

# AN ECONOMIC CONCEPTION OF "HEALTH PROMOTION"

by

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## **ABSTRACT**

Although health promotion programs still account for a relatively small proportion of health sector spending in most developed nations, that proportion has generally grown in recent decades (OECD, 2000). This paper argues that while economists have analysed the component parts of projects and programs of a health promotion kind, no conceptual overview of the field has been provided. The purpose of this paper is to provide such an overview. It provides an integrated vision of the field along with an analytical treatment of the targets and possible instruments of health promotion. As the investments of economies in this field of health sector activity increases, a consolidated view of the field is likely to be an increasingly important ingredient for the formulation of efficient public health policies.

**Keywords:** economic analysis, health promotion, welfare.

## **1 Introduction**

This paper contributes to the literature on health promotion by providing an economic conception of it. In the existing non-economic literature on the topic, a range of quite disparate views exist regarding those activities that constitute "health promotion" and those that do not (see, e.g. Connelly, 2002). In the economic literature, considerable attention has been paid to the evaluation of health projects and programs that are designed to maintain health/prevent illness. See, e.g., many of the works cited by Drummond, O'Brien, Stoddart and Torrance (1997), Folland, Goodman and Stano (1997).

This paper seeks to provide a holistic view of health promotion, albeit through the lens of one discipline, *viz.* economics. Specifically, this paper may be viewed as an application of the (sub-)discipline of welfare economics to the topic "health promotion". The work is motivated by the view that not only is an atomistic vision of health promotion conceptually dissatisfying, but also that the presentation and debate of unified overviews of this field might also help to improve health sector resource allocation in this growing sub-sector. Health promotion expenditures still account for a relatively small proportion of health spending in the budgets of most developed nations. However, that proportion has increased over recent decades for all but two of the OECD countries (OECD, 2000). As the economic stakes in this sector increase, so too does the importance of clarity of thought regarding the purpose and apparatus of health promotion. This paper presents a coherent overview of the topic.

The paper is arranged as follows: Section 2 provides a working definition of health promotion and develops the geometric framework that is used throughout the paper to analyse health promotion activity. In this section, a distinction is also drawn between two broad classes of objective for the policy-maker, *viz.* those of (i) maximising social welfare (i.e., those with so-called "welfarist" objectives); and (ii) pursuing other objectives that include health targets (i.e., those with so called "extra-welfarist" or "non-welfarist" objectives). Section 3 describes the instruments and targets of health promotion and, in particular, produces a conceptual treatment of the "means" via which health promoters can pursue chosen "ends". Section 4 presents an illustrative note on the topic of "non-welfarist" health promotion; and Section 5 provides the conclusions.

## **2. An Economic Conception of the Phenomenon**

It is not the purpose of the current paper to provide a review of the non-economic literature on health promotion. Such a review may be found in Connelly (2002). The starting point for this paper is with a working definition of health promotion. For the purposes of this paper health promotion will be defined as *that set of activities that is designed to affect the*

*consumption of goods and services, primarily for the purposes of enhancing health, or preventing illness.* It is important to note the emphasis this definition places on consumption: it presupposes **consumption** or, more specifically, the modification of consumption, is the mechanism via which health promotion programs operate.

The definition provided above excludes medical services, including those that are "preventive" in nature. However, it encapsulates efforts to affect the consumption of those services. For example, although vaccinations *per se*, are outside the scope of health promotion, according to the definition above, programs that encourage people to be immunised are not outside its scope. By contrast, note that programs such as water fluoridation are excluded by this definition: programs of this kind do affect consumption patterns, but consumption is changed by *de facto* compulsion, not by affecting the choices consumers make. Thus, this definition is more exclusive than some definitions that are to be found in the health promotion literature, e.g. those produced by of the Department of Health and Human Services (1980) and the World Health Organization (1984).

With the above definition of health promotion in mind, it is pertinent to consider the mechanisms via which consumer choices can be affected. According to consumer demand theory (see, e.g. Deaton and Muellbauer, 1980) and household production theory (Becker, 1965), consumption patterns are affected by (i) consumer preferences; (ii) consumer knowledge; (iii); relative prices; (iv) the contents of the opportunity (or choice) set(s); and (v) the budget constraint. Mechanisms (iii) through (v) are often closely related, but distinctions between them are useful, because this paper invokes the useful distinction between market goods consumption and household production.

If health promotion is a set of activities that is designed to affect consumption patterns (for a specific purpose), mechanisms (i) to (v) represent an array of potential policy instruments for health promoters. Specifically, the relevant policy instruments are those that affect health-related consumption and hence the household production of health and non-health outputs. A more detailed consideration of these consumption-production activities is central to the analyses presented in this paper.

The definition of health promotion that has been invoked here suggests that an important health promotion target is health, *per se*. It is important to point out, in this context, that a variety of motivations may be consistent with the pursuit of a given target. For example, policies that are health-improving could be motivated by a desire to maximise social welfare, as this term is used in the conventional discourse of welfare economics. In such cases, health is simply an intermediate target of policy. However, a variety of factors other than welfare maximisation can also motivate health policy (see, e.g. Feldstein, 1998) and, indeed, public policy more generally (for an overview of the latter, see, e.g. Cullis &

Jones (1992)). The ultimate objective of some health policy advocates might, in fact, be to maximise health (however measured) *per se*. On the other hand, Lewis (1996), for example, has argued that technocratic, rather than economic (or health), considerations are responsible for the determination of Australia's guidelines on water quality. Alternatively, the goals of policy makers may be to maximise prestige, pay, power, etc., as Niskanen (1968, 1971) has suggested. In the latter case, the relationships between policy targets and the utility of the bureaucrat are central.

In this paper, a distinction is drawn between health promotion programs that are motivated by the goal of welfare maximisation, and those that are not. For simplicity, the former will be referred to as "welfarist" (as that term is used by Culyer, 1991) health promotion programs, and the latter will be referred to as "non-welfarist" health promotion programs. This latter, non-welfarist conception, is explicitly introduced to acknowledge that objectives, specified in terms of health, rather than social welfare, could also motivate health promotion policy. The purpose of incorporating this idea is not to paint a unidimensional portrait of lazy and "self-aggrandizing" civil servants - as some proponents of the "public choice" school of thought have been accused of doing (Musgrave, 1999) - or to attribute other (e.g., "malicious") traits to decision makers. Assumptions as to the benevolence (or malevolence) of policy makers are not made in this paper and nor are such assumptions likely to enrich the analysis. Rather, just as economists have fruitfully explored the implications of a range of objectives other than profit-maximisation on the organisation's behaviour and performance: important examples include those of sales maximisation (Baumol, 1958); growth (or discounted future sales) maximisation (Williamson, 1966), output maximisation (in the specific context of Soviet enterprises) (Ames, 1965); *inter alia* (see, e.g., the collection of papers in Archibald (1971)), this paper seeks to explore the implications of different objectives on the outcomes produced by health promotion policies.

In this paper, it is useful to draw on the ideas of Ames (1965). Ames's (1965) characterisation of the utility function for the Soviet bureaucrat included both profit and output arguments, and these were afforded utility weights. At a general level, the ideas behind Ames's conception of the Soviet enterprise can usefully be employed here, to distinguish the non-welfarist and welfarist cases referred to above. Abstracting from inter-temporal dimensions of Grossman's (1972) model (including the notions of a "service flow" of healthy days and health stock depreciation), suppose the utility function of each of the  $j$  individuals in the society, in the purview of the health promoter, may be re-written as follows:

$$U_j = a_j \ln H_j + (1 - a_j) \ln Z_j \quad (1),$$

where  $U$  is utility,  $a_j$  and  $(1-a_j)$  are the utility weights of the  $j$ th individual,  $H_j$  is the health stock of the  $j$ th individual at a given point in time, and  $Z_j$  is the  $j$ th individual's non-health consumption at that point in time. Suppose that we may then write the health promoter's utility function as follows:

$$U_{HP} = a_{HP} \sum_{j=1}^n \ln H_j + (1-a_{HP}) \sum_{j=1}^n \ln Z_j \quad (2)$$

where  $a_{HP}$  and  $(1-a_{HP})$  are the health promoter's utility weights on the  $H$  and  $Z$  consumption of the  $j$  individuals. In addition to their "instantaneous" nature, utility functions (1) and (2) entail several simplifying abstractions. First, Equation (1) abstracts from possible utility interdependencies between the  $j$  individuals. Second, equation (2) abstracts from any utility derived by the health promoter from his/her own consumption of  $H$  and  $Z$ . When  $a_{HP}$  takes values between zero and unity, the indifference curves of the health promoter take on familiar characteristics. However, in the special cases when  $a_{HP}=0$ , or  $a_{HP}=1$ , the indifference curves of the health promoter will be (straight lines) parallel to the relevant axes. These issues will be taken up later in some detail, in geometric expositions.

