Tax Compliance Costs and Non-Filing Behaviour

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Motivation

Empirical evidence and theoretical work on characteristics of potential taxpayers who do not file tax returns and their incentives structure is limited. Yaniv (1988), is the major theoretical analysis of non-filing. His main conclusion with respect to filing behaviour is that those whose taxes are withheld may evade more out of income not subject to withholding. He, however, makes no distinction between filing but reporting zero income and non-filing so that, implicitly, non-filers are a subset of those who do not report any taxable income other than income from which taxes are withheld. Crane and Nourzad (1994), examine characteristics of former non-filers who participated in a 1986 filing amnesty in the state of Michigan in the United States. They find a positive correlation between income and filing and between tax withholding and filing. The latter is contrary to Yaniv's theoretical prediction. Erard and Ho (1995) analyse an invaluable US Internal

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Revenue Service data set on non-filers. These "ghosts" largely consist of manual, sales and service sector workers and creative arts workers. The authors point to these activities being largely in the "informal sector" in the US.[1]

For India, Aggarwal (1991), used third party data sources on 4 individual characteristics, ownership of phones, cars or homes and the size of monthly electricity bills, to identify potential non-filers in Faridabad city. Comparing his data to income tax records, he estimated that 89 percent of potential taxpayers did not file returns. The information at Aggarwal's disposal did not enable him to adequately refine his estimate of potential non-filers who are possibly over-estimated.

Given the paucity of information, there is currently no satisfactory alternative to theoretical analysis of non-filing, especially for the Indian income tax. A simple model of non-filing behaviour is developed here and its predictions for non-filing behaviour in general and for Indian income tax non-filers in 2000-01 examined. The model is developed in the next section and equilibrium filing behaviour examined in section 3. Comparative static properties are examined in section 4. Indian data and estimates are in section 5. The aim of the numerical exercise is to assess how well the model performs given Indian conditions and to assess the magnitude of costs to non-filers and society of non-filing. Section 6 concludes.

II. *A Model of Non-Filing Behaviour in the Presence of Compliance Costs and Tax Withholding*

The filing versus non-filing decision is likely to involve a comparison of costs over several years. First, on being identified in certain situations (e.g. during tax investigation or "search and seizure" operations), tax departments typically assess taxes for several years, as

[1] Poapongsakorn *et. al* (2000), in their cost-benefit analysis of tax surveys to detect non-filers present information on *stop-filer* survival rates but do not examine non-filer behaviour.

is the case in India. So the decision to file or not will depend on an individual's filing history. Second, the incidence of stop-filing is also of relevance. Once a non-filer files, this raises the probability of his being detected and penalised in the event of his choosing not to file in future, since he is now on the rolls of the tax department.[2] Both these factors raise the compliance cost of filing returns. While models of tax evasion in the Allingham and Sandmo (1971) tradition do give rise to non-filing behaviour, they do not adequately take into account the impact of compliance costs on non-filing.[3] Though a model of annual filing is developed here, variations in detection probabilities take care of the second issue while assessment of taxes on income *and* undeclared wealth address the first problem. The formal model is now described.

It is assumed that individuals have differing amounts of wealth, W. This can be invested either in the "formal sector", which gives rise to income RW, or in the "informal sector", giving rise to an income rW. Total labour supply is taken as given. R is taken as exogenous and identical for all individuals.[4] Individuals are assumed to be risk neutral income maximizers and heterogeneous with respect to informal investment opportunities available, with r having a minimum value of zero and a maximum value exceeding R. This implies that, even if they file tax returns, they report zero taxable income assuming the standard Allingham and Sandmo (1971) condition for tax evasion, $p(1+\pi) < 1$, holds.[5] Here, p is the probability that tax evasion by filers is detected and punished while π is the rate of penalty assumed proportional to tax

[2] So, for example, Poapongsakorn *et. al* (2000) use an "average survival rate" for new filers in their cost-benefit analysis of non-filer surveys in Thailand.

[3] Models of tax evasion with compliance costs include Alm (1988), Mayshar (1991), Slemrod (1994), and the models in Chattopadhyay and Das-Gupta (2002), chapter 2. Hite (1989) presents evidence suggesting that lowering compliance costs lowers non-compliance in general, though she does not focus specifically on filing versus non-filing.

