INVESTMENT INCENTIVE AND INCOME TAX [1])

by J. PUTHUCHEARY

Singapore.

The disincentive effect of income tax on investment is an important part of all thinking on taxation. It is true that a large number of qualifications have been introduced since the theoretical basis of the disincentive effect was first postulated by Ricardo, but the basic concept in its essentials has remained unchallenged. Current theories of taxation incorporate the disincentive theory, but to make it consistent with its observable contradiction, include the qualification that the disincentive effect is only operative 'after a point'. Even where it is accepted that there is no evidence of 'penal or confiscatory' tax rates having affected the incentive to invest, the disincentive concept is not rejected, but retained as probable though unascertainable. [2])

Within the limited knowledge that we have of the workings of an investor's mind, economists have suggested two types of models for analytical study — the profit maximization model and Shackle's

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[2]) A study of the annual investment flow in the United Kingdom during the periods 1924-9 and 1949-54 has shown that there has been no decline in the Gross Investment as a percentage of Gross National Income at Factor Price. Gross Home Investment and Gross Fixed Investment have also been steady during the periods. The figures for 1907, a pre-tax year, showed Gross Investment as 17.8 % which was similar to the figures for 1924-9 and 1949-54. Gross Home and Fixed Investments in 1907 were 11.5 % a figure lower than the other years compared. But this may have been due to large foreign investment that year.

Private investment as a ratio of private incomes has also been steady during the period. If adjustment is made to the 1907 figures by the inclusion of foreign investment the figures are similar to those for the years 1924-9 and 1949-54.

Focus Outcome model. The profit maximization model relates profit expectation and 'costs' in their final form while the Focus Outcome model goes some way in uncovering the formulation of expectations and their relationship.

In order to find out whether the basis of the theory of the disincentive effect of taxes on investments is sustainable or not, we will have to examine whether decisions made under the assumptions of these models are changed by the inclusion of tax liability calculations. The term 'tax' includes all direct taxes on income, that is, income tax, surtax, excess profit tax and levies, profit taxes, etc.
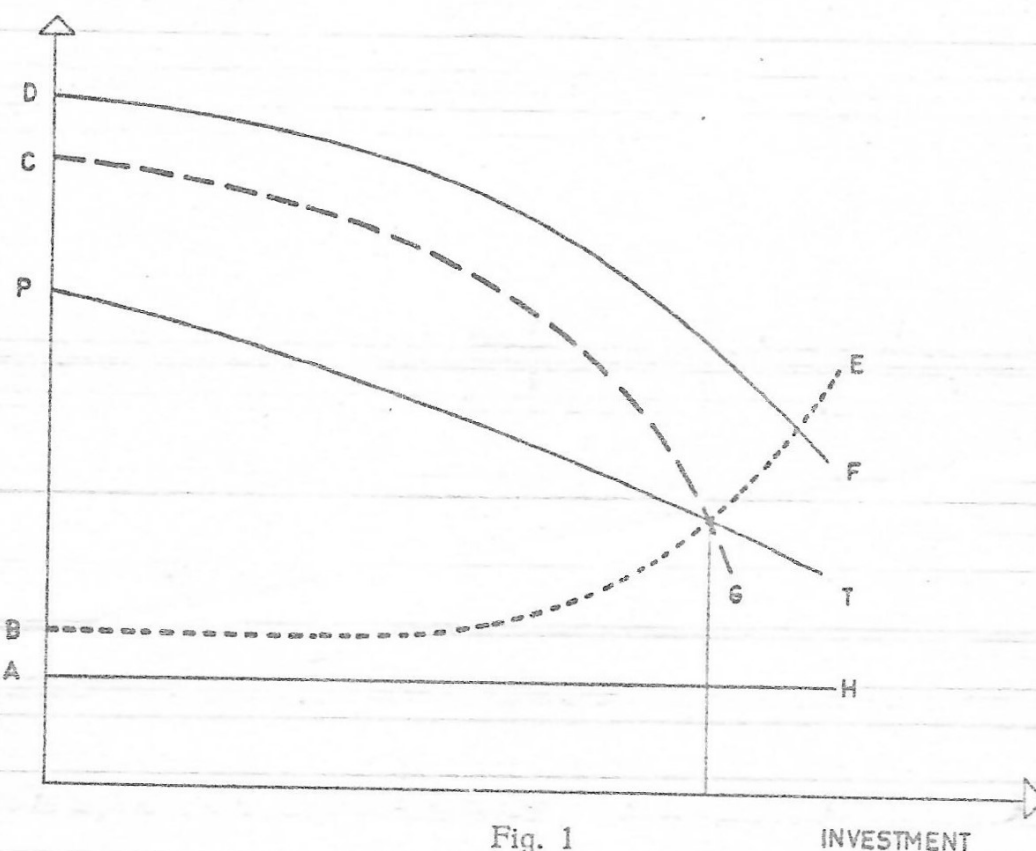

