An Economic Model of Customs Evasion

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Introduction

Evasion of customs duties has historically captured little or no research attention compared with other forms of taxes[1]. The lack of attention is understandable as most of the research has been carried out in the developed world where customs duties occupy a marginal role in the revenue structure of the economy. The main source of government revenue is income tax for a large number of countries including the entire developed world. It is said that with growth and development, the tax-structure tilts away from indirect to direct forms of taxes [Musgrave, 1969**;** Tait *et al*, 1979]. Consequently, in the context of developed world, any reference to the problem of evasion immediately focuses on the evasion of income tax other than anything else.

But Compared with the developed world the situation is entirely different in the developing countries where a vast informal sector continues to exist and the formal sector is not large enough to warrant adequate amount of direct taxes. In fact, it is too difficult to put the vast informal sector effectively into the tax net. Hence the reliance on indirect taxes. For the government, indirect taxes are rather easier to collect, and government control over the tax-payers is far greater. As the incidence on the consumers is indirect, there is also obvious political expedience in administering indirect taxes. In fact, in a large number of developing countries, international trade offers the only reliable base for levying taxes. Here the control over the tax payers is absolute as realisation of taxes is directly connected to the physical clearance of goods from customs control. Eventually, the trade-sector becomes the niche sector of the economy for mobilisation of resources.

Consequence of Evasion

Wide-scale evasion merits attention on at least five broad grounds. First, evasion means loss in current revenue and further constraint in mobilising internal resources. Many developing countries are not only heavily dependent on foreign aid for development efforts, the utilisation of foreign aid is also seriously constrained by the paucity of internal resources resulting in huge accumulation in the aid pipeline. Any leakage of revenue may compel the government to look for other sources including imposition of heavier taxes[2].

Secondly, apart from mobilisation of resources, fiscal policy in the developing countries has a very important role to play in achieving various socio-economic objectives.

[1] In fact researchers have given little attention to the evasion of indirect taxes. For analysis of evasion in relation to domestic (excise) taxes *vide* Marrelli[1984] and Panagariya *et al* [1988]. To date there has been no research about evasion of Value Added Taxes.

[2] In the 1980s, inadequacy of domestic revenue mobilisation compelled the government to utilize foreign aid for running the day-today administration [Khan *et al*, 1989]

Any tax to be levied has to assist in the development of agriculture and industry, promotion of savings, investment and exports, alleviation of poverty, creation of employment or maintenance of price stability etc. The tax structure of the country is planned accordingly. Strategy to achieve such non-revenue objectives is to implement a graduated tax structure whereby different goods are given differential treatment[3]. Tax evasion counteracts such fiscal policy by affecting and distorting the targeted tax structure. For example, because of evasion, a high duty luxurious item may enter the economy untaxed, and government's intention of discouraging the consumption of this item may be completely disabled.

Thirdly, evasion of customs duty definitely implies diversion of resources from one class of population of the society to another class through the machinery of government. This is not a problem common with income tax where the incidence of taxes is direct. Consequently, through evasion of customs duties, resources is siphoned off from the consumers to the importers, instead of the government, and also to the class of venal customs officers who share in the evaded amount. Evasion, therefore, also leads to affect the income distribution of the country in an undesirable way.

Fourthly, importer-specific evasion creates imbalance in the commodity market. The importers who are unable to evade are faced with unequal competition and, are in a difficult positions to thrive.

Fifthly, and all the more importantly, evasion, which is a social vice having individual benefit, has tremendous demonstration effect. Unabated persistence of evasion-behavior fosters an environment in which more and more people are attracted to such an immoral activity and people in general become habituated to it in course of time. In many countries the rampant existence of evasion today owes largely to government's failure to contain evasion in the past. An old saying is, a lie told or heard many times sounds like a truth. Similarly, unchallenged persistence of corruption and evasion collects a normative sheath over time and, in their mind, people begin to decriminalise the offence.

Does evasion have any beneficial role? It is widely believed in the customs circle that many importers would not be able to survive if they did not have any opportunity to evade government taxes[4]. This is actually the case when the local market is distorted for some reason and import of the item is not commercially efficient. In such a situation, indeed, this is a way how in effect the importers are subsidised albeit at the cost of people's money.

While analysing smuggling, which also involves evasion of customs duty, sometimes it has been found that even this illegal activity may improve the welfare of the society [Johnson,1974,p.46]. Similarly, society's welfare will on the whole increase if the national welfare loss due to evasion is outweighed by the corresponding welfare gain by the importers as a whole. As evasion of government taxes necessarily implies diversion of potential resources from the public to the private sector, so any welfare improvement would require that marginal social welfare of spanning one dollar in the private sector is higher than that in the public sector.

