



*Bachelor's thesis*

# The moral limits of the market for cancer drugs in the Netherlands

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## Abstract

The market in cancer drugs in the Netherlands is noxious, as a result of its scores on the four parameters by Satz to assess the noxiousness of a market. Especially the extremely weak position of cancer patients and the disastrous outcomes of the market in cancer drugs on individuals and society give rise to an uneasy feeling when looking at the market. An evaluation from the perspective of economics does not capture the noxiousness, but can help in allocating limited means effectively to tackle causes of the noxiousness of the market.

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## Introduction

There is an ongoing debate in the Netherlands on the market for cancer drugs. Especially the price level and accessibility of cancer drugs in the Netherlands are contested. A point of discussion is the extremely high price of patented cancer drugs (Sullivan et al., 2011). The high price is problematic, since it leads to a high level of expenses related to cancer care, and it risks no reimbursement of the drug by the Dutch health insurance companies. It can however be argued that the high price for cancer drugs is needed for pharmaceutical companies to acquire funds. As pharmaceutical companies are listed multinational organizations, and investing in pharmaceutical companies is risky (only a small percentage of all the expensive research and development leads to a successful, marketable drug), investors expect a high return on investment. Therefore, pharmaceutical companies have to maintain a profit of approximately twenty percent (Katen & Vaessen, 2017).

Whereas an extremely high price for everyday consumer goods would not be disturbing, an extremely high price for cancer drugs might quite naturally be seen as disturbing. Thus, there is something in the market for cancer drugs that makes us perceive it differently than the market in everyday consumer goods.

For example, the market for toothpaste is perceived differently than the market for cancer drugs. Many will not have thought about the market for toothpaste, its aspects, and its impact on society. The market for cancer drugs is different. As cancer drugs can contribute to a longer lifespan of cancer patients, the availability of cancer drugs is perceived as more crucial than the availability of everyday consumer goods. Nonetheless, when economists are asked to evaluate the market for toothpaste or the market in cancer drugs, this difference is not considered. The type of market, its level of competition and efficiency are evaluated. No considerations are made for those aspects of the market that result in the divergence between the market for toothpaste and the market for cancer drugs.

The aim of this thesis is to evaluate what makes the market for cancer drugs different from markets for everyday consumption goods. Insight into the market for cancer drugs is needed in order to evaluate what can and what cannot be improved in the market. I will defend the following claim:

*The market for cancer drugs in the Netherlands is rather noxious in Satz' sense, and can be made less so by tackling the sources of the noxiousness.*

The claim is evaluated using the theory of Debra Satz, professor of Ethics in Society and of Philosophy at Stanford University. Satz defines a noxious market as a

market that is destructive to human values, as a result of “prior and unjust inequality of noneconomic dimensions” (Satz, 2010). By measuring how attributes of the market for cancer drugs give rise to high scores on Satz’s parameters, the market for cancer drugs is proven to be rather noxious. This aspect of noxiousness makes one look at and experience the market in cancer drugs differently than the market in everyday consumer goods.

It is shown that both the perspective from economics as well as Satz’s philosophy are needed in order to evaluate the market for cancer drugs in the Netherlands. They are needed to shed light on the sources of noxiousness of the market, and to assess what can be improved and how this can be enabled with limited means. An evaluation from the perspective of economics captures how competition and efficient companies are needed for these companies to raise enough funds, and to stay incentivized to develop new effective drugs. This evaluation however cannot fully capture that what makes the market for cancer drugs noxious. Therefore, an evaluation from the perspective of philosophy is needed to assess the sources of the noxiousness of the market. Subsequently, the perspective of economics is used to evaluate how the changes can be reached efficiently with limited means.

In order to argue for the above claim, first, in Chapter I, Satz’s method is explained and elaborated upon. The four parameters used to decide upon the level of noxiousness of a market are introduced and discussed with examples. Secondly, Chapter II elaborates upon all aspects of the market for cancer drugs in the Netherlands that are relevant when considering the noxiousness of the market. To better assess the impacts of the market, the market for general cancer care and health care system in the Netherlands are addressed as well. The different parties in the market and their different interests are evaluated. The market for cancer drugs is compared to the market for toothpaste, to illustrate how an evaluation from the perspective of economics needs the perspective of philosophy in order to capture all aspects of the market. In Chapter III, relevant economic literature on the market for cancer care is provided. Having different evaluations from a perspective of economics contributes to the discussion on the market for cancer drugs. In order to assess how Satz’ theory can evaluate the market for cancer drugs in the Netherlands, Chapter IV examines how the market scores on the four parameters for noxiousness. Chapter V concludes upon the noxiousness of the market for cancer drugs in the Netherlands, and demonstrates how the perspective of economics and the perspective of philosophy contribute to one another.

## I. Debra Satz on “noxious” markets

In order to assess the thesis, the aspect of noxiousness is elaborated upon using Satz’s method. In *‘Why some things should not be for sale: the moral limits of markets’*, Satz (2010) looks at markets that can be considered immoral, and investigates the causes of this immorality. Contemporary economists consider a free market as being the most efficient way to redistribute goods amongst players, independent of the product sold on the market. Enlarging markets is often a solution to market inefficiencies, for instance in cases of market externalities. However, economists also have cases where restriction of the market in the form of regulation serves as a solution for market inefficiencies, as happens with monopolies.

Contrary to economists, Satz stresses that markets for some goods, like kidneys, are fundamentally different from markets for everyday consumption goods like toothpaste. Satz takes the market for kidneys as an example of a “noxious” market, being “destructive to human values”. Where economists would favor a market for kidneys, being an efficient solution to the shortage in kidneys, the morality of such a market can be questioned. This is where theories of economics fall short and need a philosophical perspective, as the perspective of economics by itself cannot explain why some markets result in negative responses, hence why it might be better to ban these markets.

When looking at markets, Satz stresses the importance of considering the results of markets on social justice, our personality, our relationship with others and our relationship with society. These results can indicate whether a market is likely to be noxious. Crucial are the implications of markets on both political and social relationships, that entail relationships of the rich versus poor, men versus women and powerful versus weak. On top of that, the effect markets have on the production and allocation of goods should be considered.

### *What is a noxious market?*

Satz describes noxious markets being destructive to human values, as a result of “prior and unjust inequality of noneconomic dimensions” (Satz, 2010). The problem of noxious markets is that they damage the way our society is perceived, our identity and what we care about.

Parameters used to assess whether a market is noxious are extremely harmful outcomes for individuals, extremely harmful outcomes for society, weak agency, and vulnerability (pp. 94-98). These parameters will be explained below. In a noxious market, problems exist associated with the position of participants and third parties before, during and after the transaction (p. 93). Noxious markets damage the

“horizontal relationship of equal status” between people; this results in people being unequally related to each other (p. 99).