[4] Wealth can include time and human capital endowments, so that, formally, labour income is not neglected. In this case the penalty on non-filers will only depend on the taxable fraction of undeclared wealth.

[5] This simplifies the analysis while abstracting from reporting behaviour to permit a sharp focus on under-reporting. The assumption biases the model results *in favour* of filing.

evaded. *Third party compliance requirements* are also introduced through the important channel of tax withholding (TDS or tax deduction at source in Indian usage) identified by Yaniv (1988). For this, it is assumed that if formal income RW exceeds a threshold, Z, then taxes are withheld at rate $s \leq t$.[6] Furthermore, for detected non-filers, a fixed penalty, N, is levied. The fraction of wealth invested in the informal sector is denoted by β. Post-tax income if evasion and non-filing is detected and punished is denoted by Y_C and if undetected by Y_N. C denotes the net compliance cost of filers. That is, it nets out any sacrifice a non-filer may have to make to maintain a low profile, such as induced by the "1 in 6" scheme in India in addition to any direct costs non-filers may incur.[7] With this, there are three possible cases:

Case g (non-filers not subject to TDS or "ghosts", probability of detection $= p_1$):

$Y_N = rW\beta + RW(1-\beta)$, with $RW(1-\beta) \leq Z$.

$Y_C = [rW\beta + RW(1-\beta)][1 - t(1+\pi)] - W\beta t(1+\pi) - N$

Case nt (non-filers subject to TDS, probability of detection = p_2):

$Y_N = rW\beta + RW(1-\beta)(1-s)$, with $RW(1-\beta) > Z$

$Y_C = rW\beta[1-t(1+\pi)] + RW(1-\beta)[1-s-(t-s)(1+\pi)] - W\beta t(1+\pi) - N$

Case f (filers, probability of detection = p):

$Y_N = rW\beta + RW(1-\beta)(1-s) - C[RW(1-\beta)]$

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[6] For example, such a threshold is part of Indian income tax law with taxes withheld at the lowest marginal tax rate. Due to lack of information sharing, in practice, separate thresholds apply to each income yielding asset. In addition income from some government bonds and also dividend income are not subject to tax. These complications are not explicitly addressed. Incorporation of many assets would reduce the positive impact of TDS on filing but would complicate the model.

[7] Under the "1 in 6 scheme", filing is mandatory for individuals who have club memberships, credit cards, or cellular phones, travelled abroad during the year, or who own a house or a car. While detection of non-compliance with this filing requirement is by no means fool-proof, and while the introduction of this scheme led to a massive increase in filers, those who continue to refrain from filing may have to sacrifice some of these filing "perks". For a press report on demand for credit cards being adversely affected by filing requirements, *see The Times of India*, June 15, 2002, p15. Furthermore, the newspaper report by Joshi (2002) claims that the 1 in 6 scheme has "failed to achieve its objectives" with respect to rich individuals.

$Y_C = rW\beta[1-t(1+\pi)] + RW(1-\beta)[1-s-(t-s)(1+\pi)] - W\beta t(1+\pi) - C[RW(1-\beta)]$

There are four features worth noting about this specification. First even for filers, 100 percent under-reporting is assumed. Second, as discussed, in the event of detection, additional taxes and penalties are assumed to be levied not only on informal income, $rW\beta$ but also on informal wealth $W\beta$. Third, the direct compliance cost of filers is assumed to be increasing (and concave) in income as empirical evidence in Das-Gupta and Chattopadhyay (2002a) suggests. In the absence of information on the opportunity cost of non-filers, it is assumed to be proportional to direct costs, so that C is also concave. The probability of detection is assumed to be lowest for ghosts, higher for non-filers who are nevertheless subject to TDS, and highest for filers for relevant ranges of wealth.[8] However, non-filing by the very wealthy individuals will not go undetected, though evasion may continue. Though not incorporated in the equations above, this is addressed in the analysis below by introducing an upper bound on the wealth of non-filers. As pointed out, the assumption of a relatively high probability of detection of filers captures the increased probability of detection of future income for individuals on the rolls of the tax department.

