

Advertising Prescription Drugs to Patients

*A framework for economic analysis of
direct-to-consumer information about
prescription medicines*

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Advertising Prescription Drugs to Patients, Balancing Information and Persuasion⁺

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ABSTRACT

Direct-to-consumer (DTC) information about prescription drugs is now a major phenomenon in the US, driving investments in mass media advertising by pharmaceutical companies in the order of \$2 billion a year. Recently, the question of whether or not patients should be able to access DTC information about prescription drugs has been considered by the European Commission in its proposal to review current EU pharmaceutical legislation. The purpose of this paper is to present a theoretical framework for examining the effects of direct-to-consumer (DTC) information about prescription medicines on demand for such medicines, on public health and on health delivery costs. Empirical evidence on the different effects identified by the model is also discussed.

Keywords: advertising, prescription drugs, consumers, DTC information.



1 INTRODUCTION

Most economists would agree that improved consumers' information is generally conducive to the operation of market forces and beneficial to social welfare. For instance, asymmetric information is believed to be at the heart of some important market failures. Yet, whether consumers should have access to direct-to-consumer (DTC) information about prescription medicines has always been a controversial subject.

By DTC information we mean that provided by pharmaceutical companies for patients, possibly in the form of advertising, allowing them direct access to consumer-oriented information on prescription medicines. Direct-to-consumer advertising is not permitted in the EU but has been allowed in the US since the early 80s and it is now driving investments in the order of \$2 billion a year. This growth has been accompanied by an ongoing debate about the impact that DTC advertising has had on public health and on health delivery costs. Recently, the question of whether or not patients should be able to access DTC information about prescription drugs in some specific therapeutic areas has been considered by the European Commission in its proposal to review the current EU pharmaceutical legislation.¹

The purpose of this paper is to present a theoretical framework for examining the effects of direct-to-consumer (DTC) information about prescription medicines on demand for such medicines, on public health and on healthcare delivery costs. The model proposed is employed as a guide for discussing empirical evidence on the various effects identified and provides a basis for designing practical studies to evaluate the economic effects of various types of DTC information provision.

There are many reasons why the provision of information to consumers may be beneficial. Consumer-oriented information may increase patients' awareness of the existence of a disease, of the availability of a treatment and of appropriate therapeutic alternatives. DTC information might facilitate patient-physician communication and result in more precise matching of drugs with patients' needs and preferences and in better clinical outcomes. On the other hand, however, there might be negative effects, mainly deriving from the increased pressure on physicians to prescribe excessively and inappropriately, that could result in worse clinical outcomes, and in increased drugs prices and health expenditures.

We conclude that the impact that DTC information can have on public health and healthcare delivery costs hinges on the balance of a number of important effects and cannot be straightforwardly evaluated on the basis of aggregate evidence. The balance of the various effects depends not only on what information is allowed to be passed through what communication channels, but also on other elements such as the particular culture and organisation of a specific health care system.

¹ Mr Erkki Liikanen, Commission's proposal to review EU pharmaceutical legislation, Press Conference, Brussels 18 July 2001.



The paper is organised as follows. Section 2 presents the framework for the economic analysis of DTC information about prescription medicines. Empirical evidence on the economic mechanisms identified by the model is examined in section 3. Section 4 discusses some issues that are relevant for public policy choices in relation to DTC advertising. Final conclusions follow.



2 A MODEL OF THE EFFECTS OF DTC INFORMATION ON THE DEMAND FOR PRESCRIPTION DRUGS

The consumption of prescription medicines is the result of a “directed” demand. The end consumer, the patient, does not choose the drug he or she will consume; instead, the drug therapy and the specific prescription drug are chosen by the patient’s doctor. In theory at least, doctors act as “gatekeepers” to ensure appropriate consumption of medicines.

