Pakistan Journal of Applied Economics, Vol. XII No.2; XIII No.1, (107 - 126)

# ANALYSIS OF THE NEW SCHEME REGARDING IMMUNITY FROM INCOME TAX ASSESSMENT IN PAKISTAN*

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A new Income Tax Audit Scheme was introduced in Pakistan in the budget 1993-94. In fact, it was a modified form of the Immunity Scheme of the early 1980's. This paper attempts to analyse the new scheme on the basis of the tax evasion theory. Our analysis shows that this scheme induces those taxpayers, who have been selected for audit at least once in the preceding three years, to participate in it and to raise their declaration. However, the majority of taxpayers (who were not audited previously) exploit the scheme and drop their declaration level. Thus, it does not meet the objectives of the policy makers. Moreover, our analysis reveals that the scheme is pro-corruption.

In the budget speech for the fiscal year 1993-94, the Finance Minister of Pakistan announced a new Income Tax Audit Scheme. In fact, it was a new version of the immunity scheme of 1980's. Earlier, the income taxpayers were given immunity from the audit in a given year, if their declared income was 15-20 per cent higher than the declared income of the previous year. The objective of such a provision was to create mutual confidence between the taxpayers and the tax collection department, on one hand [Zafar & Associates (1990-91)]; and to induce the taxpayers to raise their income declaration for the purpose of tax payment, on the other hand. It was assumed that the scheme would generate reasonable growth in tax revenues, but it failed to provide the expected results. With the introduction of the immunity scheme the growth in the income tax revenues, which was 56.5 per cent in 1979-80 and 34.5 per cent during 1980-81, fell to 18.3 per cent during 1981-82 and to 1.6 per cent during the next two years, [CBR Year Book (1988-89)]. It remained around 10 per cent until 1988-89, the year when the government withdrew that scheme. Actually, the immunity scheme was pro-evasion by its nature, as established by Pasha and Shaikh (1986). It gave the taxpayers a strong incentive to evade

* The first version of the paper was submitted in September, 1993.

** The author, gratefully acknowledges comments by Hafiz A. Pasha. Comments by anonymous referees of the journal are also much appreciated.

and to drop the base upon which the next period's growth in declaration had to be computed. The scheme legalised the previous years evasion on the part of taxpayers and deprived the tax department of additional revenue which could be charged in the form of fines and penalties on the tax evaded. After discontinuation of five years, the government introduced the new version of the immunity scheme according to which the returns of a taxpayer filed under Self Assessment Scheme would be given immunity from audit if:

a) his/her case has been subjected to audit at least once in the last three years, and
b) if the tax paid on the basis of declared income for the current year is higher by 20 per cent, over the income declared or assessed during any of the preceding three years.

The underlying objectives of the new version are: first, to fulfil the demand of taxpayers regarding provision of the immunity from audit and; second, to mitigate the negative implications of the original immunity scheme. It was expected that unlike the original scheme, taxpayers would find it difficult to drop the base level of declaration since the new scheme provided immunity only when the current year's income was 20 per cent higher than the maximum income of the preceding three years. It is perceived that it becomes impossible to suppress the base during all the three years because to qualify for the scheme the taxpayer has to be audited at least once in the three year period.

It is imperative to predict response of the taxpayers on the basis of microeconomic theory and to understand whether the new rules and conditions will improve the scheme. At the time of the promulgation of the scheme, following types of taxpayers may have existed:

i) The taxpayers who were subjected to audit in the last years.
ii) The taxpayers who were subjected to audit in the second last year.
iii) The taxpayers who were subjected to audit in the third last year.
iv) The taxpayers who were not subjected to audit during the last three years.
v) New taxpayers.

For each of the above mentioned taxpayers, following questions arise regarding their responses to the new audit scheme:

i) Will a taxpayer participate in the scheme?
ii) If he participates, then what will be the extent of declaration (i.e., will the new scheme reduce or increase the tax evasion)?
iii) Will the scheme be successful in curbing corruption (in terms of bribes)?

This paper attempts to answer the above questions by using the standard

theory of tax evasion. In the following section the basic model of tax evasion is presented. Section three attempts to answer the first question while section four determines the optimal extent of income declaration and bribes. The last section concludes the paper.