III. Non-Filing and Filing Behaviour

To analyse this model, (a) ranges of r for which individuals prefer informal to formal investment and (b) individual preferences for each of the three filing/non-filing regimes, must be determined. To do this expected income functions are needed. These are given by:

Case g: $E_g = W[r\beta+R(1-\beta)][1 - p_1t(1+\pi)] - p_1[W\beta t(1+\pi)+N]$

[8] In India, filers not subject to TDS are required to pay advance tax. In this case, s may be considered the rate of advance tax. The assumption is then that the implicit rate of advance tax chosen by taxpayers is s, given their intention of declaring no additional income in their return. Complications arising from any difference in the TDS rate and the implicit advance tax rate are ignored.

Case nt: $E_{nt} = Wr\beta[1-p_2t(1+\pi)] + WR(1-\beta)[1-s-p_2(t-s)(1+\pi)] - p_2[W\beta t(1+\pi)+N]$
Case f: $E_f = Wr\beta[1-pt(1+\pi)] + WR(1-\beta)[1-s-p(t-s)(1+\pi)] - p[W\beta t(1+\pi)] - C[RW(1-\beta)]$

These expected income functions are decreasing but convex in compliance costs, so that investment in both formal and informal assets can never be optimal. Differentiating these functions with respect to β, we get the conditions for informal versus formal investment[9]:
Case g: $\beta = 1$ if (and only if)

$$r > R + \frac{p_1 t(1+\pi)}{1-p_1 t(1+\pi)}, \text{ else } \beta = \beta_0 \equiv \max\left[1 - \frac{Z}{RW}, 0\right] \quad (1)$$

Case nt: $\beta = 1$ if $r > R - Rs\frac{1-p_2(1+\pi)}{1-p_2 t(1+\pi)} + \frac{p_2 t(1+\pi)}{1-p_2 t(1+\pi)}$, else $\beta = 0$ (2)

Case f: $\beta = 1$ if $r > R - Rs\frac{[1-p(1+\pi)]+C'}{1-pt(1+\pi)} + \frac{pt(1+\pi)}{1-pt(1+\pi)}$, else $\beta = 0$ (3)

The values of r at which (1), (2) and (3) hold with equality are denoted r_g, r_{nt} and $r_f(W)$ respectively. In case g, individuals preferring formal investment must invest $\beta_0 W$ in the informal sector if RW exceeds Z in order to remain outside the TDS net. Furthermore, taxes and penalties on detected informal wealth make informal investment worthwhile only if r exceeds R by a margin which depends on p_1 and C_N. In cases nt and f, this penalty is counteracted by terms which depend on the TDS rate and compliance costs, so that informal investment may be preferable even if r < R. However, since s is a fraction of t and R is taken below to be 9 percent in numerical implementation below, this case is not considered further here. Notice that the critical values of r in case f depends positively on C' if r > R. Ranges of W for which, formal investors prefer to file or subject themselves to TDS must now be determined.

First consider $E_f - E_{nt}$, with $\beta = 0$:
$E_f - E_{nt} = WR(p_2-p)(t-s)(1+\pi) - C[RW] + p_2N$ (4)

[9] It is clear that, under our assumptions, filing for those who wish to avoid TDS, i.e, case f with $\beta = \beta_0$, can never be optimal.

Since (4) is decreasing in RW, clearly, there exists RW^f, such that $E_{nt}>E_f$ for $RW > RW^f$. So this implies that richer individuals prefer not to file, given the lower probability of detection of income. The implication of this model, that very rich individuals prefer not to file, is because the model does not formally take account, for individuals already on the rolls of the income tax administration, that non-filing will quickly be detected with probability close to 1 even if detection of other forms of non-compliance (e.g. tax evasion) remains difficult. In practice, there is, therefore, likely to be a wealth level above which individuals always file. More generally, at every wealth level there are likely to be relatively visible individuals whose non-filing is likely to be discovered. It is plausible that the proportion of such individuals is increasing in W. This is taken account of in the numerical estimates below.