Demand for a prescription drug is the outcome of a composite process, resulting from both patients’ and doctors’ behaviours and interaction. The role of the former is important because the process is normally set off by a patient seeking medical advice. Given the knowledge or prejudice he or she has, a patient evaluates whether the expected benefits of seeking medical advice are higher than the costs — in terms of money, time or inconvenience — of obtaining it. Generally, a patient also develops some expectations about the treatment that might be appropriate.

Once a patient chooses to seek medical advice, the doctor directs the decision process. A rational doctor chooses a medicine so as to maximise his or her utility, which can be defined as a function of both the health benefits accruing to the patient and some prescribing costs. This maximisation is constrained by the knowledge to which the doctor has access, both with respect to the patient’s condition and to the available substitutable medicines. Doctors gather information — on the medicines available, their characteristics in terms of effectiveness, side-effects and risks — from many sources. These include medical education, journals, and direct-to-doctor advertising. Personal interaction with the patient provides information on the specific patient’s needs.

Finally, the consumption of a prescription medicine is influenced by the patient’s compliance with the prescribed treatment.

It seems reasonable to assume that DTC information on prescription medicines has no *direct* effect on doctors’ knowledge on drugs. Where it might be relevant is in affecting the patient’s decision to seek medical advice, his or her expectations on the appropriate medicine condition, the quality of doctor-patient interaction, and also the patient’s compliance with the prescribed treatment. We examine these effects in turn.²

2.1 The Choice of Seeking Medical Advice

The process that leads to a new demand for a prescription medicine is started by a potential patient seeking medical advice. In economic terms, this can be characterised as the result of an optimal choice by a rational agent: in theory, a rational patient would seek medical advice if the benefits expected from consulting the doctor exceed the expected associated costs. The expectation is dependent on the information that the patient has relating to his or her condition and on the potential health gains that medicine is perceived to offer. In general a patient gathers

² See Antonio Buttà, (2002), “Advertising prescription drugs do patients”, Europe Economics Staff Working Paper, for a more formal treatment of these effects.



this information from many sources, such as his or her own experience, friends, books, doctors, and so on. The better a patient's knowledge of a disease and of the potential gains from available prescription medicines, the more likely that he or she would make an accurate assessment of when to seek medical advice.

Access to information on prescription drugs directly targeted to consumers can have important effects on this choice. Indeed, DTC information might increase a patient's awareness of a particular disease and of the existence of a new or better treatment (which we term the "*awareness effect*"). As a result of improved information, a patient might (appropriately) seek medical advice when he or she otherwise would not have.

In general, the quality of a patient's health improvement can be considered to be dependent on the medical treatment he or she takes. By having access to DTC information, not only will a patient form expectations on his or her health condition, but also on the treatment most appropriate for improving it.

At this stage, then, the information a patient has access to has two effects:

- 1 it affects the choice of seeking medical advice by increasing awareness of a disease or of possible available treatments (i.e. expectations of gains from medical advice); and
- 2 it leads to the patient forming some expectations on the appropriate treatment.

We now consider the doctor's role in the decision process leading to the demand for a prescription medicine.

2.2 The Prescription Choice

A patient can choose whether or not to seek medical advice but has no prescribing authority. A prescription is necessarily the result of a choice by a doctor, and it is the outcome of a complex process, affected by various factors.

A doctor's prescription decision, which can also encompass a decision not to prescribe, is described as an optimal choice intended to maximise the difference between the (expected) patient's health outcome and the doctor's prescribing cost.³

2.2.1 The medically optimal medicine

The identification of the medically optimal prescription medicine is usually a very knowledge-intensive activity, which requires the consideration of information on the disease, on the patient and on the available medicines and their effects.

Patients differ in many respects and a doctor has to identify not only the occurrence of a disease but also those characteristics of the patient that are relevant to the choice of a proper medical treatment among those available. Patient-doctor interaction is the source of much of this

³ Prescribing costs will be described below. It should be clear that these do not refer to the cost of the drug prescribed.



information, and can be thought of as the means by which a doctor observes some signal that leads him to update his a priori expectations on the type of patient he is dealing with.