Now, consider the fundamental difference between the utility function given by Equation (2), and the following utility function:

$$U_{HP} = \sum_{j=1}^n \ln U_j = \sum_{j=1}^n a_j \ln H_j + \sum_{j=1}^n (1-a_j) \ln Z_j \quad (3).$$

The utility function described by Equation (2) indicates that the health promoter's utility derives from both the pattern and the levels of **consumption** of  $H$  and  $Z$  by the  $j$  individuals in the population. By contrast, the utility function given by Equation (3) indicates that the utility of the health promoter derives, not from consumption patterns of individuals *per se*, but the **utility** that each of the  $j$  individuals derives from his/her own consumption pattern. Thus, in the language employed above, Equation (2) represents the utility function of a "non-welfarist" health promoter, while Equation (3) represents the utility function of a "welfarist" health promoter. While, in the former case, it is the health promoter's utility weights,  $a_{HP}$  and  $(1-a_{HP})$ , that "matter" in the formulation of policy, it is the utility weights  $a_j$  and  $(1-a_j)$  of **individuals**, that "matter" in the welfarist case.

It is useful to explore the implications of different assumptions about the values of  $a$  by considering the extreme cases. First, consider Figure 1, in which  $a_{HP}$  is assumed to take the value of unity. In this case, the health promoter's preferences are lexicographic: s/he derives zero utility from the non-health consumption of individuals, so  $MRTS_{ZH} = \infty$ , and his/her indifference curves in Figure 1, e.g.  $IO_{HP1}$  through  $IO_{HP3}$ , are straight lines, parallel to the  $x$ -axis. Suppose that the curve marked  $PPF_j$ , in Figure 1, describes the  $H$  and  $Z$  production

possibilities for the  $j$ th individual in the relevant society. (Note that  $H_{MIN}$ , the minimum health stock, is non-zero by assumption, i.e. it is assumed that the health stock is non-zero, even if no health inputs are used.) The health promoter's indifference curves provide a corner solution for the health promoter at  $V$ : the utility of the health promoter is maximised when  $H_j = H_{MAX}$  and  $Z = 0$ . (Indeed, when the health promoter's preferences are of the form depicted in Figure 1, a health-maximising corner solution will always arise, provided the  $PPF_j$  is strictly concave to the origin.)

Now consider Figure 2, which presents  $PPF_j$  and indifference curves for the  $j$ th individual, marked  $IO_{j1}$  through  $IO_{j3}$ . In this extreme case,  $a_j = 0$ , and the  $j$ th individual's  $MRS_{ZH} = 0$ . This assumption (well-summarised by the adage "Eat, drink, and be merry, for tomorrow we die") gives rise to indifference curves that are parallel to the  $y$ -axis, and the selection of output bundle  $K = Z_{MAX}, H_{MIN}$ . Note that this extreme case results in non-zero health stock, by assumption.

Figure 3 presents another extreme, *viz.* that in which  $(1 - a_{HP}) < 0$ . This case, in which the health promoter derives disutility from  $Z_j$  consumption, gives rise to  $MRS_{ZH} < 0$ , and generates positively-sloped indifference curves for the health promoter. As was the case in Figure 1, a "health-stock-maximising" solution arises at  $V$ . A health-maximising solution is inevitable when preferences take this form, even if the  $PPF_j$  is not strictly concave to the origin. (The  $U_{HP}$ -maximising basket may not, however, be a true "corner" solution if the  $PPF_j$  is not strictly concave: i.e. the basket contain some  $Z$ , in such cases.)

Finally, and without geometry, one can imagine the "intermediate" cases in which health promoters and individuals have utility weights  $0 < a < 1$ . The critical issue then becomes to what extent the utility weights of health promoters and individuals in their purview differ, and the extent to which the health promoter can use his/her budget to affect the composition of the output bundles of those individuals.

In the welfarist case, since the health promoter's utility is a function of the utilities of the  $j$  individuals there is no divergence, absent market failure, of the views of the health promoter and of individuals, about the composition of the "optimal" output bundles. An important implication of this observation is as follows: if the ultimate purpose of health promotion is welfarist (i.e., to maximise welfare), market failure in the health sector is a necessary condition for the institution of a health promotion "intervention". All health promotion programs that are motivated by welfarist considerations will, essentially, be programs to correct inefficiencies that arise due to the existence of externalities, public goods, problems of information, or problems of market power. The targets of welfarist health promotion initiatives become quite clear: they are the sources of market failure that are

responsible for distorting the health-related decisions of individuals, and thereby reducing their utilities.

By contrast, if the ultimate end of health promotion is non-welfarist in nature market failure is not even a necessary condition for health promotion "interventions". Instead, the selection of targets and use of the instruments of health promotion are manifestations of health promoter's own consumption weights over health and non-health outputs, subject to whatever resource constraints (e.g. the health promoter's budget constraint and other institutional constraints) are applicable.

## 2.1 Grossman's Health Stock Model and Some Further Geometry

Henceforth, the analysis is primarily geometric. The framework to be employed is inspired by Hadley's (1982) and Wagstaff's (1986) graphical interpretations of Grossman's (1972) model; and they are, as such, primarily of a comparative static nature. The intertemporal dimensions of the Grossman (1972) model are explicitly acknowledged. However the focus of this paper is on consumer decisions and outcomes in adjacent time periods and, for the purposes of simplification, some temporal dimensions of the Grossman (1972) model (e.g., health stock depreciation, and healthy days service flows) are not given explicit treatment.

Figure 4 presents a stylised representation of (part of) Grossman's (1972) model. Quadrant I contains the health production function of an individual (the  $j$  subscript is now suppressed, for convenience): it relates the consumption of health inputs to the production of health stock. The function is assumed not only to become subject to diminishing marginal returns in the health input ( $HI$ ) but also, eventually, zero marginal returns (at  $HI_E$ ) and, finally, negative marginal returns (for  $HI > HI_E$ ).  $H_{MAX}$  thus represents the maximum producible health stock for the individual, with an input requirement of  $HI_E$ .

Quadrant II contains an indifference curve,  $IO_2$ , for the individual, drawn over output space. The pertinent outputs are health stock ( $H$ ) and non-health consumption ( $Z$ ). Thus, indifference curves in this space represent the consumer-producer's (hereinafter, simply "the individual's") "underlying" preferences for health and other consumption. The fundamental nature of the preferences depicted in Quadrant II deserves emphasis: the consumer's input preferences are derivative of his/her (i) preferences over outputs; and (ii) his/her understanding of the technologies of health production and non-health production.

Quadrant III presents the non-health production function,  $NHPP$ . For analytical convenience, it is assumed that the non-health production function is homogeneous of degree one, yielding a linear function in non-health input ( $NHI$ )- $Z$  space. It is also assumed, for convenience, but without loss of generality, that the production function has a zero intercept

and unit-slope. The ray from the origin produced by these assumptions has a slope of  $45^\circ$ , which enables *NHPF* to serve as a reference line to Quadrants II and IV.

Quadrant IV presents one of an infinite number of input indifference curves,  $IIN_1$ . The relevant inputs are *NHI* and *HI* and, as indicated above, the consumer's preferences over them are derived from the relationships in Quadrants I-III. For example, the output combinations *U* and *V*, on  $IO_2$ , correspond with input combinations *W* and *T*, respectively, on  $IIN_1$ . The indifference curve  $IO_2$  has the properties generally expected of a conventional indifference curve for two goods and hence it is strictly convex to the origin. Note, however, that  $IIN_2$  is not strictly convex to the origin. Rather, for combinations on  $IIN_2$  where  $HI > HI_E$ , the marginal rate of substitution of health input for non-health input ( $MRS_{HI\ NHI} = \partial NHI / \partial HI$ ) becomes zero, and then changes sign (i.e.,  $MRS_{HI\ NHI} = -\partial NHI / \partial HI$ ). This non-convexity arises due to the fact that increments of  $HI > HI_E$  do not increase, and then actually reduce, the stock of health, while simultaneously decreasing non-health production-consumption possibilities. Thus, in the region of  $HI > HI_E$  health inputs are output- and hence utility-decreasing ("bads") and their consumption must be compensated by increasing other consumption (*Z*) to maintain constant utility. In input space, this demands an increased allocation in *NHI*.

The utility-maximising output combination(s), and the corresponding optimum input bundle(s) cannot be discerned from Figure 4. Information about the consumer's budget constraint must also be introduced. Figure 5 presents the consumer's budget line ( $HI_{MAXI}NHI_{MAXI}$ ), in Quadrant IV and, in Quadrant II the production-possibilities frontier (*PPF*) for the individual has been derived. The *PPF* derives from the budget constraint and the technical relationships in Quadrants II and III. For example, its intercepts,  $H_{MAX}$  and  $Z_{MAX}$ , are found by taking corner solutions on the inputs budget line, at  $HI_{MAXI}$  and  $NHI_{MAXI}$ , respectively. Note that the latter input corner solution produces the output bundle *K* ( $=Z_{MAX}$ ,  $H_{MIN} > 0$ ). This outcome arises due to the assumption evident from the positive intercept on *HPF* (in Quadrant I), viz. that the stock of health will be non-zero, even if the consumption of health inputs is zero.

Given the state of technology, the relative prices of inputs, the consumer's preferences, and the budget depicted in Figure 5, the bundle  $C^* (=H^*, Z^*)$  is uniquely utility-maximising, or the "welfarist" outcome. Thus, in the absence of market failure, the consumer will choose the input bundle  $P^* (=HI^*, NHI^*)$  and produce the utility-maximising output bundle  $C^*$ . (This  $C^*$  basket will serve as an important reference point for the remainder of the geometric analysis.)

How can the role of health promotion be depicted in this framework?