Now consider $E_f - E_g$ with $\beta=0$ for E_f and $\beta = \beta_0$ for E_g.

$$\frac{1}{RW}[E_f - E_g] = [t(1+\pi)(p_1-p) - s\{1-p(1+\pi)\}] -$$

$$\frac{1}{RW}[C(RW) - p_1N] + \frac{\beta_0}{R}[p_1t(1+\pi) + (R-r)\{1-p_1t(1+\pi)\}] \qquad (5)$$

Notice that the coefficient of β_0 in square brackets is a rearrangement of the condition for non-filing and informal investment to be preferred in (1). So attention is restricted to the non-negative values of this coefficient. This equation gives rise to interesting filing and non-filing ranges with respect to RW:

(a) For very low RW, say $RW \leq RW^0$, $\beta_0 = 0$ and C(RW) is small. So these individuals are filers. Since the income tax has an exemption limit, these individuals can be ignored.
(b) Assuming that C(RW) exceeds p_1N at some $RW < Z$,[10] non-filing is preferred for $RW^0 < RW < RW^g$, where $RW^g > Z$.
(c) Thereafter (5) defines a positively sloped boundary, $r = f(R,W)$, $f(R,W^g) = 0$, such that non-filing is preferred at values of r above the boundary.[11] This is intuitively obvious, given the greater sacrifice

[10] This is likely given the extremely high and regressive compliance costs found by Chattopadhyay and Das-Gupta (2002a).

[11] For a positive slope it suffices for $RWp_1N - ZC$ to be positive over the relevant range. This is true for sufficiently large values of RW. Since N is relatively small in the Indian context, this is assumed to be the case throughout the relevant range.

made due to the increase in β_0 with W and the falling average compliance costs.

For the model to predict any filers at all, it must be the case that $RW^f > RW^g$. This is assumed to be the case here and in the next section.

The upshot is that filers and non-filers are identified as in Figure 1 for the situation where $r_{nt} = R$. Combinations of parameter values giving rise to filing are shown by the lightly and heavily shaded areas in the graph. A second case is illustrated in Figure 2, where the possibility of r_f intersecting the boundary r = f(R,W) is illustrated. In Figure 2, with initial parameter values, only the lightly shaded areas are filing zones. The impact of changes in C and the TDS regime on filing behaviour can now be explored.

IV. Comparative Statics and Compliance Costs of Non-Filers

The impact of higher C (that is, greater direct compliance costs of filers or a smaller loss from non-filing) is, firstly, to shift RW^g and the r = f(R,W) locus to the right. This occurs since, at any r, RW will have to be higher to offset the additional cost. Second, RW^f shifts left to, say, RW^{f_1}. This is shown by dotted lines in Figure 1. The impact is to decrease the range of parameters giving rise to filing to the heavily shaded area labeled f' in Figure 1.

The impact of more stringent TDS (higher s and lower Z) on the r = f(R,W) locus is indeterminate. However, RW^f shifts *right* implying, counter-intuitively, an increase in filers. This occurs because the marginal loss to filers, who already have a high probability of detection, p, is smaller than for non-filers. This could be part of the explanation for the empirical finding of Crane and Nourzad (1994). This is shown by the dotted lines in Figure 2, assuming no change occurs in the r = f(R,W) locus. The filing zone is shown by the heavily shaded area.

The impact of removal of TDS (s=0 and Z not being binding) is, firstly, to make case g coincide with Case nt and secondly to cause W^f to shift leftward to W^0. In other words, filers will be restricted to those whose probability of detection of non-filing is close to 1, who are not captured in the model: No one else files tax returns.