[3] Budget Speeches of the Finance Ministers of Bangladesh frequently referred to such socio-economic *objectives* of the proposed tax-structure[GOB, different years].

[4] Author's personal correspondence with some knowledgeable customs officers.

However, in relation to crime and deviance, utility gain by offenders should not be netted against the utility loss of the society in general because society has branded these as illicit [Stigler,l970]. Any illicit activity is by definition incapable of generating any true welfare to the society in its entirety.

Income Tax Vs Customs Duty

It has been suggested that there is no reason why tools developed in the literature relating to analysis of evasion of income tax should not be applied to the question of evasion of indirect taxes [Pyle, 1989]. This is true but as it will be gradually exposed later, such application eventually offers only limited usefulness. This is so on two accounts. First, even with respect to income tax, economists have not been able to derive unambiguous and definitive policy suggestions that are effectively practicable by the anti-evasion authority. Secondly, there are some basic differences in the laws and the methods of administration of customs duties from those in relation to income taxes which ask for a different angle of consideration.

One of the procedural difference lies in the mode of assessment. Self-assessment is the rule for income tax, but for customs duties, the rule is invariably one of official assessment. The absolute physical and documentary control of the customs department on the trade consignments liable to duty indicates the inevitability of the 'customs net' for the legal imports through authorised route. It may be noted that we have excluded smuggling from the purview of this thesis, which is, by definition, outside the scope of customs net[5].

Accordingly, the control of the tax base being direct and complete, the customs officers are systematically in an advantageous position to recognise and expose every attempt at evasion provided that they possess the necessary technical knowledge and training. But for income tax, control of the tax base is only indirect, and is constrained by the capacity of the taxation authority to bring the assessment-returns under the coverage of audit and investigation programme. In the realm of income tax, it is rather a matter of chance that an assessment return submitted by a wage earner involving evasion will be subject to subsequent random scrutiny that might then result in detection. Indeed, while in the domain of income tax, the critical problem is tax-payer compliance, it is not the same for customs duties.

However, over the last twenty plus years, sizeable volume of theoretical research and empirical investigation into the phenomenon of income tax evasion has been carried out. A number of good reviews on the related literature is already available including Pyle[1989, Chapter: 5]. As a result, any attempt at the analysis of the evasion of customs duty has the privilege of having research on income tax evasion as a helpful reference point.

Economic Models of Tax Evasion

Tax non-compliance is just one of the many forms of peoples behaviour flouting government as an institution. In the domain of income tax, participation in evasion has been explicated from two perspective: psychological and economic. The psychological model, or more appropriately, the fiscal-psychological model explains mainly peoples attitudes towards government taxes and motives behind evasion. It purports to identify the conditions under which people part with a norm-compliance attitude and decide to engage in deviant activity.

[5] Smuggling generally implies international trade through unauthorised route.

However rigorous analysis of the phenomenon of evasion of income tax has come mainly from the hands of economists who saw it basically as a problem of decision making under a situation of uncertainty. The analysis of income tax evasion has been carried out much in line with the conventional economic analysis of crime pioneered by Becker[1968][6]. The economic models identify mainly two enforcement variables, namely, the probability of detection and the provision of punishment as a deterrent factor. The evader has been visualised as an amoral, rational being who maximises utility solely based on the consideration of these two variables. The conditions under which such gain will be maximised has been developed and the effect of the changes in the policy-variables deduced.

The economic model of income tax evasion was pioneered by Allingham and Sandmo(1972) who framed the problem as one of expected utility analysis under risk and uncertainty. Building on a premise as pre-indicated above, their theoretical model of income tax evasion was posited as a problem of decision making under uncertainty. They considered mainly three determinants of evasion: (a) marginal rate of tax, (b) probability of detection and (c) the provision of punishment in the form of fines. The model showed that rise in the probability of detection or enhancement of the level of punishment would reduce attempts at evasion. It also suggested that if the risk-neutral individuals generally aim at maximising expected utility out of evasion of income taxes, then evasion will tend to increase with higher marginal rate of taxes. However, with a risk averse person, no conclusive relation between the level of tax-rate and the propensity to evade could be deduced. The subsequent extensions of this model in the hands of different researchers mainly dealt with the impact of choice variables on the quantum of evasion [Peacock *et al*, (1982), Graetz *et al*, (1986).]

An Economic Model of Customs Evasion

To my knowledge, no systematic study has yet been done or published in the area of customs evasion. To date there has not been any model explicitly dealing with the evasion of customs duties. Below a micro-theoretic economic analysis of the evasion of custom duties basically in the same fashion as that of income tax is attempted.

