

DO FIRMS REMIT AT LEAST 85% OF TAX EVERYWHERE? NEW EVIDENCE FROM INDIA

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Abstract:

In this note, we present new evidence about firm tax remittance in India, and discuss the remarkable similarity and prominence in the role of businesses in tax remittance in very different tax systems – India, the United States and the United Kingdom. Previous studies of developed countries have concluded that firms remit the great majority of taxes: 83 percent of taxes in the U.S., and 87 percent of taxes in the U.K. A recent OECD working paper estimates the share for a sample of 24 OECD countries, and finds an unweighted average of 89.7 percent. The proximity of these estimates suggests an emerging “rule of 85,” but notably absent is any evidence for developing countries, where the tax structure and administrative capacity varies substantially from developed countries. We find, somewhat remarkably, that in India firms remit about the same fraction of total revenue as in the U.S., U.K., and other OECD countries--87 percent of the total tax revenue collected by the central and state governments. This is true even though the composition of tax revenue in India is very different from that of the U.S., U.K., and throughout the OECD.

1. INTRODUCTION

Richard Bird stated, “The key to effective taxation is information, and the key to information in the modern economy is the corporation [...]” (Bird, 2002). Firms, not just those that are incorporated, are not only directly taxed (e.g., through corporate tax), they also act as withholding agent (e.g., for salary income of employees) and remitters (e.g., for sales and excise taxes). As a result, firms remit far more in taxes than their actual tax liability. In this note, we present new evidence about firm remittance in India, and discuss the remarkable similarity and prominence in the role of businesses in tax remittance in three very different tax systems – India, the United States and the United Kingdom.

Note that our discussion uses the word *remittance* with a distinct meaning, the deposit of tax with the government. This is distinct from who the statute says the tax is “on”, and distinct from who bears the burden of a tax. In the case of a retail sales tax, for example, even though the retail firm remits the tax, it is generally assumed that much of the economic incidence falls on the consumer. In the case of a labor income tax, the tax is “on” the employee’s income but the bulk of the tax

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may be remitted by employers because of withholding requirements. In this note, we focus only on tax remittance by firms, not the incidence of taxation.

Previous studies of developed countries have concluded that firms remit the great majority of taxes: 83 percent of taxes in the United States, and 87 percent of taxes in the United Kingdom. A recent OECD working paper estimates the share for a sample of 24 OECD countries, and finds an unweighted average of 89.7 percent (Milanez, 2017). The proximity of these estimates suggests an emerging “rule of 85,” but notably absent is any evidence for developing countries, where the tax structure and administrative capacity varies substantially from developed countries.

In this paper, we present the first such estimate for a developing country, India. We find, somewhat remarkably, that in India firms remit about the same fraction of total revenue as in the United States and United Kingdom--87 percent of the total tax revenue collected by the central and state governments. This is true even though the composition of tax revenue in India is very different from that of the United States and the United Kingdom.

Who remits matters. Under conditions of complete observability of characteristics that determine tax liability, the identity of the remitter is irrelevant for the revenue, efficiency, or economic incidence of a tax. However, given key aspects of real tax systems – particularly evasion and non-trivial administrative and compliance costs, this irrelevance breaks down (Slemrod, 2008). In the case of personal income tax, for example, withholding by the employer or the originator of dividends and interest payments, has at least two advantages. It reduces administrative and compliance costs. Instead of relying on each individual employee to correctly and truthfully estimate and remit their tax liability, a human resources department can take advantage of the economies of scale from applying the same knowledge to multiple identical employees. Second, it provides a third-party check on reported tax liability. Evasion in the personal income tax subject to withholding would require collusion between the employee and the employer, which is more costly than misreporting in the absence other sources of verifiable information.

In sum, because most economic activity flows through businesses, firms play a key role in improving the efficiency of tax collection by reducing administrative and compliance costs, and gathering verifiable information.

2. REMITTANCE BY FIRMS IN DEVELOPED COUNTRIES

Christensen, Cline and Neubig (2001) and Shaw, Slemrod and Whiting (2010) follow similar methodology to estimate the proportion of total tax remitted by businesses in the United States and United Kingdom, respectively. Both studies classify the self-employed as a non-business and focus on remittance as opposed to statutory tax liability. Christensen, Cline and Neubig (2001) focus on the role of corporations in tax collection as opposed to non-corporate businesses like (pass-through) Subchapter S corporations or partnerships. The two studies first estimate the proportion of tax remitted by business in individual tax categories used by each country – personal income tax, property tax, sales tax and so on. Then the proportion of total tax remitted by businesses is a weighted average of the fraction remitted by firms in each tax category, weighted by the contribution of each tax category to total tax collection.

