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Revisiting the tax compliance problem using prospect theory

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R. Kavita Rao and Suranjali Tandon

National Institute of Public Finance and Policy
New Delhi

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*R. Kavita Rao and Suranjali Tandon**

Abstract

The paper presents a model for tax compliance based on prospect theory wherein an individual makes the decision whether to file, and declare a certain amount of income, or to not file based on a set of policy parameters as well as his/her preferences. The paper poses the question- at what incomes would individuals choose to file a return and answers the same using a model based on prospect theory. Further, simulations are presented to illustrate the impact of changes in tax rates, penalty and audit probability on the individual's preference to file. The results from the simulation show that for different values of policy parameters there exists crossover income at which individuals would choose to file a return. Given all else, at the exemption threshold of 0.1 million, individuals would choose to file a return at incomes greater than or equal to 0.6 million.

Keywords: prospect theory, compliance, tax, exemption threshold, crossover income

JEL classification: H26, H31, D11, K42

*R. Kavita Rao is Professor, NIPFP and Suranjali Tandon is Consultant, NIPFP.

1. Introduction

The decision of tax compliance by a tax payer involves two separate but inter-dependent decisions – one, the decision to file a return and the second, to determine the amount of income to report in the return. While there is a huge body of literature on the second decision, there is comparatively little work on the former[1]. The present paper is an attempt to model the decision to file a return. The existing literature on non-filing is largely focused on profiling the non-filers or "ghosts". In a study for India, an attempt to profile the non-filers suggested that the non-filers were bunched together at the lower income levels – while the exemption threshold was INR 1.8 million, non-filers appear in the income ranges up to INR 5 million. While the actual numbers would be of interest, what would be equally interesting is to see if the decision to file or not file can be influenced by the policy variables available to the government. This paper attempts to explore this aspect.

In modelling decision making in the context of uncertainty, two frameworks are available – the expected utility framework and the prospect theory framework. In the tax compliance literature, the expected utility framework has thrown up some results which have not been supported by empirical results – first, compliance being a desired outcome at rather high probabilities of detection and second, higher taxes inducing declaration of higher incomes. Prospect theory, it has been argued, provides results more in sync with observed outcomes. The use of prospect theory reduces the predicted levels of evasion[2]. In the present paper therefore, we use a framework based on prospect theory to model the decision to file along with the decision to declare a certain income. We provide conditions under which an individual would choose to file.

In section 2 a brief overview of the literature is provided. In section 3 and 4 we posit the two problems and set up the model. Based on the findings of the model we conclude in section 5.

2. Literature Review

As mentioned in the previous section, compliance comprises of the decision to file a return and the decision to declare incomes to the tax department. Allingham and Sandmo (1972) provided the very first model on tax evasion using the expected utility framework, where an individual is confronted with the choice to either declare full income to the tax department or to declare a value less than the full income based on the prevailing rates of tax, penalty and the probability of being audited. In the event that an individual is not caught (s)he will pay tax on the declared income however in the event of being caught (s)he will pay tax and a penalty on the income. The paper shows that "penalty rate and probability of being caughtare substitutes for

[1] Braithwaite et al. (2001) used surveys of the Australian Community and Clike (1998) used US IRS data.
[2] Piolatto and Rablen (2013), page 13

each other. While the expected tax yield would fall with a decrease of p, the loss of tax revenue could be compensated by an increase of penalty rate"[3]. The approach however threw up a somewhat controversial result, i.e., individuals declare higher incomes for higher rates of taxes - referred to as the Yitzahki puzzle[4]. Many different formulations of the basic problem have been proposed to correct for this apparent incongruity in the result.

In 1979, Kahneman and Tversky demonstrated classes of choice problems in which the preferences of individuals would violate the axioms of expected utility and proposed an alternative in the form of prospect theory[5].

Various studies have used prospect theory to explain the decision to evade taxes. To name a few Yaniv(1999), Bernasconi and Zanardi(2004), Dhami and al-Nowaihi(2007), Trotin(2012) and Piolatto and Rablen (2013) have re-examined the tax evasion problem using prospect theory. Yaniv (1999) analyzed whether obligatory advance tax payments influence the taxpayer's evasion decision under prospect theory. He finds that the advance tax payments provide an alternative to costly detection methods to enhance compliance. Bernasconi and Zanardi (2004) used cumulative prospect theory (CPT) with a general reference point with which the taxpayer is in the domain of gains even when (s)he is audited and is the domain of losses even if (s)he is not audited. On the other hand Dhami and al-Nowaihi (2007) take income after payment of legal tax as the reference point such that taxpayer is in the domain of gains if not caught and in the domain of losses if caught. Further they introduce stigma from the detection of tax evasion. They show that an increase in the tax rate increases the evaded tax. Trotin (2012) found using CPT that the introduction of stigma changes the result of the Allingham and Sandmo(1972) model. From the results in literature it is evident that the analysis of the tax compliance problem within the prospect theory framework helps address the limitations of expected utility theory which provide results that are not in line with the observed compliance behaviour. In fact the use of prospect theory, it has been argued, helps reduce the predicted levels of evasion[6] and reverses the Yitzhaki Puzzle[7]. This part of the literature analyses the decision on how much income to report to the tax department.