A Typology of Customs Evasion

Virtually there are numerous ways of effecting evasion. But depending on the basic characteristics, a typology of the modes of evasion is attempted here. From a careful analysis of the various modes of evasion, it transpires that all types of evasive activity may be grouped into two broad categories, namely :

(a) evasion through undervaluation, and,
(b) evasion through underassessment.

Here undervaluation refers to the underestimation of the assessable value of the entire consignment. The different modes of evasion through undervaluation include underinvoicing, underappraisement, miscalculation of assessable value, misdeclaration of description and of quantity etc. It is important to note that evasion would not be possible in many cases if the scope of manipulation of the assessable value did not exist. Scope of such manipulation arises at two levels: at the official level, the assessing officer is authorised to examine the declared value and fix up the assessable value as he may deem fit based on certain norms and practices, and at the importer's level, since the assessable value is fixed up based on the

[6] Pecker achieved Nobel Prize in the field of economics in the year 1992.

declared value. Therefore, it appears that the opportunity of evasion of customs duty is systematic by nature.

Underassessment mainly includes application of a lower rate of duty. The common process is wrong classification[7]. But there are other ways like misuse of concessionary rates of duty, evasion through temporary importation, erroneous assessment etc. Here, that is, in most cases, the opportunity of evasion is systematic too. That is, if there was a flat rate of duty, with a single rate and no concessionary rate and exemptions, then an opportunity of underassessment would not arise at all. In fact, in a graduated tax structure, evasion is effected through the application of a lower rate of duty than due.

Therefore it may be concluded that most opportunities of evasion of customs duty are systematic in nature. The typology that is suggested above is important because it allows us to formulate a simple *evasion equation* capable of explaining all sorts of evasion. We do it in the following section.

Evasion Equation for Customs Duty

As just postulated, the various ways of customs evasion may ultimately be analysed as evasion on two counts : undervaluation and underassessment. From this premise, the following equation may be derived which is good for expressing evasion of customs duties relating it to these two basic functional types :

$$E = (V - v)\,t + V\,(T - t)$$

where, E = Amount of Evasion

v = Assessable value of the consignment as declared by the importer (or as under-appraised)

V = Normal value of the consignment (i.e. the duly appraisable value)

t = rate of duty actually applied

T = rate of duty that is legitimately applicable

We will call this the *evasion equation for customs duties.* The first half on the right hand side **(V-v)t** indicates the loss of revenue on account of the extent of undervaluation while the effect of applying a lower rate of duty is ignored. Similarly, the second half **V(T-t)** denotes the loss of revenue because of applying a lower rate of duty **t**, instead of the legal rate **T**, if there was no undervaluation. It is wonderful to note that this simple equation may be interpreted to give very strong and effective policy suggestions for prevention of customs evasion.

First, it is seen that evasion will be zero if **t** and **T** are equal which means that there will be no underassessment if **T** and **t** are the same. As already indicated above, this will be systematically possible if there is no more than one rate of customs duty. Then any scope of evasion through underassessment, by applying a lower rate of duty, stands ruled out.

Secondly, there will be no evasion on account of undervaluation if **v** and **V** are invariant. **V** and **v** may be different on two categories of cases, namely, when there is misdeclaration of actual purchase price and when there is no misdeclaration at all, but under-appraisement occurs or is resorted to by the appraising officer. Under-appraisement means

[7] For customs purpose, all commodities have been classified and given a numeral heading. Rate of duty is referred to such headings.

ignoring or hiding the higher pre-recorded value and assessing duty and taxes on the basis of the declared value[8].

Alternatively, for rolling out the scope of under-appraisement items may be assessed to duty based on a prices pre-fixed by the tax-authority. The resulting prices are known as the *tariff-value* and are the same irrespective of the source of supply, volume of imports and, in many cases, brands and grade of the commodity. Obviously, such a policy involves ethical questions.

Evaluating an Opportunity of Evasion

In drawing up an economic model of customs evasion, the importer is assumed to be a rational man. So, it is plausible to postulate that the importer will try to maximise evasion provided that opportunities of evasion are available to him. Now the first relevant question is, how will he evaluate an opportunity of evasion? What will be the criterion for such an evaluation ?

For evaluating an opportunity of evasion, an importer will not consider the amount of evasion alone. If he considers the evaded amount alone, then he will try to attempt at every scope of evasion however small the amount of evasion be in absolute sense. In real life, an importer *can not* try to utilise each and every opportunity of evasion that he comes across. In fact, importers are often found to ignore scope of any petty evasion. He considers many other factors. These factors include the costs of evasion. Another determinative factor is the risk involved albeit risk may also be subsumed as a cost factor. Risk is involved because an evasion may be detected by the authority through routine audit, intelligence activity or through, other anti-evasion programmes, and that may warrant penal action including confiscation of goods, fines and personal penalty and also indirect costs in terms of delay in clearance, demurrage at the port and also an intangible cost in terms of the extra time necessary for following the legal process that ensues from a detection etc. So it may not be realistic to say that the importer tries to maximise evasion irrespective of such other apparently hidden factors.

