

# Estimation of VAT Compliance Costs of Unincorporated Enterprises in India: Unit Level Analysis

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# Why Tax Compliance Cost Study is Important?

- **Tax Participation**

Tax Participation important for expanding tax base and improving tax environment/morale.

Compliance cost one of the factors influencing tax participation decision.

- **Taxpayer Base**

Proprietary enterprise and partnership firms constitute 90.96% of the tax payers' base in the GST regime and contribute 20.7% of GST collection (GST Council 2020).

- **Sparse Literature within Indian Context**

Literature on tax compliance costs in general and VAT/Sale tax compliance costs in particular sparse in India.

- **Primary Survey- low response rate**

Earlier studies on tax compliance costs have relied on primary survey and not free from limitation of low response rate.

# Objective and Data Source

- **Objective**

The major objective of this paper is to develop a methodology to measure **VAT/Sales Tax Compliance costs** of unincorporated enterprises in India.

## What is Compliance Cost?

“The costs incurred by taxpayers in meeting the requirements laid on them by the tax law and the revenue authorities” – Sandford (1995)

- **Data Source**

Secondary Data- NSSO's 73<sup>rd</sup> Round Survey of Unincorporated Enterprises (July 2015 – June 2016).

# Literature Review

**Table 1** Components of tax compliance costs

Components of compliance costs	Studies
Major costs of tax compliance	
Payment made to acquire services of external advisors solely for tax-related activities (legal advisors, tax agents, tax auditing, or investment advisors/financial advisors)	Palil et al. (2013); Evans et al. (2013); Susila and Pope (2012); Chattopadhyay and Das-Gupta (2002a, 2002b); Hansford et al. (2003); Slemrod and Venkatesh (2002); Abdul-Jabbar and Pope (2008); Eichfelder and Hechtner (2018); Blaufus et al. (2014); Evans et al. (2014)
The cost incurred on maintaining books of accounts, records etc	Palil et al. (2013); Evans et al. (2013); Chattopadhyay and Das-Gupta (2002b); Hansford et al. (2003); Slemrod and Venkatesh (2002)
Time Valuation (Time spent by either manager, accountant, accounting staff, administrative staff etc. for tax compliance activities OR Time spent on tax computation, tax planning, tax appeal, tax objections)	Abdul-Jabbar and Pope (2008); Evans et al. (2013); Palil et al. (2013); Susila and Pope (2012); Chattopadhyay and Das-Gupta (2002a, 2002b); Slemrod and Venkatesh (2002); Yilmaz and Coolidge (2013); Eichfelder and Hechtner (2018); Blaufus et al. (2014); Evans et al. (2014)

# Literature Review (contd.)

Additional costs of tax compliance	
Tax materials (related to tax matters)	Palil et al. (2013)
Travelling expenses	Palil et al. (2013); Susila and Pope (2012); Chattopadhyay and Das-Gupta (2002a, 2002b); Abdul-Jabbar and Pope (2008)
Stationary, photocopying etc	Palil et al. (2013); Susila and Pope (2012); Chattopadhyay and Das-Gupta (2002a, 2002b); Abdul-Jabbar and Pope (2008)
Office Space at market rental value, general supplies etc	Chattopadhyay and Das-Gupta (2002a, 2002b)
Human Resource Training (on tax matters)	Palil et al. (2013); Chattopadhyay and Das-Gupta (2002b);
Computers or any other electronic equipment	Chattopadhyay and Das-Gupta (2002a) <sup>#</sup>
Computer hardware or software costs	Chattopadhyay and Das-Gupta (2002b); Hansford et al. (2003); Eichfelder and Hechtner (2018); Blaufus et al. (2014)
Staff salaries/wages/allowances (particularly for tax compliance activities)	Susila and Pope (2012); Chattopadhyay and Das-Gupta (2002b); Yilmaz and Coolidge (2013)
Communication costs	Hansford et al. (2003); Abdul-Jabbar and Pope (2008)
Psychic Costs (e.g. cost of anxiety)	Faridy et al. (2016); Hansford et al. (2003)
Benefits of tax compliance	
Benefits of complying with the tax regime (Cash Flow benefits or tax-deductibility or Managerial benefits)	Susila and Pope (2012); Chattopadhyay and Das-Gupta (2002a, 2002b); Evans et al. (2014)*

<sup>#</sup>Computer costs for completing and submitting TDS returns (Das-Gupta, 2003).