Turning to the question of whether or not to file a return, there is an emerging strand of literature on this aspect as well, e.g. Erard and Ho (1999) and Yaniv(2003). Erard and Ho (1999) modified the existing tax compliance models to incorporate the possibility of ghosts in the system

[3] Allingham and Sandmo (1972), page 330
[4] Yihtzhaki (1974) also pointed out that the penalty should be levied on incomes evaded than total income
[5] Prospect theory involved three major innovations- one, the choice that an individual makes is not over the income in the two states but over the net gains or losses. Therefore an individual compares his/her income in each state with a reference point. This reference point is the income that the individual earns in the current state. Two, the people assign value to the changes than the final states which implies that to each probability people assign a decision weight. This decision weight is not the same as the probability and reflects both an individual's preference and expectation of an event. Therefore prospect theory assigns a weighting function to each of the outcomes. Three, individuals are averse to losses and therefore they weight their losses. The parameter of constant risk aversion is therefore assigned to utility from the event that he is caught (or loss)
[6] Piolatto and Rablen (2013), page 13
[7] Piolatto and Rablen (2014)

and verify the same empirically from audit information for filers and non-filers in US. They modify the A-S model by adding the cost of compliance to the existing framework. A similar model for the non-filer is introduced wherein an individual faces the probability of being caught and the penalty for non-filing. The model for filing works on the construct that there is some prepayment of tax by the individual who then decides to file the return. The paper concludes that individuals in occupations that are less visible are less likely to file and for those around the threshold for filing will be deterred from filing when there are costs involved. Further, they find that there is a high degree of persistence in filing behaviour that is once a ghost is brought into the system, he is likely to continue to file[8]. Yaniv (2003) provides a rather simple representation of tax evasion by two categories of taxpayers-workers and retirees with two levels of incomes-high and low, as well as two forms of observable consumption-apartments and villas. The model suggests that IRS must lower its audit rate in order to induce high income earners to reveal themselves through villa ownership. These models do not address the more general question of when would a taxpayer voluntarily file a return.

While Erard and Ho(1999) as well as Yaniv (2003) provide an analytical model, most other studies on non-filers have focussed on profiling of non-filers using the information provided by the tax department or through surveys. Braithwaite et al. (2001) used Centre for Tax System Integrity's (CTSI) surveys of the Australian Community and Clike (1998) used US IRS data to characterise non-filers. Braithwaite et al. (2001) find that on most attitudinal or behavioural indicators such as perception of tax department, tax filers differ from non-filers. Clike(1998) and Erard and Ho(1999) find that increase in incomes increase the likelihood of filing. The latter also demonstrate for the US that individuals who are self–employed and for professions such as mechanics, filing was less prevalent.

Among the innovations in modelling the tax compliance is a strand of literature which brings in the role of stigma, ethical norms and moral sentiments. Allingham-Sandmo (1972) acknowledged the role of factors other than the policy parameters which are "summarily characterised" as affecting the taxpayer's reputation adversely when he/she was caught.[9] Within this framework, Gordon (1989) showed that the disutility from evasion increases proportionally with the concealed income. Gordon's model corroborates empirical literature in that the relationship between the tax rate and evasion is positive. Bordignon (1993) shows that the taxpayer has a sense of the fair tax burden, i.e. an individual evaluates how much he would be willing to pay based on his/her ethical disposition. With a general increase in the evasion by other taxpayers the individual's perception of the fair tax burden declines. Myles and Naylor (1996) show that there are individuals who either do not evade or they are "ruthless evaders" as in the

[8] Erard and Ho (1999), page 22
[9] See Skinner and Slemrod (1985) and Besley and Coate (1992) for some further developments on this aspect.

Allingham-Sandmo model[10]. The issue is explored using prospect theory in Dhami and Nowaihi (2006) [11]

The solution to a model after incorporating such variable (referred to as 's' in the paper) provided stricter conditions for "profitable" tax evasion and yielded break even values of parameters for the different taxpayers. The authors suggest that the use of prospect theory reverses the Yitzhaki puzzle i.e. individuals tend to evade for higher rates of tax[12].

While there are some studies such as Piolatto and Rablen (2013) that argue that the Yitzahki puzzle can be resolved without the use of prospect theory by introducing stigma. However, the level of stigma that would be necessary to reverse the results of EUT are very high. Snow and Warren (2005) demonstrate that when ambiguity is introduced in relation to the probability of being caught then evasion declines for ambiguity averse individuals or as shown by Kleven et al (2011) third party information reporting bring the compliance levels in line with those observed. Notwithstanding such criticism the importance of prospect theory cannot be undermined since it has been useful in explaining the systematic deviations[13]. Further as is demonstrated by many such as Dhami and Nowaihi (2007) the results of these models come closer to actual or observed levels of evasion.

Using prospect theory framework and incorporating the role of stigma associated with detection of non-compliance, we explore the question: when would an individual want to file a return?

3. The Model

In complying with the tax system every individual must decide whether to file a return and if filing a return, how much income to declare tax will have to be paid. If the tax department audits the tax payer and establishes evidence of non-compliance, a fine or penalty is levied on the tax evaded. On the other hand, if the tax payer is not subject to audit, the individual gains by not filing a return and/or reporting is less than true income.

The other aspect of compliance which is filing of return, we evaluate by comparing the value from filing (V^f) to the value from not filing (V^{nf}). Using these value functions we identify at what incomes an individual would choose to file, referred to herein as crossover income. Since the value from filing entails decision on how much to declare we evaluate the function (V^f) at the optimal proportion of declared income ($\frac{D^*}{Y}$).