We may take care of the problem by postulating that the importer tries to maximise *net gain out of the evasion* activity. Net gain will depend on other factors like penalty, associated costs etc. in addition to the amount of revenue added. In that case we may introduce *expected value of penalty*, as a measure of risk involved which is probable consequent upon any detection. On detection and adjudication, penalty may be imposed in a number of forms the consignment may be confiscated, a fine may be imposed and a personal penalty may also be inflicted. Even provision of imprisonment through judicial trial exists.

Confiscation of the consignment will be equivalent to a penalty of the value of its landed cost[9]. If detected and confiscated, the importer will also lose the chance of making a profit out of that importation. This will be an opportunity cost of an attempt that is detected by

[8] For the sake of uniformity, a lower declared value is appraised up to the level of pre-recorded higher value of a comparable contemporary consignment of imports.

[9] Landed cost means the value of the consignment plus charges paid for freight plus insurance (i.e. cif value) plus handling charges at the port.

customs. Usually confiscation is substituted by a redemption fine[10] unless the item is banned or restricted from entry and use in the country. Therefore, it is possible to interpret all these penal provision in monetary terms. For other fines and personal penalties, it is convenient to assume that penalty is leviable on the basis of the amount of me short-levy[11].

Costs of evasion may include at least two major elements. First, the importer may have to purchase co-operation of the customs officers in the act of evasion. In such a case he may have to give as bribe share of the evaded amount to the collaborating customs officer. Secondly, he may have to minimise risk by spreading money among some other potentially threatening agencies or persons who may be directly involved with law enforcement or in a position to leak out the information which might call for intervention by other agencies. We assume that at any rate ,the amount spent by the importer for buying the co-operation of such venal customs officers and other agencies in connection with the evasion may be lumped together and regarded as a unified proportion β of the evaded amount (E). In practice there may be ample use of speed money involved with almost all import consignments. But this component of costs to the importer is ignored here since it is not a evasion-related cost.

Net gain from Customs Evasion

First we consider what will be the net gain from evasion if there is no detection and penalisation. Obviously, net gain will be the amount of evasion(**E**) adjusted for the costs of evasion(**B**).

So, Net Gain = (**E - B**)

Where,

E = amount of duty evasion

B = amount of bribe paid to the customs officer, i.e. costs of Evasion

$\mathbf{B}=\beta.\mathbf{E}$

β = rate of bribe as a proportion of evaded amount

and, $1 \geq \beta \geq 0$ and $B \geq 0$, which mean that the rate of bribe and the amount of bribe are non-negative.

Net gain from evasion would be higher if the involvement of the customs officer can be avoided. Ignoring speed money and such other miscellaneous costs, this would mean **B = 0**. It has previously been noted that in some cases the importers arrange things in a way so that evasion could safely be effected without the knowledge of the customs officers.

Again, net gain from evasion would fall if an attempt at evasion is detected. On detection, the importer will have to pay the short levy, i.e. **E** , and in addition to that, any penalty that may be levied. It is postulated that penalty is a proportion θ of the attempted amount of evasion (**E**). Usually, unlike here, payment of the short-levy amount on detection has not been explicitly dealt with as a cost item in the literature related to income tax evasion. However, alternatively, a condition that $\theta > 1$ may be included which would imply that

[10] Redemption fine is a provision in the Customs Act allowing the adjudicating officer to offer to the importer the option to redeem the consignment after confiscation, on payment of a certain fine, known as the redemption fine. Usually the fine is not higher then the value of the consignment.

[11] Sometimes a token redemption fine is leived if the offence is nominal and/or evidently unintentional.

penalty is inclusive of the payment of the short-levy at the first instance. In that case it is not necessary to specify the amount of short-levy separately[12].

So, on detection, Loss = -(E + θE).

Here, as already proposed, θ is the rate of penalty as a percentage of the amount of evasion.

Let us assume that the probability of detection and penalisation is **p**[13]. Then the probability of no detection is (**1-p**). In other words (**l-p**) is probability of safe and successful attempts at evasion.