Fig. 1   INVESTMENT

DF = Marginal expected profits.   PT = CG less taxes.
CG = Marginal profits less borrower's   BE = Interest plus lender's risks.
     risks.   AH = Long term interest rate.

The profit maximization model used by F. A. Burchardt in his essay *"The Causes of Unemployment"* [3] incorporates most of the essential factors that go into decision-making. The general structure of the model is that an entrepreneur in making his decision about an investment is guided by a marginal profit expectation curve, which is generally forward falling. He deducts from this curve his

[3] Economics of Full Employment. Oxford University Institute of Statistics, 1948.

estimates of risk and derives the final expectations, or the expectations which are held with highest confidence. This curve is termed 'profit expectation less borrower risks.' The limit to which he will invest, guided by this curve, is determined by an 'interest rates plus lender risks curve' that is, the price at which the capital to be invested will be available or financial costs. The financial cost curve is assumed to be forward rising and the intersection of the two curves gives the point at which net profits will be maximized for the investment opportunity under consideration.

In the diagram given above area CIB gives the net profits expected with the highest confidence or the amount on which he would expect to pay taxes.

Under a progressive tax structure the rates for different parts of the income differ, but no part will be taxed at a rate equal to 100 %. If we were to plot the values of profit expectations less borrower's risk less tax on net profits expected, we will get a curve PT which will pass through the intersection I.

Let the differences between curve CG and curve BE, that is, values of net expected profits be $a_1, a_2, a_3, ..., a_n$ where a_n at the intersection is zero, and corresponding values of curve BE or financial cost be $x_1, x_2, x_3, ..., x_n$. After deducting taxes on values $a_1, a_2, a_3, ...$ the values of curve PT will be

$x_1 + a_1 (1 - t_1), x_2 + a_2 (1 - t_2), x_3 + a_3 (1 - t_3) ... x_n.$ All these values are more than the values of x and less than $a_1 + x_1, a_2 + x_2, a_3 + x_3 ...$ The only common value of the three curves CG, PT and BE is the value x_n or they have a common point of intersection I. At all other points the curve PT will lie between the curves CG and BE.

Consequently, under the assumptions of this model it is evident that as long as the rates of tax lie between zero and one, the optimum size of investment will remain unchanged.

Before discussing the inadequacies of this analysis, it may be useful to examine whether a progressive tax structure will affect adversely the choice between investments.

When there is a choice between two investments, according to the assumptions of the profit maximization model, the entrepreneur will choose the investment which has the largest net profit expectations, that is, the largest area CIB. The question is whether estimates of profits from investments with different degrees of risk are directly comparable or not. The process of deducting borrower's risks from expected profits makes the residues comparable, as these

estimates have, for the individual making them, equal credibility. The estimates, after the deductions of borrower's risks, will be treated by him with the same degree of confidence and so are directly comparable.

It is quite possible that these rates of risk deductions are different from those that will be used if the investments were being considered in isolation. This is because the rates now express not only the estimates of risk relating to a particular investment project but also express this risk in comparison with the ~~risk in comparison with the~~ risks of the other project. It in fact expresses estimates of comparative risks. When we talk of rates it is possible to say that $(1 - r)$ is the 'coefficient of confidence' where (r) is the rate at which borrower's risk is estimated.

By treating the borrower's risk concept as a rate, it is not suggested that the entrepreneur makes his deductions in terms of some ratio. It is more probable that he works out this value as an amount to be lopped off. But as these lump sums express a unique relationship between the degree of risk involved and the amount expected, it can be treated for analytical purposes as a rate.

The position that an entrepreneur faces can be stated as follows. He has to choose between investment A and B. The profit expected for investment A is equal to $a + b + c$ and that for B is $a + b$. The co-efficients of confidence are $(1 - r)$ and $(1 - r_1)$ respectively where $(1 - r_1) > (1 - r)$, and the financial costs are (e) and (f) respectively. Investment A will be preferred to investment B if $[(a + b + c) (1 - r) - e] > [(a + b) (1 - r_1) - f]$. If the net expectations for investment A is greater than that for B, then the introduction of tax liability will not change the preference for A, though the difference between the profit expectations from the investments will be narrowed.