Thus, the ability to identify an optimal prescription medicine is influenced by the quality of some signal that a doctor perceives by interacting with his patient. By having more precise information on his patient, as a result of better mutual interaction, a doctor might be able to reduce his uncertainty about the type of patient he is dealing with and identify a more appropriate drug.

The quality of patient-doctor interaction can depend on many variables. It can depend on the time that a doctor spends interacting with the patient, on the knowledge the doctor has access to, and on the patient's own knowledge. By having access to DTC information on health and on available medical treatments, a patient can improve the quality of interaction with the doctor (termed the "*interaction effect*"). For instance, suppose that the doctor does not know whether his patient has intolerance for certain medicines or not. The patient might learn from DTC information about whether different brands of medicine could give rise to such side-effects. The patient's mention of this intolerance and the advertised medicine to her doctor might result in a better prescription. However, the reverse can also be true and a patient who has accessed DTC information might bias the information she conveys to her doctor.

The doctor, on the basis of his updated expectations on his patient's type, given his knowledge about available drugs and their characteristics, can determine what medicine is expected to maximise his patient's health improvement. Clearly, the optimal treatment can also be to do nothing.

If no other factors affect the doctor's prescription, the doctor would optimally prescribe the medically optimal treatment. However, the choice of the prescription medicine may also take account of a prescribing cost.

2.2.2 Prescribing cost

The prescribing cost faced by the doctor can be thought of as deriving from decreased patient's satisfaction with the doctor's services if the drug that the patient expects is not prescribed, or as a cost in terms of the doctor's time which would be lost for deviating from such drug. Giving a patient a prescription for a drug he or she has specifically requested is usually much easier, and it is certainly faster, than refusing with an explanation.

There seems to be evidence from the US, which will be discussed below, that doctors do tend to fulfil patients' requests, unless there is a clear counter-indication. To introduce the balance between the cost of deviating from a patient's request and the desire to prescribe the optimal prescription, it is necessary to consider the *health loss* that a doctor would expect to result from prescribing a drug different from the medically optimal one as defined above. More generally, the notion of *health loss* could encompass all the costs that the doctor would incur in when deviating from the medical optimal treatment.

Now we have all the elements to characterise a doctor's prescription choice. The drug that the doctor will prescribe is the drug that minimises the sum of the expected health loss and the



prescribing cost (i.e. it maximises the difference between the expected health outcome and the prescribing costs).⁴

The difference between the medically optimal prescription and the prescription predicted by this model is a measure of the “*prescription distortion effect*”. This is defined as the deviation from the prescription which maximises the patient’s expected health that is caused only by the *prescribing cost*: the doctor substitutes an increase of the patient’s health outcome with a saving of the such cost.⁵

Notice that if there is a strong *prescription distortion*, such that the actual ex-post health outcome is negative compared to no treatment, then the *awareness effect* can enhance this negative effect.⁶ This can be the case when the doctor’s knowledge on drugs is poor or he fails to recognise some important characteristics of his patient so that he underestimates eventual risks or side-effects of a drug with small health benefits. This result suggests that, of all the effects identified in this model, the potential *prescription distortion* has a central role in determining the actual impact of DTC information on public health.

2.3 Patient’s Compliance

The actual health outcome not only is influenced by the appropriate prescription of a medicine, but also by the compliance of the patient with the prescribed drug therapy. There is evidence that non-compliance is a substantial problem, and that access to more information and better patient-doctor interaction can help to reduce it.⁷ We term this the “*compliance effect*”.

In theory, access to information can affect a patient’s compliance in two different ways:

- it can increase compliance for every drug therapy (*general compliance*); or
- it can increase compliance for a *particular* drug therapy (*specific compliance*).

These two *compliance effects* can have rather different consequences. The first effect would not affect a doctor’s prescription choice, whilst the second effect might be taken into account by a doctor when selecting a specific drug. This is an important difference but we shall confine our analysis to the first type of *compliance effect*, leaving aside the investigation of *specific compliance*.