Categories where the tax is imposed directly on the business (e.g., corporate taxes) or that are remitted through withholding by firms, like PAYE in the United Kingdom, or through taxes such as VAT that are not designated as taxes “on” business but must be remitted by businesses are classified as 100 percent remitted by firms. Others where the firm is clearly not the remitter, such as income taxes remitted through “self-assessment” by the individual or self-employed, are classified as wholly unremitted by businesses.

Some cases are more ambiguous. In the United Kingdom, for example, one ambiguous category is that of “other receipts” under income tax, which is comprised of three sub-categories: a tax deduction scheme for interest income, other “tax deducted at source” and a catch-all “others” category. In the first two subcategories, Shaw, Slemrod and Whiting (2010) claim that the withholder is the business in most cases. They assume that taxes in the “others” sub-category is wholly remitted by individuals. Weighting by the relative revenue importance of each of the sub-categories, Shaw, Slemrod and Whiting (2010) estimate that businesses remit 58 percent of taxes under the “other receipts” category. Through similar calculations, they estimate that about 97 percent of national insurance contributions come from businesses, and that businesses remit 20 percent of Vehicle Excise Duty (VED).

In the United States, Christensen, Cline and Neubig (2001) estimate that payroll taxes, property taxes and personal income taxes are at least partially remitted by firms. 95 percent of payroll taxes and 80 percent of personal income taxes are remitted by businesses, while about 42 percent of property tax is remitted by firms.

The recent study by the OECD uses data from the OECD Revenue Statistics database, which collects information in standardized revenue categories for their sample. This data is supplemented with information from surveys sent to the member countries, which further broke down revenue from certain ambiguous tax categories into the portion remitted by business. Unlike the earlier studies it includes the self-employed as a “business.” Furthermore, unlike the earlier studies and our own analysis of India, where there is no reliable data on the identity of the remitter the OECD study leaves some portions of tax revenue as “unallocable” as either remitted by business or by individuals.

The OECD study also makes the distinction between the share of taxes that are both remitted by business and are the legal liability of businesses, and the share that is remitted by business but where the legal liability falls on others. To compare to our estimates, as well as those of the earlier studies of the United States and the United Kingdom, we take the sum of these two business-remitted categories. As a share of the allocable tax collection, the unweighted 24-country average of firm-remitted taxes is 89.7 percent, ranging from as low as 67.5 percent in Luxembourg³ to as high as 98.5 percent in Chile. The United Kingdom comes in at 90.8 percent, and the United States at 97.3 percent. To calculate lower and upper bounds to these ratios, we can assign the entire unallocable portion to non-businesses or to businesses. This generates an unweighted average of between 78.8 percent and 91.1 percent.

³ France also has a lower than average share of firm remitted taxes (about 85 percent of total allocable tax collection). It is also the only one of the 24 countries in the OECD sample without withholding by employers on personal income tax. However, France was about to introduce withholding on income tax in 2018 but has postponed by a year to 2019, which will likely raise the share of tax remitted by firms substantially.

3. FIRM REMITTANCE IN INDIA

We present the first estimate of firms' role in tax remittance for a developing country, taking a similar approach to that of Christensen, Cline and Neubig (2001) and Shaw, Slemrod and Whiting (2010) in Table 1. Firms remit a surprisingly similar proportion of total tax collection – about 87 percent – in India. As did the earlier studies (but not the OECD study), we exclude self-employed professionals from the definition of a firm.⁴ Where the extent of firm remittance is uncertain, we make the most conservative assumption about the share remitted by firms.

We compile data on tax collected by the Central and State government revenue bodies between fiscal years 1998-2014, separately for each tax instrument. For each of these tax instruments, we estimate the proportion of total revenue that is remitted by firms. Some taxes like the corporate tax, VAT, excise and customs are fully remitted by firms. Others are fully remitted by individuals - like the "professions tax." Tax instruments such as the personal income tax and service tax are remitted by both firms and individuals, in varying proportions. For these instruments, we estimate the proportion remitted by businesses using available information on tax collection by type of taxpayer. The details of this estimation are provided in the data appendix.

Some smaller categories, such as stamp duties, are partially remitted by firms, but the proportion of firm remittance is apparently very small and is difficult to pin down, that we classify them as being remitted fully by individuals.