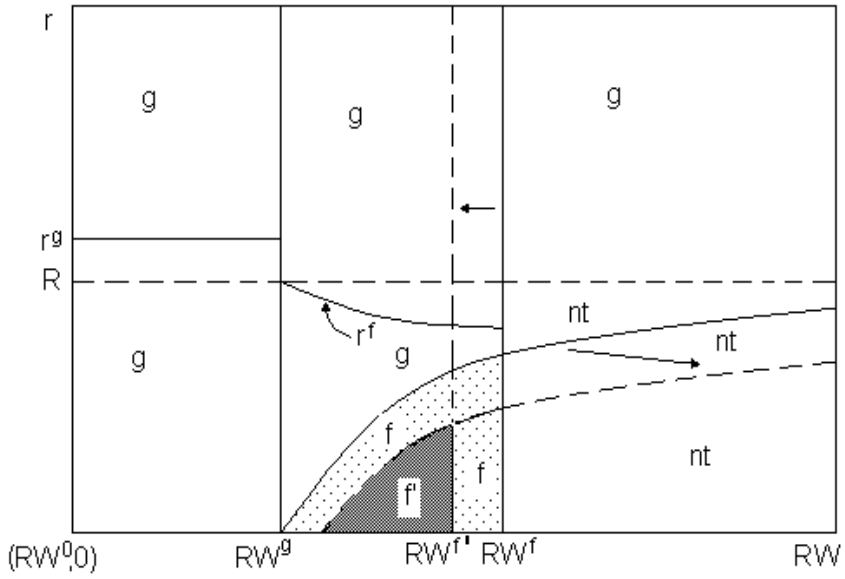

Figure 1: Filers and non-filers: impact of increasing C

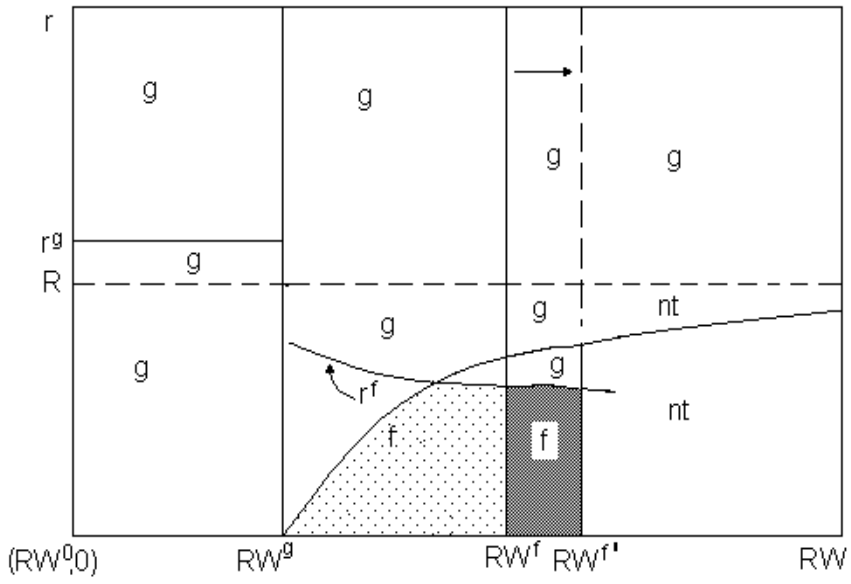

Figure 2: Filers and non-filers: impact of increasing TDS

Thus, overall, *TDS leads to lower non-filing, while higher filer compliance costs lead to increased non-filing.*

This model over-predicts non-filing for three reasons. First, due to such activities as door-to-door survey by the tax department and pursuit of stop-filers (i.e. those who are on the income tax rolls but stop filing), there are individuals with RW < RW^1 for whom non-filing is detected with high probability.[12] Second, risk aversion itself gives rise to "psychic" non-filing costs, so that some risk averse individuals close to

[12] The Comptroller and Auditor General of India (CAG) (2001) reports that 124,283 premises were surveyed by the income tax department in 2000-01 with a further 105 cases of ostentatious expenditure being investigated. However, no information is available about the number of non-filers identified through these surveys. Furthermore, no data are available on the "survival rate" of new income tax return filers. For an earlier evaluation of income tax surveys, *see* Das-Gupta and Mookherjee (1998). Thai surveys are examined in Poapongsakorn *et. al* (2000)

RW^g and RW^f will file even if this entails a loss in expected income. Third, honesty, guilt, shame and other cultural factors do play a role in the filing/non-filing choice for at least some individuals.[13]

V. A Crude Estimate of Income Tax Compliance Costs of Non-Filers in India

To measure non-filer compliance costs, two elements need to be taken into account. First is the distortion in investment patterns induced by TDS (or third party compliance requirements). Second, the direct and opportunity cost of non-filers $P_jN + C_2(RW)$, $j = 1,2$, where C_2, discussed further below, is the non-filer opportunity cost of foregone consumption benefits. The indirect compliance costs of third parties, however, need *not* be taken account of, since TDS obligations are independent of filing behaviour.

Assumed parameter values for estimates of non-filing compliance costs are now described.