### **3 Instruments and Targets of Welfarist Health Promotion Strategies**

According to the welfarist conception of health promotion presented above, health promotion policies have no role to play in a world that is devoid of market failure. Assuming a utilitarian social welfare function, if individuals attain their utility-maxima without public intervention, government intervention will not Pareto-improve social welfare.

If markets do fail, though, the resulting utility losses may be large enough to warrant government intervention. Specifically, when the benefits of helping individuals to make efficient resource allocation objectives (that are also consistent with the preferences of those individuals), exceed the costs, there is an economic (welfarist) case for intervention. This part of the paper is concerned with illustrating several health promotion policies that are motivated by welfarist considerations. In each case, the emphasis is on the source and outcomes of market failure and the mechanisms for its correction.

#### **3.2.1 Market Failure: An Example with Imperfect Information**

In Figure 5, the output equilibrium was shown to depend on an optimal division of the total budget between health and non-health inputs. Optimal input allocation was shown to depend, in turn, on the individual's (implicitly perfect) knowledge of the technologies for the production of health and other goods. If individuals are not well informed about the technologies of production, however, their resulting input choices may be sub-optimal. Expressed another way, imperfect knowledge can give rise to market failure in the markets under consideration and, just as for other sectors of the economy, an economic argument can be made in such cases for public intervention. In this section, applications of two types of policy instrument, *viz.* information provision, and taxes and subsidies, are explored.

#### **3.2.2 Information Dissemination**

Information provision is one of the instruments available to governments when markets fail due to problems of information. Some of the most visible health promotion activities might be justified on such grounds. Elements of the HIV/AIDS media campaigns of the 1980s, arguably fall into the category of information provision. It may be argued that the purpose of those campaigns was to obviate a specific source of market failure, *viz.* imperfect knowledge about a disease and modes of its transmission. Programs that are designed to disseminate accurate information about the relationships between health and diet, exercise, consumption of medical and preventive health care services, and so on, are other examples of this type of health promotion policy.

Figure 6 presents an analysis of the economic role played by welfarist health promotion policies involving the provision of information. Here, it is assumed that the

consumer is perfectly informed about the technology of non-health production. It is also assumed, however, that the consumer is ill-informed about the state of health production technology. Suppose that  $HPF$  again represents the "true" health production relationship, but that the individual mistakenly believes the relationship is that indicated by the dashed line,  $HPF_D$ . This individual (who "doesn't know much about health production" (Quadrant I), but "knows what s/he likes" (Quadrant II)) has an input indifference map (e.g.,  $IIN_D$  in Quadrant IV) that is distorted by his/her misunderstanding of the health production function. How are the consumer's choices and welfare affected by his/her ignorance?

This individual will choose input combination  $Q^*$  (Quadrant IV), because s/he expects it to produce the bundle  $D (=H_D, Z_D ;$  in Quadrant II). Although  $D$  is inferior to  $C^*$ , the consumer's knowledge-poverty misleads him/her to the conclusion that it is the highest-utility bundle that can be produced given the (perceived) technology and the budget constraint. However, the bundle produced as a result of this budget allocation will not be  $D$ , but  $F$ : the realised production of  $H$  will be greater than expected. Although bundle  $F$  provides greater utility than  $D$ , it is still inferior to the utility-maximising bundle,  $C^*$ . Moreover, because health stock is non-tradeable, the consumer cannot augment utility by making *ex post* trades along the  $PPF$ . The individual's ignorance of the true relationship between  $HI$  and  $H$  is thus a source of welfare loss.

As an aside, it is worthwhile noting that, although  $F$  is not a utility-maximising basket, its attainment does produce some information about health production that the individual previously did not possess. In subsequent periods, the consumer's learning might be brought to bear on his/her production activities and input allocations so that, by trial and error, the output equilibrium may eventually be achieved. However, the process of discovery of the "true" production relationship could be protracted and/or expensive. The process may be especially costly, in terms of utility forgone, if (i) the individual misinterprets the information produced (e.g., as the result of stochastic shocks); (ii) the health production technology changes over time; and/or (iii) the rate of health stock depreciation changes with age, confounding the signals received. Furthermore, for various conditions of ill-health, the consequences of market failure might be catastrophic if the first opportunity that knowledge-poor individuals have to learn about the relationship between consumption choices and their health consequences arrives too late.

Generally, as the cost of locating the health production function grows, so too does the economic case for public intervention. In the absence of externalities, the welfare benefits of information-disseminating health promotion activities may be conceived in terms of the utility gained by individuals whose search for equilibrium is shortened, as a result of them. The target of health promotion in this (welfarist) case, is the consumer's knowledge state

regarding health production; the instrument for its achievement is information dissemination (or "education"); and the welfarist objective is, as always, to augment utility, and hence welfare. (The net benefits of public provision may also be increased by the public good attributes of health information.)

### 3.2.3 Taxes and Subsidies

An alternative to that outlined above is to levy taxes and/or subsidies on inputs. Specifically, the relative prices of health and non-health inputs can be manipulated in such a way as to bring the information-poor consumer immediately to his/her output equilibrium.

Figure 7 presents an example that is based on the budget constraint and preference sets indicated in Quadrant IV of Figure 6 (other Quadrants are suppressed). The consumer's initial budget constraint, from Figure 6, is  $NHI_{MAX1}HI_{MAX1}$ , and the full-information indifference curve for inputs is  $IIN_2$ . Recall that, if the consumer were well-informed about the technologies of  $H$  and  $Z$  production, s/he would have allocated his/her budget to  $Q^*$  ( $=HI^*, NHI^*$ ). However, misinformed input preferences lead to the mistaken choice of  $P^*$  ( $=NHI_D, HI_D$ ). The visible hand of government (Chandler, 1977), manifest as a goods and services or value-added tax and/or subsidy on inputs, can optimally redirect the budget allocation. For example, the prices implied by the budget line  $NHI_{MAX2}HI_{MAX2}$  will effect the consumption of  $Q^*$  by the consumer. Thus, the effective policy involves a tax on health inputs, and a subsidy non-health inputs. Notably, although the policy is utility-improving in output space (since it is consistent with the output bundle  $C^*$  in Quadrant II, in Figure 6), the input tangency  $Q^*$  implicates a lower poor-information input indifference curve ( $IIN_{D2}$ ), than the pre-intervention basket,  $P^*$ .

Figure 7 shows how applications of taxes and/or subsidies can be used as instruments of "health promotion" when market failure by information occurs. However, for pragmatic reasons, these are not likely to be efficient instruments to employ when information is the source of market failure. The practical difficulties are first, that the requirement for information about consumer preferences is formidable: to formulate efficient policy, the health promoter must be as good a judge of individual welfare as the individual concerned! Second, since health policy is constituted over groups of individuals, with inevitably heterogeneous preferences, generalising such a policy involves tailoring tax and subsidy provisions, perhaps even at the level of individuals.

It is noteworthy that the previous two Figures illustrate cases in which efficiency is promoted by applying instruments that actually lead to a **reduction** in the consumption of health inputs. This analytical outcome is deliberate. It is designed to illustrate the fact that, in

some (perhaps "special") cases, health policies that are motivated by welfarist concerns do not invariably result in increased health input consumption.

The tax and subsidy instruments discussed above can also be used to pursue other, non-welfarist, health promotion ends. The focus of the paper is now directed to a discussion of such ends and some policy applications.

### 3.3 Non-Welfarist Health Promotion Strategies

Consider Figure 8, in which the (non-welfarist) health promoter's indifference curve,  $IO_{HP}$ , in Quadrant II, is added to the framework used for Figures 6 and 7. The form of this dashed indifference curve (kinked at the point  $F$ ) suggests a special case that has not previously been considered, *viz.* that in which  $a_{HP}$  is not a constant, but depends in part on the quantity of  $H$  the individual has. Specifically, for  $H > H_F$ ,  $a_{HP} < 1$ ; while, for  $H < H_F$ ,  $a_{HP} = 1$  (and hence indifference curves lower than  $IO_{HP}$  (not depicted) are lines parallel to the  $x$ -axis). This formulation assumes health target-setting behaviour, rather than health maximisation, on the part of the health promoter. The remaining analyses suppose that the health promoter's utility function is of this nature, although the conclusions are insensitive to this idiosyncratic (or, some may say, "Marie Antionettesque") preference formulation.

From the point of view of the health promoter, the utility-maximising output bundle in Figure 8 is  $F$ , in Quadrant II. Its production demands that the  $j$ th individual select the input combination ( $R=H_F, HI_F$ ). The critical observation to be drawn from Figure 8 is that the individual's equilibrium,  $C$ , represents disequilibrium to the non-welfarist health promoter (and *vice versa*). Attention is now directed to some mechanisms by which the health promoter might affect increases in his/her utility, by changing the composition of the  $j$ th individual's output bundle.

#### 3.3.1 Disinformation, Misinformation, Reinforcement, and Exaggeration as Policy Instruments

The health promoter could attempt to affect the individual's basic preferences over  $H$  and  $Z$ , so that individual's preferences, and equilibrium, are identical (or closer) to those of the health promoter. This subsection outlines some of the means via which this end might be achieved. It is worth restating here, that related issues regarding the ethical, moral and other non-economic dimensions of the economic analysis presented here are beyond the scope of this paper.

