

# Does VAT have higher tax compliance than trade taxes?

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# Introduction

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- Waves of bilateral and multilateral trade agreements has led to a reduction of tariffs
  - further loss of tax revenue;
  - reduced state capacity to improve on tax enforcement;
- Alternative: A broad-base consumption tax, like Value-Added Tax (VAT)
  - ▶ could reduce distortions;
  - ▶ higher collection efficiency due to a) upstream tax withholding, b) asymmetric evasion incentives, c) third party information on sales;

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  - ▶ To claim back VAT paid on inputs, domestic firms require VAT receipts (backward linkage);
  - ▶ Also to be able to deduce costs from revenue for corporate tax.
- Is the effect different for consumer goods compared to raw, intermediate, and capital goods (longer supply chains)?

# Literature

- Small reduction in tariff could be replaced by a lower VAT to keep revenue unchanged and hence improves efficiency (Keen and Ligthart [2002]), but
  - ▶ informal sector (Emran and Stiglitz [2005])
  - ▶ enforcement at the point of import might be easier than VAT
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- But VAT is *also* charged at the point of import (Keen [2008])
- Empirical evidence on the enforcement of VAT in low enforcement environments
  - ▶ De Paula and Scheinkman [2010] and Hoseini and Briand [2020]: chains of (in)formality
  - ▶ Pomeranz [2015] and Naritomi [2019]: paper trail and asymmetric incentives
  - ▶ Waseem [2020]: withholding channel of VAT
  - ▶ Fan et al. [2020]: impact of Chinese VAT rebates on exports

# What we do

- Measurement of illicit activity is rather hard.
  - ▶ Good proxy for trade evasion from mirror reports (Fisman and Wei [2004]);
- Many theoretical studies on the interplay of VAT and trade taxes
  - ▶ but not much empirical evidence
- Disaggregated data (HS 6-digit) for 10 years (2007 - 2016) for Iran
- Provide evidence on upward linkages of VAT to importers.

## Data sources and main variables

- Iran Custom Administration (2007 - 2017)
  - ▶ imports and collected tariffs @ 8-digit HS classification
- Handbook of Customs Regulations (2007 - 2016)
  - ▶ Statutory tariff and VAT rates
- World Integrated Trade Solution (2007-2017)

# Data sources and main variables

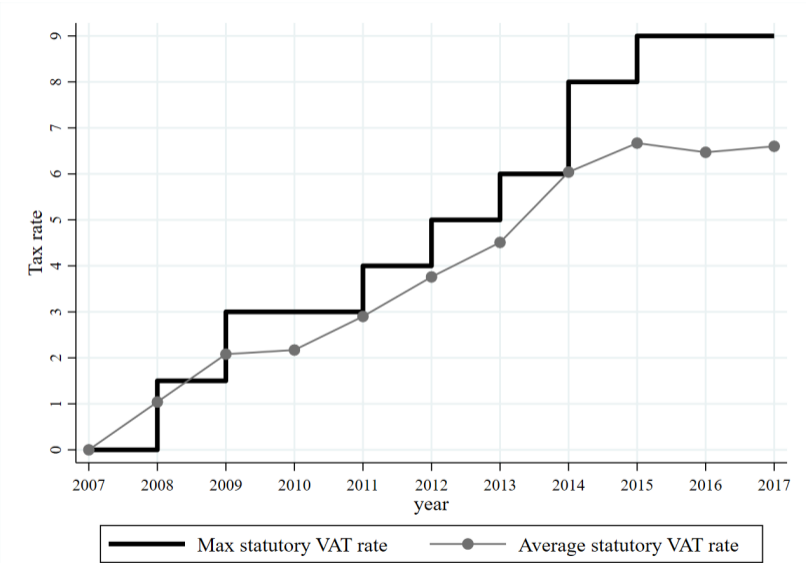
- Iran Custom Administration (2007 - 2017)
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- World Integrated Trade Solution (2007-2017)
- Trade gap:  $\ln(\text{export}_{it}) - \ln(\text{import}_{it})$ 
  - ▶ CIF vs. FOB prices
- Tariff gap:  $\tau_{it}^s - \tau_{it}^e$