## II. Basic Model

We have applied the expected utility framework, originally developed by Allingham and Sandmo (1972), in the following analysis. However, the tax evasion model of Allingham and Sandmo is corruption free, while to make it more realistic, we have allowed corruption in our model. In this model the tax payer has to decide the extent of under declaration facing some probability of audit 'P', penalty on evasion 'ß', and a tax rate 't'.

where: $P \leqslant 1$; $ß > 1$; $t < 1$.

If a taxpayer is selected for audit, he can still get income under-reported by offering a bribe to the income tax officer. Suppose the taxpayer's actual income in the current year is one and he declares fraction 'A' of it in the return of his Income Tax. His tax payment is 'tA'. If a taxpayer is not selected for audit then his net of tax income is (1-tA) with probability (1-P). On the other hand, if he is selected for audit by the tax official then he has to pay a penalty, in addition to the tax already paid. The penalty is ßt(1-A).

But, the taxpayer tries to minimize the penalty by offering a bribe to the income tax officer (ITO). We assume that the bribe deal between the taxpayer and the ITO is successful. We also suppose the ITO agrees to report a fraction $\tau$ of the true income to the Central Board of Revenue as the taxpayer's assessed income, such that $A < \tau < 1$. Although, $\tau$ is less than one but it is assumed to be greater than 'A', because the assessed income less than or equal to the declared income, may create suspicion regarding the audit and efficiency of the Income Tax Officer.

The taxpayer has to pay penalty equal to $\beta t(\tau-A)$ and his penalty saving is $\beta t(1-\tau)$. Suppose, he offers 'b' per cent of his penalty savings to the ITO as bribe, then his total cost of evasion in the bribe deal is $\beta t(\tau-A) + b\beta t(1-\tau)$. Therefore, his net income in this case is $1-tA-\beta t(\tau-A) - b\beta t(1-\tau)$ with probability P.

Before proceeding further we stipulate the following utility function for the taxpayer assuming him to be risk averse;

$$U = \ln(Y) \qquad (1)$$

where 'Y' is the net income (i.e., actual income less tax and penalty, if any).

Given the above specification the Expected Utility Function of the taxpayer is:

$$E(U) = (1-P)\ln[1-tA] + P\ln[1-tA-\beta t(\tau-A) - b\beta t(1-\tau)] \quad (2)$$

By applying the first order conditions on equation (2) we can determine the optimal level of declaration (A), under the conventional Self Assessment Scheme:

$$A = \frac{P(\beta-1) - (1-P)[1-\beta t\{\tau+b(1-\tau)\}]}{t(\beta-1)} \quad (3)$$

## III. Determination of Optimal Strategies in the New Scheme

Now we can determine the optimal strategies of the five types of taxpayers mentioned above, under the new scheme.

### *Type-I Taxpayer*

*Taxpayer who has been subjected to audit in the last year*

There are two possible strategies for such a taxpayer: If he participates in the scheme, he can enjoy immunity from audit for a period of three years, but if he does not participate he will have to declare proportion 'A' of his actual income (same as under the Self Assessment Scheme).

The Expected Utilities over three years from these strategies will be as follows.

*a) The case of participation*

To claim immunity the taxpayer has to pay 20 per cent higher tax than the maximum tax paid during the last three years. If the taxpayer's current year income is one then his income in the previous year is 1/R, where R = 1 + h, if h is the annual rate of growth in the actual income which is assumed constant in all the years. The taxpayer has paid $t\tau/R$, $tA/R^2$ and $tA/R^3$ in the last, second last, and the third last years, respectively. The maximum of these three tax payments will depend on the rate of annual growth in the actual income. At any positive growth rate $tA/R^3$ is less than $tA/R^2$. Therefore, the comparison is to be made between $t\tau/R$ and $tA/R^2$. It can easily be established if $\tau R > A$ then $t\tau/R > tA/R^2$.

In the following analysis, since we only consider the case of those taxpayers who have non-negative growth in the actual income therefore $R > 1$, always. Moreover, as we have already determined $\tau > A$, therefore $\tau R$ will always be greater than A. Thus $t\tau/R$ is the maximum tax paid during the last three years and will be the base on which 20 per cent growth is to be shown.