In order to do so, the intrinsic values the individual places on health and other consumption must be affected. How might this be done? Perhaps an advertising strategy that extols the virtues of a particular lifestyle may be undertaken in an attempt to change the preferences of individuals for "health", itself (i.e. to affect the individual's  $MRTS_{ZH}$ ). Geometrically, such strategies can be depicted as attempts to change the slopes of the individual's output indifference curves (e.g., in Quadrant II of Figure 8) so that  $F$  represents a tangency between the existing  $PPF$  and the individual's "reformed" indifference curves. (The geometric exposition is not provided here, for reasons of space.)

Another strategy involves manipulating the preferences of individuals over health and non-health inputs to achieve the health promoter's utility-maximising bundle. The instruments that might be used to effect this change, in input space, are (i) non-information strategies; and (ii) disinformation strategies, which are designed to persuade individuals to allocate more of the budget to health inputs than is actually utility-maximising. Category (i) includes advertising campaigns that are designed to modify the consumption of commodities via persuasion/reinforcement, rather than the provision of novel information. The mandated warnings on cigarette packets (e.g., "Smoking Kills", "Smoking Causes Heart Disease", "Smoking Causes Lung Cancer", and so on) are, perhaps, examples.

Category (ii) includes programs that are designed to exaggerate the perceived risks, costs, or benefits, of particular consumption decisions. The exaggerated claims sometimes made by private, profit-maximising, firms perhaps spring readily to mind in this regard. However, public health authorities may also pursue strategies of this nature or, at least, strategies that result in exaggerated perceptions of health risks. Some further elaboration on this point is provided, below.

Although these non-welfarist strategies involve the dissemination of data, they are motivated by the pursuit of a health objective, not the welfare-maximising objective. Strategies (i) and (ii) are designed to affect individuals' preferences over inputs. Geometrically, this implies changing the slopes of the indifference curves in Quadrant IV (i.e., consumers' marginal rates of substitution of health for non-health inputs). Recall that the input indifference curves in Quadrant IV are derived from the information about output preferences and production technologies contained in Quadrants I-III. Thus, the mechanism for strategies (i) and (ii) is the modification of consumer knowledge (by misinformation) about health production technology. The case can be understood by returning to Figure 6, and recalling that  $HPF_D$  represented the individual's distorted view of the "true" health production relationship  $HPF$ . It was supposed above that such distortions could be created by the

deliberate provision of misinformation and/or by exaggeration. In such cases, one might view  $HPF_D$ , not as the product of ignorance, but the product of misinformation that forms part of a non-welfarist health promotion policy to improve health. Its effects are to distort input preferences ( $IIN_D$ ), giving rise to the consumption of  $Q^*$ , and the production of  $F$ . This bundle maximises the health promoter's utility, but is strictly inferior to  $C^*$ , from the individual's point of view.

### 3.3.2 Taxes and Subsidies

Taxes and subsidies may also be used as non-welfarist instruments of health promotion. Figure 9 provides an example of the impact of taxes and subsidies on individual choices and outcomes. The initial inputs budget line is  $NHI_{MAXI}HI_{MAXI}$ . The production-consumption possibilities for the individual are given by the dotted-curve marked  $PPF$  in Quadrant II. The individual's initial input and output equilibria are  $P^*$  and  $C^*$ , respectively.

In order to give rise to the input equilibrium,  $R$ , which produces the output bundle  $F$ , the relative prices of health and non-health inputs must be changed. The relative price ratio that will lead this individual to choose  $F$  is the ratio given by the budget line  $AB$  (in Quadrant IV). An important impact of the tax and subsidy arrangements implied by  $AB$  is that they change the production-consumption possibilities (or "opportunity set") for the individual. For example, even if the entire budget is spent on non-health production-consumption, the resulting basket contains only  $Z_T$ , compared with the pre-tax-subsidy possibility of  $Z_{MAX}$ . The individual's post-tax-and-subsidy production possibilities are given by  $PPF_2$  which coincides with  $PPF$  only for baskets where  $H > H_F$ . Notably, all bundles that contain  $H < H_F$  contain less  $Z$  than was produced prior to the introduction of the tax on non-health inputs. The  $y$ -axis intercept of  $PPF_2$ ,  $H_{MAXI}$ , is identical to that of  $PPF$ : the marginal product of health input quantities  $HI > HI_E$  is zero, or negative (and  $HI_E$  was available to the individual before the introduction of the tax and subsidy arrangements ( $HI_{MAXI} > HI_E$ )). The individual's post-tax-and-subsidy output equilibrium is thus  $F$ , which maximises the utility of the health promoter. Notably,  $F$  is an inferior basket to  $C^*$ , in the view of the individual consumer-producer, because  $F$  occurs on a lower indifference curve ( $IO_2$ ) to  $C^*$  (on  $IO_1$ ).

### 3.3.3 Quantity Controls

Finally, it is worthwhile to consider non-price limitations on opportunity sets. Such limitations are, in fact, commonplace and include measures such as place-specific bans on

smoking and the consumption of alcohol, as well as embargoes on the consumption (and production) of drugs such as cocaine, heroin, and so on. Although negative externalities (such as the effects of passive smoking, for example) may provide some welfarist justifications for the institution of quantity limits, i.e. quantity limits that are potential-Pareto-improving, the institution of quantity controls can also be motivated by other (non-welfarist) objectives.

Consider Figure 10, which contains many of the elements of Figure 9 and in which the individual's equilibrium is given, initially, by  $C^*$  (Quadrant II) and  $P^*$  (Quadrant IV). Suppose that the health promoter's (utility-maximising) goal is, once again, for the individual consume bundle  $F$ . A consumption quota on non-health inputs could be introduced to modify the individual's opportunity set and effect the production of output bundle  $F$ . Specifically, a non-health inputs quota of  $NHI_Q$  will render the individual's inputs budget constraint  $HI_{MAXI} NHI_Q$ . The effect of the quota is to kink the budget line at  $R$ , which is then tangent to  $IIN_2$ . The quota renders the budget line perpendicular to the  $y$ -axis for all  $HI < HI_F$  and the new production-consumption possibilities are given by the transformation function  $PPF_2$ .

A notable characteristic of  $PPF_2$  is that it is parallel to the  $y$ -axis for all  $H < H_F$ , indicating the impossibility of transformations of  $H$  for  $Z$  in this region, due to the imposition the quota. Thus,  $F$  becomes the utility-maximising combination for the individual, but leaves the consumer with less utility than at  $C^*$ .

The converse of the policy just discussed involves the public provision, perhaps at the zero price, of a good or service that is health-improving. As with the policies discussed previously, this instrument could be applied to achieve a target that is motivated by either welfarist considerations (e.g., to correct the sub-optimal provision of a public good), or non-welfarist considerations. Such policies, although not depicted geometrically here, pivot the inputs budget constraint at the  $NHI$  intercept, increasing  $HI_{MAXI}$ . In output space, the effect is to pivot the  $PPF$  at its  $Z$  intercept, increasing the  $H$  intercept, provided the marginal product of health inputs is positive.

#### 4 An Illustrative Note on Non-Welfarist Health Promotion Strategies

Every tobacco death is preventable. That is [the Tobacco Free Initiative's] message and challenge (World Health Organization, 2001, <http://tobacco.who.int>).

A detailed empirical analysis of the stated objectives, instruments, targets, and consequences (e.g., in terms of welfare, health-stock, etc.) of a range of health promotion programs is outside this paper's scope. However, lest the non-welfarist notions expressed above be thought chimerical, it is useful to set them in an empirical context. In the interests of brevity, attention will be focussed exclusively on the World Health Organization's "*Tobacco Free Initiative* (TFI)" (World Health Organization, 2001). In particular, the apparent objectives, targets and instruments associated with this Initiative will be explored, alongside some pertinent academic literature on tobacco consumption. The treatment is not exhaustive and nor is it intended to be. It does, however, illustrate some apparent examples of the non-welfarist issues discussed above.<sup>1</sup>

The TFI is an international program that was launched by the World Health Organization "cabinet" late 2000. The French-language title of the World Health Organization's TFI, i.e. *Initiative Pour un Monde Sans Tabac*, is perhaps more lucid than its English-language counterpart. Taken together with the proclamation of the TFI's purpose (cited above), there is little room for interpretation: the target/objective of the TFI is to reduce the number of tobacco deaths to zero. The ideal via which this target is to be achieved is the creation of a worldwide environment that is tobacco free.

Although it may be possible to construct a welfarist case in support of the TFI's objectives/targets, such a case has (i) not been presented in the TFI documentation (see World Health Organization, 2001, <http://tobacco.who.int>, linked pages and documents); and (ii) appears difficult to extract from their contents. The competing thesis is that the TFI is motivated by non-welfarist considerations. To this end, it may be proposed that the target and objective of the TFI are one and the same: to eradicate tobacco deaths. Additionally, the (idealistic) means stated for achieving this target, viz. the eradication of tobacco *per se*, appears consistent with some of the general non-welfarist strategies that were described above (e.g., quantity controls, taxes, subsidies).

At a more pragmatic level, the World Health Organization (2001) provides some advice on instruments of TFI policy, including "media advocacy" programs. Advocacy, according to the World Health Organization (2001, <http://tobacco.who.int/en/advocacy/definitions.html>)

... is the pursuit of influencing (*sic.*) outcomes - including public policy and resource allocation decisions within political, economic, and social systems and institutions that directly affect people's lives;

and it

...requires both affirmative policy advocacy and aggressive counteraction to opposition strategies and tactics. In fact, a media advocacy campaign resembles a political campaign, in which the competing forces continuously react to the evolving media environment, leading stories, unexpected events, and breaking news (World Health Organization, 2001, <http://tobacco.who.int/en/advocacy/index.html>).