- The *distribution* of RW is assumed to be the same as the National Council of Applied Economic Research (NCAER) estimates for 1996-97 as reported by the Comptroller and Auditor General (2001). However, the NCAER distribution is scaled upward for inflation here, using the Consumer Price Index for Urban Non-Manual Workers (CPIUNME), population growth and per capita income growth.[14] Cumulative inflation, population growth and per capita income growth for 1996-97 to 2000-01 are 31.1 percent, 14.1 percent, and 8.1 percent respectively according to the *Economic Survey* (2002).

  Potential filers are taken, following Comptroller and Auditor General (2001), to be urban households with incomes above Rs 100,000 in

[13] *See*, for example, Erard and Feinstein (1994).

[14] The CPIUNME is the best available price index given that agricultural income is not subject to the income tax in India and the disproportionate number of urban, in fact metropolitan, income tax assessees.

2000-01 prices. Since the NCAER distribution is of *households* and not *individuals*, the data are not entirely consistent, though no alternative is currently available. Details are in Table 1. The number of individual filers with gross income exceeding Rs 100,000 is estimated at 5.5 million and the total number of potential filers from data in CAG (2001) is estimated at 33.5 million.[15] This suggests that only 1 in 6 potential taxpayers actually file returns or an 83.5 percent non-filer rate, somewhat lower than the 89 percent rate estimated by Aggarwal (1991). This is consistent with the subsequent introduction of the "1 in 6" scheme described above.

- The value of s is taken to be 0.1 for non-salary earners, which was the rate applicable to non-salary income in India in 2000-01. Non-filing by salary earners is assumed to be zero as s = t, and non-filing is, in practice, very limited.
- The value of Z is taken to be Rs 20,000, which is twice the normal per asset threshold for non-salary income.
- Using estimates in Chattopadhyay and Das-Gupta (2002a), direct compliance costs are assumed to be given by $C_1(RW) = 0.21914(RW)^{0.77813}$. To take account of opportunity compliance costs of non-filers, C_2, it is assumed that $C = C_1 - C_2 = 0.5C_1$. That is $C = C_2 = 0.10957(RW)^{0.77813}$ is assumed.
- The value of R is taken to be the commercial bank 1 year term deposit rate in 2000-01 of 9 percent.
- It is assumed that $0 \leq r \leq 3R$ and that individuals have a uniform distribution on the interval below R but a triangular distribution on the interval above R at each level of formal income.[16] This implies that exactly 50 percent of individuals have access to informal investment opportunities yielding $r \geq 9$ percent.

[15] In the third row in Table 1, the estimated number of filers exceed the estimated number of households in 2000-01. While this is not inconsistent if there is more than one filer per household, for the current exercise, the number of non-filers is taken to be zero in the range.

[16] This assumption may underestimate informal rates of return where compound rates of 2 percent a month, or 26.8 percent a year, are not uncommon. *See* Das-Gupta, Nayar and associates (1990).

- For detection probabilities, since subjective probabilities determine filing behaviour, the sample average in Chattopadhyay and Das-Gupta (2002a), p = 23.28 percent, is taken. For case nf, $p_2 = 0.9p$ = 20.95 percent and for case g, $p_1 = 0.8p$ = 18.62 percent are arbitrarily assumed.
- For N, while the administrative penalty in the Income tax Act, 1961, is Rs 5,000, this is not always levied given administrative discretion. So a value equal to 80 percent of this or Rs 4000 is taken.
- While the use of subjective probabilities is appropriate in calculations of critical RW and r values, for expected non-filing costs, p_1N and p_2N, objective probabilities must be used. Based on Das-Gupta and Mookherjee (1998), it is assumed that $p_1 = p_2 = 0.0005$ (that is, 1 in 2000 non-filers are detected and penalised).
- The penalty for concealment of income in Indian income tax law has a maximum value of 300 percent of taxes sought to be evaded. However, a 300 percent penalty is not always imposed and penalties are frequently overturned on appeal. The effective value of π, therefore, is assumed to be 100 percent.
- Since the actual number of filers in each income class, according to data extrapolated from CAG (2001), is used in calculations, this takes account of both filers induced to file in our model as well as filers whose probability of detection of non-filing is high enough so that they always file. As mentioned above, the latter class of filers has not been taken account of in the formal model above.