Under the assumptions of the profit maximization model neither the size of investments nor choice between them is affected by taxation. The financial cost curve determines the profit expectations necessary before investment can take place. As taxes do not push profit expectation to the level of the financial cost curve or below it cessation of investment is not induced. In short a theoretical basis for the disincentive effect of taxation does not exist.

The advantage of the profit maximization model is its simplicity. The factors that go into decision making are stated in terms that are more or less approximate to those in which we expect entre-

preneurs to think. The assumptions of infinite divisibility of invest-
ments and the treating of capital as borrowed can be dropped with-
out making material difference to the conclusions reached.

The inadequacy of the profit maximization model, as pointed out
forcibly by Prof. Shackle lies in its disregard of loss considerations.
Uncertainty in the profit maximization model appears to be one of
the extent of profits and not one of the possibility of incurring
losses.

"When the outcomes of alternative ventures are uncertain, (that
is, are felt by the particular individual to be unknown to him) we
can no longer say that the enterpriser will seek to 'maximize profit.'
A civil servant might perhaps amend the proposition by saying that
the enterpriser will seek to maximize profits 'having regard to the
possible loss'. But this makes all the difference in the world." [4])

The profit maximization model is inadequate for analytical
purposes, where loss possibilities exist. But for other situations it is
not materially different from the final formulation of Shackle's
Focus Outcome model, if we treat the 'co-efficient of confidence'
as the rate at which 'primary focus gain' is transformed into
'standardized focus gain'. It becomes in fact a special case of the
Focus Outcome model where the encumbrance of the indifference
curve map has been replaced by marginal curves.

The profit maximization model may have greater applicability
than allowed for it by Prof. Shackle and a very large number of
investment decisions may in fact be made in the manner suggested
by Shackle's clever civil servant. Greater use for the profit
maximization model can be claimed if it can be shown that loss
considerations need not manifest themselves in values large enough
to be included explicitly in calculations even when the possible
losses are large. Putting the position in the terms of the Focus
Outcome model, the standardized value of a large primary focus loss
with a high degree of potential surprise, may be so small that it can
be excluded from calculations altogether.

Loss considerations take their particular kind of emphasis in
Shackle's analysis because of the shape attributed by him to the
Y-curve (the potential surprise curve). The entrepreneur has an
inner range of hypotheses regarding the possible outcomes of an

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[4]) G. L. S. Shackle: *Uncertainty in Economics and Other Reflections*, Cam-
bridge University Press, 1955, Page 90.

investment project all of which carry zero degree potential surprise. This inner range consists of a large number of hypotheses some of which are gains and others losses.

The bell shape of the Y-curve and the breadth of the inner range are derived from the assumption that the hypotheses are *independent* of each other. [5]) If the hypotheses are independent of each other, then some of the gain hypotheses and loss hypotheses can carry zero degree potential surprise and theoretically at least, the inner range of gains and losses straddled across x_n the neutral value can extend to a considerable distance on both sides of it. It is questionable whether the mutually independent character of hypotheses regarding the same object, by the same man, at the 'same time' is valid. One would normally assume that as the hypotheses are by the same man, relating to the same object and formulated in a limited space of time, they will be interrelated, or related to a central hypothesis, which we will term the '*primary hypothesis*'.

The related nature of hypotheses on a subject in a limited period of time, can be deduced if we agree that hypotheses have a pattern and are the result of some ordering of the various factors that go into their formulation: that hypotheses are not the results of unrestricted forays into the unknown but the result of the correlating of information and anticipations and even informed guesses. The first thing that we can say about rational hypotheses regarding outcome in the future is, that they are founded on the knowledge and experience of the individual concerned and formulated 'in the light of some known laws, otherwise they will not be sensible or intelligible.' The mind selects and integrates information and anticipations according to patterns accepted as valid in the light of its knowledge and experience. Given a mass of 'data' there would in the first instance be a grading process by which degrees of credibility of each member datum, and its significance to the problem at hand, is assessed. The degree of credibility attached to one set is related to the degree attached to others which it supports or contradicts.