In order to assess the horizontal relationship of equal status, Satz (2010, p. 100) borrows three requirements for equal citizenship from Marshall. In order to reach equal citizenship, a development of civil, political and social citizenship is needed (Cohen, 2010, *Section 1*).<sup>1</sup>

**A) “Equal rights and freedoms within civil society, including rights to own property”**

As a basis foundation for equal citizenship, equal civil rights are necessary. Marshall focuses on the individual, enabling a rule of law that does not take into account any status of the citizen. Every citizen should have equal rights and freedoms such as freedom of speech and thought, the right to justice, the capitalist rights to property and concluding upon contracts and the right of liberty. With the laws for equal citizenship, Marshall wanted to give all people dignity by making them feel part of the society, and by giving them the feeling that they can fully live up to their potential as citizens and human beings. In order to sustain the idea of equality before the law, one also has to choose those who compose the law equally. Therefore, civil equality eventually leads towards political equality (Cohen, 2010, *Section 3*).

**B) “Equal basic political rights and freedoms, including rights to speech and participation in the political process”**

In order to acquire equal citizenship, Marshall states that equal basic political rights and freedoms are needed. Equal basic political rights and freedoms are implied by equal civil rights, as explained above. In order to make equal participation in the political process a better means to reach the goal of equal citizenship, citizens should have equal access to education. This is because a certain level of education is needed in order to enable people to actively and wisely enjoy and use their rights and freedoms in the political process (Cohen, 2010, *Section 4*).

**C) “Equal rights to a threshold of economic welfare and to share to the full in the social heritage and to live the life of a civilized being according to the standards prevailing the society”**

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<sup>1</sup> To better enable referencing, I divided the text into eight sections. *Section 1*: “An old conservative-minded ... a common possession”; *Section 2*: “Common. Marshall assumes ... little more detail.”; *Section 3*: “Civil Citizenship came ... account of social class.”; *Section 4*: “Political Citizenship progresses ... and civil ones.”; *Section 5*: “Social Citizenship encompasses ... to fare well.”; *Section 6*: “How shall we ... but financial cost.”; *Section 7*: “Marshall’s case, finally ... struggling for social rights.”; *Section 8*: “Where shall we ... short, elegant, classic.”

The rights that are entailed with social citizenship are extensive. They combine to what nowadays would be seen as what is entailed in a welfare state. These rights logically follow from the civil and social rights. In case every citizen is equal prior to the law, and is able to decide who is going to make the laws, the citizen should also have enough knowledge. This knowledge is needed to both enjoy the rights of citizenship, but also to carry the responsibilities of it (Cohen, 2010, *Section 5*). This implies a need for equal access to education for all citizens. Citizens should have the rights to live according to the standards prevailing the society, as horizontal equality is measured by relative difference.

Satz argues that for equal citizenship, everyone needs a minimum income, but on top of that some products, like education and health care, should be distributed in kind. A certain level of these products is a prerequisite for people to participate equally in a market and in social debates (p. 102).

#### *What are the parameters and signals for a noxious market?*

Satz describes four parameters that can be used to distinguish noxious markets from other markets. Economists will reason that a solution for noxious markets is to add markets, whereas political and moral views will argue that noxious markets should be limited. The parameters by Satz are summarized below, these being: first, extremely harmful outcomes for individuals; second, extremely harmful for society; third, weak or highly asymmetric knowledge and agency; and fourth, reflecting extreme underlying vulnerabilities. To illustrate the use of these parameters, they are applied to the market for recreational marijuana.

#### **P1: “Markets producing extremely harmful outcomes for individuals”**

When markets produce extremely harmful outcomes for individuals, noxiousness will be a consequence of these markets. Satz draws the idea of basic interests that universally belong to the lower border of an acceptable way of living. This border is the absolute minimum way of living, below this border, basic interests people have, like welfare interests and agency interests, are not satisfied. A market produces extremely harmful outcomes if the outcome is below the border of an acceptable way of living, either for the participants in the market or for third parties.

An example Satz gives of a market that produces extremely harmful outcomes for individuals is ‘a stock market that wipes out a person’s resources’ (p. 94). The existence of the stock market is often beneficial for the one party, and simultaneously as harmful for the other party, even though the stock market is not a zero-sum game.

Consider the following example, with which I will illustrate how Satz' criterion can be used to evaluate a market. The market for recreational marijuana can lead to harmful outcomes for individuals, namely when the market leads to an addiction to marijuana by the consumer of the product. This market can lead to the consumer living below a level of an acceptable way of living. However, the existence of a market for recreational marijuana cannot easily be disestablished, since this will result in an expansion of the informal market for recreational marijuana, along with its negative implications as a result of the lack of control on safety of the product. Therefore, it is ambiguous whether the existence of a formal market in recreational market is better than no existence of a formal market. A formal market will imply a controllable, safer market, whereas a formal market will also make the recreational marijuana more easily available. When recreational marijuana is more easily available, the threshold to use it will be lower, and therefore the number of people addicted to marijuana could increase. Furthermore, a formal market for recreational marijuana often only legalizes the sale of marijuana, but not the production of marijuana. This can lead to extremely harmful outcomes for the individuals who produce marijuana, since they still work under risky and informal circumstances.

## **P2: "Markets that are extremely harmful for society"**

When markets are extremely harmful for society, this implies that they negatively affect the social framework that is needed to enable people to communicate and cooperate on an equal level. Satz states that people interact as equals in case they can "make claims on one another and interact without having to beg or to push others around". In principle, markets should enable people to interact as equals, as one of the basics of markets is that all participants follow their own interest. Noxious markets pose a threat to this feature.

As an example for this parameter, Satz mentions child labor (p.96), as one can imagine that with child labor, firstly, the education of children will suffer. Next, as children work for a low wage, there will be less work available for grown up people for a reasonable wage. Therefore, child labor is extremely harmful for society.

Consider the example of recreational marijuana again. The market for recreational marijuana is not extremely harmful for society. The market does however score on this parameter, as generally people using marijuana, the consumers, are not completely able to communicate and cooperate on an equal level with people who do not use marijuana.



Parameters P1 and P2 describe *consequences* of markets that make that market noxious. P3 and P4 describe *sources* of markets that can make it noxious markets.

**P3: “Markets with very weak or highly asymmetric knowledge and agency”**

When markets have weak agency or when there is asymmetric knowledge, they are more likely to be noxious. Perfect information in markets leads to Pareto efficient results, as no agency problems or information asymmetry exists. Although information in realistic markets is never perfect, there are cases where imperfect information produces detrimental results. Information asymmetry can arise when a time difference exists between the commencement and the realization of a contract. Disastrous agency problems can arise in case participants in the markets are dependent on others to negotiate and have no influence on the transaction.

An example of a market with very weak or highly asymmetric knowledge and agency that Satz mentions is the case of a woman bearing a child for someone else, in exchange for a sum of money that is agreed upon in the beginning of the contract. This is a typical case where there is an extensive time difference between the announcement and the realization of the contract. When the contract is announced, the mother agrees to bear a child for someone else. However, the realization of the contract will only be over nine months after announcing the contract. Within this time, it is possible that the biological mother changes her mind about giving her baby away after giving birth; for instance, because she has built up a tight emotional connection with the baby. The biological mother did not know this at the time of the announcement contract, but over time she gradually changed her mind and gained more information about her emotional status at the time of realization of the contract. This illustrates the negative effect of information asymmetry on markets.