The nature of the (general) *compliance effect* is relatively clear: provided that the drug therapy is effective, increased compliance can improve the quality of the actual health outcome. Increased

⁴ In general, a doctor might want to take into account drugs’ prices. Clearly, the incentives to do so are different across countries. Price considerations can be incorporated in the model by assuming, for instance, that doctors maximise the health outcome per euro spent.

⁵ In the case in which the optimal prescription would be zero, then the prescription distortion effect can be termed the *over-prescription effect*. The doctor prescribes a drug when he should not have. The two effects, however, are treated in the same way in this model since they are both deviations from a medically optimal (non) treatment.

⁶ This might be the case if a doctor prescribes a drug with risky side-effects without substantial expected health-gains.

⁷ Non-compliance by patients in taking their medicines as instructed is thought to be widespread. For example it is well-known that many fail to complete a full course of antibiotics because they “feel better”. Evidence on patients’ compliance is discussed in section 3.2.4.



compliance can be considered to depend on the information that a patient has access to and can therefore be enhanced by access to DTC information.



3 IMPLICATIONS FOR PUBLIC HEALTH AND HEALTHCARE DELIVERY COSTS

The theoretical framework we have described can be employed to assess the impact of DTC information on public health and healthcare delivery costs.

Consider the common, albeit sometimes disputed, claim that advertising would increase demand for advertised pharmaceuticals and consequently increase healthcare costs.⁸ It should be clear from the previous section that an economic evaluation of such an increase of demand and of healthcare delivery costs cannot be undertaken without specific consideration of all the various effects we have identified. Increase in the consumption of direct-to-consumer prescribed medicines that derives from increased awareness but no prescription distortion has economic implications very different from increased consumption that is mainly driven by prescription distortion.

This section discusses how the various effects identified in the previous section affect social welfare, and surveys some of the available evidence from the USA. It should be clear that this evidence refers to the effects of DTC advertising, rather than other forms of DTC information provision, and that, although suggestive, it cannot be uncritically transferred to different contexts.

3.1 DTC Information and Public Health

According to the above analysis, there are four main effects of DTC information:

- the *awareness* effect — increased patient's awareness of a disease and/or of available medicines
- the *interaction* effect (or distortion) — improved (or biased) patient-doctor interaction
- the *prescription distortion* — distortion of a doctor's prescribing decision deriving from the existence of some prescribing costs, and
- the *compliance* effect — improved patient's compliance with the prescribed treatment.

To assess the impact of DTC information on public health and healthcare delivery costs these effects have all to be considered and disentangled. It is their balance that ultimately determines the nature of the overall effect of DTC information on public health and health-delivery costs.

If the *prescription distortion* is not particularly strong and the *awareness*, the *interaction* and the *compliance* effects dominate, DTC information might increase usage of new therapies for conditions that have a history of being under-diagnosed or for conditions that were formerly untreatable. This might lead to a better public-health outcome and perhaps longer-term savings in healthcare delivery costs. Short-term health care delivery costs may increase because DTC

⁸ See, for instance, Prescription Drugs and Mass Media Advertising, National Institute for Health Care Management, September 2000. Available at <http://www.nihcm.org>.



information could lead to an increase in demand and/or in prices. However, in both cases the effect on longer-term costs can be different. Earlier diagnosis and more effective treatment can, over the long run, reduce complications and the cost of emergency treatments. Also, higher drug costs are likely to result in lower total healthcare delivery costs if they are related to decreased disability or morbidity.

However, if the *prescription distortion* is particularly strong, then DTC information can have a harmful effect on public health and healthcare delivery costs. This can stem from:

- drugs being prescribed where none are needed;
- medically inappropriate drugs being prescribed; and
- branded drugs being prescribed when there are appropriate and cheaper generic equivalents.

The increase in the demand for and/or price of branded drugs attributable to DTC advertising may or may not negatively affect public health and healthcare delivery costs: more disaggregate evidence is needed to assess the welfare impact of DTC advertising.