"The subjective credence attached to a proposition is only partly determined by the probability of the proposition and the probability of the proposition is a complex relationship to a mass of other

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5) G. L. S. Shackle: Op cit, Page 9.

propositions." [6]) This essential process may not exist in the formal and mechanistic manner suggested. But it must exist in some form or other in the process we call thinking. Selection, ordering and integrating are essential parts of any thinking process, whether these parts are consciously separate or unconscious and telescoped.

The *primary hypothesis*, the central theme of the thinking on an investment project, is formulated from all the data considered significant and most credible. Secondary hypotheses will be formulated by the inclusion of factors rejected in the formulation of the primary hypothesis and/or by the inclusion of sets referring to factors already included, which were rejected in preference to other sets when formulating the primary hypothesis. Consequently, the primary hypothesis will have the greatest importance to the decision-maker and will have the greatest credibility to him. All the secondary hypotheses are deviations from the primary hypothesis and as such will have less importance and credibility. The primary hypothesis having the greatest credibility will have zero potential surprise and the secondary hypotheses will all have a higher degree of potential surprise, as they postulate outcomes, different from that postulated by the primary hypothesis, and as they were formulated by the inclusion of data rejected in the first instance.

In general terms the more a secondary hypothesis deviates from the primary hypothesis the greater will be the potential surprise associated with it. This proposition would hold good whatever the manner in which the primary hypothesis is formulated. The primary hypothesis may be the result of conscious and careful collection and selection of data as a result of an exhaustive study, and the rational basis of the selection and integration may be apparent or even explicit. Or the primary hypothesis may be the result of 'the funded and assimilated experience of an expert', [7]) the rational basis of which is not readily apparent. Or it could be a guess which has acquired properties of belief and has for the individual concerned

[6]) G. Patrick Meredith: Methodological considerations in the study of human anticipation (from *Uncertainty and Business Decisions* edited by C. F. Carter, G. P. Meredith and G. L. S. Shackle. Liverpool University Press, first edition 1954, second edition 1957).

[7]) D. J. O'Connor: Uncertainty as a philosophical problem (2) Chapter II of *Uncertainty and Business Decisions* edited by C. F. Carter, G. P. Meredith and G. L. S. Shackle. Liverpool University Press, first edition 1954, second edition 1957.

the same kind of validity as primary hypotheses formulated diffe-
rently have for those formulating them. They all are in a way
manifestations of the quality of mind that is termed 'business
acumen'.

As a valid generalization, it is possible to say that it is immaterial
how exactly a primary hypothesis is formulated; as long as there
is a primary hypothesis or a hypothesis which has the highest degree
of credibility all other hypotheses on the same subject formulated
in a limited period of time, postulating different outcomes, will have
less credibility for the individual concerned. The more they differ,
generally the less credibility will they have.

There is a further point, which is probably fundamental to the
Focus Outcome model. Under conditions of uncertainty gains and
losses are possible outcomes, but can both the possibilities be treated
as expected outcomes at one and the same time? Shackle's answers
to such a question have not been satisfactory. 'Hope and fear can
co-exist in a man's mind' and 'we cannot suppose that thoughts of
a venture's possibilities of gain will enable the enterpriser to dismiss
... possibilities of loss.' [8] Whether possibilities of gains and losses
can co-exist is not important, but whether expectations of gains and
losses can co-exist is important.

It is necessary first of all to distinguish the importance of the
difference between expectations and possibilities. Action or decision
is based on expectations rationally founded or otherwise, while
possibilites express the uncertainty of the outcome. In situations of
uncertainty, it is conceivable that the outcome is so indeterminate
that both gains and losses are treated as possibilities. But as long
as they are considered possibilities, the situation is one of indecision.
Decision can only take place when one of the possibilities is trans-
formed into an expectation.

That is, the outcome must not only be considered possible but
must also be believed to be likely. The importance of likelihood in
inducing investment has been pointed out by Prof. Shackle [9]. It

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8) G. L. S. Shackle: *Expectation in Economics*, Cambridge University Press,
second edition, 1952, Page 42.

9) G. L. S. Shackle: The Nature of the Inducement to Invest. *Review of
Economic Studies* 1940. Page 46.

He has also suggested that where the choice is not induced by 'what we or-
dinarily call 'likelihood' it would be 'to enjoy by anticipation the largest series
which he sees no reason to disbelieve in'. Whether this motivation exists or not,

is this element of belief in the likelihood of a possibility that makes is an expectation.

