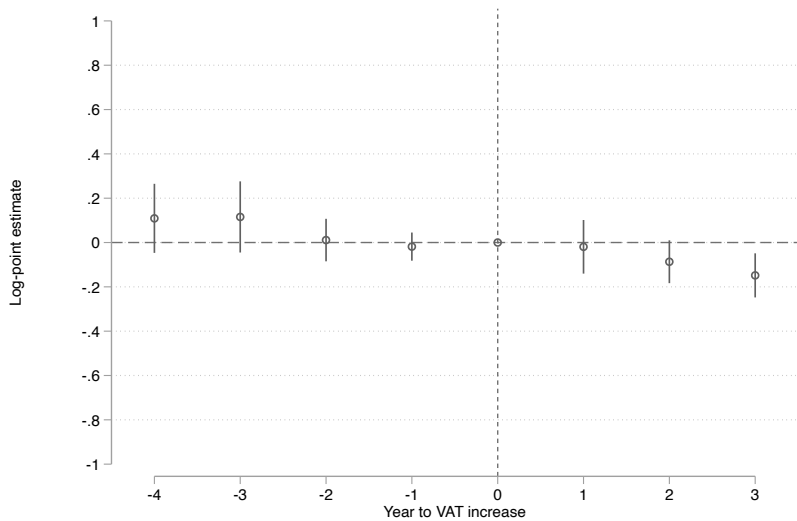
Corporate Income Taxes



Profits



Revenues



Main Regression Results (PPML)

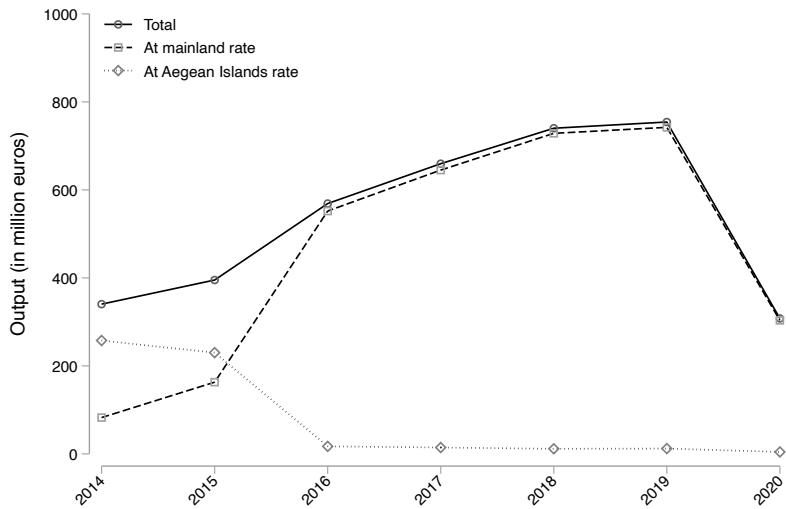
	(1) Corporate Income Tax	(2) Gross Revenues	(3) Profits
2011 × VAT ↑	-0.0863 (0.2101)	0.1090 (0.0795)	-0.0442 (0.2122)
2012 × VAT ↑	-0.1258 (0.2076)	0.1154 (0.0819)	-0.0859 (0.2122)
2013 × VAT ↑	0.0080 (0.0915)	0.0111 (0.0489)	0.0558 (0.0942)
2014 × VAT ↑	0.1236 (0.0954)	-0.0185 (0.0324)	0.1083 (0.0978)
2016 × VAT ↑	-0.1560** (0.0642)	-0.0193 (0.0617)	-0.1139** (0.0568)
2017 × VAT ↑	-0.2983*** (0.0677)	-0.0867* (0.0493)	-0.2487*** (0.0886)
2018 × VAT ↑	-0.2934*** (0.0850)	-0.1483*** (0.0508)	-0.2508*** (0.0933)
Log cash	0.0557*** (0.0059)	0.0329*** (0.0097)	0.0558*** (0.0058)
Log dividends	0.0395*** (0.0067)	0.0011 (0.0013)	0.0389*** (0.0066)
Log net fixed assets	0.0075 (0.0382)	0.1615*** (0.0292)	0.0126 (0.0396)
Log accommodation nights	0.7148* (0.3955)	0.9142*** (0.2674)	0.7009 (0.4740)
Annual hotel capacity	-0.0156** (0.0069)	-0.0119*** (0.0036)	-0.0149* (0.0083)
Corporate t-varying controls	Yes	Yes	Yes
Island t-varying controls	Yes	Yes	Yes
Corporation-Postcode FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Number of Observations	12798	12798	12798
Number of Postcodes	46	46	46
Ps. R-squared	0.90	0.97	0.88