The following passage provides further illumination about the nature of the 'information' to be disseminated:

**That tobacco use causes disease and death must be heralded by the media, as often as possible, and in as dramatic a story as possible.** But it is not merely the volume of news that determines an issue's ascension onto the policy agenda...the frame is the central organizing principle that structures meaning...**it signals to people how to think about an issue**, not merely what issue to think about (World Health Organization, 2001, <http://tobacco.who.int/en/advocacy/principle.html>, emphasis added).

The moderating effects of consumer preferences and knowledge on the impact of this message (on tobacco consumption) are also addressed. In a list of the "five most common mistakes associated with public interest campaigns" two of the "mistakes" listed, and their narratives, are as follows:

...[Mistake number] 2. *The public opinion is the message.*

**Remember that the public's understanding of an issue is often what you are up against, not where you want to end up;** while you need to connect to public opinion, you do not need to repeat faulty models and further reinforce them.

... [Mistake number] 4. *All people need are the facts, or more facts.*

Remember that, **until you change the frame, the facts will not add up to a change in attitude or policy preference** (World Health Organization, 2001, <http://tobacco.who.int/en/advocacy/principle.html>, emphasis added).

Arguably, it is difficult a welfarist theme is difficult to extract from these statements. Such a theme becomes even more difficult to construct when one considers the statements above alongside empirical evidence on consumers' perceptions of health risks. In particular, findings about risk perceptions derived from the field of cognitive psychology and recent empirical results in related literatures are pertinent.

Viscusi's extensive research on risk perceptions and tobacco consumption is particularly noteworthy in the present context. *Inter alia*, Viscusi (1990) has found that most US smokers and non-smokers overestimate the risk of lung cancer due to smoking, and few underestimate it. Additionally, in his sample of over 3,000 individuals, he found the extent of overestimation to be 20 times as great as the amount of understimation of risk and, furthermore, that smokers' overestimates of risk are generally greater than (and statistically significantly different to) those of non-smokers (Viscusi, 1990). He has also found that risk overestimates are generally more pronounced in younger age groups (Viscusi, 1991). Finally, his results also show that US tobacco taxes are large enough to induce reductions in tobacco consumption that far exceed those which are predicted using objective/actual health risk probabilities and published price elasticity data (Viscusi, 1990). (Viscusi (1999) has also found that, even at the level of the US state, tobacco consumption is always "self-financing" – a result that may cast doubt on the externality-based public health arguments for further tobacco tax increases in that country.)

Under the circumstances described above, correcting consumer perceptions of risk by providing information about the relationship between tobacco consumption and health outcomes might actually be expected to **increase** tobacco consumption. Information provision (or the provision of "more facts") might, therefore, be quite incompatible with the TFI target/objective, under these circumstances. Consider, on the other hand, the recommended TFI strategy of emphasising the message that "...tobacco use causes disease and death ...as often as possible, and in as dramatic a story as possible." The cognitive psychology literature provides reason to believe that such strategies might actually encourage overestimates of risk. Specifically, the so-called "availability heuristic"

...predicts that people judge an event as more likely or more probable if it is easily brought to mind. For example, Slovic *et al.* found that survey respondents overestimated the frequency of rare causes of death (murder, care accidents) and underestimated the frequency of more common causes (such as stroke and stomach cancer). **Overestimates may have occurred because [the former] were more dramatic or sensational** (Lloyd, 2001, i14, emphasis added).

Indeed, that such upward-bias in perceptions of risk arises for highly-publicised phenomena is well-accepted (Fischhoff, Lichtnestein, Slovic, Derby and Keeney, 1981; Viscusi, 1998). Recent work by Viscusi (1997) suggests that the availability heuristic is at work in relation to environmental risks too; and, in another field subject to health promotion initiatives, Paul, Barratt, Redman, Cockburn & Lowe (1999), found that a large proportion (64.7 per cent) of a sample of 1000 Australian women overestimated their lifetime risk of breast cancer. In the context of such empirical results on risk, strategies that are designed to dramatise and raise the frequency of messages that pertain to smoking risk appear more compatible, in effect, with strategies that are designed to exaggerate risk perceptions

The preceding discussion is, of course, far from conclusive about (i) the motivation for the TFI; and (ii) the compatibility, or otherwise, of the program with welfarist objectives. Indeed, it is possible to construct welfarist arguments, such as arguments of inter-temporal myopia (Pigou, 1932), to support components of the Initiative. The World Health Organization itself, however, has not sought to construct any coherent argument of the latter kind to support its Initiative. Thus, while inconclusive, this brief discussion illustrates some aspects of a *bona fide* health promotion program that cannot be ruled inconsistent with the non-welfarist notions introduced above.

## **5 Conclusion**

This paper has presented an integrated economic conception of the instruments and targets of health promotion. By examining this topic through an economic lens, this paper contributes to the analysis of public policy in this increasingly important sector in the health industry. Scope exists both to extend upon the analytical treatment provided here and to apply other disciplines to analyse this important topic. Furthermore, this paper provides only one illustrative example of policies that might be labelled "non-welfarist" in nature.

Clearly, there is considerable scope for additional empirical work to determine how public agencies make resource allocation decisions and devise policy in the field of health promotion. Of course, a large literature in public finance and public choice exists and that literature does not ignore the health sector. However, a range of specific questions needs also to be asked. For example, To what extent do public health authorities attempt to maximise the health gains due to their constrained expenditures by dramatising the costs and benefits of various health-affecting decisions? and, if authorities do engage in such activities Are these

efficient (effective, ethical, and so on)? Such questions inevitably draw heated responses, but they are questions worth addressing.

Finally, some readers of this work will inevitably consider the analysis of so-called "non-welfarist" decisions with the tools of welfare economics inherently disconcerting. As such, this paper may open another avenue for further research, *viz.* an application of alternative economic approaches to the topic considered here.