The distinction between a self-employed individual and a "firm" can be difficult to pin down. For example, a sole proprietor who is registered for VAT is treated as a "firm" whereas a consultant who is registered under the service tax is treated as an individual. This blurred line is especially relevant in India, where sole proprietorships and small firms are more prevalent than in OECD countries. We try as best we can, given the limitations of data, to decide which side of the ledger to place these small firms based on why it matters – the extent to which the entity can act as an information aggregator or provide a third-party check. For this reason, VAT-registered sole proprietors are treated as "firms" while service-tax-registered professionals are not.

⁴ In the case of the VAT, excise, and customs, we cannot distinguish sole proprietors, so implicitly VAT remittances of these taxes by sole proprietorships are considered to be made by firms.

Table 1: The Role of Firms in Tax Remittance in India, Fiscal Year 2014-15

	Receipts (₹ mn)	Share of Total Revenue	Proportion Remitted by Business
Central Government Taxes			
Corporate Tax	4,289,250	20.80	1.00
Personal Income Tax	2,583,260	12.53	0.60
Other Direct Taxes	11,030	0.05	0.00
Customs	1,880,160	9.12	1.00
Central Excise	1,881,280	9.12	1.00
Service Tax	1,679,690	8.15	0.70
Other Indirect Taxes	124,190	0.60	1.00
State Government Taxes			
<i>Taxes on Income</i>	53,879.8	0.26	0.00
Agricultural Income Tax	1,614	0.01	0.00
Taxes on Professions, Trades, Callings & Employment	52,265.8	0.25	0.00
<i>Taxes on Property and Capital Transactions</i>	1,005,292.5	4.88	0.00
Land Revenue	103,396.3	0.50	0.00
Stamps and Registration Fees	889,728	4.32	0.00
Urban Immovable Property Tax	12,168.3	0.06	0.00
<i>Taxes on Commodities and Services</i>	7109526.8	34.48	1.00
Sales Tax	5,218,532.8	25.31	1.00
State Excise	941,601.2	4.57	1.00
Taxes on Vehicles	410,292	1.99	1.00
Taxes on Goods and Passengers	203,657	0.99	1.00
Taxes and Duties on Electricity	266,125.3	1.29	1.00
Entertainment Tax	21,559.3	0.10	1.00
Other Taxes and Duties	47,759.2	0.23	1.00
Total	20,617,559.1	100	87.35

Note: \$1 ≈ ₹65 and £1 ≈ ₹81. We make the conservative assumption that stamp duties and property taxes are fully remitted by individuals and that self-employed individuals, professionals are not “firms”. Source: Author’s calculations based on data from Economic and Political Weekly Research Foundation (EPWRF) India time series, <http://www.epwrfits.in/index.aspx>

Figure 1 shows that the proportion of total tax collection remitted by firms in India has shown a moderate but steady decline from 91 percent in 1998 to about 87 percent in 2014. This is largely because of the rising relative importance of personal income tax and service tax, which feature mixed firm remittance, and the relative decline in customs and excise tax collection, which have complete firm remittance. Personal income tax rose from 9 to 13 percent of total tax collection and service tax rose from close to zero percent to 8 percent of total tax collection between 1998 and 2014. Over the same time period, customs and excise duty declined dramatically from 44 to 18 percent of total tax collection, as India lowered tariffs to liberalize trade.

Figure 1:

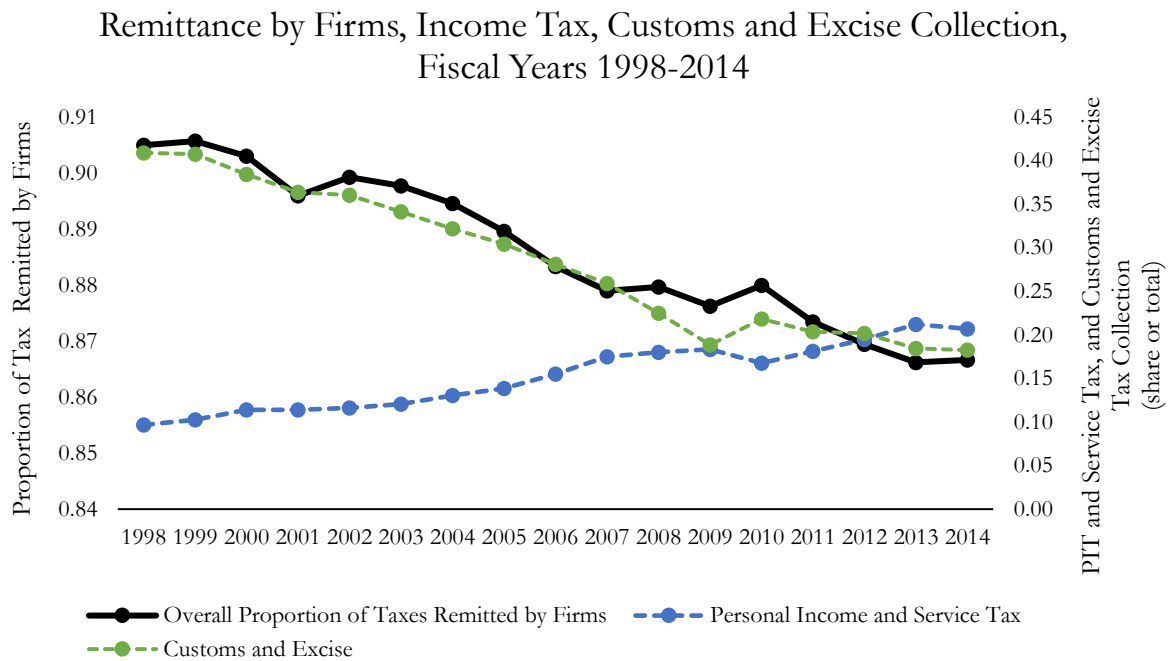
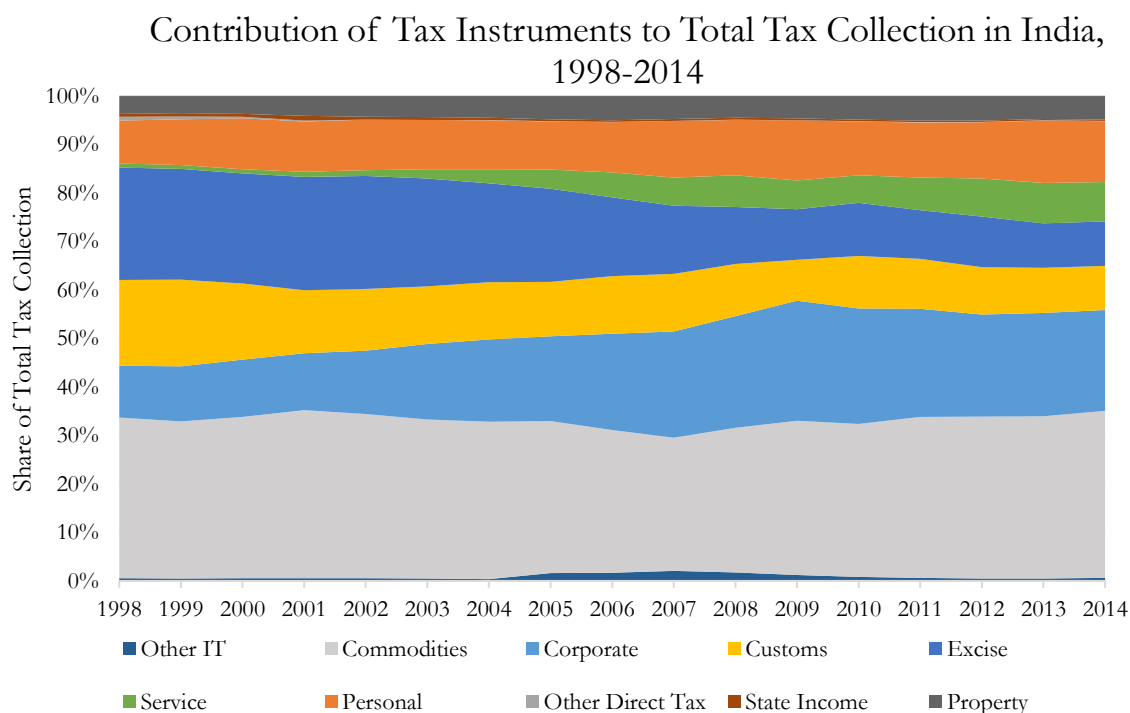


Figure 2 shows the contribution of the various types of tax instruments to total tax collection in India. The five categories starting from the bottom (up to and including the large deep blue shaded area) are wholly remitted by firms. The share of revenue from these categories steadily declines from 1998 to 2014, as customs and excise contribute a smaller share to overall tax collection. The green region represents service tax collection and the orange represents personal income tax collection, which are only partially remitted by firms. These two categories contribute an increasing share of total tax revenue mainly due to the rising importance of service tax. Service tax collection has increased from 1 to 10 percent of total tax collection over the same period, while personal income tax collection has remained unchanged at about 12 percent of total revenue. Over this time period, the service tax base was expanded to cover almost 200 services from the initial three that were covered. Taxes on property, state taxes on income and other direct taxes levied by the national government-- remitted entirely by individuals--have remained an approximately constant proportion of total tax collection over the entire period. Taxes on commodities, entirely remitted by firms as well, have also stayed steady as a constant proportion of total tax collection. Corporate taxes increased as a proportion of total tax collection from about 10 percent in 1998 to 20 percent in 2014.