Where an investment has been decided upon, the position is seldom, if ever, stated by entrepreneurs as 'Profits and losses are possibilities!' But whatever the situation, it is inconceivable that the statement would be in the form 'I expect profits and losses'. Such a sentence has no meaning. Two opposite expectations cannot co-exist. Where *profits* are expected, losses can only be possibilities and where *losses* are expected, profits can only be possibilities.

This I think is true of even situations where both gain and loss foci carry the same degree of potential surprise. Prof. Shackle has reduced investment decisions to what he calls 'the simplicity of an ordinary bet' and betting situations provide illustrations of this distinction between the foci even when there is no difference in the potential surprise.

The potential surprise associated with 'heads' or 'tails' resulting from the toss of a coin, or the appearance or non-appearance of a card in a card game is nil. In situations like these considerable betting takes place. It may be said that decision to act results from the attractiveness of the rewards as compared with the stakes. That is, if the value of the gains is greater than that of the stakes, net attraction would rest with the gains in spite of the chances being even (i.e. potential surprise of gain or loss being the same). But betting also takes place where the chances are even and the value of the stakes and gains the same. If there is no qualitative difference between the loss situation and gain situation the individual should remain in a state of indecision.

It is not sufficient to say that the individual acts because of optimism. It is necessary to find out what optimism or even 'gambling instinct' and the like do to focus values. Surely it would be difficult to suggest that optimism and the like change the potential surprise estimates or change the values of the gain and loss subjectively. What probably happens is that one of the outcomes is transmuted into an 'expectation' and the other into a 'possibility'. Where the focus gain is transmuted into an 'expectation' betting takes place and where loss is transmuted into an 'expectation' betting does not take place. I think it would be correct to say that

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anticipation of enjoyment, the prime motive of investment, involves the existence of likelihood in the possibility or expectation.

the distinction between an expectation and a possibility is due to the psychological attitude to the focus outcomes. This psychological attitude is generally based on the difference in degree of potential surprise associated with focus values but not necessarily so.

The term 'transmuted' is not intended to convey the idea that the distinction between expectation and possibility is a secondary process; something extraneous to the original hypotheses. The distinction is a part of the hypotheses and I think it would be correct to say that where the primary hypothesis postulates a gain outcome, it would be an investment from which gains are expected and losses are possibilities. The secondary hypotheses on the gain side will help to determine the final value of the gain on which the expectation of the entrepreneur will be focused. Consequently, the primary hypothesis helps to determine the general shape of the Y-curve and which of the focus values is the expectation.

We can, I think, postulate two characteristics of the value which would be the expectation. Normally the focus value which is the expectation would be a value in close proximity of the value postulated by the primary hypothesis. It is certain, that other than in exceptional cases where the degree of potential surprise for the two focus outcomes is the same, the expectation will have a smaller degree of potential surprise than that of the possibility. Though of the two focus outcomes the potential surprise of an expectation will be nearer zero, it need not necessarily be the hypothesis with potential surprise nearest to zero.

If the discussion up to this point is valid, then two changes must be made to Shackle's model. First the general shape of the Y-curve must be changed. Secondly the gambler's indifference curve map must be re-drawn with the curves having gentle slopes and in same cases being almost flat at least in some sections of the curve.

On the assumption that there is a primary hypothesis and all secondary hypotheses are related to it, it seems legitimate to suggest that the shape of the Y-curve would be more like a wedge than a bell.

In suggesting a smooth and continuous Y-curve, whatever the shape, it is not suggested that there is a continuity of hypotheses. This continuity of hypotheses is at best a diagrammatic fiction. From what we know of hypotheses it would be more correct to assume that hypotheses are generally a discontinuous series. Prof. Carter has suggested that as thinking generally tends to be in

broad groups it may be better to draw the Y-curve in the shape of a staircase [10]) or two staircases facing each other.

Probably the whole Focus Outcome model may be illustrated by an analogy to electric wiring. Let us say that these $\emptyset$ = constant curves are wires carrying positive current and the Y-curve is wire of a different material carrying negative current to which florescent tubes (hypotheses) are attached at irregular intervals. The florescent tubes at the points where the two wires are tangential would light up. From this analogy it will be seen that there are two elements that have to be diagrammatically represented. One is the inter-connection between the hypotheses or some 'continuity' relationship and the other the discontinuous nature of the individual hypotheses. Diagrammatically we may thus have an underlying wedge pattern of some sort which has large irregular details and may probably be somethinkg like that shown in the diagram below. The smooth Y-curve is derived by joining the highest values of each broad group.