As the probability of audit due to immunity is zero, the total Expected Utility of three years will be:

$$E_1(U) = [1-1.2t\tau/R] + 1n[R - (1.2)^2 t\tau/R] + 1n[R^2 - (1.2)^3 t\tau/R]$$

or

$$E_1(U) = 31n(R) + [1 - 1.2t\tau/R] + 1n[1 - (1.2)^2 t\tau/R^2] + 1n[1 - (1.2)^3 t\tau/R^3] \quad (4)$$

*b) The case of unchanged behaviour*

If the taxpayer does not participate in the scheme then the expected utility in the three years will be:

$$E_2(U) = (1-P)\ 1n(1-tA) + P\ 1n[1-tA-\beta t(\tau-A) - b\beta t(1-\tau)] + (1-P)\ 1n(1-tA)R + P\ 1n[\{1-tA-\beta t(\tau-A) - b\beta t(1-\tau)\}R] + (1-P)\ 1n(1-tA]R^2 + P\ 1n[\{1-tA-\beta t(\tau-A) - b\beta t(1-\tau)\}R^2]$$

or

$$E_2(U) = 31n(R) + 3(1-P)\ 1n(1-tA) + 3P\ 1n[1-tA-\beta t(\tau-A) - b\beta t(1-\tau)] \quad (5)$$

The optimal strategy will depend on the comparative values of $E_1(U)$ and $E_2(U)$. If $E_1(U)$ is higher than $E_2(U)$ then the taxpayer will participate in the scheme, otherwise not. We have determined the numerical values of $E_1(U)$ and $E_2(U)$, by assuming the following values for various parameters:

$$P = 0.33, \quad \beta = 2.5, \quad t = 0.25, \quad b = 0.1, \quad \text{and } \tau = 0.6$$

Most of the above values are hypothetical yet there is some rationale for the assumed values of penalty and the tax rate. According to the Income Tax Ordinance of Pakistan the penalty on tax evasion cannot be more than 2.5 per cent of the total tax evaded. The tax rate varies for various income slabs ranging from 10 to 45 per cent. Thus, the assumed rate of 25 per cent may be a good approximation of the average tax rate.

The results of the simulation are given in Appendix (Table-1). These results show that, except in the case when the income growth rate is less than 20 per cent, the taxpayer will participate in the scheme. The expected gain (in terms of utility) to the taxpayer is higher in case of participating in the scheme since there is no audit, no expected penalty and no bribe to the Income Tax Officer.

***Type-II Taxpayer***

*Taxpayer who has been subjected to audit in the second last year*

Such a taxpayer can enjoy immunity from the audit for two years if he participates in the scheme. He is required to pay 20 per cent higher tax than the maximum tax paid during the last three years. Previously, he paid $tA/R$, $t\tau/R^2$ and $tA/R^3$ in the last, second last and the third last years, respectively. Again, the maximum of these will depend on the rate of annual growth in the actual income. We have to compare only $tA/R$ and $t\tau/R^2$ (since $tA/R^3$ is minimum), i.e., decision is to be made whether $tA/R \geq t\tau/R^2$.

Given the numerical values of different parameters as mentioned above, we can find the value of 'A' from equation (3) which is 0.248. Given this value of 'A', the value of 'R' required to be $AR > \tau$ which is 2.42. It implies a nominal growth of 142 per cent in the actual income - which is not possible in business under normal circumstances. Thus, AR cannot be greater than $\tau$. Therefore, $t\tau/R^2$ is the maximum tax paid during the previous three years and will be the base upon which 20 per cent growth is to be shown. The level of expected utility in the next two years will be:

$$E_1(U) = \ln(R) + \ln(1 - 1.2t\tau/R^2) + \ln[1 - (1.2)^2\, t\tau/R^3] \qquad (6)$$

On the other hand, if the taxpayer does not participate in the scheme then his expected utility will be:

$$E_2(U) = \ln(R) + 2(1-P)\ln(1-tA) + 2P\ln[1-tA-\beta t(\tau-A) - b\beta t(1-r)] \qquad (7)$$

Again the optimal strategy will depend on the comparative values of $E_1(U)$ and $E_2(U)$ which are given in the Appendix (Table-2). These results show that the expected utility of the taxpayer will increase if he participates in the scheme even if the growth rate in his actual income is less than 20 per cent. For such a taxpayer, gains made for not paying the bribe and penalty is more than the additional tax he has to pay.