Figure 2:

In sum, the small decrease in the share of total tax collection remitted by firms comes from the substantial decline in the contribution of customs and excise taxes and the relative increase in the contribution of the service tax, which is only partially remitted by businesses.

4. SO DIFFERENT, AND YET THE SAME

Some readers will undoubtedly be struck by the fact that the extent of firm tax remittance is about the same in India as it is the United Kingdom and United States, in spite of the vast differences in the economic environment and other aspects of the tax system. In this section we inquire further into this phenomenon. Because we consider the self-employed as non-business remitters and attempt to divide all tax revenue into the portion remitted by business and others, our estimates are more comparable to that of Cline, Christensen, Neubig (2001) and Shaw, Slemrod, Whiting (2010) than to the OECD.

One striking contrast between the United States and United Kingdom on the one hand and India on the other hand, shown in Table 2, is the difference between the proportions of personal income tax remitted by firms. Firms in the United Kingdom and United States remit over 80 percent of personal income tax, while firms in India remit only 60 percent of personal income tax.⁵

⁵ This is estimated as the proportion of income tax remitted by non-corporate taxpayers as “tax deducted at source,” i.e. tax withholding. This is a conservative estimate because non-corporate taxpayers can also include partnerships, which remit tax directly (not through withholding). However, we do not have an estimate of tax deducted at source for non-corporate, non-partnership taxpayers.

Table 2: A Comparison of the Role of Firms in Tax Revenue Collection in the United States, United Kingdom and India

Tax	Proportion Remitted by Business			Share of Country's Total Tax Revenue		
	US	UK	India	US	UK	India
Personal Income Taxes	0.80	0.82	0.60	41.64	30.28	12.53
<i>Capital Gains Tax</i>	*	0.00	*	*	0.78	*
Corporate Income Tax	1.00	1.00	1.00	8.84	9.12	20.80
Payroll Taxes/ National Insurance	0.95	0.97	n.a.	24.53	17.96	0.00
Property Taxes	0.42	0.49	0.00	9.34	8.89	0.56
Stamp Duties	n.a.	1.00	0.00	0.00	2.76	4.32
Sales Taxes/ VAT	1.00	1.00	1.00	8.23	15.92	25.31
Excise Taxes	1.00	n.a.	1.00	6.05	0.00	13.69
Service Tax	n.a.	n.a.	0.70	0.00	0.00	8.15
Estate Taxes	0.00	0.00	0.00	1.42	0.73	n.e.g.
Other Taxes	n.a.	0.94	0.98	0.00	14.33	14.64
<i>Indirect</i>	n.a.	0.94	1.00	0.00	14.33	14.33
<i>Customs</i>	n.a.	*	1.00	#	*	9.12
<i>Tax on Vehicles</i>	n.a.	0.20	1.00	0.00	1.05	1.99
<i>Petroleum Tax</i>	n.a.	1.00	n.a.	0.00	0.44	0.00
<i>Other</i>	n.a.	1.00	1.00	0.00	12.84	3.22
<i>Direct</i>	n.a.	n.a.	0.00	0.00	0.00	0.31
Total Taxes	83.74	87.74	87.35	100.0	100.00	100.00

*: Indicates categories that are included in the aggregate but for which disaggregated amounts are not known.

Capital Gains Tax collection is included under personal income tax collection reported for the U.S., Customs is included under "indirect tax" for the U.K.

#: The United States collects some customs but Christensen, Cline and Neubig (2001) do not provide information on this category.

U.S. figures are from Christensen, Cline, Neubig (2001), U.K. figures are from Shaw, Slemrod, Whiting (2008).

Indian estimates are for tax revenue in the year 2014-15. \$1 ≈ ₹ 65 and £ 1 ≈ ₹ 81.