The problem of drawing the Y-curve is mainly one of the diagrammatic limitations and not one of conceptual difficulties regarding either the nature of hypotheses or their inter-relationship.

The actual shape of the curve is unimportant. Its general characteristics are that the apex of the curve (zero potential surprise) would be at some point away from the neutral value x_n. The further away the apex is situated, the stronger the general tendency will be for the value of primary focus loss to be smaller and the degree of potential surprise to be higher. That is the greater the gain postulated by the primary hypothesis, normally the smaller will be the focus loss and the higher the surprise associated with it. This assumes that where considerable primary gain is postulated, the hypothesis postulating loss would have to incorporate factors or sets which deviate greatly from those that were included in the formulation of the primary hypothesis and consequently will have higher degrees of potential surprise associated with them. There may be cases where a small change in some of the factors could result in large losses and as such the loss hypothesis will not be associated with high degrees of potential surprise. But it is unlikely to be the case generally.

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[10]) C. F. Carter: A Revised Theory of Expectations. (From *Uncertainty and Business Decisions* edited by C. F. Carter, G. P. Meredith and G. L. S. Shackle). Liverpool University Press, first edition 1954, second edition 1957, Page 55.

When the wedge shaped Y-curve is transposed on the Ø = constant curve map the standardized focus loss would tend to be small even where some of the hypotheses postulate very large loss possibilities. The standardized values of these primary focus values would tend to be small as they would tend to be associated with high degrees of potential surprise. Some of these values would be so small that they will fall into the 'valley of oblivion' reserved
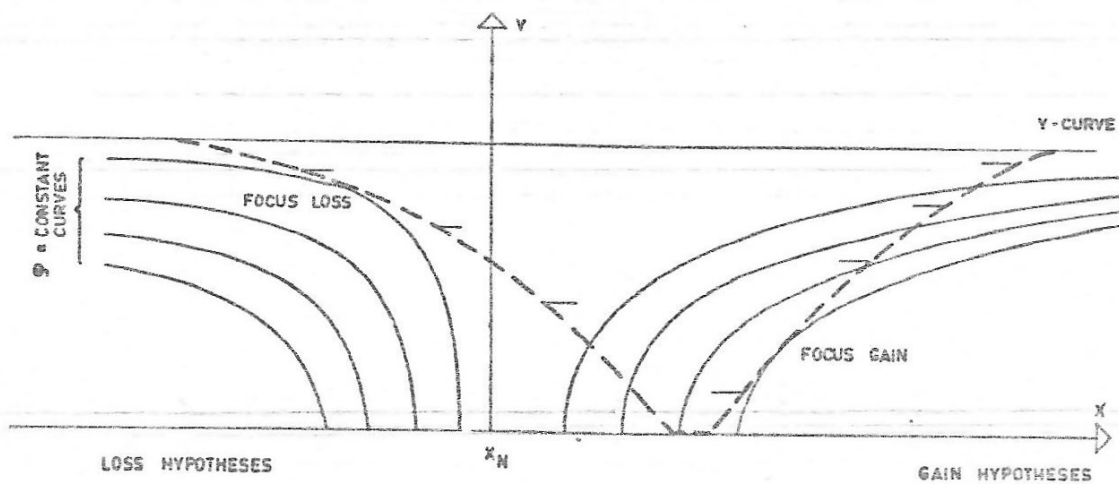

Fig. 2

for small and uninteresting values. In such cases, and the extent could be large in view of the shape of the Y-curve, the profit maximization model will be applicable and what an entrepreneur does is what has been well summarized by the clever civil servant. 'The entrepreneur will seek to maximize profits having regard to possible loss'.

The shape of the Y-curve reduces the importance of losses and in some cases would eliminate it as an effective consideration. But significant loss possibilities would continue to exist. Where they continue to exist the indifference curve map is necessary for understanding their relationship in decision making.

The second consequence for the concept of the primary hypothesis is the distinction between expectations and possibilities. In general terms a unit of expectation would have greater impact than a unit of possibility. It also seems legitimate to assume that where values of expectations are great, i.e. where large profits are expected, values of possibilities, i.e. loss possibilities, will have smaller influence on the mind of the decision maker than when associated

with small values of expectations. On the other hand where loss possibilities are large and tend to swallow up the total fortune of the individual, they will exert increasing influence.

These assumptions translated into curves will given an indifference curve map which is something of the nature given below.