### *Type-III Taxpayer*

*Taxpayer who has been subjected to audit in the third last year*

During the previous three years such a taxpayer has paid annual tax equal to $tA/R$, $tA/R^2$ and $t\tau/R^3$, and the maximum tax will depend on the annual growth in the actual income. At any positive growth rate $tA/R^2$ is less than $tA/R$. Thus, the comparison is to be made between $tA/R$ and $t\tau/R^3$. By taking the values of A and $\tau$ equal to 0.248 and 0.6, it can be established that $tA/R$ will be higher than $t\tau/R^3$ if $R > 1.56$.

Since it is unusual for R to be greater than 1.56, therefore, the highest tax paid is $t\tau/R^3$. To join the immunity scheme the taxpayer has to pay $1.2t\tau/R^3$ in the current year. It is important to note that such a taxpayer can participate in the scheme only in the current year, because in the following year he will not fulfil the conditions of the scheme.

His expected utility in the case of participation will be:

$$E_1(U) = \ln(1 - 1.2t\tau/R^3) \quad (8)$$

And in the case of unchanged behaviour the expected utility will be:

$$E_2(U) = (1-P)\ln(1-tA) + P\ln[1-tA-\beta t(\tau-A) - b\beta t(1-\tau)] \quad (9)$$

To determine the optimal strategy we refer to simulation analysis - results of which are given in Appendix (Table-3).

From the simulation results it is clear that the optimal strategy for such a taxpayer is to participate in the scheme. In fact, this scheme has more attraction for type-III taxpayers as there are significant gains in the expected utility. But, they are eligible for the scheme only for one year because in the second year they will not fulfil the conditions of audit.

### *Type-IV Taxpayer*

*Taxpayer who has not been subjected to audit during the previous three years*

So far we have examined the response of those taxpayers who were eligible for the scheme at the time of its promulgation. There may be a number of taxpayers who were not audited during the last three years and hence do not fall in the framework of the scheme. Moreover, in the following years. the taxpayers who were eligible may have become ineligible or they may change their category. For example, after three years Type-I taxpayer will fall in Type-IV category, after two years, Type-II will be in the category of Type-IV, and after one year Type-III taxpayers will also join this group. Thus, in the long

run, the analysis of the response of Type-IV taxpayers is valid for all categories of taxpayers.

Type IV taxpayer has various strategies at his disposal. Three obvious options are:

i) *The Unchanged Behaviour:* The taxpayer may totally ignore the scheme and continue to declare his income under Self Assessment Scheme.

ii) *The Natural Behaviour:* He may keep his behaviour unchanged until he is selected for audit, which is the necessary condition of eligibility. However, when he is selected for audit, he may decide to participate in the scheme.

iii) *The Strategic Behaviour:* Having new provisions in the law, the taxpayer may adopt a new strategy, and take some steps to exploit the scheme. First, he may try to be selected for audit in the current year, as it is a necessary condition to enter the scheme. He can easily achieve that objective if he pays tax less than the tax paid in the last year.[1] Second, when he is audited he may ask the ITO to determine his tax liability which should not be more than maximum of the previous two years, so that the base payment should not be higher than what he has already paid. If he succeeds and the ITO agrees with the deal he can enjoy complete immunity from audit for the next three years. Now, to determine the optimal strategy, we formally model the above options.

Take the Strategic Behaviour, the taxpayer has paid tax equal to $tA/R$, and $tA/R^2$ in the last and the second last years. Assuming a positive growth rate in the actual income the maximum of these is $tA/R$ (the tax paid in the last year). Suppose the taxpayer declares 'D' as his income in the current year, such that $tD < tA/R$. In this case he will be necessarily selected for audit. If he wants his tax liability to be fixed at least at $tA/R$ (the maximum of the previous two years) level then he will have to offer an attractive amount as bribe to the ITO. The maximum bribe the taxpayer can offer is b per cent of the total tax savings (i.e., the tax savings not only in the current year but also in the following three years), which is given by the following equation:

$$MB = b\beta t[(1-A/R) + P(1-\tau)R + P(1-\tau)R^2 + P(1-\tau)R^3)]$$

$$= b\beta t[(1-A/R) + P(1-\tau)\,(R+R^2+R^3)] \qquad (10)$$

where MB stands for Maximum Bribe.

