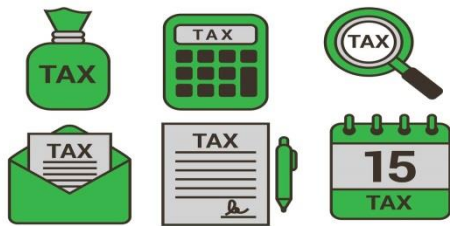


**REGIONAL WORKSHOP ON  
ECONOMIC GLOBALIZATION STATISTICS  
& REGIONAL CONFERENCE ON  
MAPPING VALUE CHAINS**  
10-15 JUNE 2019 JAKARTA, INDONESIA

# An Empirical Investigation of Border Tax Evasion in Sri Lanka

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# How do we measure tax evasion?



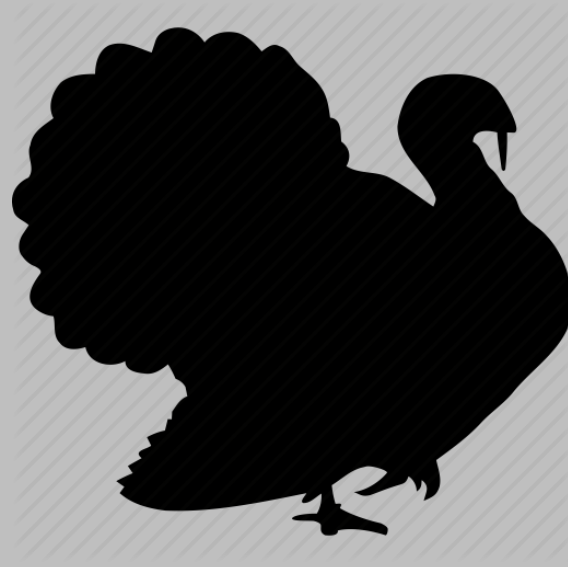
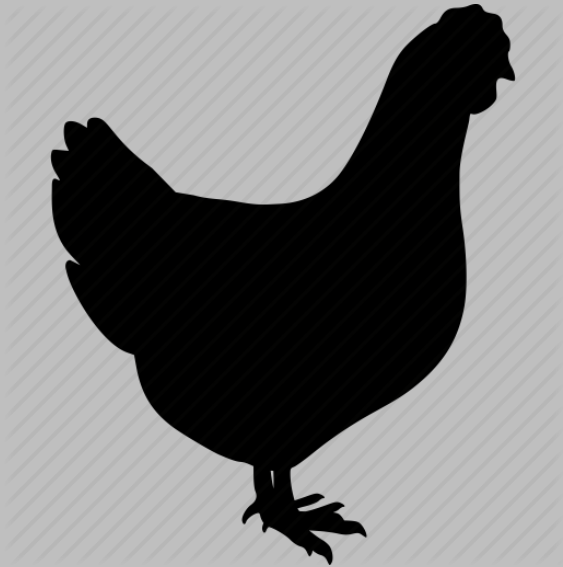
Tax evasion is not directly observable –need innovative methods of measurement



Trade data can tell us something about border tax evasion – discrepancies between two entries of the same trade flow



Two forms of tax evasion at the border using this method – underreporting and mislabeling



Chickens or Turkeys?

# Motivation

- Tax evasion is understudied in SL – data limitations
- Low tax-take in SL relative to middle income country average – is tax evasion part of the reason?



# Motivation

- Anecdotally we know that evasion/avoidance is widespread in SL – low tax morale




# Research Questions



Q1

What is the responsiveness of border tax evasion to the border tax rate?



Q2

IO analysis of para-tariff removal on Chinese apparel imports – any effect of a positive shock equivalent to the size of additional import value reported when para-tariffs are removed?



Q3

Impact evaluation of a policy that removes VAT-exempt status from a basket of imports – any effect on evasion?