With these assumptions, firstly, RW^g exceeds RW^f, so that all individuals are predicted to be in zone nt. *In other words, given the assumed numerical parameters, the model suggests that neither TDS nor non-filing penalties induce filing.* Since the 1 in 6 scheme did induce a substantial increase in filing, the exercise here underestimates the opportunity cost of not filing due to foregone consumption benefits. Consequently, our cost estimates for non-filers provide a lower bound to actual costs.

At the base estimate, non-filer compliance costs work out to be Rs 10888 million, of which Rs 7517 million is due to foregone

consumption benefits, Rs 56 million is from expected non-filing penalties and Rs 3315 million is due to the income loss from distorted investment. This amounts to 3.4 percent of non-corporate income tax collections for the year 2000-01. Though substantial and much higher than Income tax Department administrative expenditure, these costs are dwarfed by compliance costs of income tax filers, even with a 100 percent margin of error.[17]

Table 1: Estimates of Household Income and Tax Returns Filed with the Income Tax Department

Income range (1996-97 rupees '000)	NCAER estimates for 1996-97 Households (thousands)	Gross income (Rs million)	Income range (2000-01 rupees '000)	Chattopadhyay and Das-Gupta (2002a) estimates for 2000-01 Gross income (Rs million)	Households (thousands)	Income tax filers# (thousands)	Potential non-filers (thousands)
Above 1000	97	128,690	Above 1310.95	208,130	105	27.6	77.4
500 to 1000	211.5	46,580	524.38 - 1310.95	75,330	229	412.3	0
200 to 500	1,897	82,460	262.19 - 524.38	133,360	2051	106.3	1944.8
100 to 200	4,362	27,3760	131.1-262.19	442,760	4716	2873.3	1842.7
76.278 * to 100	24,224	234,410	100 to 131.1	379,110	26191	2113.9	24077.1
TOTAL	30,791.5	765,900		1,238,690	33,475 **	5533.4	27941.9

Notes:

* : Rs 76,278 equals Rs 100,000 in 2001-02 rupees. So the range and number of households is estimated at 50 percent of the income fraction (10-7.6278)/5, given an exemption limit of Rs 50,000. Gross income is conservatively estimated to equal this fraction of gross income between Rs 50,000 and Rs 100,000.

**: Adjusted for filers between Rs 200,000 to Rs 500,000.

: Projected from data for 1999-2000.

Source: Chattopadhyay and Das-Gupta (2002a) based on CAG (2001) and computations.

[17] Estimated at around 49% of personal income tax collection by Chattopadhyay and Das-Gupta (2002a).

VI. Conclusion and Policy Suggestions

The model provides a framework for estimating the impact of filing requirements on the misallocation of wealth. Investment distortions occur when those who would have invested in either the formal or the informal sector in the absence of TDS or filing compliance costs, are induced to invest in the other sector. They can be identified by setting $p = p_1$, $p_2 = p_1$, and $s = Z = C(RW) = 0$ in equations (1) to (3).[18] This means that, in the presence of TDS, a fraction of wealth, β_0, is misallocated to informal investment for Case g individuals. For Cases nt and f, misallocation of resources depends on the size and direction of the shifts of the r_f locus and r_{nt}, since the middle terms in both (2) and (3) drop out while the third terms in both equations decrease.

The major policy suggestions emerging from this study, are, of course, reducing filer compliance costs and increasing direct and indirect non-filer penalties.

A second possible suggestion is the implementation of more extensive TDS and lowering the TDS threshold where possible, provided third party compliance costs do not thereby increase greatly, is likely to be effective, though procedures to curb non-compliance by tax with-holders will have to be instituted.

Increased efforts to improve the Permanent Account Number (PAN) data base of the Income tax Department, first to increase its coverage and second, to remove incorrect, duplicate and incomplete records, may also prove effective. To do this improved usage of third party information to identify potential taxpayers is important as suggested by the criteria used by Aggarwal (1991) and the 1 in 6 scheme.[19]

To the extent possible, final withholding taxes ($s = t$) could also be considered to reduce the need for filing by those whose taxes are

[18] However, if the condition in (1) is not satisfied, $\beta_0 = 0$.

[19] A review of usage of third party information is in Das-Gupta and Mookherjee (1998).

withheld. Other than this, standard prescriptions to reduce the incidence of non-filing, through increased automation of citizens' records and improved use of third party information continue to remain valid.

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