An increase in the number of prescriptions of highly advertised branded drugs may not *per se* be an indicator of negative effects of advertising on public health delivery costs. It is necessary to understand where this increase in demand stems from. If it is the result of increased awareness and better interaction, then advertising can have a positive effect on public health and longer-term health-deliver costs. This is because earlier diagnosis and more effective treatment can reduce over the long run any indirect effects and the cost of emergency treatments. If, instead, the increase in demand is the result of a strong *prescription distortion*, then it should be seen as undesirable because it leads to cost ineffective and/or medically inappropriate prescriptions.

3.2 Evidence on the Effects of DTC Advertising in the US

In this section we survey the evidence available from the US experience on the various effects discussed before, which mainly consists of the results of surveys undertaken by *Prevention* magazine and by the Food and Drug Administration (FDA).

3.2.1 Awareness effect

According to the 2000 survey by *Prevention* magazine, DTC advertising has motivated approximately 54 million US consumers to talk with their doctors about their health and potential medical conditions since the FDA issued the new guidance regarding prescription drug advertising in 1997.

In a 1999 survey of 1,200 people by *Prevention* magazine, 31 per cent of the respondents said they had talked with their doctor about a prescription drug they had seen advertised. Of those 372 people, 104 asked their doctor for a drug they saw advertised; almost half of the adults surveyed said that DTC advertisements helped them make better decisions about their own health.



The 1999 FDA survey of 1,081 consumers found similar results. Three quarters had seen an advertisement for a prescription drug in the three previous months. Eighty-five per cent of respondents said advertisements had helped them become aware of new drugs and 47 per cent agreed that advertisements for prescription drugs help to make better decisions about their own health. More than 50 per cent of the people surveyed were prompted by a DTC advertisement to look for more information about the drug or about their health. Of these, 81 per cent looked for further information by talking to a doctor and about 25 per cent asked a doctor for the first time about a condition or illness.

3.2.2 Interaction effect

Empirical evidence tends to suggest that a positive *interaction effect* exists. That is to say, DTC advertising facilitates patient-doctor interaction.

Survey results indicate that consumers generally perceive having access to DTC advertising to be potentially helpful to them in their discussion with their doctors. For instance, the 1999 FDA-sponsored survey reports that more than six out of ten of the adults surveyed said advertisements for prescription drugs help them have better discussions with their doctors about their health.

Foley and Gross (2000) report the findings of a survey which shows that three quarters of the consumers contacted agree that an advertisement could assist them in discussing treatment options with their doctors, if they might need the drug that is advertised.

3.2.3 The prescription-distortion effect

There exists convincing evidence that doctors tend to be influenced by patient preferences. Rebecca K. Schwartz et al. (1989), for instance, in a study that investigates the motivations of doctors' prescribing behaviour, reports that nearly half of the doctors identified "patient demand" as the reason why they had made inappropriate prescribing decisions, due, for instance, to the fear that refusal to accommodate patients might result in a loss of business and reputation.

The 1999 survey by *Prevention Magazine* found that 87 per cent of those who asked their doctor for a drug they saw advertised said their doctor complied with their request. The FDA survey reports that 50 per cent of patients who asked their doctor for a specific prescription medicine were given the drug by their doctor. Although these figures are not directly indicative of the magnitude of the potential *prescription distortion* they show that in many cases doctors do accommodate patients' requests.

Bell, Wilkes and Kravitz (1999) asked a small sample of adults what they would do if a doctor refused to accommodate an advertisement-induced patient's request. Disappointment was the reaction indicated by nearly half of the respondents; one quarter of patients said they would seek a prescription elsewhere and 15 per cent said they would terminate their relationship with their doctor.



3.2.4 The compliance effect

Dezii (2000), reports that compliance rates tend to average between 50 and 60 per cent and that they can be much lower. An average rate of non-compliance of 70 per cent is reported by Ellickson, Stern and Trajtenberg (2000).