However, in India personal income taxes are a much smaller proportion of total tax collection. Personal income tax is about 12 percent of total tax collection in India in 2012, but 40 percent in the United States and 30 percent in the United Kingdom. While firms in India remit a lower proportion of income tax collection, Indian tax revenue also relies less on personal income tax revenue.

On the other hand, taxes on commodities are much more important in India, a tax category where firms remit nearly all the revenue. State VAT, excise and other forms of taxation on commodities and services represent about 33 percent of total tax collection in India in 2014, while central taxes on commodities (customs and excise) are about 20 percent of total tax collection. Together, these forms of commodity taxes account for over half of Indian tax revenue. In contrast, sales tax and VAT are just 8 percent of total tax collection in the United States and 15 percent in the United Kingdom.

Is the similarity in the aggregate firm remittance ratio a coincidence, or is there something more fundamental involved? These differences could be partially driven by the difference in amenability to firm remittance. Gordon and Li (2009), for example, suggest that the ease of enforcement and reliance on the formal financial sector can explain many features of developing country tax systems. Tax systems rely more heavily on revenue from instruments that are easier to enforce. As the amenability of firm remittance increases, tax revenue from that instrument is higher because enforcement is relatively less costly.

One reason for the increase in revenue is that remittance by businesses increases the likelihood of truthful reporting. Take for example, the stark contrast in evasion on self-employed income (64 percent) and income from salaried employees (1 percent) in the United States. As the proportion of salaried employees increases, compliance is higher and therefore we would expect tax revenue from personal income tax to be higher.

Increased amenability to remittance by firms also increases revenue from that tax instrument through a second channel. Tax authorities broaden the base and increase the tax rate as well once a tax becomes easier to enforce. Dusek and Bagchi (2016) exploit the staggered introduction of withholding in personal income tax by U.S. states to find that introduction of withholding led to an immediate and permanent increase in tax collection by about 24 percent. Because of this increase in tax collection efficiency, state governments also raised the importance of the income tax as a tool for tax collection. The share of income tax in total tax collection increased by 19 percent.⁶ Jensen (2016) shows how the rise in personal income tax collection has tracked the growth in salaried employees across countries and over time. He shows how government policies designed to increase the share of employees has a causal impact on state income tax collection. Besley and Persson (2014) also show suggestive evidence that increases in the size of government (tax to GDP ratio) occurred at the same time as the introduction of income tax withholding and is correlated with improvements in financial markets and formalization. Improvements in amenability to remittance by firms not only raises the reliance on certain tax instruments, but raises overall tax collection as well.

These findings are consistent with the patterns we observe in the tax systems of the three countries. Amenability to firm remittance is much lower in the personal income tax in India than in the United States or United Kingdom. On the other hand, withholding is in some respects more expansive in India than in the United States. Rules for “tax deducted at source” requires withholding not only on salary but also on interest income, dividends, payments to contractors, life insurance payouts, rent, payment for professional services, and a few other payments. Even so, salary income – an

⁶This is despite their finding that an increased demand for government revenue motivated the introduction in withholding, which also drove the increase in corporate and sales tax rates at the same time. The authors suggest that this points to an increase in reliance on the gains in efficiency in income tax collection.

important source of income that is subject to withholding - comprises about half of total reported gross income compared to 70 percent of total adjusted gross income in the United States.^{7,8} Accordingly, the statutory income tax base in India is more limited than in the United States and United Kingdom; it excludes all agricultural income and has a high exemption threshold at the top decile of the income distribution (Jensen, 2016). Income tax rates are also lower in India. The highest marginal tax rate is 30 percent in India compared to 39.6 percent in the United States and 45 percent in the United Kingdom.

5. FIRMS IN INDIA VERSUS THE UNITED STATES AND UNITED KINGDOM

Of course, even though firms play a similar role in all three countries, India has a much lower tax-to-GDP ratio. Are firms more efficient intermediaries in the United States and the United Kingdom than in India?

Two things distinguish firms in India relative to the typical developed country – the predominance of cash transactions and the extent of many small informal firms. Most employment in manufacturing in India is in firms with less than 10 workers (Hsieh and Klenow, 2014). The advantages to firm remittance through information aggregation and reduction in administrative and compliance costs are therefore more limited in India.

Transactions in cash are widespread, which limits the paper trail and other information useful to tax authorities. It has been estimated that 87 percent of all consumer transactions in India take place in cash.⁹ Low level of digitization of returns and lack of coordination between multiple tax authorities also limit the potential of information generated by businesses. For instance, if the customs authority does not share information with a state VAT department, the paper trail generated by a sale by an importer cannot be used as third-party verification of reported costs. Not only is amenability to firm remittance lower in India for taxes like the personal income tax, firm remittance also does not provide the same level of information and compliance advantages as in the United States and the United Kingdom.