Now we can deduce the expected net gain from evasion as the sum of expected values of gain on successful evasion and loss on detection and penalisation. If we denote Net Expected Gain by **G**, then G = (E - B)(1 - *p)* -E*p*(1 + θ)
which means, G = E(1 - β)(1 - *p)* -E*p*(1 + θ)

Now by substituting *evasion equation for customs duties* as deduced above, *we get :*

G = *(V*T - *vt)(*1 - *p*)(1 - β) - *p* (*V*T - *vt*)(l + θ)

This is the objective function or the maximand for the importer which we may call the *customs evasion function.* Here, obviously the underlying assumptions are as follows -

(i) $\frac{\delta G}{\delta v} < 0$ and (ii) $\frac{\delta G}{\delta t} < 0$

which means that in respect of evasion (i) change in 'gain' is negative for positive change in the amount of declared or appraised value and also, (ii) change in 'gain' is negative for positive change in the rate of duty. That is, if higher rate of duty is applied or the if the declared or appraised value is higher, then, gain from evasion will be reduced.

Instead of formulating an *expected utility function* as is a frequent practice in relation to the analysis of evasion of income taxes [Allingham *et al,* 1972], we visualise the importer intent upon maximising the *net expected gain* from evasion rather than maximising the expected *utility* arising therefrom[14].

Not only that this assumption is more straightforward and appealing rather it is more pertinent, because importation is a business enterprise for the importer whose utility is related

[12] In reality, detection causes detention of the cargo which entails fall in the quality of goods, higher port charges, loss of profit for failure to supply the goods in time and so on. These hidden costs may be of a very significant amount high enough to discourage any illegitimate practice. In fact, such costs are sometimes considered by the Adjudication officers and formal punishment is reduced accordingly. But in the instant, analysis they are excluded as an argument for the sake of simplicity.

[13] It is *assumed that detection definitely leads to* adjudication and penalty. If all detections are not reported and are not taken to book, then the problems of detection and penalisation will be different.

[14] In fact Srinivasan(l973) adopted such an approach in analysing evasion of income tax.

to the total net profitability of the business instead of separately just to savings by way of tax evasion. Evasion contributes directly to profitability and only then to personal utility of the importer. This is more so, presumably, with the industrial importers. It may be noted here that the assumption that importers maximise expected net gain instead of utility signifies risk-neutrality[15].

Net gain from evasion will be maximised when any change in the applied rate of import duty or in the declared value will not be able to increase the amount of net gain any more.

Accordingly, the necessary condition for maximising *net expected gain* from evasion is the equilibrium when the rate of change of the objective function is nil with respect to changes in the independent variables. Mathematically, this implies a condition when the partial derivatives of the objective function are zero. We, therefore, set the relevant partial derivatives of the *customs evasion function* equal to zero :

$$\frac{\delta G}{\delta v} = -t(1-p)(1-\beta) + tp(1+\theta) = 0$$

and,

$$\frac{\delta G}{\delta t} = -v(1-p)(1-\beta) + vp(1+\theta) = 0$$

By simple algebraic manipulation of the above two we get,

$$(1 - p)(1 - \beta) = p(1 + \theta)$$

This is the necessary condition of maximisation of evasion. The left side is the *expected* value of net gain from an additional(marginal) dollar of evasion after deducting unit bribe, while the right side is the *expected* value of penalty on detection related to one dollar of evasion.

Here, obviously,

β = bribe per dollar of evasion,

$(1 - \beta)$ = net gain per dollar of evasion, and

$(1 + \theta)$ = penalty per dollar of evasion[16].

So, in consideration of this equation, the importer will be in equilibrium when incentive for evasion (left side) will not be different from the disincentive for it (right side). He will be completely satisfied when he reaches this state being left with no more *gainful* scope of evasion. Alternatively, this implies that, so long marginal net expected gain from evasion will be positive, his effort for further evasion will continue. Effort at evasion will cease only when the expected gain from evasion (left side) will be no longer greater than the expected loss from evasion (right side).

[15] Assumption of risk-neutrality makes life simpler since different analyses for risk-averse and risk-prone as well as risk-neutral persons are not warranted then.

[16] It may be reminded that detection leads to payment of the attempted amount at the first instance; fines and confiscation are additional.

The mechanism of how a situation from $(1 - p)(1 - \beta) > p(1 + \theta)$ to a situation $(1 - p)(1 - \beta) = p(1 + \theta)$ will be reached may be explicated. Here the underlying assumption is that the probability of detection goes up as evasion increases in terms of frequency and value of evasion. That is, attempts at evasion start with easier and less risky opportunities. When the level of evasion increases, other things remaining the same, it means that riskier opportunities are being utilised. So, when **E** increases, **p** increases too and accordingly **(1 -p)** decreases. It means, with rise in **E**, the value of $(1 - p)(1 - \beta)$ decreases and at the same time the value of $\mathbf{p(1 + \theta)}$ appreciates and the process continues unless they are equal to each other. Here, again, the plausible implicit assumption is while E is increased, no change occurs in the rate of bribe (β) or the rate of penalty (θ).