\*Majorly focuses on the managerial benefits.

Source: Compiled by Authors

# Components of Total Selected Cost

## **1. Costs of legal services**

1.1 Service charges for legal services availed.

## **2. Costs of maintaining books of account and bank account**

2.1 Service Charges for work done by other concerns such as audit, advertising, accounting, book keeping, architecture, engineering, photocopying.

2.2 Financial charges- Banking, commission brokerage (exclude interest payments to banks).

## **3. Costs of Information, Communication and Technology (ICT) related services**

3.1 Minor repair and maintenance of information, computer and telecommunication equipment (ICT)

3.2 Computer related services (software development, Annual Maintenance Contract (AMC), etc.)

3.3 Communication expenses (telephone, fax, postal, courier, email, internet, cyber cafe etc.)

# Components of Total Selected Cost (contd.)

## 4. Market value of assets (related to ICT equipment)

4.1 Market value of owned information, computers and telecommunications equipment.

4.2 Market value of owned software and database.

## 5. Labour cost

5.1 Annual compensation to workers (includes salary/wages, house rent allowances, transport allowances, bonus etc.) or annual total emoluments paid to workers.

**The overall aggregate cost is calculated after summing up 1 to 5 components:**

**Total Selected Costs (TSC)** = Costs of legal services + Costs of maintaining books of account and bank account + Costs of Information, Communication and Technology (ICT) related services + Market value of assets (related to ICT equipment) + Labour cost.....(1)



# Data Limitations

**1) Inseparability of costs** between general business activities and tax compliance – A challenge in tax compliance cost research.

For example, cost associated with accessing legal services- legal services may be availed for some legal disputes/litigation related to general business purposes and may not be necessarily related to VAT/Sales tax.

**2) Partial coverage** of Compliance cost since the NSSO's survey does not capture all information pertaining to tax compliance activities. For example, costs of litigation or tax appeal should be included in measuring the compliance cost. We have not included Psychological costs and time related costs.

**3) Benefits of complying** with the tax regime, such as cash flow benefits, tax-deductibility and managerial benefits, can offset compliance costs. We have not included such benefits.

Therefore, the cost of tax compliance that the present study captures is a **lower bound estimate (partial compliance cost)** and availability of more information in future NSSO's surveys may help to include other components of compliance costs.

# Data Cleaning

- Restricted our sample to **proprietary enterprise and partnership firm** only i.e. excluded self-help groups, non-profits institutions and other enterprises.
- Restricted our sample to enterprises engaged in **manufacturing and or/ trading activities** as enterprises in services sectors are not required to be registered.
- Excluded enterprises which are **not legally required to be registered** by considering state-wise VAT registration threshold (determined by the annual turnover).
- With all cleaning up of data, we have 58,586 observations of which **12,516 (21.36%) are registered** and 46,070 (78.64%) are unregistered under State VAT/Sales Tax Acts.

# Methodology

We adopt **difference approach** to estimate VAT compliance costs where additional costs incurred by VAT registered enterprises vis-à-vis unregistered enterprises are considered as VAT compliance costs

**Instrumental Variable 2 Stage Least Square (IV 2SLS) Method has been used to meet the desired objective.**

- **Structural equation**

$$\log(\text{total selected cost}) = \beta_0 + \beta_1 \log(\text{turnover}) + \beta_2 [\log(\text{turnover})]^2 + \beta_3 [\log(\text{turnover})]^3 + \beta_4 \log(\text{asset}) + \beta_5 [\log(\text{asset})]^2 + \beta_6 \log(\text{total worker}) + \beta_7 [\log(\text{total worker})]^2 + \beta_8 [\log(\text{total worker})]^3 + \beta_9 \text{VAT} + \beta_{10} (\text{prop}^* \text{oe}) + \beta_{11} \text{locationout}^* \text{urban} + \beta_{12} (\text{manuf}) + \beta_{13} (\text{expanding}) + \beta_{14} (\text{yoop}) + \text{state dummies} + u \dots \dots \dots (2)$$

**For consistent estimator** of all  $\beta_j$ s in Eq.2, we need

- $E(u) = 0$  and  $Cov(x_j, u) = 0$ , where  $x_j$ s are regressors in Eq. 2.