6. THE OTHER 15 %

Given the substantial advantages of firm remittance, it is perhaps surprising that governments collect 15 percent of their revenue directly from individuals. The tax categories that rely on individual remittance share a common feature – the tax base is highly observable or to some extent self-enforcing. A large portion of the revenue in this 15 percent category comes from taxes on immovable property. Another large category is stamp duties, which are taxes on various transactions and legal documents. A large portion of stamp duty revenue comes from duties on

⁷ <https://www.irs.gov/uac/soi-tax-stats-individual-statistical-tables-by-filing-status>, Table 1.3 for 2014.

⁸ The threshold for income tax is set quite high at ₹0.25 million (approx. \$3870) today (₹0.2 million (\$3094) in 2013-14). There are only about 71 million individuals of working age who are regular wage/salaried workers in non-agricultural industries, earning an average of about ₹0.1 million (\$1547) a year, out of a labor force of about 400 million.

⁹ <http://fletcher.tufts.edu/~media/Fletcher/Microsites/Cost%20of%20Cash/IBGC%20WP13-01%20Cash%20Outlook%20India.pdf>.

sales, particularly of property. Non-payment of these stamp duties would hinder an individual's ability to enforce their property rights.

CONCLUSION

We are not ready to declare a "rule" of (at least) 85% for firm remittance. After all, in a graph of the fraction of taxes remitted against real GDP per capita, we really now have just two distinct points, one for India and one cluster for most of the OECD countries. An infinite number of polynomials fit these two points and, even if we restrict ourselves to second-order polynomials, we cannot rule out either a U-shaped or inverted-U-shaped relationship. Of course, the relationship could be more complex than this.

More data points for the developing world are needed. The calculation of the fraction of taxes remitted by firms is not conceptually complex. For example, it does not require one to classify taxes into ultimately somewhat arbitrary categories, such as consumption versus income, business versus non-business, direct versus indirect. Nor are the data requirements particularly onerous. Once we have more data points, we can begin to understand the relationship of the firm remittance ratio not only to the level of per capita real income, but also to other country and tax-system characteristics such as sectoral composition.

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DATA APPENDIX

I. Estimate of Income Tax Remitted by Firms

Compliance Audit Reports (various years) by the Comptroller and Auditor General of India present personal income tax collections from non-corporate taxpayers by mode of payment, that is, whether it was remitted directly as part of self-assessment, advance tax collection or tax deducted at source (TDS). The only mode remitted by firms unless the taxpayer is a firm themselves is TDS. Under the TDS rules, certain entities – mostly firms - are required to act as withholding agents for personal income tax. The proportion of income tax collected under TDS from non-corporate taxpayers has averaged around 60 percent between 1998 and 2014.

The category of non-corporate taxpayers also includes partnership firms. Ideally, we would want to know the proportion of income tax collected through TDS from non-corporate, non-partnership taxpayers. Because this figure is unavailable, 60 percent is actually a lower bound on personal income tax remitted by firms.

We estimated the share of personal income tax remitted by businesses as the share of revenue coming from “Tax Deducted at Source.”¹ This includes income tax withheld by employers as well as tax on interest income, capital gains or dividends that are withheld and remitted by firms. In 2011-2012, approximately 59 percent of personal income tax was collected as tax deducted at source.

II. Estimate of Service Tax Remitted by Firms

Service tax can be remitted by firms and individual taxpayers. However, the breakdown of service tax collection by type of taxpayer is not publicly available to the best of our knowledge. To estimate the proportion of service tax remitted by firms, we make use of the fact that individuals are only required to remit the tax quarterly, but firms are required to remit monthly. Figure 3 plots in blue monthly service tax collections between fiscal years 2010 and 2015. In the month following the end of each quarter (July, October and January), there is a spike in service tax collection. There is also a significant spike in March but we exclude March, which we discuss later.