There is some information asymmetry in the market for recreational marijuana, but many markets for similar goods exist that are comparable regarding information asymmetry. The case of information asymmetry for the market for recreational marijuana is therefore not noteworthy.

**P4: “Markets that reflect the underlying extreme vulnerabilities of one of the transacting parties”**

In case agents in a market have different resources and are not able to understand the transaction to the same extent, they are vulnerable to one another to different extents and thus can be exploited. In case markets reflect this vulnerability, their level of noxiousness is given rise to. This risk is high, since agents in extremely vulnerable positions will comply with almost all terms and conditions of a contract. Other cases of extreme vulnerabilities exist when the supply of a crucial good is extremely limited, or in case parties have divergent needs for a good.

Satz gives an example of a famine in Bangladesh where the price on rice increased exponentially, leaving the poorest people starving, and the richest people even richer off since they get paid in rice (p. 98). In this case the market for rice reflects underlying extreme vulnerabilities of one of the transacting parties; namely the poor people. This extreme vulnerability is reflected, as the market leaves the poor even poorer; the income gap is widened in case of famine.

Regarding recreational marijuana, the market somewhat reflects extreme underlying vulnerabilities of the buyer. When a consumer buys marijuana against the consumer's second order desires (the consumer desires to use marijuana, but wishes he or she would not desire to desire marijuana), the vulnerability of the consumer is reflected. The market for recreational marijuana thus scores relatively high on this parameter.

These four parameters can be used to signal noxious markets. High scores on at least one of the parameters result in the inclination that a market is noxious. Satz stresses that there is no absolute way to with absolute certainty state whether a market is noxious, but these parameters definitely give more insight into whether a market can be considered as noxious (Satz, 2010).

#### *What kind of solutions does Satz offer for these noxious markets?*

In order to see how the sources of noxiousness can be tackled, the solutions Satz offers are considered. The solutions or approaches offered depend on the source or outcome of noxious markets, described by the four parameters. In order to tackle the noxiousness of a market, the source of this noxiousness has to be addressed. This can be achieved by regulation, addressing property rights of the participants, redistributing income or property, or disabling agents to participate in the market. Besides, the implications of tackling the source of noxiousness should be considered when deciding upon a solution. In case a market is only noxious in a particular context, a solution might be to only alter the context.

When the outcome of a noxious market is that citizens cannot interact as equals anymore, a solution might be to guarantee access to goods. Distributing certain goods enables everyone to have the same (minimum) "level of education, health care, opportunities, rights, liberties and physical security" (Satz, 2010). In this case, distributing these goods in kind is better than giving money that can be used to acquire these goods, as people are only able to interact as equals after the minimum level of these certain goods has been satisfied (Satz, 2010). The method to solve noxiousness thus depends on the source of noxiousness and the context of the market.

## II. The Market for cancer drugs in the Netherlands

### The market for cancer care in the Netherlands

In order to evaluate the moral limits of the markets for cancer drugs, the market for cancer drugs has to be evaluated and placed into context.

The role the General Practitioner (GP) plays in the market for cancer care in the Netherlands is considered first. The first stage of cancer care involves detection. Detection can arise through preventive screenings, genetic tests, and as a result of a visit to the General Practitioner. When screenings or 'genetic tests' lead to positive results, the GP will contact the patient and discuss the results. Next, the patient will go to a specialist who will decide upon the treatment and treat the patient.

It should however be noted that screening tests just indicate the risk of getting cancer (RIVM, 2012). In almost all cases of cancer, the patient first has to pay the GP a visit before the patient can be redirected to a medical specialist.

Cancer can be treated in several ways, where a distinction is made between two forms of treatment that can be used sequentially or simultaneously; '*tumor targeted care*' and '*people targeted care*'. Tumor targeted care concentrates on minimizing or removing the tumor, using chemotherapy, radiotherapy and surgery. The more specialized the tumor targeted care is, the more expensive and the less accessible the specific cancer drugs will be. In order to support the body in undergoing the heavy tumor targeted care, and to improve the condition of the patient in general, people targeted care is needed. Here, the patient gets help with deciding upon good nutrition and regular movement. The mental state of the patient is crucial. Psychologists, physiotherapists and nutritionists play an important role here (Tegen Kanker, 2017).

Pharmaceutical companies play an important role in treating cancer patients, by their process of research and development of innovative cancer drugs. The more effective these drugs are, the higher the chance of surviving cancer. However, patients do not necessarily benefit if the drugs are too expensive.

Another agent is the government, which indirectly influences cancer care by its policies. Policies like taxes on cigarettes and alcohol, subsidies for sports and information on healthy nutrition are likely to lower the number of cancer patients. The government is also crucial in negotiating prices of cancer drugs with pharmaceutical companies. Given the limited means and the high price of innovative cancer drugs, it is important for the government to have a good model based upon which decisions can be made on which cancer drugs will be reimbursed.

In 2013, half of the cancer patients survived for at least five years (Siesling & van Rooij, 2014). Whether patients survive cancer is only a result of the treatments is

questionable, since some tumors maybe would not have caused complaints. Older cancer patients are likely to be too weak for heavy tumor targeted therapies; therefore, their chance of dying from another disease or condition might be higher than the chance of dying from cancer.

The GP, patients themselves, pharmaceutical companies and the government are thus important actors in the market.

### **Suppliers of cancer drugs in the Netherlands**

Pharmaceutical companies like Pfizer, Bayer, Roche, Novartis are some of the biggest suppliers of cancer drugs. These companies are known to have high development costs resulting from extensive research to new drugs. When a new drug is launched, a patent is levied upon this product to enable a monopoly position for the pharmaceutical company. In this way, the companies can set prices and obtain a high return. The high return covers the high research and development costs, and is used for new research and development. Not all of the proceeds are used for these goals, as substantial amounts go to profit (and thus to stockholders) and marketing costs (NZa, 2015).

### **Interests of the suppliers and stakeholders**

“Pharmaceutical companies strive to develop drugs that are effective in as large a population as possible to reap maximum profits”( Ho & Gibaldi, 2004).

As pharmaceutical companies strive for maximum profits, they might not always act in the best interest of a cancer patient. Sometimes it can be cheaper yet still effective to use an unpatented drug than a new patented one when treating a patient. Regardless of this, the pharmaceutical company is likely to supply the newly patented product, and not the unpatented product.