[10] Schnellenbach (2007), Page 15
[11] Another strand of literature which incorporates the impact of inter-personal relations on tax compliance uses the models derived from the ferromagnetism literature. (See Pickhardt and Goetz (2014), Zaklan et al. (2009))
[12] Page 5 Dhami and Nowaihi (2006)
[13] Piolatto and Rablen (2013), page 15

Consider an individual earning income of "Y". The individual chooses to declare income of "D" in his tax return. The tax payable on this income is t(Y-E). Here 'E' represents the exemption threshold[14] i.e. for incomes below E, there is no tax liability and for incomes above 'E' the taxpayers have to pay a tax of 't'. People perceive that a fraction 'p' of the returns received by the government is subject to scrutiny.[15] In case a return is picked up for scrutiny, the tax department can identify the entire amount of income that is being suppressed. In that case, in addition to the tax on such incomes, the individual has to pay a penalty of "λt". The department also undertakes some efforts to bring in "non-filers". In people's perception, the department has a probability "q" of detecting a non-filer and scrutinizing the case. If such a case is scrutinized, and income is found to have been concealed, the same tax and penalty provisions would be applied to this individual. There are two other costs faced by the individual – one, there is a stigma associated with being shown to be a defaulter. This stigma is modelled as follows: for every unit of income suppressed, the individual faces a stigma of "sY". In other words, the total cost of stigma would be $sY(Y-D)$. This implies that for a rupee of income suppressed, individuals with higher overall income face more stigma than individuals with lower income. In this model the stigma that one attaches to being caught is related to one's income level rather than just on undeclared income. The rationale for doing so is that people at higher levels of income have different perceptions of prestige. Literature on prestige, though largely focussed on the occupations and its association with prestige, also provides evidence that incomes contribute to prestige (Hope (1982), Charette (2010)). At higher incomes an individual is therefore expected to perceive greater stigma from being caught irrespective of the amount suppressed. The second cost is the cost of being scrutinized and may be associated with time and effort required to comply with the scrutiny process. This cost is modelled to be "$c=aY-bY^2$". This cost is incurred by an individual irrespective of whether an individual complies fully or not. The cost increases with an increase in the overall income – could be because more documents need to be scrutinized or more effort might be expended by the official for those with higher incomes. Beyond a certain level of income, these costs might not increase anymore and this is captured by the second term in the cost function. The decline in the cost could be attributable to the possibility that the individual at higher levels of income hires professional services that reduce his time and cost for complying with procedures.

Following prospect theory, all options for the individual are compared to the reference income where the individual has paid full tax that he is liable to. In other words the reference income is

$$R = Y - (Y - E)t$$

[14] While there are some countries where the system of earned income tax credits exist instead of the exemption threshold the model is based on a system of exemption that is known to be relatively prevalent.

[15] It is possible that the actual fraction of returns being scrutinized is equal to that perceived by the people. This would not change the results of the model. It is also possible that the cases taken up for scrutiny are not just randomly selected but selected on the basis of some criteria. But this aspect is not being explored in the model.

3.1.1 Filing of Return

If the individual decides to file a return, he gains if he is not caught. The gain can be expressed as:

$$X_f^{nc} = Y - (D - E)t - [Y - (Y - E)t] = (Y - D)t \tag{1}$$

If the individual's return is scrutinized, then his loss can be expressed as:

$$X_f^c = Y - (D - E)t - (Y - D)(t + t\lambda + sY) - c - [Y - (Y - E)t]$$

$$= -[(Y - D)(t\lambda + sY) + c] \tag{2}$$

While X^{nc} represents the gains to the individual, X^c represents the loss. The utility associated with the gain or loss is expressed as a value function $\vartheta(X^i)$ where,

$$\vartheta(X^i)=\begin{cases} X_i^\beta & if\ X_i \geq 0 \\ (-\theta(-X_i)^\beta & if\ X_i < 0 \end{cases}$$

where, $\beta \in [0,1]$ indicating diminishing marginal utility and the parameter for loss aversion, "θ">1 which implies that a unit of loss hurts individuals more than a unit of gain.

Gains and losses are assigned weights, ω^+ and ω^- based on probabilities associated with gains and losses. The value function can then be written as

$$V^f = \omega^+[X^{nc}]^\beta - \omega^-\theta[X^c]^\beta$$

$$= \omega^+[(Y - D)t]^\beta - \omega^-\theta[(Y - D)(t\lambda + sY) + c]^\beta \tag{3}$$

The individual chooses a "D" so as to maximize the value function from filing, V^f.

$$\frac{\partial V^f}{\partial D} = \beta\omega^+(-t)[(Y - D)t]^{\beta-1} + \omega^-\theta\beta(t\lambda + sY)[(Y - D)(t\lambda + sY) + c]^{\beta-1} = 0 \tag{4}$$

Denoting

$$\pi = \left[\frac{\omega^-\theta(t\lambda + sY)}{\omega^+t}\right]^{\frac{1}{(1-\beta)}}$$

We can simplify the equation (5) above to get

$$\frac{D^*}{Y} = \frac{\pi t - t\lambda - sY - c/y}{\pi t - t\lambda - sY} \tag{5}$$

This suggests that there exists for given values of policy parameters, preferences and cost of compliance, a unique value of income that an individual will choose to declare. As long as there is a cost of compliance on being audited, the individual agents in the economy choose to reveal less than their total income.

3.1.2 Non-filing of return

In case the individual decides not to file a return, the functions for losses and gains will be written as follows

Gain: $X_{nf}^{nc} = Y - [Y - (Y - E)t] = (Y - E)t$ (6)

Loss: $X_{nf}^{c} = Y - (Y - E)(t + t\lambda + sY) - c - [Y - (Y - E)t] = -[c + (Y - E)(t\lambda + sY)]$ (7)

The weights associated with these events would be based on the probabilities associated with these events and can be denoted as η^{+} and η^{-} respectively. The corresponding value function would then be written as

$$V^{nf} = \eta^{+}[(Y - E)t]^{\beta} - \eta^{-}\theta[c + (Y - E)(t\lambda + sY)]^{\beta} \quad (8)$$

To determine whether the individual will choose to file or not file, one needs to compare value functions in both conditions i.e. when he files and when he decides not to. Since the individual has a choice of the amount of income to declare in the first case where (s)he files a return, the value function should be valued at the optimal value of D.