# Specifics



Q1

- Underreporting – What is the responsiveness of the *evasion gap* to the *border tax rate*
- Mislabeling – What is the responsiveness of the *evasion gap* to the *minimum tax rate* on similar goods



Border tax rate =  
Tariff + VAT + PAL  
+ NBT + SCL +  
CESS + SPL

Minimum tax rate on  
similar goods =  
Minimum tax rate  
among a group of  
goods belonging to the  
same HS4 category

Evasion gap = Difference  
between exports to Sri Lanka (as  
reported by Sri Lanka's trade  
partners) and imports by Sri  
Lanka (as reported by Sri Lanka)

# Specifics



Q2

- Positive shock injected to the economy = Additional import value reported when para-tariffs on Chinese apparel imports are removed
- Size of shock determined using underreporting elasticity estimated under Q1 (for the Chinese sample of imports)

# A quick look at the literature



## Allingham & Sandmo (1972)

Pioneering theoretical model on tax evasion which states that there is an **ambiguous** relationship between tax rates and tax evasion; depending on the nature of '**risk aversion**' of agent

# Empirical Literature on Measuring Evasion

Addressing tax evasion empirically is challenging as it is unobservable. Some indirect strategies:

- **Clotfelter (1983) & Feinstein (1991)** - employ reporting discrepancies to estimate evasion gaps - reported taxable income versus true audited income
- **Saez et al. (2012)** - The elasticity of taxable income to changes in the marginal tax rate
- **Best et al. (2015)** - Bunching method provides estimates of many behavioral responses by agents to changes in tax rates, including labor supply, work hour and evasion responses.

# Empirical Literature on Measuring Evasion

Using the double declaration of trade flows:

- **Fisman & Wei (2004)** – Discrepancy between Hong Kong reported exports (to China) and China reported imports of the same, to the tax rate - elasticity of 3%
- Employ F&Ws method but extend to products trade between SL and its top 7 import partners

Data

# Data Samples

Q1

Cross-sectional sample of all products imported from Sri Lanka's top 7 import partners in 2014 -India, China, Singapore, Japan, UAE, France, and Malaysia

Q2

Sri Lanka's I-O Table for 2010 – latest available



# Data Sources

WITS  
Database

Product level data (HS6)  
Tariff data (UNCTAD's TRAINS)

SL Customs  
Tariff Guide

All other border taxes (para-tariffs)  
Exemptions lists

OECD, SL I-O  
Table

Positive shock calculation

# Preparing Datasets for Analysis

## Cross-section Sample



## Impact analysis using I-O table



# Summary Statistics

Q1

Table 1: Summary statistics - cross-sectional sample

Variable	Mean	Std. Dev.	Min.	Max.	N
Log(export_value)	3.8	2.63	-6.91	12.31	9359
Log(import_value)	3.53	2.72	-6.91	12.28	9359
Evasion gap	0.27	2.28	-10.53	11.79	9359
Tax rate	0.24	0.20	0	4.47	9359
Min_tax (at 4-digit level)	0.19	0.14	0	2.69	9359

# Methodology

Q1

$$\log(\text{export}_k) - \log(\text{import}_k) = \alpha + \beta_1 \text{tax}_k + u_k$$

$$\log(\text{export}_k) - \log(\text{import}_k) = \alpha + \beta_1 \text{tax}_k + \beta_2 \min(\text{tax}_k) + u_k$$

Q2

I-O Impact Analysis Tool by the DCS – 1.4% positive shock imposed on ‘Manufacture of Wearing Apparels’ sector

# Identifying Assumptions



Reverse Causality



Product Specific Characteristics

## OLS RESULTS

Testing for evasion by underreporting/mislabeleding

# Results

Table 3: Effect of tax rates on evasion

	(1)	(2)	(3)
	gapvalue_logs	gapvalue_logs	gapvalue_logs
Tax	0.270 (1.69)	0.265 (0.88)	0.379 (1.22)
Constant	0.201*** (3.83)	0.197* (2.47)	0.171* (2.09)
Excluding outliers?	no	yes	yes
Excluding products lacking observations on quantities?	no	no	yes
<i>N</i>	9359	9247	8625
<i>R</i> <sup>2</sup>	0.0006	0.0002	0.0005

Note - *t* statistics in parentheses. Standard errors are robust accounting for clustering of standard errors by 4-digit HS