The high price that pharmaceutical companies charge for their products is often criticized, as it would leave patients worse off. However, since pharmaceutical companies are privately funded, their investors expect a certain return on their investment. Therefore, to make sure that the pharmaceutical company has enough investors in order to enable research, development and production, a certain level of profit is needed. This gives another perspective on the on-going discussion of ‘expensive cancer drugs’. The higher price enables financial stability of the pharmaceutical company, which is in the interest of the patient who wants to have access to effective drugs. A case of the pharmaceutical company Janssen illustrates how the government’s demand for low prices turns out badly for patients. According to Janssen, the extensive negotiations in the price for drugs leads to a relatively late introduction of drugs into the market compared to for instance the Belgian market

(Katen & Vaessen, 2017). This leads to worse survival rates in the Netherlands compared to Belgium, Germany and France. Where Belgium would accept the given price that Janssen has set for a cancer drug, the Dutch ministry of health care does not accept the price, and asks for a discount. This makes Janssen consider stopping the price negotiations in the Netherlands, which could lead to a situation where Dutch cancer patients will not have access to Janssen's product at all. Although it is important for the Dutch government that health care expenses do not rise too high, continuous price negotiations do not lead to a desirable outcome either (Katen & Vaessen, 2017).

### **The consumers of cancer drugs**

The consumers of the drugs are cancer patients. For their consumption of the drug, they are dependent on their medical specialists, who are in turn employed by a hospital. The hospital has a budget for treating patients who have cancer, and allocates some of this budget to the purchase of cancer drugs, often directly from the pharmaceutical company. Sometimes, the health insurance companies buy the drugs (Schippers, 2016). The Dutch health insurance companies and government form the biggest source of the funds the hospital allocates to the treatments.

The demand for drugs is price inelastic, as patients are likely to want the best drugs, which are usually expensive. As they are insured, they do not bear the financial consequences of demanding these drugs. This could be called moral hazard, but describing the behaviour of cancer patients as moral hazard can be argued to be controversial (Sullivan et al, 2011). When trying to comprehend the situation a cancer patient is in, one is not to blame the patient for trying to get the best care possible, even though this would lead to higher healthcare costs and thus higher health insurance premiums. As the health care insurers are by law obliged to cover these health care costs a higher price in drugs will not lead to a lower demand (NZa, 2015). As the consumers are dependent on other parties, they can only indirectly influence the market.

### **How accessible are cancer drugs and who pays for them?**

In order to assess the level of noxiousness of the market, the accessibility of cancer drugs is considered. The medical specialist decides upon the method of treatment and the drugs. The patient pays the 'own risk' (*eigen risico*) for the treatments and drugs. The 'own risk' is part of the Dutch insurance system, and decreases moral hazard. Yearly, the patient always has to pay the first costs of treatment, where the maximum amount to be paid on a yearly basis is the 'own risk'. After the 'own risk' is spent fully, the rest of the health care costs are covered by the health insurance company. It is

possible to opt for a higher 'own risk' in order to pay a lower premium, or to opt for a lower 'own risk' along with a higher premium.

The hospital decides on what drugs to buy, the medical specialists can thus only use drugs that the hospital has bought (NZa, 2015). In principle, medical specialists never take into account money when treating patients. The specialists can however be nudged to often use or prescribe drugs by a particular pharmaceutical company, as a result of investments in the relationship with medical specialists by pharmaceutical companies.

The pharmaceutical companies are subsidized for the research and development costs, and these subsidies do not have to be paid back to the government in case this results in a successful patented product (E.I. Schippers, 2016). This eventually leads to the fact that the Dutch population pays for the availability of new drugs through tax payments, and again through the high price of the drug, as a result of the higher health care premium. The consumers of the drug also pay for this higher price in the case their 'own risk' is called upon.

The public sector and beneficiary institutions mainly play a role in funding research by universities and hospitals to improve cancer treatment. The government gives health care insurance companies subsidies in case they insure 'bad risk' patients.

### **Determination of the price level**

In order to determine the price of a new patented drug, the 'Nederlandse Zorg autoriteit' (Dutch healthcare authority, NZa in short) states a maximum price. This maximum price is the average price of the prices of the same drug in the UK, Belgium, France, and Germany. These countries decide upon their maximum price using the same method. Pharmaceutical companies will set their prices while looking at price levels of similar treatments. The value of improvement in health and quality of life and participation in the labour market as a result of the drug is also considered. The price is thus not necessarily correlated with the research and development costs of the pharmaceutical company (Kesselheim et al, 2016).

Then, the hospitals and health insurance companies collectively construct a contract where they decide upon the price that the hospital charges to the insurance companies. This results in a price that is on average 1 percent lower than the maximum price stated by the NZa. This contract price is in turn higher than the price for which the hospitals purchased the drugs at the pharmaceutical companies. The pharmaceutical companies generally charge 95 percent of the contract price. However, often when a new drug is launched on the market, the pharmaceutical company will

only state the price when launching the product. This gives hospitals less time to negotiate about the price, often resulting in the hospitals to accept the price, since time is scarce when treating patients.

There has been an upward trend in the prices of drugs over the last couple of years, leading to an increase in the costs per patient. When more patients get an indication for the use of a new drug, the price per patient of this drug does not necessarily decrease, even though the development costs of the drug could be divided over more patients (see Figure 1 in the Appendix) (NZa, 2015). This rising price has negative consequences for the accessibility of cancer drugs to individual cancer patients. Furthermore, the higher costs are unfavourable for society in the form of higher health insurance premiums and higher government spending.

### **The market for cancer drugs compared to the market for everyday consumer goods**

To demonstrate how the market for cancer drugs is different from other markets, the market for cancer drugs is compared to the market for toothpaste. This difference helps to illustrate what makes the market for cancer drugs rather noxious.

The markets are already different in the ways in which the products are consumed. In the market for toothpaste, the agent has to decide whether to buy toothpaste, and if so, which kind of toothpaste to buy. The consumer will buy the toothpaste with the highest utility given the budget constraint for toothpaste. The cancer patient is the consumer of the cancer drug, since the patient will eventually be the one whose body the drug will enter. The budget constraint of the patient however is not relevant for deciding which drug to consume. The consumer only used the budget constraint to purchase the obligatory health insurance, after this the budget will not be affected by choices of consuming drugs. The relevant budget constraints for deciding which drugs can be consumed are the ones from the appointed health insurance companies and from the hospitals who have appointed budgets to treat cancer.

Whereas the market for toothpaste is a market with monopolistic competition, the market for cancer drugs is an oligopoly. There are a few big players in the market for cancer drugs, resulting in a limited level of competition. As the research and development costs of pharmaceutical companies are substantial, a bigger company is more likely to be able to carry these costs, and the high research and development costs also serve as a barrier for new entrants in the market. The few firms that do exist are competing with each other by trying to develop the newest and most effective (cancer) drugs, and by hooking themselves to health insurances, hospitals and medical specialists.

Information asymmetry occurs when suppliers and buyers of a product or service do not have the same information about the product or service available. Information asymmetry can result in market inefficiencies, as it can lead suppliers to sell their product for a price that is too low. This price results when buyers do not have enough information about the product and are afraid to pay too much<sup>2</sup>.

Information asymmetry is limited in the case of the market for toothpaste. Suppliers of toothpaste know exactly what is in the toothpaste, consumers know this to a certain extent. The buyers might not have full knowledge on what the ingredients specifically do or what their characteristics are, but, the search costs for information on toothpaste are low.