In the 1999 *Prevention* survey, a section was devoted to DTC advertising and its effects on patient compliance and showed that:

- 46 per cent of those who have seen an ad for the drug they are taking say they feel better about the safety of the prescription and 52 per cent feel better about the medicine's benefits;
- 31 per cent of those who have seen their prescription medicine advertised say they are more likely to take their medicine;
- 33 per cent of those who have seen an advertisement for their medicine they are taking say the advertisement reminded them to have the prescription renewed.

3.2.5 Weighing up the US evidence

The US Food and Drug Administration (FDA) offered strong support for direct-to-consumer advertising in December 1999, stating that it was unaware of any data supporting the assertion that the public health is being harmed, or is likely to be harmed, by the Agency's actions in facilitating consumer-directed broadcast advertising. While the FDA does have concerns about the potential for DTC advertising to prompt the use of un-needed drugs, it believes that there is no evidence that DTC advertising is increasing inappropriate prescribing.⁹

The studies surveyed in this section suggest that there is evidence of both positive and negative effects associated with DTC advertising of prescription pharmaceuticals and that their balance is still not clear. Moreover, it is likely that this balance would vary in different therapeutic areas and in different countries, according to the specific culture and organisation of the health care systems. This is certainly an area in which the existing empirical evidence is neither exhaustive nor thoroughly evaluated.

⁹ Source: Ostrove Nancy, deputy director of FDA division of drug marketing, advertising and communication, quoted by Reuters Health, 25 July 2001.



4 DTC INFORMATION AND POLICY DESIGN

This final section identifies the issues that are relevant for the policy choices in relation to whether or not to allow DTC advertising, to the type of DTC information that should be allowed to be disclosed, and to the possible communication channels that should be permitted.

4.1 DTC Advertising: Profits Versus Welfare?

Firms advertise in order to increase demand for their products and increase profits. The effects that we have identified have important implications for firms' incentives to advertise. Firms' incentives will be higher when the *awareness* effect and to some extent the *compliance effect* are high, since in this case, the impact on overall demand is stronger. Indeed, there is evidence that in the US most of the drugs advertised have been those for common chronic conditions, for conditions that might not be recognised by consumers as pathologic or treatable, for under-treated ailments, and for conditions not previously treatable with medication.¹⁰ These are all situations in which there could be considerable gains from increased awareness.

However, a pharmaceutical firm might also benefit from a *prescription distortion effect* because this would tend to increase demand for its particular branded drug at the expense of others.

Social welfare would be maximised, provided that the *prescription distortion* effect is not severe, when the *awareness* and the *compliance* effects are high because more people would seek medical advice for under-diagnosed and under-treated conditions and would comply with their prescribed treatment. It would also benefit from a strong positive *interaction* effect that leads to efficient matching of patients and drugs, and from a low *prescription distortion* effect.

So, the challenge for regulators is to define a system of information provision in the drug sector that maximises the positive effects and minimises the negative ones. Both content and communication channels of DTC information are relevant in this respect.

4.2 Content of DTC Information and Communication Channels

The analysis undertaken so far seems to suggest that DTC disease-state advertising — i.e. advertising focussed on creating educated health care consumers rather than on promoting a particular brand of drug — might be preferable to the advertising of specific branded drugs because it would probably have large *awareness* and *compliance* effects and a relatively low *prescription distortion* effect.

However, private firms would advertise (i.e. convey information to the market) only if they have the incentive to do so. The impact of advertising on the overall demand for a certain class of medicines might not provide sufficient incentives to firms to invest in advertising, because free-riding behaviour could come into play. Incentives to advertise are higher when advertising can

¹⁰ See, for instance, Prescription Drugs and Mass Media Advertising, National Institute for Health Care Management, September 2000. Available at <http://www.nihcm.org>.



also have a competitive impact by increasing demand for the advertising firm's products at the expense of its rivals.

Hence, if specific drug advertising would not be preferable to disease-state advertising (if it were viable), this does not necessarily imply that it would not be preferable to no DTC advertising. The question is whether the *prescription distortion* that may stem from advertising would outweigh the benefits associated with more information being conveyed to the patients.