VAT Returns Breakdown

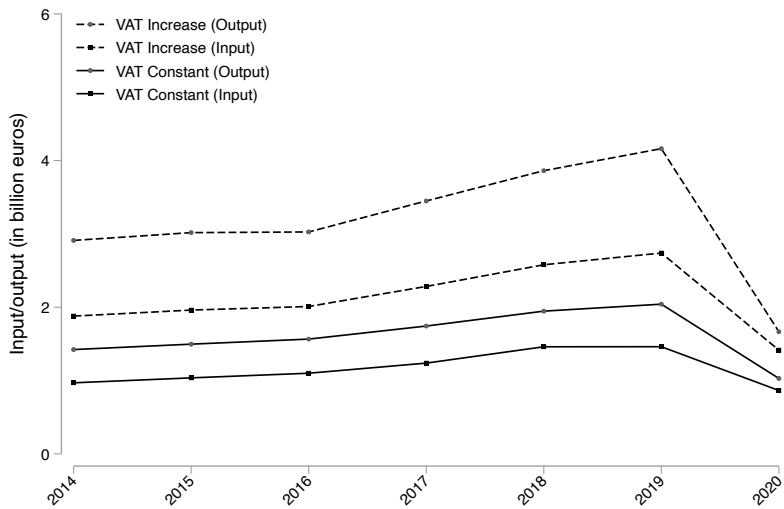
B. TABLE OF OUTPUTS – INPUTS after the reduction (according to the VAT rates) of refu

a	Taxable OUTPUTS (supply of goods or services, etc) INTRA-COMMUNITY ACQUISITIONS AND REVERSE CHARGE TRANSACTIONS that mechanisms applied.	VAT Rate %	VAT AMOUNT OF OUTPUTS DUE
I. OUTPUTS, INTRA- COMMUNITY ACQUISITIONS & REVERSE CHARGE TRANSACTIONS in Greece apart from the Aegean Islands	301	13	331
	302	6	332
	303	24	333
II. OUTPUTS, INTRA-COMMUNITY ACQUISITIONS & REVERSE CHARGE TRANSACTIONS in the Aegean Islands and from the rest of Greece towards the Aegean Islands	304	9	334
	305	4	335
	306	17	336
TOTAL TAXABLE OUTPUTS	307	TOTAL VAT	337

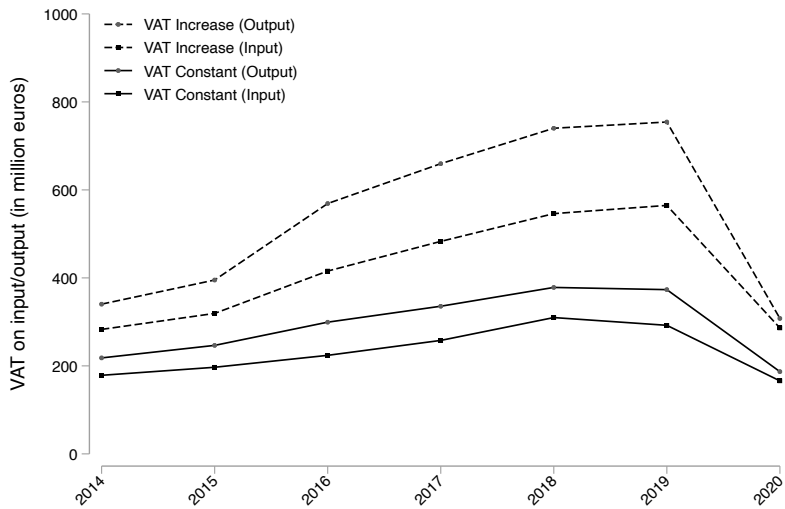
Responses in VAT Returns (Treatment Group)