The case of information asymmetry in the market for cancer drugs is more complicated. The consumer of cancer drugs is in a sense also 'consuming' information, by getting help from a medical specialist. The information available to the consumer is whether there is physical pain. The consumer, however, does not have perfect information regarding the best treatment processes to cure the symptoms. Next, the medical specialist decides upon the treatment of the patient. Depending on the kind of cancer and circumstances, a list of approved indications for cancer drugs by BOM (Committee for evaluating oncological drugs; *commissie ter Beoordeling van Oncologische Geneesmiddelen*) enables the specialist to decide upon which drugs to use. The medical specialist's information on this is likely to be much better than the information the patient has, resulting from the specialist's education and experience. The medical specialist has perfect information of the drug used in the sense that the exact ingredients and their proportions will be known. The information on how exactly the drug will work in treating the patient is increasingly perfect as a result of extensive research. In itself, information asymmetry here does not have to be a problem, as patients are basically buying information from specialists. Problems will only arise in case of competing interests among agents.

Information asymmetry between the hospital and medical specialist is assumed to be very limited, as both agents have the same goal; treating patients as well as possible, while being limited by the budget constraints set by hospitals and health insurances regarding the cancer drugs.

The case of information asymmetry between health insurance companies and their clients is more extensive. In the Netherlands, health insurance is obligatory, and

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<sup>2</sup> A typical example of this is the market of second hand cars, where the big price difference between new and second hand cars is the result of information asymmetry. For second hand cars, the seller of the car will know whether the car is a good one or a bad one (a lemon). The buyer doesn't know this, but does know what the probability  $p$  is of a second hand car being a lemon. This eventually results in the buyer to only be willing to pay the value of the average car ( $p \cdot \text{price lemon} + (1-p) \cdot \text{price good car}$ ), which is lower than the value of a good car. This eventually drives out good cars of the second hand market, and only lemons being sold, even though the buyers would have been willing to pay a higher price for a good car (Akerlof, 1970).



all health insurance companies are obliged to accept everyone. Obliging all health insurance companies to accept everyone solves the problem of adverse selection, which would otherwise arise as a result of information asymmetry. The information asymmetry, however, will still exist to the same extent. This does not necessarily lead to an unfavorable situation, as long as health care providers follow the same agenda as the patients do.

The difference in the market for cancer drugs from the market for toothpaste illustrates some aspects that give rise to the level of noxiousness, upon which will be elaborated in Chapter IV.

### III. Relevant perspectives from economics

*How did the other literature from the perspective of economics, describe the market? Do the conclusions agree with each other?*

In order to apply Satz's method to the market for cancer drugs, this section evaluates literature regarding health care, from the perspective of economics. This will be relevant when judging how noxiousness can be solved using limited means.

Bosanquet and Sikora (2006) evaluated the conflict resulting from the limited health care budget and the aspiration to cure all cancer patients. A tradeoff will always exist in the decision on how much to spend on treating cancer patients while keeping funds available to treat other patients with a life-threatening disease (Bosanquet & Sikora, 2016). Because of this tradeoff, it is important to have a solid ground based on which decisions can be made regarding how much spending on treating cancer patients can be justified, at the cost of treating other patients. Using Satz' theory can help here, by using the parameters to justify a tradeoff.

As both the costs of treating cancer and the incidence of cancer care are increasing rapidly, the decision on how much to spend on cancer patients at cost of treating other patients will be more difficult. Along with the rising costs comes a rise in the percentage of people who survive cancer. This is a result of the more expensive and intensive targeted treatments that are more effective, and transform cancer to a chronic disease, comparable to diabetes. The authors expect that this will result in cancer patients living in privately owned hotels with medical care. In this case, the government is expected to only play a controlling role. Within this role, new ethical issues will arise (Bosanquet & Sikora, 2006).

Another source of conflict is the role new technologies play in treating cancer. New technologies are increasingly successful in treating cancer, but are also increasingly expensive. The authors stress that there will be a boundary, across which the costs of the technologies are not justified by their effectiveness according to society (Bosanquet & Sikora, 2006). Both a perspective of economics and Satz' theory are needed to decide this boundary, by evaluating what aspects are important for society and how they are reached efficiently.

The authors mainly focus on the cost effectiveness of cancer care, and expect that developed countries will manage to reach a survival rate of 90 percent, by using effective means to prevent and cure cancer. By evaluating the market for cancer drugs, an optimistic view is established regarding the effectiveness of the market, while a warning is given on the financial sustainability and new ethical challenges.

Aggerwal, Ginsburg, and Fojo (2014) assess the opportunities and threats to cancer care in Europe. The main threats are the rise of the cost of cancer drugs, where the rise in costs is not matched by a rise in effectiveness. The authors give three causes for the rise in costs of cancer care: consumerism, innovation and demographic changes (Aggerwal et al, 2014).

To deal with the rising costs, careful consideration is needed for the effectiveness of new radiotherapy and cancer drugs relative to their costs. Another important factor is the accessibility. This accessibility is often threatened by the time it takes to evaluate and accept or decline new drugs. The longer this process lasts, the longer patients have to wait for drugs that could help them. When improving the accessibility, cost effectiveness of new drugs should be taken into account. Only in this way a better accessibility will not lead to a threat to fiscal sustainability of cancer care. This shows one of the difficulties in the market for cancer drugs, as on the one hand better accessibility of cancer drugs is crucial for cancer patients. On the other hand, however, better accessibility will often lead to an increase in costs, which can be disastrous for society who pays for it in the form of taxes and health insurance premiums.

Regarding the effectiveness of cancer care in general, the authors stress the importance of radiotherapy. New innovations in radiotherapy are more cost effective than chemotherapy or surgery. The effectiveness is measured by the therapeutic ratio: the ratio of tumor tissue to normal tissue targeted. Therefore, investing in radiotherapy might be more sustainable than investing in cancer drugs (Aggerwal et al, 2014). The availability of the option to invest relatively more in radiotherapy than in new cancer drugs can soften the impact of the high costs and lower accessibility of cancer drugs. In case new innovations in radiotherapy can act as an alternative for new cancer drugs, this would increase the competition and could force pharmaceutical companies to lower the prices of new cancer drugs.

A threat mentioned by the authors is the fiscal sustainability of cancer care, which is particularly affected by treatment of cancer patients in the last stage of cancer. In this stage, new cancer drugs are applied to desperately try to cure the patients, which is not effective in most cases. Here lies the opportunity to fiscal sustainability; not treating the patient in the last stage of cancer, however difficult this might be. Evaluating from an economic perspective, not continuing to treat the patient in this stage would be the best option, whereas an evaluation from a philosophical perspective could argue differently. One could, however, argue that people should have the right to be treated as long as there is a chance on improvement. If a person

would be in a situation of being the patient in the last stage or being a relative, the person would want the treatment to be continued.

Another opportunity to fiscal sustainability mentioned by the authors is the sharing of best practices in treating patients across Europe. This can lead to improved diagnosis, improved treatment and early diagnosis (some of the policy goals of the United Kingdom). Early diagnosis of cancer can greatly improve the fiscal sustainability, and can be realized by a better screening practice and more awareness among people on cancer symptoms (Aggerwal et al, 2014). The sharing of best practices is an opportunity to the market for cancer drugs, as the potential gains are rather large.