# Instrument Variable Approach (2SLS Regression Analysis)

It is to be highlighted that coefficient of VAT in regression model indicates difference in average costs (TSC) borne by VAT registered enterprises vis-à-vis VAT un-registered enterprises. This difference, as we claim, is due to compliance costs associated with VAT/ Sales tax.

However, VAT registration also depends on scale and enterprise-specific factors (Badola & Mukherjee, 2021; Mukherjee and Rao, 2019). So, possibility of having  $Cov(VAT, u) \neq 0$  in equation 2 cannot be ignored, especially when correlation coefficient between  $u$  and VAT is -0.02 at 1% level of significance

Reduced form equation for VAT is

$$\begin{aligned} \text{VAT} = & \pi_0 + \pi_1 \log(\textit{turnover}) + \pi_2 [\log(\textit{turnover})]^2 + \pi_3 [\log(\textit{turnover})]^3 + \pi_4 \log(\textit{asset}) + \\ & \pi_5 [\log(\textit{asset})]^2 + \pi_6 \log(\textit{total worker}) + \pi_7 [\log(\textit{total worker})]^2 + \pi_8 [\log(\textit{total worker})]^3 + \pi_9 \\ & (\textit{prop*oae}) + \pi_{10} (\textit{locationout*urban}) + \pi_{11} (\textit{manuf}) + \pi_{12} (\textit{expanding}) + \pi_{13} (\textit{yoop}) + \pi_{14} \\ & (\textit{formal credit}) + \text{state dummies} + v \dots \dots \dots (3) \end{aligned}$$

- Instrument identification requires :  $\widehat{\pi}_{14} \neq 0$  and  $Cov(\textit{formal credit}, u) = 0$ .
- Instrument relevance condition requires:  $\text{Corr}(\text{VAT}, \textit{formal credit}) \neq 0$

# Description of Variables

Variable Name	Variable Description	Expected Signs
<b>Dependent Variable</b>		
log(total selected cost)	log of total cost (auditing, accounting, book keeping, legal services, communication cost, etc.) as mentioned in equation 1.	
<b>Independent Variables</b>		
<i>Scale Factors / Economic Characteristics</i>		
log (turnover)	log of annual turnover (in INR)	Positive
[log (turnover)] <sup>2</sup>	square of log(turnover )	Depends
[log (turnover)] <sup>3</sup>	cube of log (turnover)	Depends
log (asset)	log of the market value of total (owned and hired) assets excluding land (in INR)	Positive
[log(asset)] <sup>2</sup>	square of log (asset)	Depends
log (total worker)	log of total workers (full-time and part-time, male, female and transgender)	Positive
[log (total worker)] <sup>2</sup>	square of log (total worker)	Depends
[log (total worker)] <sup>3</sup>	cube of log (total worker)	Depends
<i>Enterprise specific factors/ Operational Characteristics</i>		
VAT	1 if the enterprise registered under VAT/Sales Tax, 0 otherwise.	Positive
prop*oae	1 if the enterprise is proprietary & own-account enterprise (OAE) and 0 otherwise	Negative
locationout*urban	1 if the enterprise is located outside household's premises and in urban area and 0 otherwise.	Positive
manuf small	1 if the enterprise is engaged only in manufacturing activities, 0 otherwise (trading activity form the reference category for activity type).	Depends
yoop	years of operation (as on 2016)	Negative
expanding	1 if the enterprise is expanding in nature and 0 if enterprise is stagnant/ contracting or operated for less than 3 years.	Positive
<i>Instrument variables for VAT</i>		
formal credit	1 if enterprise has taken credit from formal sources and 0 otherwise along with other set of instrument variables	-

# Tests for Model Specification

## Endogeneity test

**Durbin-Wu-Hausman test**- confirms the presence of endogeneity

## Heteroskedasticity test

**Breusch-Pagan/Cook Weisberg test** – confirms the presence of heteroskedasticity and hence we reported robust variance estimator.

## Standard 2SLS Vs. Adams et al. (2009) 2SLS model

It is often argued that when the endogenous variable is binary in nature then using instrumental variable 2SLS model may lead to inconsistent estimate of the coefficient.

Following **Adams et al. (2009)**, we also adopt a three-stage procedure.