[1] According to the rules of Self Assessment Scheme [Section 59(5) of Income Tax Ordinance (1979)], those taxpayers who declare their income less than the last year income will necessarily be subjected to detailed audit.

We assume that the above amount of bribe is actually paid. Thus, the utility level in various years will be:

*a) First Year (the year of sure audit)*

$$E^1(U) = 1n[1-tD-\beta t(A/R-D) - MB] \quad (11)$$

As mentioned above 'D' is the declared income in the current year. Its value ranges between zero to $A/R-\sigma$, where $\sigma$ is a small number. If $D = 0$, then the above expression becomes:

$$E^1(U) = 1n[1-\beta t(A/R) - MB] \quad (12)$$

and if $D = A/R-\sigma$, then the expression becomes:

$$E^1(U) = 1n[1-t(A/R) - \sigma t(\beta-t) - MB] \quad (13)$$

As $\sigma$ is a very small amount which approaches zero, therefore, we can write equation (13) as:

$$E^1(U) = 1n[1-t(A/R) - MB] \quad (14)$$

Clearly the utility level by equation (14) is higher than that by equation (12), thus the taxpayer will declare his income $A/R - \sigma$ in this year.

*b) Second year (the year of immunity from audit)*

$$E^2(U) = 1n(R - 1.2tA/R) = 1n(R) + 1n(1 - 1.2tA/R^2) \quad (15)$$

*c) Third year*

$$E^3(U) = 1n(R^2 - 1.44tA/R) = 21n(R) + 1n(1 - 1.44tA/R^3) \quad (16)$$

*d) Fourth year*

$$E^4(U) = 1n(R^3 - 1.728\ tA/R) = 31n(R) + 1n(1 - 1.728tA/R^4) \quad (17)$$

Thus, the life time expected utility from the above strategic behaviour can be derived by adding the expressions from equations (14) to (17), as under:

$$E_1(U) = E^1(U) + E^2(U) + E^3(U) + E^4(U) \quad (18)$$

### *The Natural Strategy*

In the natural case as under the Self Assessment Scheme the strategy of taxpayers remains the same until he is selected for audit. However, when he is selected for audit he decides to participate in the scheme from the next year. We will analyse this strategy under four years framework as this will help us to compare it with the strategic behaviour analysed earlier. There are following five possibilities for such a case:

i) When the taxpayer is subjected to audit in the current year and participates in it from the next year; the probability of outcome is 'P'. Thus, the utility attached to it is as follows:

$$\begin{aligned} E^1(U) &= P[1n\{1-tA-\beta t(\tau-A)-b\beta t(1-\tau)\} + 1n(R-1.2t\tau) + \\ &\quad 1n(R^2-1.44t\tau) + 1n(R^3-1.728t\tau)] \\ &= P[61n(R)+1n\{1-tA-\beta t(\tau-A)-b\beta t(1-\tau)\} + 1n(1-1.2t\tau/R) + \\ &\quad 1n(1-1.44t\tau/R^2) + 1n(1-1.728t\tau/R^3)] \end{aligned} \tag{19}$$

ii) When the taxpayer is subjected to audit in the second year and participates in it from the third year; the probability of outcome is (1-P)P. The level of utility attached to it is:

$$\begin{aligned} E^2(U) &= (1-P)P\ [1n(1-tA) + 1n\{1-tA-\beta t(\tau-A)-b\beta t(1-\tau)\}R + \\ &\quad 1n(R^2-1.2t\tau R) + 1n(R^3-1.44t\tau R)] \\ &= (1-P)P\ [61n(R) + 1n(1-tA) + 1n\{1-tA-\beta t(\tau-A) - \\ &\quad b\beta t(1-\tau)\} + 1n(1-1.2t\tau/R] + 1n(1-1.44t\tau/R^2)] \end{aligned} \tag{20}$$

iii) When the taxpayer subjected to audit in the third year and enjoys immunity in the following year; the probability of outcome is $(1-P)^2P$. The level of expected utility is:

$$\begin{aligned} E^3(U) &= (1-P)^2P\ [1n(1-tA) + 1n(1-tA)R + 1n\{1-tA-\beta t(\tau-A) - \\ &\quad b\beta t(1-\tau)\}R^2 + 1n(R^3-1.2t\tau R^2)] \\ &= (1-P)^2P\ [61n(R) + 21n(1-tA) + 1n\{1-tA-\beta t(\tau-A) - \\ &\quad b\beta t(1-\tau)\} + 1n(1-1.2t\tau/R)] \end{aligned} \tag{21}$$

iv) When the taxpayer is selected for audit in the fourth year with a probability of audit $(1-P)^3P$; the expected utility will be:

$$E^4(U) = (1-P)^3 P\ [1n(1-tA) + 1n(1-tA)R + 1n(1-tA)R^2 + 1n\{1-tA- \beta t(\tau-A) - b\beta t(1-\tau)\}\ R^3]$$

$$= (1-P)^3P[61n(R) + 31n(1-tA) + 1n\{1-tA-\beta t(\tau-A) - b\beta t(1-\tau)\} \quad (22)$$

v) When the taxpayer is not selected for audit in all the four years; its probability is $(1-P)^4$ and the attached level of utility is:

$$E^5(U) = (1-P)^4\ [61n(R) + 41n(1-tA)] \quad (23)$$

By adding all the above five expressions [equations (19) to (23)], the lif time expected utility obtained by the natural behaviour is as under:

$$E_2(U) = E^1(U) + E^2(U) + E^3(U) + E^4(U) + E^5(U) \quad (24)$$

***Unchanged Behaviour***

In this case the taxpayer does not participate in the scheme at all. However, he faces the same probability of detection as under the conventional scheme. The extent of his income declaration will also remain the same. The declaration strategy in one year is independent to that in any other year. Thus, the lifetime expected utility (in the four years framework) will be as follows:

$$E_3(U) = 61n(R) + 4(1-P)\ 1n(1-tA) + 4P\ 1n[1-tA-\beta t(\tau-A) - b\beta t(1-\tau)] \quad (25)$$

To determine the optimal strategy the simulation technique which was used for other types of taxpayers is applied in this case. The results of simulation are given in the Appendix (Table 4).

The simulation results clearly show that the strategic behaviour for the taxpayer is the optimal behaviour. Thus, a taxpayer who is not yet subjected to audit will try to be audited in the current year and will participate in the scheme from the next year, with a base tax payment equal to the previous year. Actually, this is the most profitable strategy because in this case the taxpayer pays very little tax. Since the taxpayer may negotiate with the ITO, the actual amount of bribe may be much lower than the maximum bribe assumed in our analysis. Thus, the expected gain from this strategy may still be higher.

***Type-V Taxpayer***

This type of taxpayer enters the scheme for the first time. The nature of the scheme is such that the taxpayers are not eligible for this scheme for at least three years. After three years they will be the existing taxpayers and the above scheme will be valid for them.

## IV. The Extent of Income Declaration

In the absence of the scheme the extent of income declaration by each taxpayer, every year is:

$$Eo(D) = (1-P)A + P\tau = 0.364 \qquad (26)$$

(given the values of various parameters as assumed above).

Whereas in the presence of scheme, the level of income declaration from various types of taxpayers are the following.

### *i) Type-I Taxpayer*

The extent of income declaration in the various years, as a fraction of actual income of taxpayers is:

first year = $1.2\tau/R$,
second year = $1.44\tau/R2$,
third year = $1.728\tau/R3$.

Given the values of different parameters, the extent of declaration is given in Table-1.

The simulation results show that the level of income declaration in this scheme will be higher for taxpayers of this category. However, over time it has a falling trend.

### *ii) Type-II Taxpayer*

As stated earlier these taxpayers are eligible for the scheme for the next two years. The fraction of income declared in the two years will be:

first year = $1.2\tau/R2$,
second year = $1.44\tau/R3$.

The simulation results are given in Table 2.

It is clear that the extent of income declaration for these types of taxpayers will also be higher under the new scheme, as compared to the original Self Assessment Scheme (SAS). However, a taxpayer with a 35 per cent or more growth rate in his income will declare a smaller proportion of his income in the second year, as compared to the income declared under SAS.