In general, the authors mention the immoral parts of the market, but justify these by arguing for the financial sustainability and effectiveness of cancer drugs.

Pauwels et al. (2014) consider how access to cancer drugs evolved over time, and develop advice that should lead to better allocation of funds to cancer drugs in Europe. The main point that is interesting here is that treating cancer is prioritized over treating other diseases. Pharmaceutical companies producing cancer drugs are excluded from a rule to pay budget excesses. Being excluded from this rule gives pharmaceutical companies more funds to sustain a level of production and innovation of cancer drugs. On the one hand, this leads to a higher accessibility and availability of new cancer drugs. On the other hand, however, it leads to higher costs for the overall health care system. This threatens the fiscal sustainability and can eventually lead to worse outcomes for all patients (Pauwels et al, 2014).

The fact that treating cancer is prioritized would suggest that society adheres more value to treating cancer than other diseases. There is, however, no empirical evidence for this. Therefore, the authors stress that prioritizing cancer care is only justified in unique cases, and only when principles of fairness, transparency and equity are taken into account (p. 106). Transparency can be reached by constructing a list of cancer drugs that are subject to special examination, together with their financial consequences. This list should be constructed a priori, to enable a posteriori control (Pauwels et al., 2014).

The overall view on the market for cancer drugs is negative, as the government spends more money on treating cancer than on treating other diseases, while lacking fairness, transparency and equity.

Elsinga and Rutten (1997) address the role of economic evaluation in improving the Dutch health policy. The Dutch decentralized health care system is a market for which

economic evaluation is particularly useful. The decentralization results from the government playing a regulating role, while insurance and provision of health care are privately arranged. As the insurance companies and health care providers are increasingly responsible for their financial situation, the importance of economic evaluation rises. Economic evaluation is useful in deciding upon which new drugs should be reimbursed, and can be used to dampen the costs and increase the efficiency of health care.

In addition, pharmaceutical companies can use economic evaluation for marketing purposes, in order to enhance the chance of their drugs being accepted by the public sector (Elsinga & Rutten, 1997). However, the market would be more financially sustainable when pharmaceutical companies do not invest as much in marketing, as marketing itself mainly costs money and does not contribute to more cost-effective drugs.

The authors have a positive view on the prospect of increasing effectiveness of the market in the Netherlands compared to other countries.

The literature provides a context for considering the market for cancer drugs in the Netherlands, and provides some relevant points to assess the noxiousness of the market for cancer drugs.

A crucial point in the debate is the accessibility of new cancer drugs. Chapter IV will elaborate on this aspect, where a better accessibility can tackle one of the causes of noxiousness of the market for cancer drugs. The treatment of cancer in the last stage is something that, when evaluating from an economic perspective, cannot be defended, whereas it can be defended when evaluating from a philosophical perspective. Therefore, combining both evaluations helps in deciding how far to go with treating patients in the last stage of cancer.

One of the solutions to the debate could be the sharing of best practices across Europe. The cost effectiveness of this is substantial, and can be defended both from the perspective of economics and from the perspective of philosophy. Next, the boundary across which new technologies are not justified by their costs anymore has to be decided upon. Having a well-established policy gives a base upon which this decision can be justified.

The warning that treating cancer patients is prioritized over treating other patients can be an example of the market for cancer drugs being extremely harmful for society (P2), as will be elaborated upon in Chapter IV.

Being aware of the possibility of cancer becoming a controllable disease like diabetes is useful for the debate, as it changes the impact of the cancer and because it gives rise to new ethical challenges.

## **IV. Satz and the market for cancer drugs in the Netherlands**

### *How can Satz's method be applied to the market for cancer drugs in the Netherlands?*

When applying Satz's method to the market for cancer drugs in the Netherlands, it can be concluded that the market is rather noxious. Aspects of the market that cause its noxiousness are the extremely harmful outcome for patients in case they cannot access cancer drugs, the negative externalities of financing cancer care on health care in general, leaving out patients in negotiations, and the extreme vulnerability of cancer patients. These aspects are further elaborated upon when assessing the level of noxiousness of the market, using the four parameters as introduced in Chapter I.

### *Is the market "noxious" a la Satz?*

#### **P1: Does the market produce extremely harmful outcomes for individuals?**

The individual consumers of the market for cancer drugs in the Netherlands are patients who suffer from cancer. If failure of the market disables cancer patients to have access to the cancer drug they need, this will significantly decrease the chance of being cured, and decreases the likelihood of surviving the disease. Eventually death can be one of the outcomes of market failure, thus the market can produce extremely harmful outcomes for individuals.

The market for cancer drugs is not a free market; patents and rules undeniably lead to a loss in efficiency if seen from a perspective of economics. However, the patents are needed in order to enable the existence of complex cancer drugs.

The market for cancer drugs still has a level of competition between pharmaceutical companies, stimulating them to produce even better drugs. In this case, the existence of the market would not produce extremely harmful outcomes for individuals, since the whole existence of the market enables the existence of cancer drugs. The cancer patient would be worse off in case there was no competition in the production and innovation in cancer drugs. However, because pharmaceutical companies are privately held, they are funded by investors. As described with the Janssen case (see Chapter II), investors require a certain return on investment. This return on investment can be reached by a certain profit margin of the pharmaceutical company. On the one hand, this profit is needed for pharmaceutical companies to

exist, as the pharmaceutical companies are dependent upon their investors. On the other hand, however, the focus on profit by pharmaceutical companies leads to a high price of cancer drugs, making them less accessible. Whether the high price in cancer drugs is extremely harmful for the individual is therefore ambiguous.

In case the ministry of health care accepts the high price, some patients will be able to get the cancer drug. However, the money that is spent on that drug, cannot be spent on other health care costs, leaving some individuals worse off. In case the ministry of health care negotiates with the pharmaceutical company about the price level of drugs, there are two possible outcomes.

Firstly, when the negotiations are successful, the price level will be lower. In this case, treating cancer will become less expensive, eventually leaving cancer patients better off. However, if the successful price negotiations lead to a loss in investors in the pharmaceutical company, this could in the long run be disastrous for the development of new cancer drugs. The market here will enable other pharmaceutical companies to step in.

Secondly, when the price negotiations are unsuccessful, the results for individuals could be disastrous in case a pharmaceutical company gets sick of the price negotiations, as was the case with Janssen. When a pharmaceutical company decides to not participate in price negotiations anymore, this could be especially harmful for the individual, as it would completely disable the individual to have access to the cancer drug produced by that pharmaceutical company. As the price of cancer drugs is high, the own risk is often fully spent in case a cancer patient gets treated. Payment of the own risk can be very expensive for some patients. In this case the high price of the cancer drug is thus extremely harmful for the individual patient. The result of the market for cancer drugs on individuals is thus ambiguous.