**The results of Standard IV 2SLS and 2SLS (ala Adams et al. 2009) are similar across all criteria. Therefore, it confirms that standard IV 2SLS estimation gives consistent estimates.**

# Regression Results

Dependent Variable- log(TSC)	IV 2SLS Regression Results (vide Adams et al. 2009)			IV 2SLS Regression Results			OLS Regression Results		
	Coef.		Robust S.E.	Coef.		Robust S.E.	Coef.		Robust S.E.
<b>VAT</b>	<b>0.806</b>	<b>**</b>	<b>0.375</b>	<b>0.806</b>	<b>**</b>	<b>0.375</b>	<b>0.097</b>	<b>***</b>	<b>0.008</b>
log (turnover)	8.525	***	2.418	8.525	***	2.418	3.826	***	0.306
[log (turnover)] <sup>2</sup>	-0.513	***	0.160	-0.513	***	0.16	-0.211	***	0.021
[log (turnover)] <sup>3</sup>	0.010	***	0.003	0.01	***	0.003	0.004	***	0.000
log(asset)	0.358	***	0.091	0.358	***	0.091	0.277	***	0.031
[log(asset)] <sup>2</sup>	-0.012	***	0.004	-0.012	***	0.004	-0.006	***	0.001
log (total worker)	0.418	***	0.077	0.418	***	0.077	0.282	***	0.033
[log (total worker)] <sup>2</sup>	0.321	***	0.040	0.321	***	0.040	0.431	***	0.020
[log (total worker)] <sup>3</sup>	-0.056	***	0.006	-0.056	***	0.006	-0.073	***	0.003
prop*oae	-2.616	***	0.046	-2.616	***	0.046	-2.716	***	0.017
locationout*urban	0.121	***	0.025	0.121	***	0.025	0.152	***	0.007
manuf	0.589	***	0.055	0.589	***	0.055	0.393	***	0.008
expanding	0.053	***	0.017	0.053	***	0.017	0.051	***	0.007
yoop	-0.001		0.001	-0.001		0.001	-0.002	***	0.000
Constant	-40.016	***	12.170	-40.016	***	12.17	-15.483	***	1.524
Number of obs.	10,302			10,302			55,759		
<b>R-squared</b>	<b>0.867</b>			<b>0.867</b>			<b>0.882</b>		
<b>Tests for endogeneity</b>									
Durbin (score) chi <sup>2</sup> (1)	4.179	**		4.179	**				
State Dummies	Included			Included			Included		

# Major Findings

## Estimates of Total Selected Costs (TSC)

- Average TSC (INR 2,19,117) is 5.4% of **average annual total operating cost** (INR 40,66,309).
- Average TSC is (INR 2,19,117) 4.8% of **average annual turnover** (45,60,458).

## Regression Results

### *VAT Coefficient*

- As per 2SLS results we find that coefficient of VAT dummy is positive and significant.
- We observe that **VAT registered enterprises incur additional 80.6% of TSC** as compared to un-registered enterprises after controlling for all possible control variables and state dummies.
- **The estimated VAT Compliance Cost is 4.35% (80.6% of 5.4%) of average annual total operating cost.**
- **Similarly, average VAT Compliance Cost is 3.87% (80.6% of 4.8%) of average annual turnover.**



# Major Findings (contd.)

To check **regressive nature** of compliance cost, we have run separate set of regressions for three quintile classes of annual turnover and annual market value of total assets

We report that

- Compliance cost **regressive over turnover classes**  
The value of VAT coefficient reduces with increasing turnover
- Compliance cost is **progressive over asset classes**  
The value of VAT coefficient increases with increasing asset classes

# Conclusions

- In our knowledge, this is the first attempt to estimate VAT compliance costs in India based on secondary unit-level data of unincorporated enterprises.
- **NSSO conducts this survey on regular basis, methodology developed in this paper may help in future estimation of compliance costs.**
- Though our study is not free from limitations, it finds that compliance cost could be a reason for a large section of unincorporated enterprises to stay outside the tax system, as 78.63% of eligible unincorporated enterprises are not registered under VAT/ Sales Tax.
- **Therefore, government may consider facilitating ease-of-tax-compliance by providing tax payers services to unincorporated enterprises.**
- Being tax collectors in VAT/ GST regime, refunding a part of collected taxes to small and medium enterprises may encourage unregistered unincorporated enterprises to take part in the tax regime.
- We hope that upcoming NSSO's surveys will give emphasis to capture more information specific to tax compliance activities so that future research on this issue could be explored.

THANK YOU