The OS curve, 'the origin indifference curve' or the 'action-inaction' curve will lie for most of its length if not all, well below the
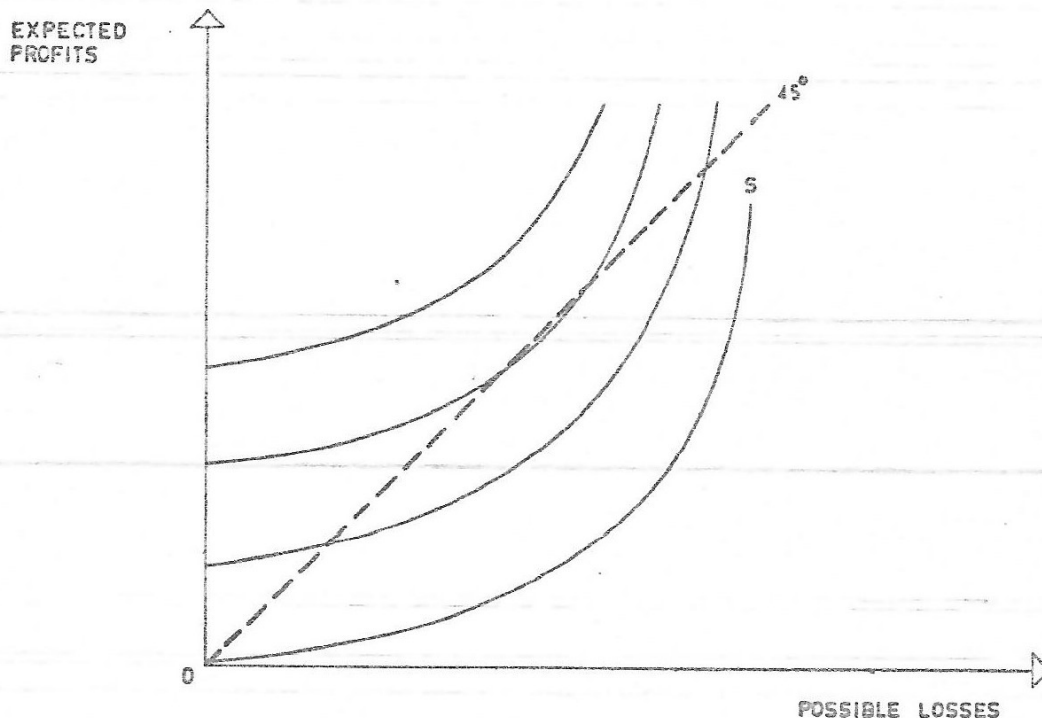

Fig. 3

45° line. It will be the sharpest slope of all the curves. The general shape of the other curves will be:

1. $\frac{dy}{dx}$ positive < 1 generally, rising to > 1 in remote regions.

2. As we shift to curves with successively larger Y-intercept, the positive slope decreases and tends to 0 for some values of X.

Within the adjusted Focus Outcome model what are the effects

of the inclusion of tax liability calculations on investment decisions? In the first instance it reduces focus gains and focus losses.

It is doubtful whether an entrepreneur would work out the tax liabilities for each one of his hypotheses and derive a new Y-curve. It is more probable that he would work the tax liabilities of the focus outcome values, and adjust these values to possible tax payments. Focus loss can only be adjusted if he has income from other sources. We will assume that this income exists and call it 'original income'.

The amount by which primary focus gain will be adjusted would be a simple calculation but loss adjustments will equal the reduction of tax payment on the original income due to the incurring of this loss. If income in the event of profit or loss remains in the same tax bracket the focus gain and focus loss will be reduced in the same proportion. But if gain would move the income into a higher bracket or loss would move it to a lower income bracket, focus gains will be reduced at a higher rate than focus losses.

Whatever the sums — the reductions from focus gains and focus losses — these sums will be reduced from the primary values. Prof. Shackle has suggested that the $\emptyset =$ constant curves would have decreasing concavity as they move away from x_n, the neutral value. In that case the standardized values will be reduced by less than the full amount of the tax liability. The further away the primary focus value is from the neutral value x_n, the greater will be part of the tax liability that is not passed on to the standardized value. Further, the higher the degree of potential surprise associated with a focus value, the less of the tax liability will be passed on to the standardized values.