Another important factor that might substantially affect the nature of the effects of DTC advertising is the particular DTC communication channel used. An important distinction might be drawn between reactive and proactive communication channels, depending on whether or not the information is provided only to active information-seeking consumers.

Allowing only reactive disclosure of information by pharmaceutical companies (e.g. help-lines or information available on the Internet) would probably limit the potential gains arising from the *awareness* effect and the *compliance* effect. In these cases people would come across information on a particular condition and/or treatment only if they look for it. In contrast, these effects would probably be larger in the case of proactive communication, such as DTC advertising on television, which conversely might have a stronger *prescription distortion*.

To the best of our knowledge, there are no published studies that address the different impact of various communication channels. Intuition would lead to an initial assessment of the four effects identified in our model as summarised in the following table: these are not firm views, but propositions to be tested.

Table 1: DTC impact and communication channels

	Awareness effect	Interaction effect	Prescription distortion	Compliance effect
TV	High	Medium	High	High
Newspapers and Magazines	Medium	Medium	Medium	Medium
Internet sites	Low	High	Medium	Medium



5 CONCLUSION

The impact of DTC information for prescription medicines on public health can be thought of as deriving from the balance of various specific effects that affect the decision process behind prescribed medicine consumption at various stages. We have identified four main effects of DTC information:

- the *awareness* effect — increased patient's awareness of a disease and/or of available medicines;
- the *interaction* effect — improved patient-doctor interaction;
- the *prescription distortion* — distortion of a doctor's prescribing decision deriving from the existence of some prescribing costs of deviating from the patient's preferred drug; and
- the *compliance* effect — improved patient's compliance with the prescribed treatment.

DTC information may have a positive effect on health outcomes when, provided that the *prescription distortion* effect is not severe, the *awareness* and the *compliance* effects are high because more people would seek medical advice for under-diagnosed and under-treated conditions and would comply with their prescribed treatment. It would also benefit from a strong positive *interaction* effect that leads to efficient matching of patients and drugs, and from a low *prescription distortion* effect.

The available evidence on the impact of DTC advertising in the US that has been reviewed suggests that all these effects are empirically relevant but, at the same time, that the net balance is not clear. Besides, it is evident that a methodology to evaluate the impact of DTC advertising on social welfare cannot rely on straightforward aggregate evidence. For instance, an increase in the number of prescriptions of highly advertised branded drugs is not *per se* an indicator of negative effects of DTC advertising neither on public health, nor on health delivery costs in the long run. It is necessary to disentangle the various effects of DTC information that may lead to increased prescriptions if a welfare evaluation has to be reached.

The model discussed in this paper offers also a natural framework to assess policy options about DTC information. The challenge for regulators is to define a system of information provision in the drug sector that maximises the positive effects and minimises the negative ones. Both content and communication channels of DTC information are relevant in this respect. The suggestion is that each option should be evaluated on the basis of the separate consideration of its impact on the operation of the various effects identified, taking into account the specific characteristics of the health care system(s) involved.

At a higher level, it should be asked whether the important *prescription distortion* is the outcome of inadequate incentive schemes at the basis of doctors' prescribing behaviour rather than of DTC advertising *per se*. If this is the case, public policy should try to address this fundamental problem, rather than its symptoms. Banning DTC advertising may only be a symptomatic

Conclusion



treatment, one with its own side-effects, while improving the quality of doctors' prescribing behaviour may be the cure needed to address the real underlying disease.



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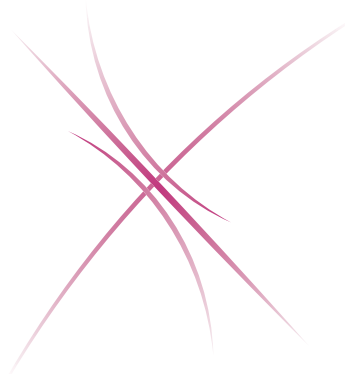
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