Comparative static analysis

Now we can examine what happens when changes occur in certain independent variables. Comparative statistics means the comparison of different equilibrium states that are associated with different sets of value of the parameters and exogenous variables(Chiang, 1984,p. 127). In the domain of tax evasion the standard practice is confined to the examination of the changes in mainly two enforcement variables **p**, probability of detection and θ, the rate of penalty. In the same fashion, we intend to see how the evasion trend *reacts* to changes in **p** and θ. In doing so it is sufficient for our purpose to examine the qualitative aspect of it. Intuitively, **dE/dp** and **dE/dθ** will be less than zero meaning that evasion will diminish with rise in probability of detection and rate of penalty.

While proceeding to do so, it may be noted that the relationship of **E** with **p** and θ is not explicitly functional. The functionality of the relationship is implicit in the following expression :

$$E(1 - \beta)(1 - p) - Ep(1 + \theta) - G = 0$$

which is an explicit function of the type $F(\beta, \theta, E, p, G) = 0$.

It may be reminded that this equation is derived from the *net expected gain equation* of page 11 above. If the explicit function is $F(\beta, \theta, E, p, G) = 0$, then we *may* suggest one implicit function of the form $E = f(\beta, \theta, p, G)$. Now we can derive the relevant partial derivatives of the implicit function by using the following rules, which states that even if the specific form of the implicit function is not known to us, we can nevertheless find its derivatives by taking the negative of the ratio of a pair of partial derivatives of the **F** function which appears in the given equation that defines the implicit function [Chiang,1984,p.208]:

$$\frac{dE}{dp} \equiv \frac{\delta E}{\delta P} = -\frac{F_p}{F_E}$$

and also similarly,

$$\frac{dE}{d\theta} \equiv \frac{\delta E}{\delta \theta} = -\frac{F_\theta}{F_E}$$

So, by deriving the partial derivatives of the **F** function as such, we can deduce the derivatives of the implicit function (the evasion function) as follows :

$$\frac{dE}{dp} = \frac{-E(1-p)}{(1-\beta)(1-p) - p(1+\theta)} < 0$$

and,

$$\frac{dE}{d\theta} = \frac{-Ep}{(1-\beta)(1-p) - p(1+\theta)} < 0$$

These two will be less than zero so long as the denominator is positive, that is, so long $(1 - \beta)(1 - p) < p(1 + \theta)$, which will be so as long as evasion will be *gainful* with expected marginal value of *gain* greater than the expected marginal *loss* owing to penalty, for an attempt at evasion.

Here, the policy implications are obvious: if opportunity of gainful evasion exists, probability of detection is to be raised through strengthening of enforcement and higher rate of penalty is to be legislated[17] for greater deterrent effect if the extent of evasion is to be curbed down.

Penalty as a proportion of Import value

In this section we try to be more realistic in formulation of the model by relating penalty to value of the import consignment instead of the evaded amount or the underdeclared value, the latter being the tradition. Yitzhaki(l974) adopted this approach while building a model of income tax evasion. Indeed, the Customs laws of many countries relate most of the penalties to the value of the consignment instead of the evaded amount. Then the objective function for the importer deduced in page 11 above may be accordingly re-written as follows :

$$G = \mathrm{E}[(1 - \beta)(1 - p) - 1.p] - \theta Vp$$

Here, as may be observed, θ is now related to the actual value of the consignment **V** instead of the attempted amount of evasion **E** ,

That is, $G = (VT - vt)(1 - p)(1 - \beta) - p(VT - vt) - \theta Vp$

It is easy to show that the maximisation condition will be now as follows :

$(1 - p)(1 - \beta) - p.1 = 0$

That is, evasion will be maximum when the marginal rate of expected net gain will be equal to the expected value of one dollar. Under such a situation, evasion may be maximised

[17] Mere legislation will not suffice. The effective value of θ will depend on to what extent penalty is imposed. Very surprisingly, this practical issue has been totally ignored in the literature. In practice, actual penalty imposed by the adjudicating authorities is far less than the maximum penalty provided for in the statute. Consequently, the deterrent impact of imposition of penalty is very low [vide Halperin *et al*, 1990]

irrespective of the consideration of the rate of penalty as a determinant of evasion as usually assumed.