# Summary Statistics

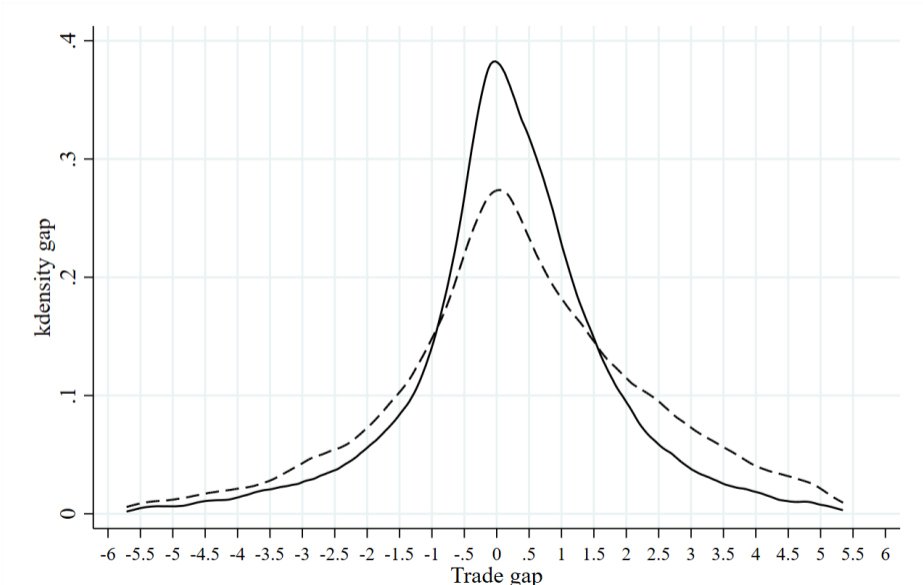
	Obs.	Mean	Median	Standard Deviation		
				Overall	Within	Between
Exports to Iran (\$), World report	34,215	6,971,725	1,576,415	24,200,731	12,671,869	25,835,530
Imports (\$), Iran report	34,215	4,403,747	1,168,528	7,699,500	3,760,239	7,476,288
Trade gap	34,215	0.21	0.19	1.95	1.18	1.95
Value Added Tax Rate	34,215	3.83	3.00	3.49	2.64	2.57
Statutory Tariff Rates	30,435	21.66	11.00	24.71	9.53	30.41
Tariff Gap	30,435	5.58	0.51	15.08	10.32	17.19



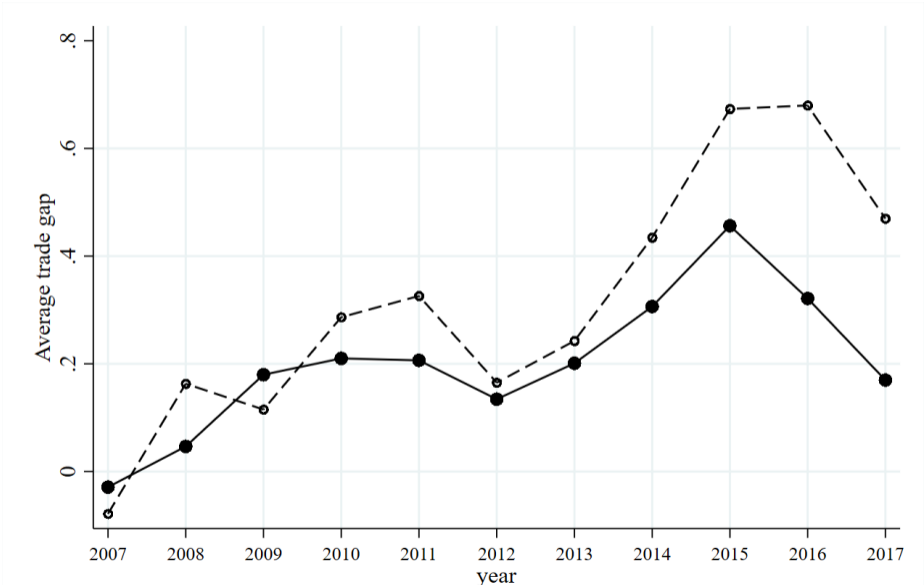
# Statutory VAT rates



# Distribution of Trade Gap



# Evolution of trade gap



# Evolution of Statutory tariff rates



# Main Specification

$$\underbrace{\ln(\text{export}_{it}) - \ln(\text{import}_{it})}_{\text{Trade Gap}} = \alpha_i + \delta_t + \beta \text{VAT}_{it} + \gamma \tau_{it}^s + \psi (\tau_{it}^s - \tau_{it}^e) + \epsilon_{it}$$

- $\text{VAT}_{it}$ : VAT dummy OR statutory rate
- $\tau_{it}^s$ : statutory tariff rate
- $\tau_{it}^e$ : effective tariff rate
- $\alpha_i$  and  $\delta_t$ : HS6 fixed effects
- Adjust for clustering at HS4 level (1125 clusters).