## **ACKNOWLEDGEMENTS**

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## **ENDNOTE**

1. The author is a non-smoker.

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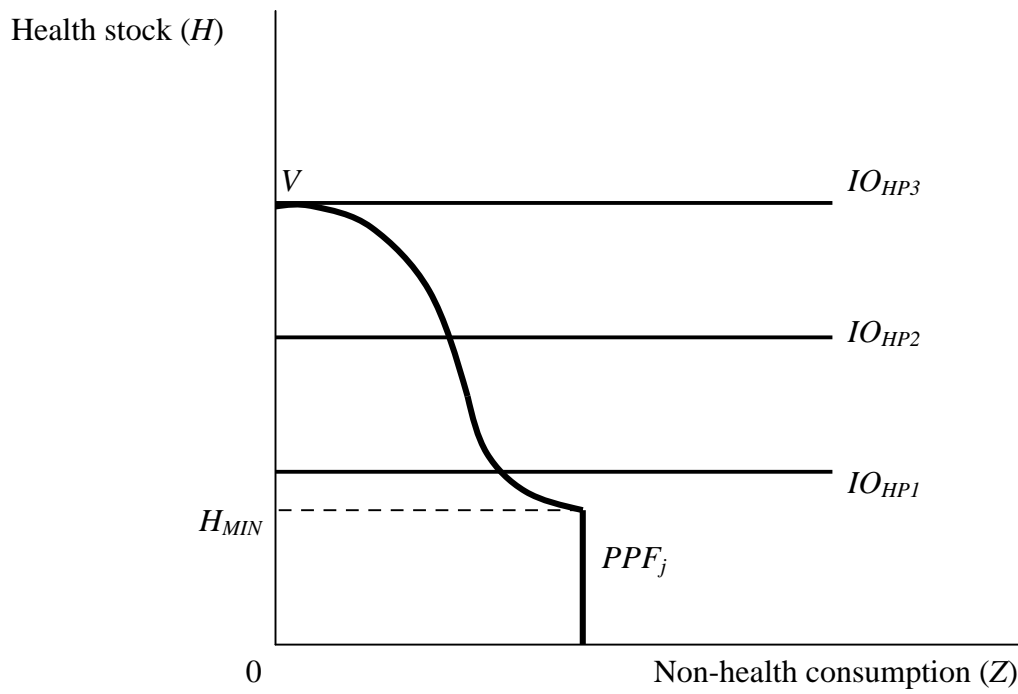
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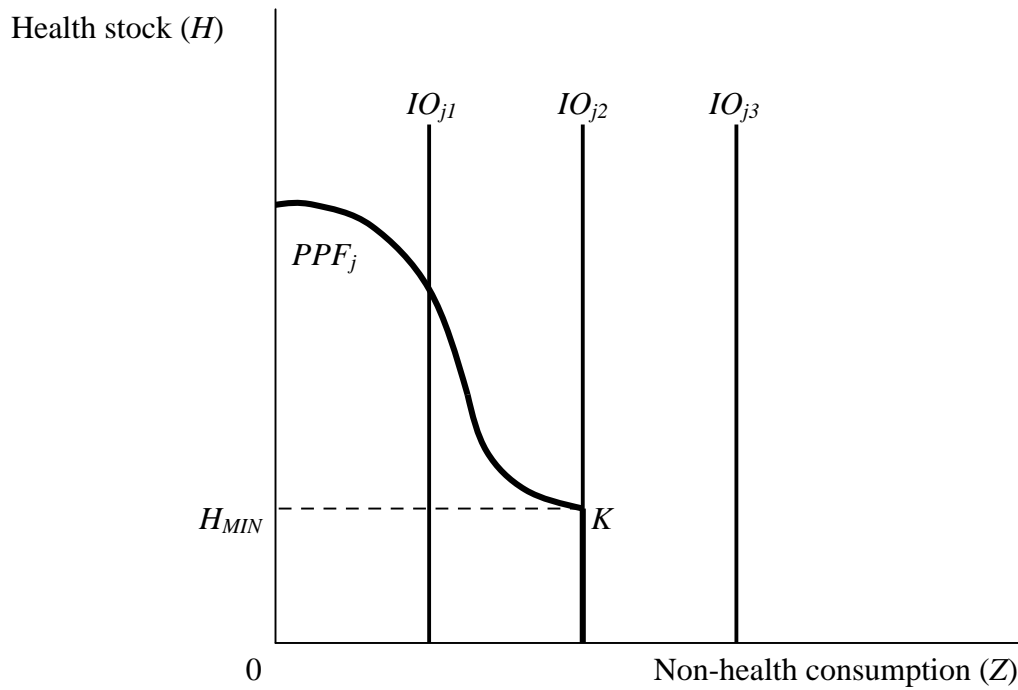
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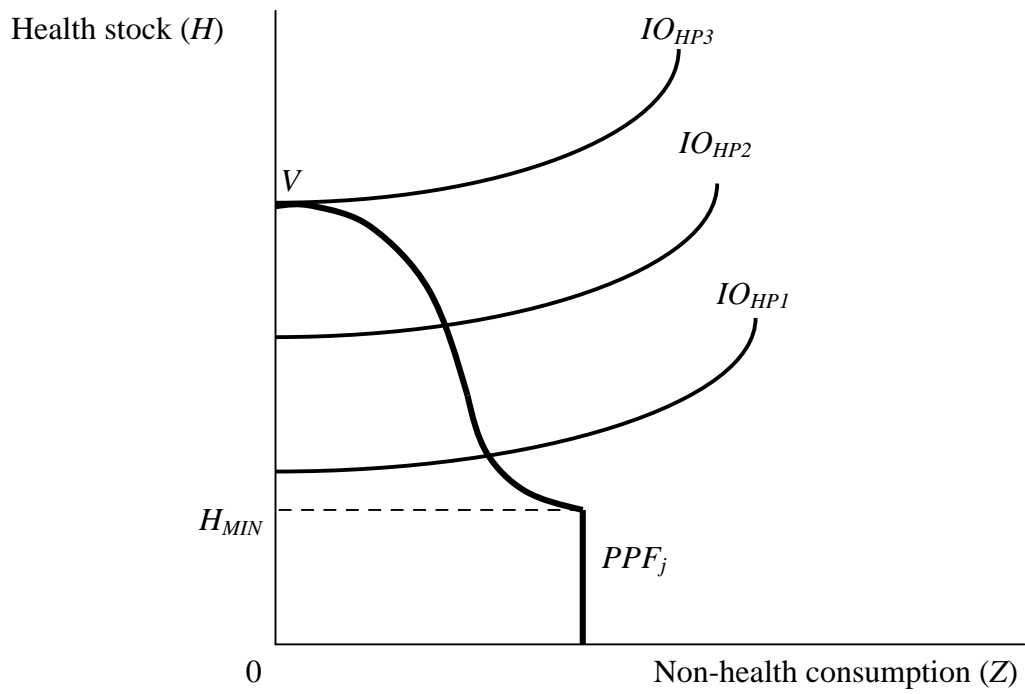
**Fig.1. Lexicographic preferences for a health promoter, expressed over the health ( $H$ ) and non-health ( $Z$ ) consumption of individual  $j$ .**



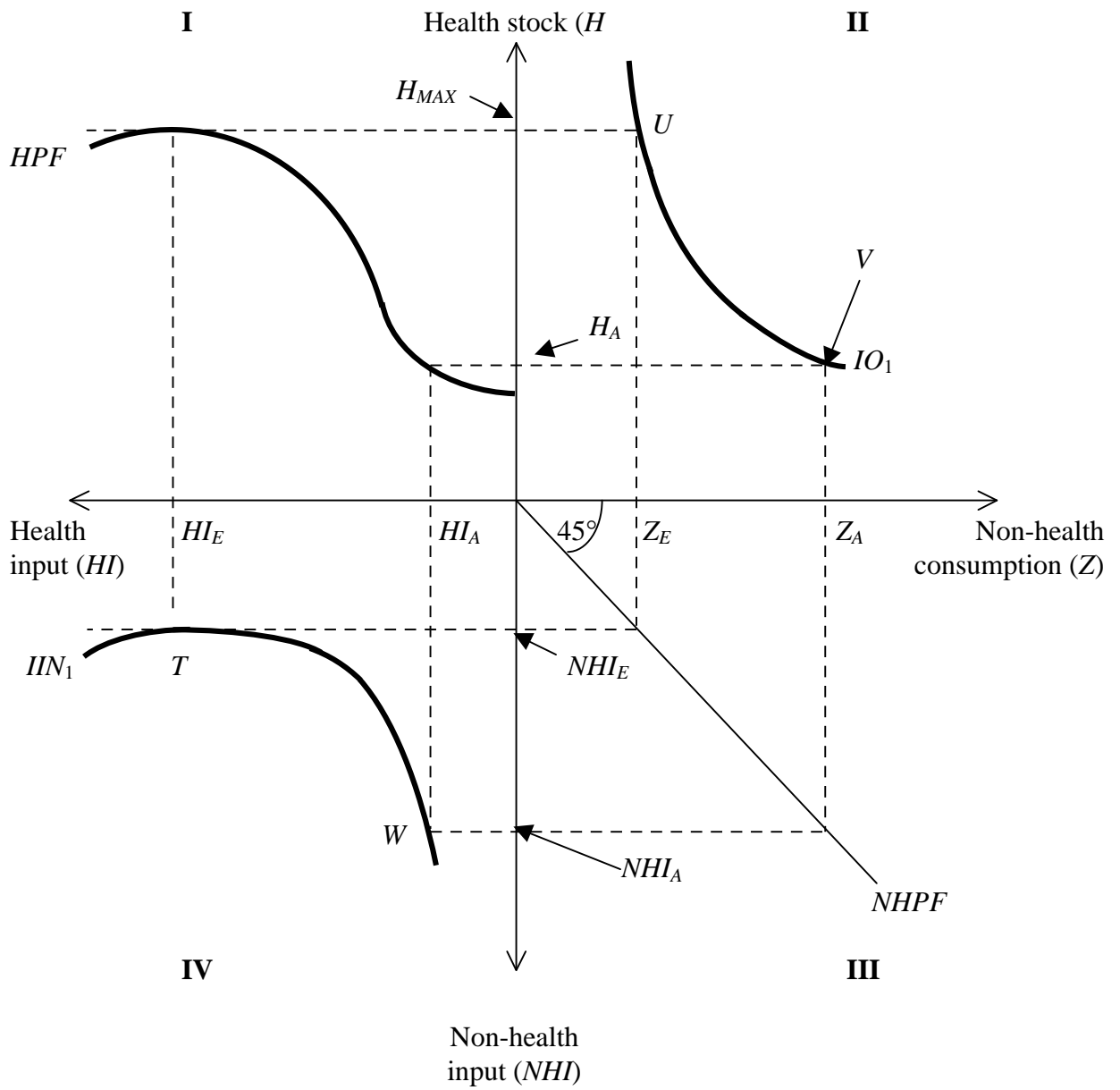
**Fig.2 Lexicographic preferences for individual  $j$  over health ( $H$ ) and non-health ( $Z$ ) consumption.**