## **P2: Is the market extremely harmful for society?**

When markets are extremely harmful for society, the horizontal relation of equality between individuals is damaged. Satz (2010) states that markets for health care have significant consequences for the structure of relationships between people in society. Markets for health care affect “who we are, what we care about, what we can do and the kind of society that we can achieve” (Satz, 2010, p.102).

Markets that “may condition people to be docile or servile, shape them into passive acceptors of a status quo” (Satz, 2010, p.95). Cancer patients are shaped into passive acceptors of a status quo, as they cannot influence the price of cancer drugs or the market. The patients are completely dependent on which drug treatment they receive. However, it is expected that the Ministry of Health Care does handle both in

the interest of health care in general and its financial sustainability, and of the patient when negotiating about prices. Nonetheless, the cancer patient is dependent on other parties in order to get access to the drug that is needed.

The market is harmful for society overall as it affects the horizontal relationship of equal status by leaving the cancer patient dependent and passive. The only way a patient could break free of this position is by getting the health care elsewhere, in another country. In this case, the patient will still be dependent on what drugs are sold in other countries, and on their own financial status, as the costs will not be covered by the health care insurance.

Furthermore, the high prices of cancer drugs can be harmful for society through health insurance companies. The high costs accompanied by treating cancer drive up the expenses by insurance companies, that on the one hand lead to higher premiums, and on the other hand lead to a lower budget for other diseases. This is not extremely harmful for society yet, but the enormous expenses on treating cancer can be worrisome for those insured.

As touched upon in the introduction, the market can be disastrous for society when the existence of the market may lead to no supply of a particular cancer drug, as described in the Janssen case (Katen & Vaessen, 2017).

More money is spent on treating cancer than on treating other diseases (Pauwels et al., 2014). This can lead to a bad outcome for society, as implying that treating cancer is more important than treating other diseases changes the relationship and level of equality among patients. Prioritizing treating cancer over treating other diseases leads to a situation where a cancer patient can be treated, whereas another patient with another life-threatening disease cannot be treated. This difference is mainly caused by the difference in money spent on treating cancer compared to treating other diseases, and is not justified by any empirical research. It directly affects the level of equality among patients, since the different patients are by definition not treated equally.

According to this parameter, the market can be concluded to be rather noxious, since it results in harmful outcomes for society.

### **P3: Is there very weak or highly asymmetric knowledge and agency in the market?**

Aspects of weak agency and asymmetric knowledge cause a market to be noxious. In the Netherlands, several cases of information asymmetry in the market for cancer drugs exist. Only the pharmaceutical companies know the exact amount of time and money spent on research and development needed to develop new cancer drugs.



Resulting from the information asymmetry, the Dutch government and health care insurances are not able to assess whether the prices charged for the drugs by the pharmaceutical companies are justified by the research and development costs. Moreover, cancer patients probably do not know exactly what kind of treatments exist and are best for them. This information asymmetry does not necessarily lead to a bad outcome. Patients do not need access to all the information themselves, as the medical specialists treating them have the information and expertise. However, health insurance companies do not know the exact details of the disease of their clients, and will not know how desperately patients need certain (expensive) cancer drugs. Therefore, a level of asymmetric knowledge in the market persists, causing noxiousness of the market.

Weak agency occurs due to pharmaceutical companies having different goals than some of their funders (the government), as mentioned in Chapter II. Where the government would want the pharmaceutical companies to produce most effective drugs for a low price, pharmaceutical companies want a certain profit margin. Therefore, pharmaceutical companies will not be inclined to sell unpatented drugs. For the government, who subsidizes the pharmaceutical companies, however, it would be desirable that unpatented drugs are sold as well.

Another source of weak agency is the patient not being involved in the transaction; the ministry of health care negotiates for the patient. The patient is therefore dependent upon the ministry of health care. Satz (2010) mentions that when others negotiate for someone, the individual will not necessarily benefit from the negotiation (p. 97). There is thus weak agency in the market, resulting from conflicting interests and the fact that patients are left out of negotiations.

As a result of both information asymmetry and weak agency in this market, this parameter shows the considerable level of noxiousness of the market for cancer drugs in the Netherlands.

#### **P4: Does the market reflect the underlying extreme vulnerabilities of one of the transacting parties?**

If markets reflect the underlying extreme vulnerabilities of one of the transacting parties, their level of noxiousness will be higher. Patients who require drugs to treat their cancer are dependent upon pharmaceutical companies, which leads to vulnerability of patients (Table 1, p. 98, Satz, 2010). It can be stated that when you are, in order to live or not die, dependent on another, you are extremely vulnerable. This is especially the case if only one party has the resources to treat your disease. The market for cancer drugs does not however exacerbate the weak position of

patients, but tries to improve their situation. However, because there is a market for cancer drugs, cancer patients know that there are drugs available that can treat their disease. Because of this availability, patients will want these drugs, in order to get better. The difficulty here lies in the fact that the market does not enable access to these drugs to all patient. As patients need the cancer drugs, they are dependent on the market for cancer drugs in order to get access to them. The market therefore reflects the extreme vulnerabilities, by making the patient dependent.

Furthermore, the market reflects the extreme vulnerability and dependence of the cancer patient in the process of testing new cancer drugs. When a new drug is tested, some patients are randomly drawn to participate in experimental use of the drug. For a year, the rate of success of the drug is recorded. After this stage, protocols have to be written in case of a market transition of the new drug. During this stage, patients who were helped by the drug cannot access that drug anymore. This testing of drugs on patients can thus be beneficial for patients who can participate in the experiment, but it also makes them even more dependent, as the access to this new drug is temporary (FDA, 2017).

The initial weakness and vulnerability of the patient makes the market for cancer drugs more noxious. The market does try to deal with the initial vulnerability of the patient. The circumstances do however require extra concern for the situation when developing policies regarding the market. The need for policy to ease access to newly developed drugs that proved to be effective in the experiment stage of the drug is evident. Such a policy can help in solving the aspect of extreme vulnerabilities being a cause of noxiousness.

### *Should according to Satz the market in cancer drugs be changed, banned or regulated?*

The market for cancer drugs does not unanimously score high on any of the parameters, although ambiguous scores on some parameters, P1 and P3, indicate a certain level of noxiousness of the market.

With regard to *the outcome of the market on individuals*, the market both contributes to curing cancer patients, but also defers patients access to cancer drugs, in which case the outcome of the market is disastrous for individuals. Thus, according to this parameter, the market should be changed or regulated, to get rid of the negative effects, but to maintain the positive effects.

Regarding *the effect of the market on society*, a noxious aspect is that the patient is left out in negotiations between the ministry of health care, health insurance companies and pharmaceutical companies. This can be partly overcome by looking at the structure and organization of the path from innovating the drug to getting the drug

to the patient. Currently, patients in the Netherlands have to wait longer for a drug to be available than patients in the surrounding countries.

Considering *weak agency*, excluding the patient from negotiations gives rise to noxiousness. However, since price negotiations are particularly relevant for future patients, it is unforeseeable to let the (future) patient participate in negotiations regarding the drug and its price. Therefore, these negotiations should stay on the macro level.