3.1.3 To file or not to file

In order to determine whether at a certain income level, filing is a superior option or not, we compare the value functions for the decision to file (equation 4) and for non-filing of return (equation 9) where the former is valued at (D/Y)* which is optimal for the given parameter values. The results are presented in the form of simulation results.

The parameter values adopted for the simulation exercise are as follows. Based on the paper by Tversky and Kahneman (1992), the values of β and θ have been fixed at 0.88 and 2.25 respectively. Further, as shown by Nowaihi, Bradley and Dhami (2006), by adding the parameter for loss aversion, the weighting function and power of the utility can be made the same for losses as well as gains. For providing the weights for gains and losses, we use Prelec weighting functions which are defined as

$$\omega^{+}(1 - p) = \exp(-(-\ln(1 - p))^{\alpha})$$

and

$$\omega^{-}(p) = \exp(-(-\ln(p))^{\alpha})$$

Similarly η^{+}=$\exp(-(-ln(q))^{\alpha})$ and $\eta^{+=}\omega^{+}(1 - p) = \exp(-(-\ln(1 - p))^{\alpha})$

The parameter value of 'α' determines the degree of overweighting of small probabilities. Therefore, $\omega(p) \to p$ as $\alpha \to 1$ which implies that the subjective probabilities then coincide with the objective probabilities. As α is increased, the value of the weighting function will approach the actual probability. A low value of α therefore indicates a high weight given to events with low probability, as with the probability of audit. For the purpose of calibration in this section α has been set to 0.35.

The tax rate, t, is fixed at 10 percent; the exemption threshold is fixed at 0.1 million and the penalty on unpaid taxes,λ, is fixed at 100 percent of taxes owed. The stigma and the cost functions are defined as follows:

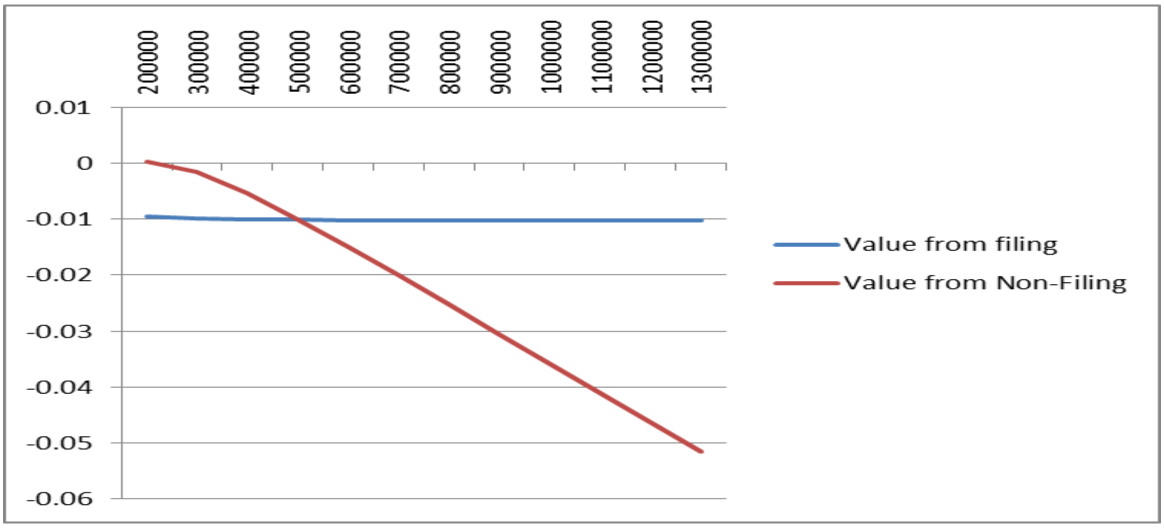
$$Stigma, sY = 0.0000001 * Y(Y - D)$$

$$Cost\ of\ audit, cY = 0.01 * Y - 0.0000000001 * Y^2$$

The value of the parameters in the cost and stigma function assumed for calibration may be treated as illustrative. The parameter in the stigma function suggests that for incomes above 10 million, the notional loss from stigma on non-filing is as high as the income itself suggesting that non-filing will not be a preferred option at such income levels. The parameters of the cost of audit are assumed to suggest that the cost is less than 1 per cent of income earned.

With these parameter values, if we assume that the probability of audit in the case of filing is 10 percent and the probability of being caught in the case of not filing is 5 percent, then for all incomes below 0.6 million, the model suggests that non-filing is a superior choice to filing. For incomes higher than 0.6 million, filing becomes the preferred choice. This income where the tax payer moves from being a non-filer to a filer will henceforth be referred to as the changeover income. This result suggests that non-filing is an issue for potential filers at the lower income levels rather than at the higher income levels. The value functions for both filing and non-filing corresponding to different levels of income are presented in the figure 1.[16]

Figure 1: Value functions for Filing and Non-filing (Crossover at 0.6 million)



Source: Constructed
Note: Penalty of 100%, p=.1 and q=.05 and tax rate is 10%.