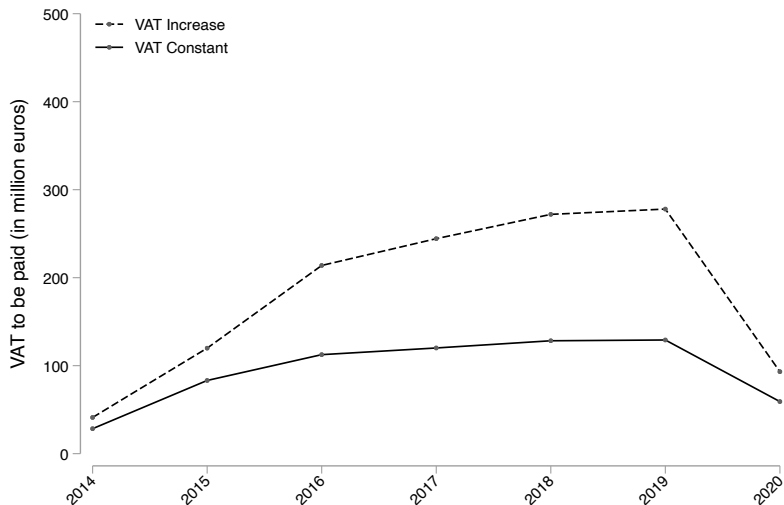
Input and Output



VAT on Input and Output

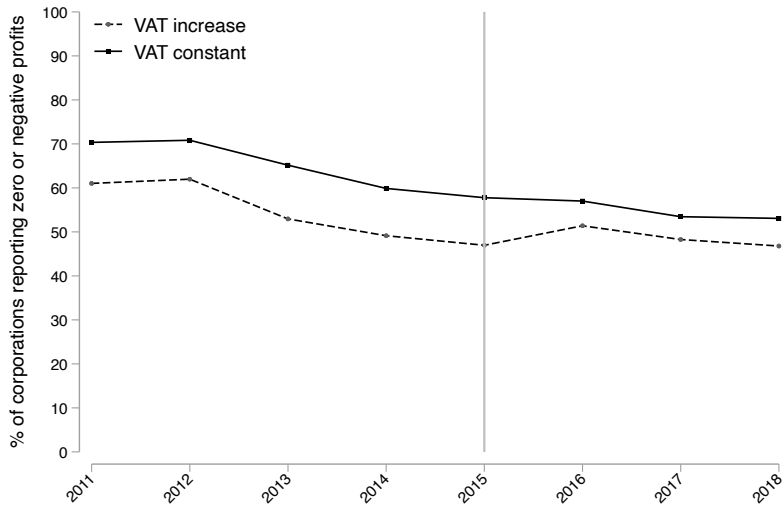


VAT Paid (VAT on Input minus VAT on Output)



Corporations in treatment islands faced an increase in VAT payments

Zero or Negative Profits



▶ **Economic importance:**

Corporations decrease revenues/profits in response to a VAT increase

→ Suggests existence of VAT distortions in economic activity

▶ **Fiscal importance:**

Elasticity of CIT with respect to VAT is large and negative

→ Governments need to account for elasticity of CIT with respect to VAT
(inverse relation of tax bases)

Work ongoing on: a VAT-CIT model, costs, price pass-through