Policy Implications

The policy implications of the above formulation of the evasion mechanism are briefly denoted here. To recall, the *evasion equation of customs duties* as formulated in page 7 is as follows :

$$E=(V-v)t + V(T-t)$$

Opportunity as a determinant of evasion is implicit here: systematic opportunity of evasion is created because of the graduation of the tax structure and the discretion delegated to the appraising-cum-assessing officers of the customs department in fixing the assessable value by way of appraisement. The principal policy implications that are evident on interpretation of this are, therefore :

(i) Graduation of the duty structure should be removed or at least reduced as far as possible;
(ii) Discretion in the fixing the assessable value should be removed or at least lowered;

The necessity and the significance of having a graduated tax structure has been indicated at the outset. Apparently the proposal for a flat rate of customs duty poses some problems in terms of revenue impact and the materialisation of other non-revenue socio-economic objective of a country. But a suggestion as such is not without precedence. It may be cited that a Task-force appointed by the Aquino administration in the Philippines for prevention of corruption recommended among other things for doing away with the graduated tax-structure and imposing a uniform tariff-rate of about 30 percent(Asher, 1989, p.113). Also, during the initial days of Islam, when customs duties were first introduced, it was leviable at a flat rate of 10 percent[18]. Hence the nomenclature *Ushr* which means 'one-tenth'. Again, when tariff was first introduced in Indian sub-continent by the then East India Company, it was a general tariff of 10 percent on all manufactured imports.

It would be an interesting exercise to estimate what could be such a flat rate of customs duty for a country. One criterion in selecting such a rate would be its revenue-neutrality. Straight away, the average tax : imports ratio at the moment may be accepted as the single flat rate that would leave the total revenue from imports unchanged.

In this article, the subsequent fuller treatment of the model in line with those built for income tax revealed the theoretical validity of the importance of enforcement variables. Most important policy implication in this regard is :

(iii) Enforcement ought to be strengthened for raising the probability of detection as perceived by the importers;

The other policy suggestion is:

[18] The general rate of customs duties was 10 percent irrespective of the item of importation. But sometimes the rate was reduced for encouragement to the local traders as against foreigners, and for encouraging importation of food grains if a famine situation prevailed [Oran *et al.* 1989].

(iv) Evasion would be lower with higher rate of penalty.

But we have also seen that this is invalid if penalty is tagged to the actual value of the import consignment instead of the attempted amount of evasion. And we have also commented that mere provision of high rate of penalty would not suffice if the actual application is lenient[*vide* Foot Note no:18 above].

Limitations of the suggested Model

The suggested model of evasion of customs duty has been able to overcome some of the limitations of a conventional economic model of income tax evasion. It has been formulated in a way such that factors like opportunity of evasion as a determinant of evasion could be incorporated. Therefore, the policy suggestions call for *preventing* evasion through eradication of the opportunities in addition to the call for *fighting* the evader through legal enforcement. However, the inadequacy that remains is: while punishment is included, reward for the law abiding importers is left out altogether. Indeed, despite the fact that rewards have a strong potential for being utilised as an effective reinforcer of the desirable behaviour [Skinner, 1953], it is difficult to conceive of one and accommodate in the instance context.

As before, the sociological factors remain largely outside the model[19]. But they may not be very important in respect of customs duty since compliance in this respect is not solely a voluntary affair, depending crucially upon attitude and motives of the importer; rather, all legal imports are subject to a formal and elaborate official assessment process when the customs office has the absolute control and scope to levy the appropriate duty and taxes. So the policy implication of strengthening enforcement by higher resource allocation is not very relevant.

In fact this is all the more irrelevant in the context of a corrupt tax bureaucracy [Cha, 1990]. In the domain of customs evasion, the crucial problem is the failure of the administrative machinery because of the class of corrupt officers. In the realm of customs administration, detection is not any serious problem, but when detected they remain unexposed or unreported to the "office" because of the collusion of the detecting officers with the importers. We conclude here indicating administrative corruption as a major determinant of evasion of customs duty in the context of a corrupt tax bureaucracy. Research is required in that line.

Bibliography

Allingham, M.G. and A. Sandmo(l912) Income Tax Evasion : A Theoretical Analysis, Journal of Public Economics, Vol. 1, 1972,p.323.

Asher M.G. (1989b) and Kintanar, A. Jr., Fiscal System and Practice in the Philippines, in Ahser (1989a).

Becker, G. S.(1967), Crime and Punishment : An Economic Approach, The Journal of Political Economy, 1967, p. 169-217.

[19] Vide the Economics of Crime and Sociology, Karl-Dieter Opp in *Kyklos*, 42, 1989, p.405-430

Benjamini, Y. and S. Maital(l985) Optimal Tax Evasion and Optimal Tax Evasion Policy : Behavioural Aspects, in Gartner, W. and A. Wenig (Eds.) The Economics of the Shadow Economy, Springer, Berlin.