[16] It may be mentioned that the way the value functions are defined, there is no reason to assume that the value will be positive alone. Even in the case of negative values, the interpretation remains the same – the agent seeks to minimize the loss or maximize the value that he can derive from the two options available to him/her.

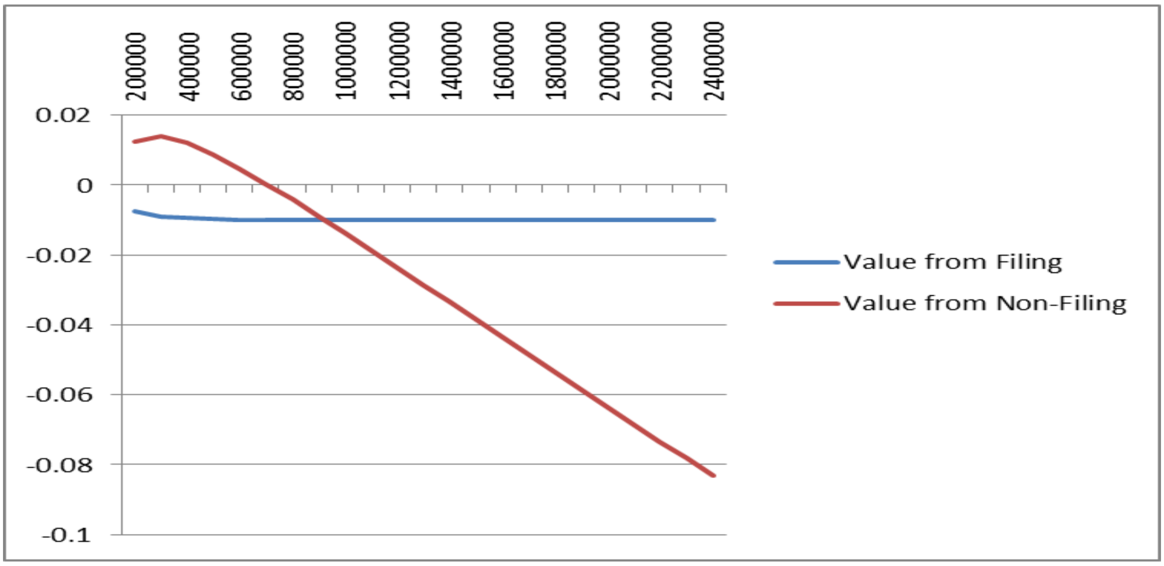
To consider the impact of changes in the different parameters/policy variables on the changeover income, we consider a few cases below.

3.2 Impact of changes in Policy Rates

3.2.1 Impact of change in the tax rate

Consider the case where the tax rate is higher – say at 20 percent instead of the 10 percent assumed to begin with. As depicted in the next graph, the changeover income increases to 1 million from 0.6 million. In other words, with an increase in the tax rate, the range of incomes for which non-filing is a preferred option, too increases. Fewer people will find it attractive to file returns if the tax rate is raised.

Figure 2: Change in Tax Rates - Value functions for Filing and Non-filing (Crossover at 1 million)

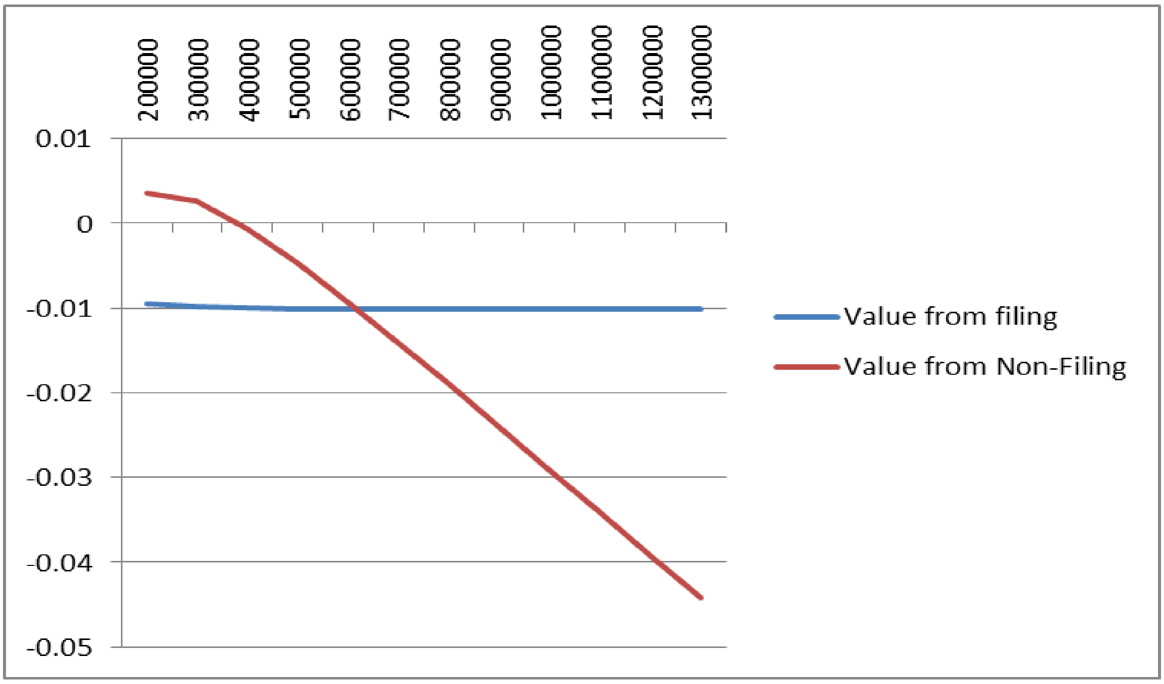


Source: Constructed
Note: Penalty of 100%, p=0.1 and q=0.05 and tax rate is 20%.