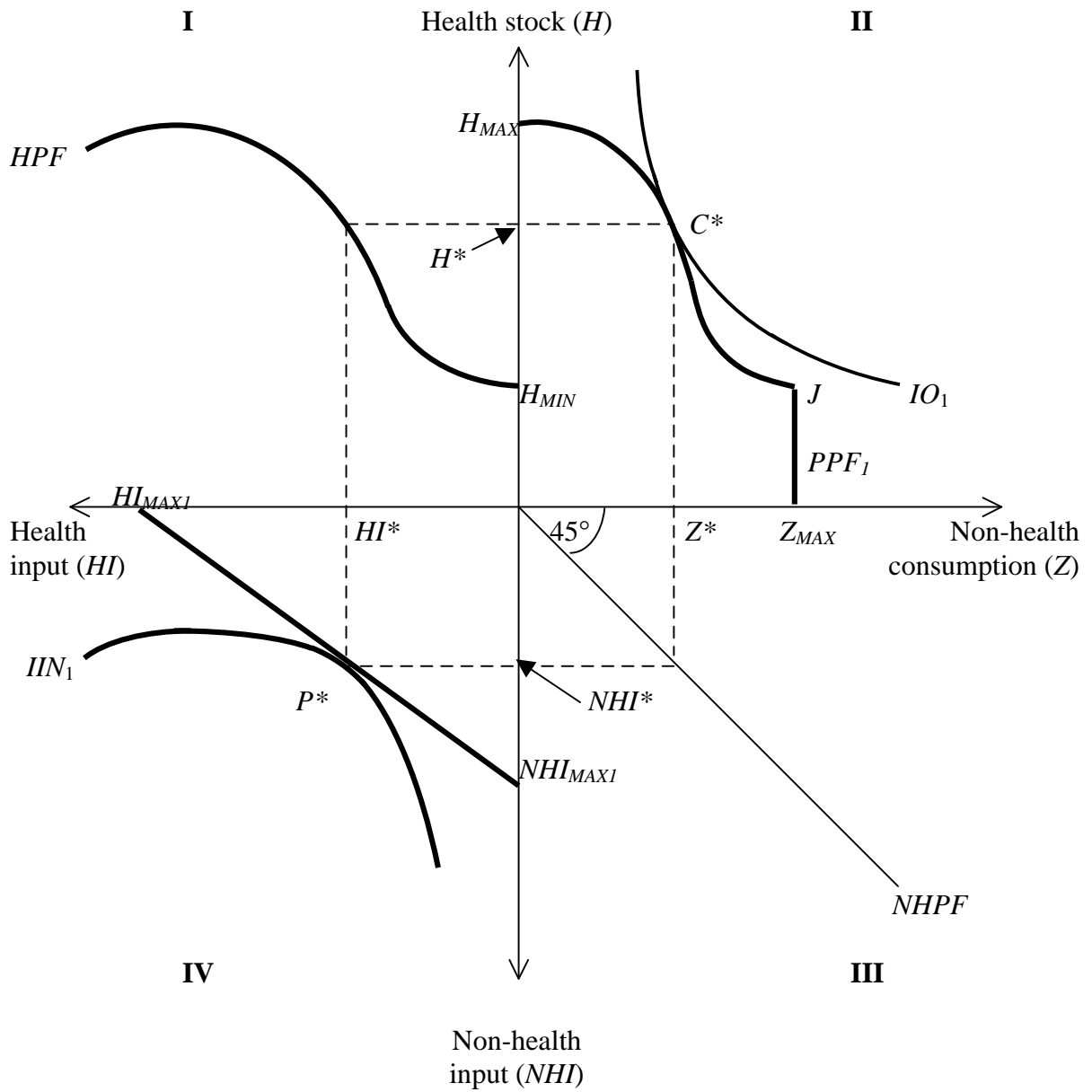
**Fig.3** Health promoter's preferences expressed over the health ( $H$ ) and non-health ( $Z$ ) consumption of individual  $j$  when non-health consumption is a "bad".



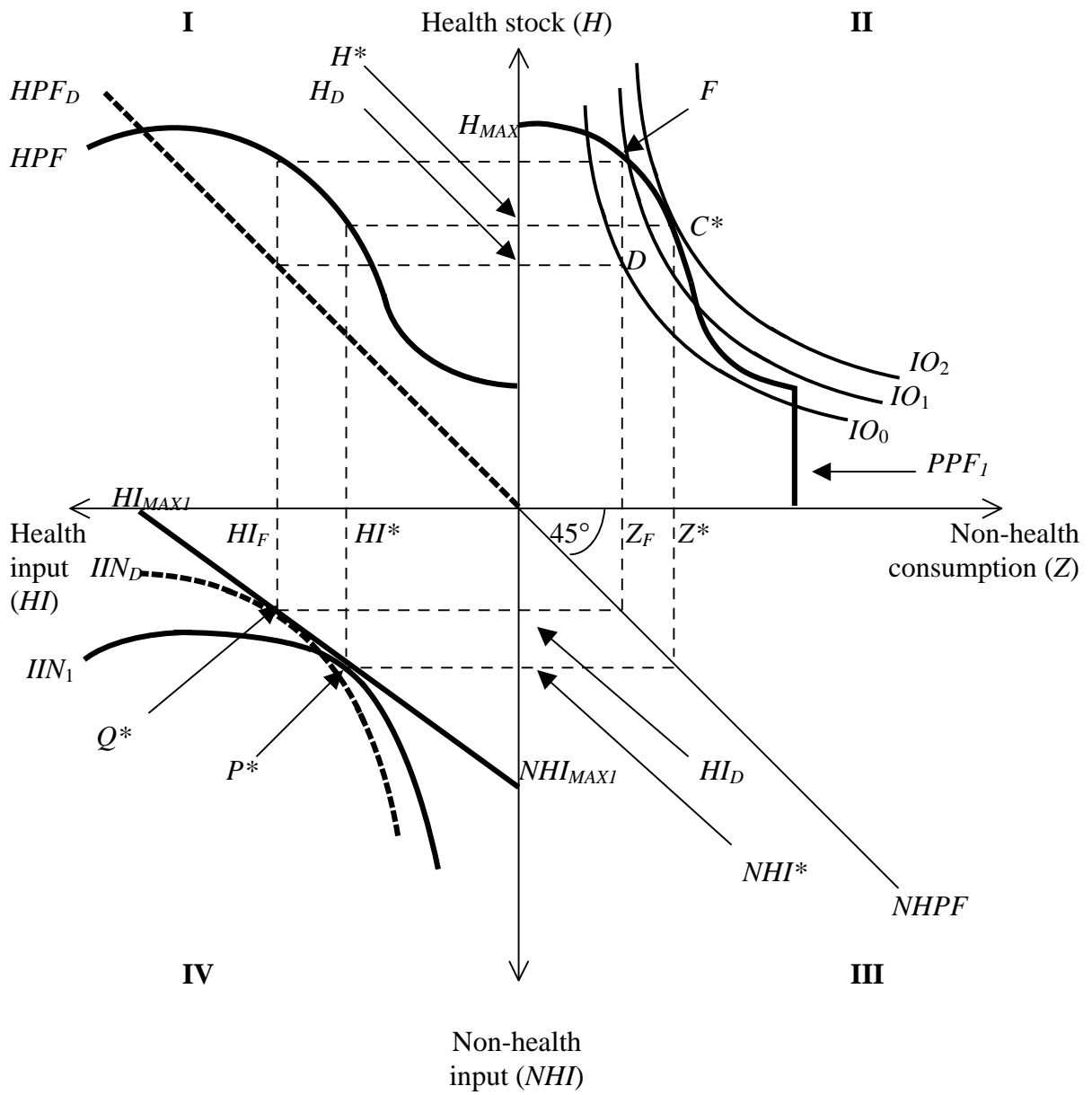
**Fig.4** Consumer's preferences expressed over health inputs and derived from preferences over health stock and non-health consumption.



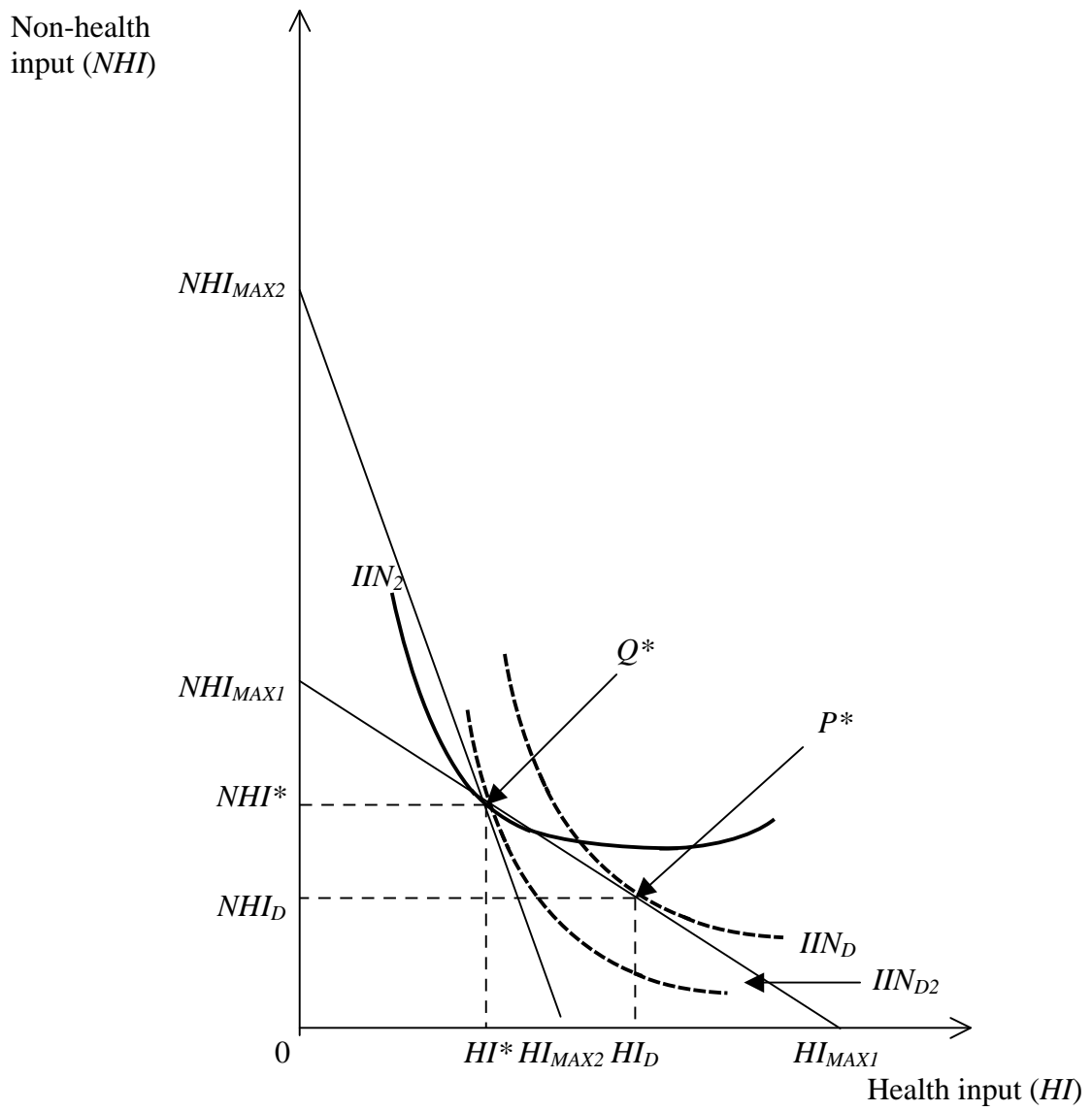
**Fig.5 Output and input equilibria for health production.**