**TABLE 1**

Extent of Declaration by Type I Taxpayer

| Growth in the Actual Income (%) | Extent of Income Declaration as Percentage of Respective Years Actual Income | | |
|---|---|---|---|
| | Year 1 | Year 2 | Year 3 |
| 15* | 0.364 | 0.364 | 0.364 |
| 20 | 0.600 | 0.600 | 0.600 |
| 25 | 0.576 | 0.553 | 0.531 |
| 30 | 0.554 | 0.511 | 0.472 |
| 35 | 0.533 | 0.474 | 0.421 |

*Non-participating

**TABLE 2**

Extent of Declaration by Type II Taxpayer

| Growth in the Actual Income (%) | Extent of Income Declaration as Percentage of Respective Years Actual Income | |
|---|---|---|
| | Year 1 | Year 2 |
| 15 | 0.544 | 0.568 |
| 20 | 0.500 | 0.500 |
| 25 | 0.461 | 0.422 |
| 30 | 0.426 | 0.393 |
| 35 | 0.395 | 0.351 |

*iii) Type-III Taxpayer*

This type of taxpayer will declare the following fraction of his actual income in the current year:

$$1.2\tau/R3$$

The numeric values of the declaration are given in Table 3.

The results show that the declared income of fast growing taxpayers i.e., having income growth of 30 per cent or more, is less under the new scheme, as compared to the SAS. If growth in income is upto 25 per cent then the extent of income declared will be higher.

*iv) Type-IV Taxpayer*

According to the optimal strategy for this type of taxpayer the income declared in various years will be:

$$\text{first year} = A/R - \sigma$$

If we ignore $\sigma$ and take the declared income as a fraction of the actual income in the relevant years (as we did earlier), then the level of declared income will be:

first year = $A/R$,
second year = $1.2\ A/R^2$,
third year = $1.44\ A/R^3$,
fourth year = $1.728\ A/R^4$.

The results of numeric simulation are reported in Table 4.

It is obvious that the level of declared income declines sharply in this case. If the growth rate in income is higher than 20 per cent then not only the declared income of the base year will reduce but, as fraction of the actual income the declaration will continue to fall in the subsequent years. Thus, the new scheme has worst implications for income declared by the above type of taxpayers.

**The Extent of Bribe in the New Scheme**

Under the self-assessment scheme the taxpayer is expected to pay the following fraction of the actual income, as bribe to the ITO each year:

$$E(B) = Pb\beta t(1-\tau) \qquad (27)$$

**TABLE 3**

Extent of Declaration by Type III Taxpayer

| Growth in the Actual Income (%) | Extent of Income Declaration as Percentage of the Year's Actual Income |
|---|---|
| | Year 1 |
| 15 | 0.473 |
| 20 | 0.417 |
| 25 | 0.369 |
| 30 | 0.328 |
| 35 | 0.293 |

**TABLE 4**

Extent of Declaration by Type IV Taxpayer

| Growth in the Actual Income (%) | Extent of Income Declaration as Percentage of Respective Years Actual Income | | | |
|---|---|---|---|---|
| | Year 1 | Year 2 | Year 3 | Year 4 |
| 15 | 0.216 | 0.229 | 0.235 | 0.245 |
| 20 | 0.207 | 0.207 | 0.207 | 0.207 |
| 25 | 0.198 | 0.194 | 0.183 | 0.176 |
| 30 | 0.191 | 0.179 | 0.163 | 0.150 |
| 35 | 0.184 | 0.166 | 0.145 | 0.129 |

Given the numerical values of different parameters the expected level of bribe, as a fraction of the current income will be:

$$E(B) = 0.00825$$

It means that, under the conventional system of audit, the taxpayer pays an average of 0.83 per cent of his actual income as bribe. Under the new scheme, the level of bribe for Type-I, II, and III taxpayers will be zero, if they participate in the scheme. The main reason is that there is no audit and hence no involvement of the ITO. However, for Type-IV taxpayer the case is entirely different. As derived earlier, the Maximum Bribe (MB) offered by the taxpayer to the ITO is given by the following equation:

$$MB = b\beta t[(1-A/R) + P(1-\tau)\,(R+R^2+R^3)]$$

To compare the above level of bribe with the Self Assessment Scheme, we take the present value of the expected bribe to be paid in the four years under SAS, as:

$$E(B)_p = Pb\beta t(1-\tau) + \frac{Pb\beta t(1-\tau)R}{(1+r)} + \frac{Pb\beta t(1-\tau)R^2}{(1+r)^2} + \frac{Pb\beta t(1-\tau)R^3}{(1+r)^3}$$

$$= Pb\beta t(1-\tau)\,[1+ \frac{R}{(1+r)} + \frac{R^2}{(1+r)^2} + \frac{R^3}{(1+r)}] \qquad (28)$$

where 'r' is the discounting factor. Assuming r = 0.10 numerical values of bribe by Type-IV taxpayer under the two schemes is given in Table 5.

The results of the table shows that the level of bribe under the new immunity scheme is much higher as compared with the Self Assessment Scheme. For example, under the new scheme, the taxpayer with 20 per cent growth in actual income will offer 8.6 per cent bribe on the current income whereas, in the absence of this scheme the present value of total bribe in the four years will be 3.8 per cent of the current year's income. According to the simulation results the level of bribe will double in the new scheme.

## V. Conclusion

The above analysis shows that with the exceptions of few fast growing taxpayers, the new income tax audit scheme is successful as it increases the level of income declaration of those taxpayers who have been selected for audit, atleast once in three years. However, there are a considerable fraction of

**TABLE 5**

The Extent of Bribe to Income Tax Officer

| Growth in the Actual Income (%) | Present Value of Expected Bribe in the Four Years Under SAS | Maximum Bribe Paid Under the New Scheme |
|---|---|---|
| 15 | 0.035 | 0.082 |
| 20 | 0.038 | 0.086 |
| 25 | 0.040 | 0.089 |
| 30 | 0.043 | 0.093 |
| 35 | 0.046 | 0.097 |

taxpayers who are not audited during the previous three years and may exploit the scheme and drop their level of income declaration. Further, with the passage of time each taxpayer may join the last group of taxpayers. Thus, the scheme which may asseverate a favourable impact on income declaration in the short run, it may have opposite consequences in the long run. It seems that while formulating this scheme, the policy makers considered only the short-run response of taxpayers, and totally ignored its long-run implications.

Moreover, it is established that this scheme leads to more corruption on part of the tax officers. Although, the ITOs will not be able to get bribe from those taxpayers who participate in the scheme, this would be only valid in the short-run. In the long-run the taxpayers will be strategic taxpayers and will offer a higher rate of bribe to the ITO, to get the income assessed at lower rates.

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## APPENDIX

### TABLE 1

Expected Utilities for Type-I Taxpayers

| Growth in the Actual Income % | $E_1(U)$ | $E_2(U)$ |
|---|---|---|
| 15 | -0.116 | -0.072 |
| 20 | 0.059 | 0.055 |
| 25 | 0.223 | 0.178 |
| 30 | 0.376 | 0.295 |
| 35 | 0.520 | 0.409 |

### TABLE 2

Expected Utilities for Type-II Taxpayers

| Growth in the Actual Income % | $E_1(U)$ | $E_2(U)$ |
|---|---|---|
| 15 | -0.160 | -0.188 |
| 20 | -0.085 | -0.146 |
| 25 | -0.016 | -0.105 |
| 30 | 0.046 | -0.065 |
| 35 | 0.104 | -0.028 |

**TABLE 3**

Expected Utilities for Type-III Taxpayers

| Growth in the Actual Income % | $E_1(U)$ | $E_2(U)$ |
|---|---|---|
| 15 | -0.126 | -0.164 |
| 20 | -0.110 | -0.164 |
| 25 | -0.097 | -0.164 |
| 30 | -0.086 | -0.164 |
| 35 | -0.076 | -0.164 |

**TABLE 4**

Expected Utilities for Type-IV Taxpayers

| Growth in the Actual Income % | $E_1(U)$ | $E_2(U)$ | $E_3(U)$ |
|---|---|---|---|
| 15 | 0.511 | 0.163 | 0.183 |
| 20 | 0.787 | 0.441 | 0.438 |
| 25 | 1.049 | 0.705 | 0.683 |
| 30 | 1.297 | 0.957 | 0.917 |
| 35 | 1.534 | 1.198 | 1.145 |