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$



# Results

Table 4: Incorporating minimum tax among similar products

	(1)	(2)	(3)
	gapvalue_logs	gapvalue_logs	gapvalue_logs
Tax	0.735** (2.63)	1.605*** (3.69)	1.690*** (3.66)
Minimum tax on similar products	-0.904* (-2.21)	-2.180*** (-3.88)	-2.111*** (-3.66)
Constant	0.258*** (4.07)	0.285*** (3.33)	0.256** (2.93)
Excluding outliers?	no	yes	yes
Excluding products lacking observations on quantities?	no	no	yes
<i>N</i>	9359	9247	8625
<i>R</i> <sup>2</sup>	0.002	0.004	0.004

Note - *t* statistics in parentheses. Standard errors are robust accounting for clustering of standard errors by 4-digit HS

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

# Results

Table 5: Evasion gap by by trade partner

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	China	France	India	Japan	Malaysia	Singapore	UAE	All
Tax	2.392*** (4.25)	0.281 (0.30)	0.276 (1.10)	-0.0851 (-0.10)	-0.138 (-0.63)	0.375 (0.58)	0.248 (0.44)	0.735** (2.63)
Minimum tax on similar products	-2.377** (-3.18)	-2.581 (-1.69)	-0.860 (-1.71)	0.0729 (0.07)	-0.0898 (-0.19)	-0.814 (-0.93)	-0.0584 (-0.06)	-0.904* (-2.21)
Constant	0.0992 (0.92)	-0.180 (-1.04)	0.145 (1.44)	0.00661 (0.04)	0.225 (1.95)	0.958*** (6.57)	0.838*** (3.98)	0.258*** (4.07)
Share of obs (%)	26.7	5.3	29.5	8.2	7.4	14.7	8.1	100
<i>N</i>	2501	500	2766	765	691	1375	761	9359
<i>R</i> <sup>2</sup>	0.013	0.014	0.002	0.00001	0.0006	0.0009	0.0005	0.002

Note - *t* statistics in parentheses. Standard errors are robust accounting for clustering of standard errors by 4-digit HS

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## I-O RESULTS

Para-tariff removal for the case of Chinese imports

# Results

Table 6: Positive shock from additional import value reported, if para-tariffs on Chinese NKF imports are removed

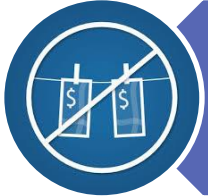
	Initial shock (Rs. Mn)	Change in Output (Rs. Mn)	Extra Employment (No of job opportunities) to be generated	Extra Household Income from compensat ion of employees (Rs. Mn)	Extra Value Addition generated (Rs. Mn)	Extra Demand for imports (Rs. Mn)	Extra Fixed capital assets to be added to capital stock (Rs. Mn)
<b>Agricultural Industries</b>	-	36.57	181	16.93	25.48	6.01	0.07
<b>Manufacturing Industries</b>	7,017.20	6,368.89	5160	655.26	2,637.14	3,226.33	131.61
<b>Services</b>	-	1,290.37	850	206.20	907.53	45.28	228.81
<b>Total Economy</b>	7,017.20	7,695.83	6191	878.39	3,570.14	3,277.62	360.49

Wrap Up

# Limitations



Inability to capture variation across time – not controlled for product specific characteristics



Doesn't adjust for illicit financial flows



Assumption of general elasticity applied to specific products, and data limitations in I-O analysis

# Policy Implications

- Laffer curve analysis for optimality of the border tax rate in terms of revenue collection - Is there space for increasing the border tax rate, without a loss in revenue?
- For any product whose tax rate exceeds 59%, an increase in the tax rate would lead to a reduction in reported imports – only 2% of sample
- OLS analysis shows presence of evasion – implies more tax revenue can be generated if more import value is reported.
- I-O analysis implies that additional GDP and employment can be generated if true import value is reported

# Recommendations

- Streamline border tax rates – phase out para-tariffs
- Avoid ad-hoc tax policy changes
- Strengthen customs procedures – National Single Window





# Thank you