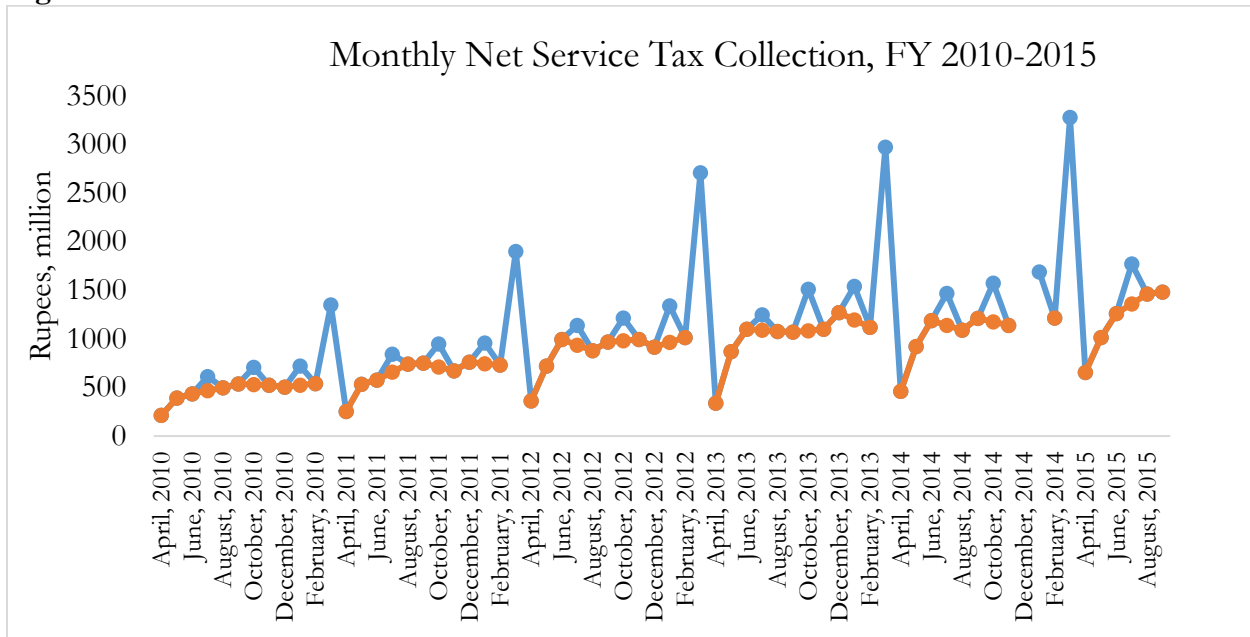
The spike in the months of July, October and January is plausibly due to individuals making their quarterly payments. Assuming that the payments we see in all other months (aside from March and April) are from firms, we impute the collection from firms in July, October and January as the average of collection in the two adjacent months. That is, we impute collection from firms in July 2010 as the average of collection in June 2010 and August 2010. The orange line in Figure 3 shows the collection from firms with these imputed figures for the quarter-end months.

The collection from individuals is estimated as the difference between actual collection in the quarter-end months and the imputed collection. The estimated collection from individuals is remarkably stable at about 30 percent of actual collection in these months. We therefore make the assumption that firms remit 70 percent of service tax collected. Because the service tax comprises only about 8 percent of total revenues, some divergence from an imputed firm remittance share would not have large effects on the overall estimate of the firm remittance ratio.

¹ Table 1.6, Report of the Comptroller and Auditor General of India.

March is the last month in the last quarter of the financial year. The largest spike occurs in this month and is plausibly because payments for annual contracts might be received in this month. This could be true for firms and individuals. If firms are more likely to remit most of their tax owed at the end of the financial year (which is a more relevant concept for firms rather than individuals), then our assumption of 70 percent remitted by firms would be an underestimate.

Figure 3:



Source: Author's calculations based on data from Principal Chief Controller of Accounts, <http://pccacbec.nic.in/>, accessed 2/25/2017

III. Union Excise

The union excise tax, also known as the central excise tax, is levied on the value of production. It is collected at factory gate for manufacturing firms only. Therefore we assume that the union excise tax is fully remitted by firms.

IV. State Taxes on Income – Agricultural Income and Professions Tax

We treat self-employed professionals”, which forms the bulk of tax collected in this category, as “individuals” rather than “firms.

V. Taxes on Property and Capital Transactions

Most of the revenue in this category comes from stamp duty. We have the breakdown of stamp duty revenue by source (type of document/transaction) in one state – Andhra Pradesh from 2010 to 2015. We use the patterns in this state as a proxy for all other states. The data reveals that 88 percent of stamp duty revenue comes from sale of property. Other major categories are gifts and mortgages. It is impossible to distinguish whether these property transactions are made by individuals or firms and therefore we assume that these taxes are entirely remitted by individuals. These comprise only 4.32 percent of total revenues in 2014-15.