3.2.2 Impact of change in the probability of detection on non-filing

If the probability of detection in the event of non-filing is reduced from 5 percent to 4 percent, the changeover income increases substantially to 0.7 million. The model suggests a fairly intuitive result – that if people perceive a decline in the probability of detection in the event of non-filing, they are less likely to file a return. This is reflected in Figure 3.

Figure 3: Change in probability of detection in case of non-filing - Value functions for Filing and Non-filing (Crossover at 0.7 million)

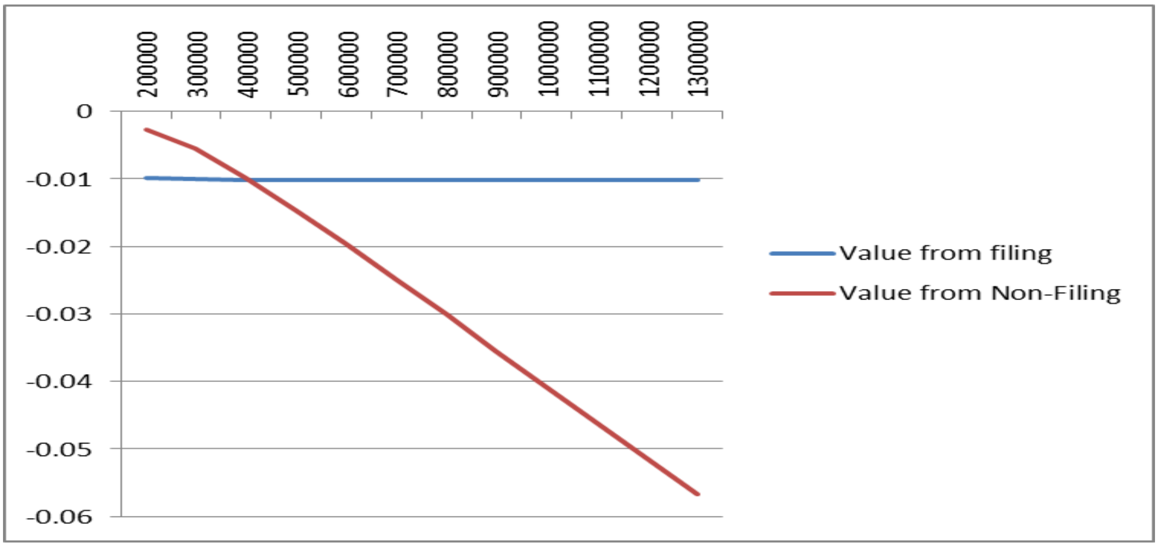


Source: Constructed
Note: Penalty of 100%, p=.1 and q=.04 and tax rate is 10%.

3.2.3 Impact of change in the penalty rate

If we consider the case where the penalty rate is increased from 100 percent to 110 percent, the changeover income reduces to 0.5 million. In other words, the behaviour of people appears to be very sensitive to changes in the penalty rate -– an increase in the penalty rate is shown to lead to a reduction in the range of incomes for which non-filing might be a preferred option.

Figure 4: Value functions for Filing and Non-filing: Crossover at 0.5 million

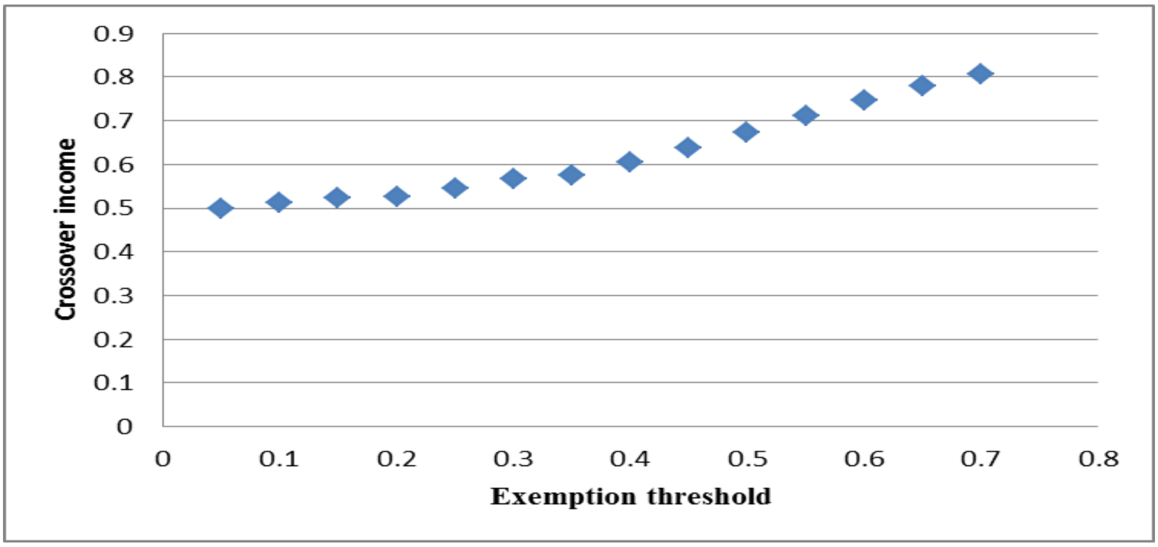


Source: Constructed
Note: Penalty of 110%, p=.1 and q=.05 and tax rate is 30%.