Bhagwati, J.N. and B. Hansen(1973) A Theoretical Analysis of Smuggling, Ouarterly Journal of Economics, Vol. ,1973.

Bhagwati, J.N. and T.N. Srinivasan(l 973) Smuggling and Trade Policy, Journal of Public Economics, Vol. ,1973.

Bhagwati, J. N.(Ed.)(1974)

Bhagwati, J. N.(Ed.)(1981) International Trade : Selected Readings, MIT Press,l981.

Budget Papers(different years), National Board of Revenue, Government of Bangladesh (GOB), Dhaka.

Chiang, A.C.(1984) Fundamental Methods of Mathematical Economics, 3rd Edition, McGraw Hill, Japan.

Chu, C.C.Y.(1990) A Model of Income Tax Evasion with Venal Tax Officials: The Case of Taiwan, Public Finance, No.3, Vo1.45,1990.

Gillis, M.(1985) Micro and Macroeconomics of Tax Reform, Journal of Development Studies, Vo1.19,No.3,1985,p.221.

Government of Bangladesh (GOB) (different year), Budget Speech Ministry of Finance. Government of *Bangladesh(GOB),* Dhaka.

Government of Bangladesh(GOB)(1 985),Customs Act. 1969,Dhaka, 1985.

Government of Bangladesh(GOB)(1987) ,Bangladesh Customs Tariff, 1987, Dhaka.

Government of Bangladesh (GOB)(1990), The Fourth Five Year Plan: 1990-95, Planning Commission, GOB, Dhaka.

Government of Bangladesh (GOB)(1991), Bangladesh Economic Survey-1990/91, Ministry of Finance, Economic Adviser's Wing, GOB, 1991, Dhaka.

Halperin, R. and J. Tzur (1990) : Tax Evasion and the low penalty, Low audit Rate phenomena, Journal of Accounting & Politic polls, wp. 9, 1990, p.179-196

Johnson, G.(1987) Strategic Change and the Management Process, Basil Biackwell, Oxford, 1987.

Johnson, H.G.(1974) Notes on the Economic Theory of Smuggling, in Bhagwati(l974).

Khan, A.R. and M. Hossain(l989) The Strategy of Development in Bangladesh, MacMillan, Paris, 1989.

Klitgaard, R. (1984), Managing Fight Against Corruption : A Case Study, Public Administration and Development, Vo1.4, 1984, P.77-98.

Klitgaard, R. (1988) Controlling Corruption, University of California Press, USA.

Lewis (1982) The Psychology of Taxation, Martin Robertson, Oxford, UK.

Long S.B. and J.A.Swingen(l991), Taxpayer Compliance: Setting New Agenda for Research, Law and Society Review, Vo.25, No.3, 1991, p.637.

Marrelli, (1984) On Indirect Taxation, Journal of Public Economics, Vo.25, P. 181, 1984.

Morad, M.(19), Current Thought On Islamic Taxation, in Mallat, C.(ed.) Islamic Law and Finance, Graham and Trotman, Great Britain.

Musgrave, R.A.(1959) The Theory of Public Finance, McGraw Hill, New York, USA,1959.

Oran, A. and Rashid, S.,(1989) Fiscal Policy in Islam, Public Finance Vo1.44, No. 1, 1989.

Panagariya, A. and A.V.L. Narayan(l988) Excise Tax Evasion : A Welfare cum Crime Theoretic Analysis, Public Finance, Vo1.43, No.2, 1988, p.248.

Peacock, A. and G.K. Sha : Tax Evasion & Tax Revenue loss, Public Finance, Vol. 37, No. 2, 1982.

Pyle, D.(1989) Tax Evasion and the Black Economy, MacMillan, 1989, UK.

Skinner, B.F. (1953) Science and Human Behaviour, MacMillan, 1953, New York.

Slemrod, J.,(1987) and S.Yitzhaki, The Optimal Size of a Tax Collection Agency, Scandinavian Journal of Economics, Vol., No., 1987.

Srinivason, T.N.(1973) Tax Evasion : A Model Journal of public Economic, Vol : 2, No : 4, 1993 Nov, p. 339-346.

Stigler, G.J.(1970) The Optimum Enforcement of Law, Journal of Public Economics, Vo1.78, 1970, p.526.

Tait, A.A., Gratz, W.L.M. and B.J. Eichengreen(l979) International Comparison of Taxation for Selected Developing Countries : 1972-76. International Monetary Funds Staff Papers, Vo1.26No. 1,1979.

Yitzhaki, S.(1974) Income Tax Evasion : A Theoretical Analysis, Journal of Public Economics, Vo1.3, No : 2, 1974, p.201-202.