As the *extreme vulnerabilities* are made less extreme by the market for cancer drugs, the market should be changed or regulated, but not banned.

Combining the results on the four parameters indicates that the market is rather noxious, and that in some cases changes are needed to decrease the noxiousness.

## V. Satz's relevance for the market for cancer drugs

To conclude, the claim given in the introduction is assessed. Consequently, it is demonstrated how both Satz' perspective and the perspective from economics are needed for a constructive evaluation of the market for cancer drugs. Satz' perspective is needed to pinpoint what can be improved in the market, and the perspective from economics is needed to assess how these improvements could be enabled with limited means.

*The market for cancer drugs in the Netherlands is rather noxious in Satz' sense, and can be made less so by tackling the sources of the noxiousness.*

The claim is supported by the evaluations made in Chapter IV. Taking Satz' perspective, the scores of the market conclude that the market for cancer drugs in the Netherlands is rather noxious. As explained in Chapter I, markets can be made less noxious by eliminating the causes of the high scores on the parameters.

To further evaluate the role of Satz' perspective and the perspective from economics regarding this claim, the usefulness and limits of these perspectives are assessed. After this, it is evaluated how both perspectives can contribute to one another.

### Why Satz' theory is useful

Satz' theory is useful for evaluating the market for cancer drugs in the Netherlands, as the parameters provide an effective tool to systematically assess its noxiousness. The parameters give insight into the aspects of the market that make it noxious, and directly steer to a direction for solutions. The high score on the parameter of extreme weakness and vulnerability sheds light on the extra care that has to be taken when evaluating the market for cancer drugs. As cancer patients are extremely vulnerable because of their dependency upon the market, the market for cancer drugs is noxious. Satz' theory can also be used to shed light on where the status quo is already satisfactory.

Using Satz' theory, it could be established that the market for cancer drugs is rather noxious on the level of all parameters. The noxiousness can be solved by changing those factors that lead to a higher score on the parameters. Regarding the market for cancer drugs, solving the noxiousness can be a challenge or even impossible. Most of the status quo cannot be changed to make the result of the noxiousness less severe, without giving rise to other factors that cause noxiousness.

However, one factor that could improve the market by lowering the score on the parameter for extremely harmful outcomes for individuals is the length of the

process of introducing new cancer drugs. Either, the length of the process of approving new drugs should be shorter, or patients that participated in an experiment should get access to the new drug before the protocols have been written.

### **Why the perspective of economics is useful**

An evaluation from the perspective of economics is needed to assess how improvements in the market can be obtained, while using limited means effectively. The literature mentioned in Chapter III demonstrates the importance of effective cancer drugs and of allocating the limited funds wisely. Attention is paid to cases where scarce funds are used ineffectively, for example at the last stage in cancer, where expensive drugs and treatments are applied without being effective. In these cases, the perspective of economics is useful, by establishing a threshold after which further treatment is not cost effective. After this threshold, the advantages of further treatment do not outweigh the financial and physical costs.

### **What are the limits of Satz' theory and how can the perspective of economics help here?**

Satz exclusively focuses on the market, and on whether it should exist or not. This limits the perspective when considering the market for cancer drugs. Evaluating the system itself, i.e. the path a drug follows from research and development to the patient, provides more knowledge on where noxiousness arises and where noxiousness can be decreased.

Furthermore, more focus should be directed at what kind of government interaction is effective in tackling causes of noxiousness. Satz solely focuses on what is noxious about the market and what should therefore be improved, without considering the potentially negative results of these improvements, like degeneration of other aspects of health care. Evaluation from the perspective of economics does capture this.

As mentioned by Pauwels et al. (2014), the means for health care are limited, and decisions have to be made and justified on what is spent on treating cancer and what is spent on other health care patients.

Economists thus look at the bigger picture, and therefore contribute to knowledge about the sustainability of the market for cancer drugs relative to the market for health care in the Netherlands in general. Therefore, the economists can help Satz in evaluating how improvements in the market can be achieved while effectively using limited means.

## What are the limits of the perspective of economics and how can Satz' theory help here?

Economists need Satz' theory as well. Economists look at effectiveness of the market for cancer drugs, but overlook the difference in the market for cancer drugs and the market for everyday consumer goods. The fact that cancer patients are extremely dependent upon the market for cancer drugs is not captured in the perspective of economics. Although cost effectiveness of drugs is crucial, long price negotiations are harmful to the accessibility of cancer drugs. As economists particularly look at the effectiveness and financial sustainability of cancer drugs, they fail to capture other aspects of the market. It would thus be possible that according to economists, the market for cancer drugs is acceptable, whereas Satz would state that the same market is noxious. The perspective of economics is not able to catch and explain the uneasy feeling that arises with the market for cancer drugs.

To conclude, both the perspective of economics and the perspective of Satz are needed for a complete evaluation of the market for cancer drugs. Although both perspectives disagree on some questions regarding the market, they are complementary on other questions. Both perspectives combined will form a steady framework to base policy decisions on.

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## Appendix

Geneesmiddel	ZI-nummer	datum introductie	AIP bij introductie	#geregistreerde indicaties	AIP bij juni 2015	#geregistreerde indicaties
adalimumab (Humira)	148888432	Jan 2004	€ 1056,26	1	€ 1070,33	11
etanercept (Enbrel)	14771918	Maart 2005	€ 543,47	5	€ 546,44	8
infliximab (Remicade)	13409602	Jan 2003	€ 653,98	4	€ 602,43	8
trastuzumab (Herceptin)	14612437	Nov 2000	€ 704,40	1	€ 606,49	3
rituximab (Mabthera)	14219557	Jan 2003	€ 614,46	1	€ 526,92	4
Bevacizumab (Avastin)	15023753	Mrt 2005	€ 371,25	1	€ 321,08	9
Lenalidomide (Revlimid)	15293939	Sept 2007	€ 5298,80	1	€ 5083,54	2
Imatinib (Glivec)	14914050	Jan 2004	€ 1250,00	1	€ 1257,64	9
docetaxel (Taxotere)*	14899396	Jan 2004	€ 204,20	2	€ 120,83	5

\*er zijn anno 2015 generieke varianten van docetaxel op de markt.

Figure 1

Table 1.3. Summary of research on the value of medical technology changes

Condition	Years	Change in treatment		Value	Net benefit
		costs	Outcome change		
Heart attack	1984–1998	\$10,000	1 year increase in life expectancy	\$70,000	\$60,000
Low-birth weight infants	1950–1990	\$40,000	12 year increase in life expectancy	\$240,000	\$200,000
Depression	1991–1996	\$0 <\$0	Higher remission probability at some cost for those already treated	More people treated with benefits exceeding costs	Highly positive
Cataracts	1969–1998	\$0 <\$0	Substantial improvements at no cost increase for those already treated	More people treated with benefits exceeding costs	Highly positive
Breast cancer	1985–1996	\$20,000	4 months increase in life expectancy	\$20,000	\$0

Source: Cutler and McClellan, 2001.<sup>4</sup>

Figure 2 - Value of medical technology changes