3.2.4 Change in Exemption Threshold

One may ask what would be the impact on compliance if the exemption threshold is revised upwards. We provide the crossover income associated with each value of exemption threshold. As can be seen from the figure below, the significant changes in crossover income are between the range of 3,00,000 and 8,50,000 where an increase in threshold is associated with lower levels of compliance. Below and above this range the crossover incomes increase marginally. Moreover the utility of the policy to raise exemption thresholds is limited to a range where it may bring individuals into the system for example in this model the threshold of 2,00,000 and 2,50,000 are associated with lower crossover incomes as compared to thresholds below 2,00,000.

Figure 5 Change is crossover income with changes in exemption threshold



Source: Constructed

Note: Penalty of 100%, p=.1 and q=.05 and tax rate is 10%.

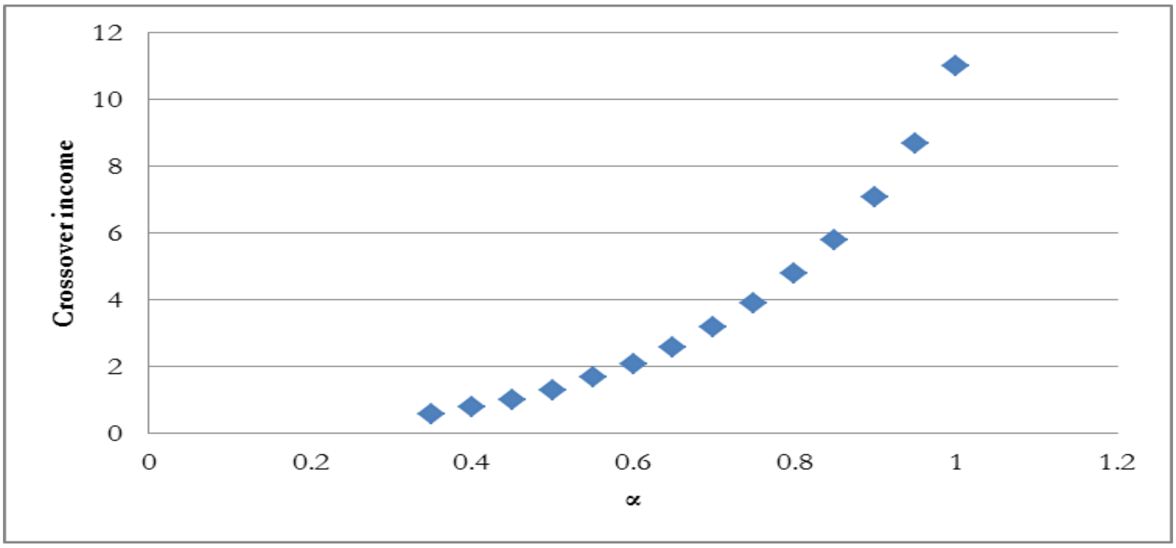
3.3 Changes in parameters

Using the policy rates assumed at beginning of section 4 the preference parameters are modified in this section to demonstrate that the results are robust to changes in the parameter values. The following analysis documents that there exists a crossover income for wide range of parameter values.

3.3.1 Change in Alpha

For the purpose of illustration we had assumed that alpha takes the value 0.35. However it is difficult to ascertain or comment on its exact value. There is no ideal value of alpha and for the model given other parameter values one can ask what happens to the preference for filing when the value of alpha changes. Therefore, here we plug in different values of alpha in the value function for filing and non-filing to find that for higher values of alpha, the income at which individuals prefer to file returns increases. (Figure 6)

Figure 6: Crossover income for different alphas

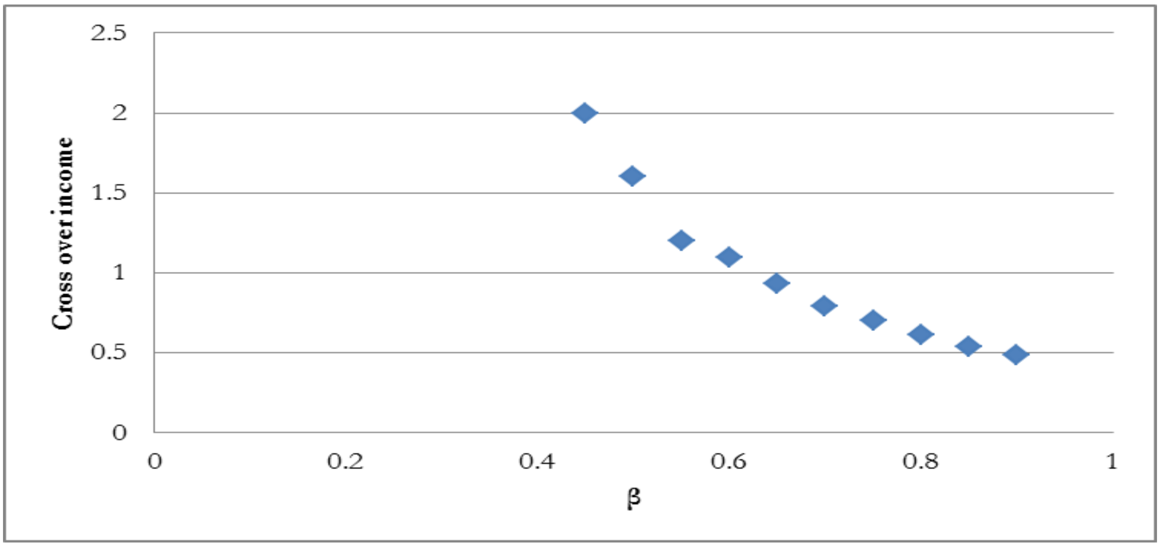


Source: Constructed
Note: Penalty of 100%, p=.1 and q=.05 and tax rate is 10%.