# Identification assumption and threats

- In the absence of VAT introduction (rate increases) the evolution of trade gap would have been the same for VATable imports and other imports.
- Heterogeneous impact of macro shocks on VATable and other imports
  - ▶ Exchange rate shocks

## Other specifications

- Impact of VAT on consumer goods vs. raw, intermediate and capital goods

$$\ln(\text{export}_{it}) - \ln(\text{import}_{it}) = \alpha_i + \delta_t + \beta \text{VAT}_{it} + \beta_{\text{cons}} \text{VAT}_{it} \times 1_{\text{cons},i} + \gamma \tau_{it}^s + \psi (\tau_{it}^s - \tau_{it}^e) + \epsilon_{it}$$

- Impact of evasion opportunities on similar products

$$\ln(\text{export}_{it}) - \ln(\text{import}_{it}) = \alpha_i + \delta_t + \beta \text{VAT}_{it} + \beta^o \text{VAT}_{it}^o + \gamma \tau_{it}^s + \psi (\tau_{it}^s - \tau_{it}^e) + \epsilon_{it}$$

## Main results

Dep. var: Trade Gap	VAT Dummy		VAT rate		
	(1)	(2)	(3)	(4)	(5)
VAT	-0.155** (0.067)	-0.107 (0.076)	-0.023** (0.010)	-0.020* (0.011)	-0.032** (0.014)
Statutory tariffs		0.026*** (0.002)		0.026*** (0.002)	0.026*** (0.002)
Tariff gap		- 0.017*** (0.002)		- 0.017*** (0.002)	-0.017*** (0.002)
Min(VAT rate on other)					0.014 (0.010)
Observations	34,215	30,435	34,215	30,435	30,435
$\bar{R}^2$	0.587	0.604	0.587	0.604	0.604



# Heterogeneity of Results

Dep. var: Trade Gap	VAT Dummy		VAT rate			
	(1)	(2)	(3)	(4)	(5)	(6)
VAT	-0.176** (0.076)	-0.073 (0.203)	-0.030*** (0.011)	-0.010 (0.028)	-0.020* (0.011)	-0.033*** (0.011)
VAT × Consumer	0.439*** (0.091)	0.335 (0.213)	0.075*** (0.015)	0.055* (0.030)		0.089*** (0.015)
VAT × Intermediate		-0.103 (0.199)		-0.022 (0.027)		
VAT × Capital		-0.133 (0.207)		-0.018 (0.028)		
VAT × Mean Gap 2007					-0.047*** (0.004)	-0.050*** (0.004)
VAT × Mean Gap 2007 × Consumer						0.013 (0.011)
Observations	30,435	30,435	30,435	30,435	◀ 26,764 ▶	◀ 26,764 ▶

# Robustness of Results

Dep. var: Trade Gap	VAT Dummy		VAT rate			
	Excl. 2012-13		Excl. 2012-13		Gap $\in$ [p5, p95]	Gap $\geq$ 0
	(1)	(2)	(3)	(4)	(5)	(6)
VAT	-0.116 (0.080)	-0.172** (0.080)	-0.019 (0.011)	-0.027** (0.011)	-0.014 (0.010)	-0.013 (0.010)
VAT $\times$ Consumer		0.366*** (0.092)		0.064*** (0.015)		
VAT $\times$ Intermediate	0.029*** (0.002)	0.029*** (0.002)	0.029*** (0.002)	0.028*** (0.002)	0.024*** (0.002)	0.022*** (0.002)
VAT $\times$ Capital	- 0.017*** (0.002)	- 0.017*** (0.002)	- 0.017*** (0.002)	- 0.017*** (0.002)	- 0.017*** (0.002)	-0.014*** (0.001)
Observations	24,550	24,550	24,550	24,550	29,855	17,295
$\overline{R^2}$	0.674	0.674	0.674	0.675	0.642	0.665

# Summary and Interpretation

- VAT seems to have a significant effect on trade gap.
- This effect seems to be smaller for consumer goods.
- Imposition of vat could help bridge the gap in tariff revenue enabling the government to charge higher tariffs given the same level of trade gap.

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