In a situation where an entrepreneur has to make a choice between two investment opportunities A and B with primary focus gains (a) and (b) where $a > b$, the effect of tax liabilities on standardized values will be as follows. Primary focus gain (a) will be reduced by (at) the amount of tax but standardized value $a_s - at_s > a_s - at$, and that of focus gain (b) will be reduced by (bt^1) but standardized value $b_s - bt^1_s > b_s - bt^1$. As (b) stands on a lower $\emptyset =$ constant curve than (a) more of (bt^1) will be passed on to $b_s - bt^1_s$ than of (at) is passed on to $a_s - at_s$. That is, a part of the narrowing resulting from taxation will be offset by the difference in the absorption of tax liability into the standardized values. It is needless to say that the narrowing process is vastly

greater than the offsetting process. Where there is original income loss is also adjusted by a similar process.

Let us assume that after plotting the pre-tax values of focus outcomes it was found that investment A was on a higher indifference curve than investment B. The focus gains of investments A and B are (a) and (b) where a>b and focus losses (c) and (d) where c>d. Investment A occupies a higher indifference curve because a — b is greater than the amount necessary to keep investment B on the curve it occupies while (d) is being made equal to (c). Let us term the amount needed to keep an investment on its indifference curve while its loss possibility is being made equal to the loss possibility of another, the 'loss equalization margin.'

After tax liability adjustment, investment A will be on a higher indifference curve if the adjusted values $a_1 - b_1$ is greater than the new loss equalization margin for investment B. Where tax adjustment narrows the difference between the two focus losses, the new 'loss equalization margin' will be smaller. Some of this effect will be offset by B moving to a lower indifference curve which will have a steeper slope than the one vacated. But where there is no loss adjustment the loss equalization margin will increase.

Under the assumptions that were made earlier the standardized focus losses are unlikely to constitute a large proportion of the focus gains, and because of the slope ascribed to the indifference curves it is unlikely that the loss equalization margins are large. Though it is not possible to say anything categorical about the disincentive effect of taxation, it seems unlikely that taxes would reverse the relative attractiveness of investments.

On the question whether tax liability calculations would lead to cessation of investment, the position in the Focus Outcome model is that investments which are pushed below the origin indifference curve will not be made. That is investments on the margin, if affected by taxation will go under. But marginal investments in this case mean investments with profit expectations which are smaller, even very much smaller than loss possibilities. It is doubtful whether such investments are ever of any significance to the considerations of entrepreneurs.

Prof. Shackle's inference that 'many ventures that enterprisers have in mind at any time, whose standardized focus gains are thus reduced (by taxation) will be moved from an indifference curve lying above and to the left of the origin indifference curve to one

lying below and to the right of it [11]) rests on the assumption that the origin indifference curve lies on and above the 45° degree line. This assumption connot be sustained if the contention that there is a difference in the quality of focus gains and focus losses is accepted. There may however be investments where large profits expectations are associated with large loss possibilities, investments in new industries or new areas. These investments would lie on the outer edge of the indifference curves map in the region where the curves are rising at a rate greater than 1. As the margin between curves and the origin indifference curve may not be very great, a very heavy tax may move the position of the investment to a point below the OS curve. And such investments will not take place.

The conclusion that we can arrive at when analysing with the help of the profit maximization model has to be amended. Where losses are not significant considerations, there is no theoretical justification for maintaining that income tax has a disincentive effect on investments. Where losses are significant considerations, it is possible but unlikely that disincentive effect exists.

The opposition to taxes lies mainly outside economic justifications. Consequently the limit of tax structure is set by the point at which investors will cease to accept a given tax structure as one of the conditions under which investments have to be made, and 'revolt' against it. Progressive tax structures probably have the advantage that they take away the moral justification for such a revolt from the owners of capital, and allow the taxing authority to arrogate the moral rights, as it does by placing heaviest tax burden on those who can best afford it.

The acceptance of the world's heaviest tax structure as one of the inescapable conditions under which investments have to be made is probably best stated by the Royal Commission on the Taxation of Profits and Salaries in its Second Report. "The combined rates of income tax and surtax attain in the case of higher incomes [a level] variously described as penal, confiscatory and very heavy... such rates are criticised as tending to repress effort and to discourage the taking of risks. Probably they do to same though unascertainable extent ... we see no evidence that higher income earners are specially affected by disincentive." (Sec. 148-149)

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[11] G. L. S. Shackle: *Expectation in Economics*, Cambridge University Press, first edition, 1949, second edition 1952, Page 95.