3.3.2 Change in Beta

The other parameter of interest is the power of the utility function. For the calibration exercise, we had assumed the value of **β** to be 0.88. However, beta represents the preference of the individual and could take any value. In order to demonstrate that for different values of **β** there exist incomes at which people would prefer to file we change the value of beta. As can be seen in figure 7, higher values of beta are associated with lower crossover incomes.

Figure 7: Crossover income for different betas

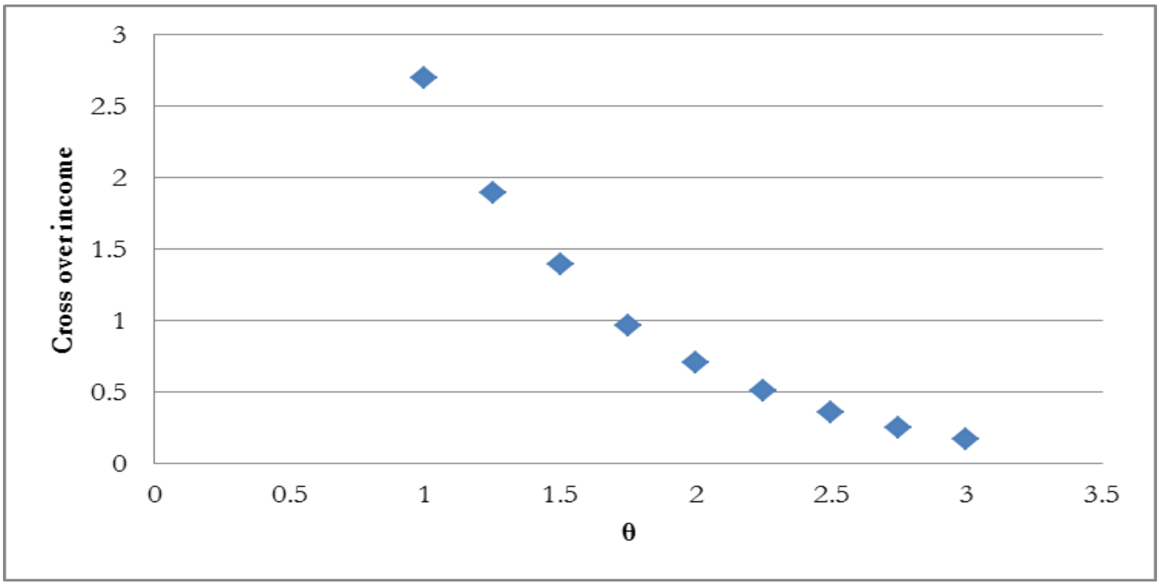


Source: Constructed
Note: Penalty of 100%, p=.1 and q=.05 and tax rate is 10%.

3.3.3 Change in Theta

The parameter that captures risk aversion associated with loss outcomes are represented by θ, which had been set to 2.25 for the purpose of calibration. Here, we change the values of θ to see what happens to the crossover income. From figure 8 it is evident that for higher values of θ, which implies higher order of risk aversion the individuals are more willing to comply with taxes. Therefore, individuals prefer to file returns for lower levels of incomes at higher values of θ.

Figure 8: Crossover income for different thetas



Source: Constructed
Note: Penalty of 100%, p=.1 and q=.05 and tax rate is 10%.

4. Conclusion

The paper attempts to model the decision of individuals to file or not file a return using the prospect theory framework. The results from the model demonstrate that not all individuals would find it optimal to file a return. The model shows that at low incomes, people would prefer to not file a return. The income at which this decision changes and the individual chooses to file a return has been referred to as crossover income. Where the exemption threshold is 0.1 million, the simulation exercise shows that people with incomes up to 0.6 million would choose not to file a return.

The decision to file depends on the policy parameters and behavioural parameters i.e. the individual will choose to file a return based on rate of tax, penalty rate and audit probability as well as based on his/her preference for risk. The impact of the change in the policy parameters on the decision to file is intuitive- for lower rates of taxes and higher rates of penalty, the income level at which filing becomes a preferred decision is lower. On the other hand, when the probability of audit for the non-filers declines, the individuals choose to file at higher income which is expected owing to the reduced threat of detection.

The parameters used in the model which include the measure of risk aversion ‘θ’, the preference parameter or power of the utility function ‘β’ and the degree of overweighting probabilities measured by ‘α’ all determine the choice of income for which individuals prefer to file. To demonstrate that the result of the existence of a crossover income exists is robust to changes in value of these parameters, we undertake a sensitivity analysis. While the cross-over income is different for different values of the parameters, the conceptual result holds, i.e., there exists a clearly identifiable income below which filing is not a preferred option and above which, agents would choose to file a return. It may be mentioned here that the model is setup under certain simplifying assumptions - it assumes that when an individual’s return is scrutinized, all suppressed income is revealed and there is no discretion in the application of penalty. In this situation, there is no scope for litigation for challenging the assessment of the tax department. Further, it is possible that individuals might seek to pay a bribe to avoid being labelled as a defaulter. This option too has not been explored in this paper. Incorporating these changes can modify the results obtained here.

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R. Kavita Rao is Professor, NIPFP and
Suranjali Tandon is Consultant, NIPFP.

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National Institute of Public Finance and Policy,
18/2, Satsang Vihar Marg,
Special Institutional Area (Near JNU),
New Delhi 110067
Tel. No. 26569303, 26569780, 26569784
Fax: 91-11-26852548

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