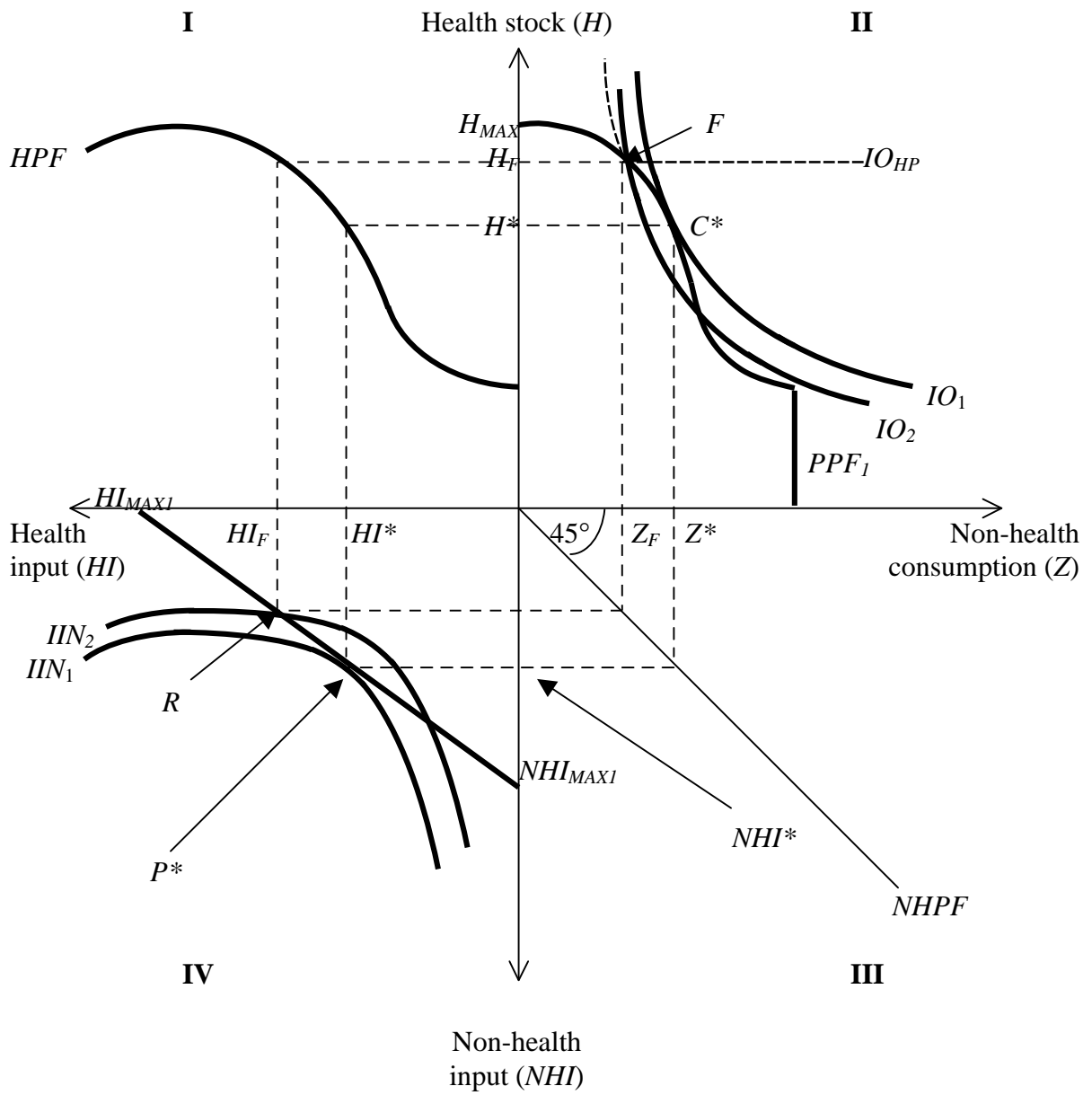
**Fig.6. Knowledge poverty (/misinformation) and disequilibrium in health production.**



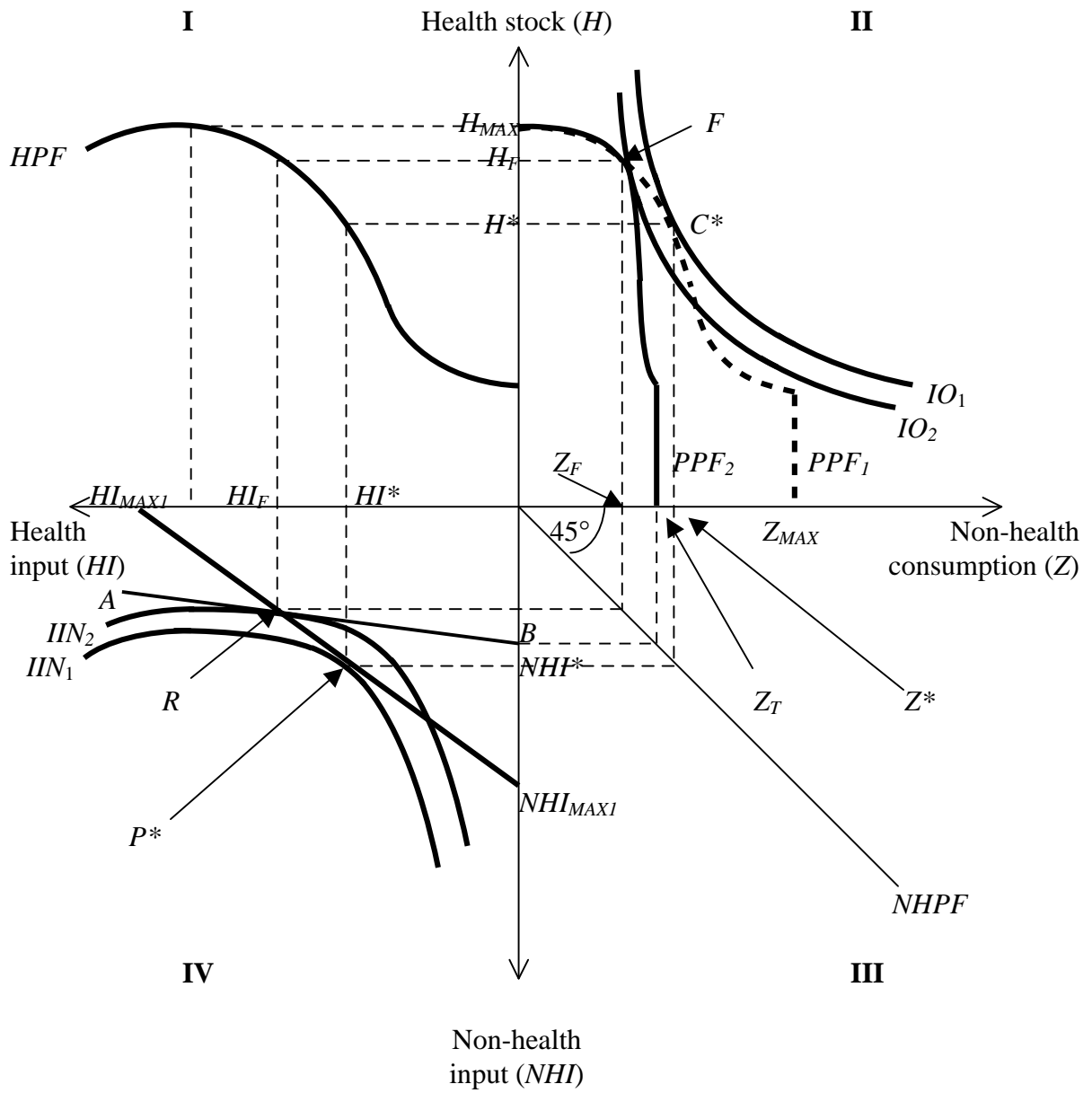
**Fig.7. Taxes and subsidies to achieve output equilibrium in the presence of misinformation about health production.**



**Fig.8. "Non-welfarist" health promotion: an advertising strategy that impacts on attitudes to health and other consumption.**



**Fig.9. Taxes and subsidies as instruments of "non-welfarist" health promoters.**



**Fig.10. A non-health inputs consumption quota as an instrument of health promotion.**

