

1-1-2009

# A Critique of Neoclassical Theory of Health Care Consumption

Xiao Jiang

University of Denver, [jiangxiao219@yahoo.com](mailto:jiangxiao219@yahoo.com)

Follow this and additional works at: <http://digitalcommons.du.edu/etd>

---

## Recommended Citation

Jiang, Xiao, "A Critique of Neoclassical Theory of Health Care Consumption" (2009). *Electronic Theses and Dissertations*. 320.  
<http://digitalcommons.du.edu/etd/320>

This Thesis is brought to you for free and open access by the Graduate Studies at Digital Commons @ DU. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of Digital Commons @ DU. For more information, please contact [jennifer.cox@du.edu](mailto:jennifer.cox@du.edu).

A Critique of Neoclassical Theory of Health Care Consumption

---

A Thesis

Presented to

The Faculty of Social Science

University of Denver

---

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

---

by

Xiao Jiang

June, 2009

Advisor: Robert Urquhart

Author: Xiao Jiang  
Title: A Critique of Neoclassical Theory of Health Care Consumption  
Advisor: Robert Urquhart  
Degree Date: June, 2009

### Abstract

The purpose of this thesis is to display an internal critique of the neoclassical theory of health care consumption with the intention of understanding its true merits and limitations. To avoid arbitrariness, instead of criticizing it directly, this thesis first explores the existing scholarly critiques, as well as the developments of this theory in response to these criticisms. What is interestingly observed is that the neoclassical responses tend to systematically fall into two problematic categories – the trade-off between reality and theoretical determinacy, and free-market behavior resolution. Such observation suggests that there is something fundamentally problematic with this theory, which is overlooked by the existing critiques. Also, by looking into how consumer behavior is theorized in neoclassical framework, this thesis points out that the fundamental problem of this theory is embedded in the *purely subjective* and *quantitative* neoclassical notion of utility, which is the foundation that this theory is built on, as well as the *interlocking characteristic* of the neoclassical theoretical structure. Ultimately, this thesis argues that such in depth critique points us to a better alternative theoretical framework to analyze the consumption of health care.

## Acknowledgements

My work on this thesis was facilitated greatly by the efforts of several individuals. Professor Robert Urquhart has offered intellectual inspiration and encouragement to me in the past two years. As my thesis adviser, an excellent teacher and a great friend, he has provided me with enormous amount of valuable guidance and advises. Professor Yasar Yavuz played a role as the second adviser of this thesis. Despite of his busy schedule, he provided meticulous critiques of my thesis both in content and grammar. I am indebted to him for the generosity he exhibited in undertaking the task of helping me with my thesis, in sharing with me his insights in health economics, and in teaching me patiently the art of learning, writing and conducting meaningful researches. Professor Tracy Mott, as a member of my thesis committee, provided me with numerous valuable comments and suggestions during and after my thesis defense; his comments and suggestions appear in many places in this final version of this thesis. I am also grateful to professor Jennifer Pap from the department of foreign language for agreeing to be the outside chair of my thesis committee.

Many faculties and students from University of Denver, to name a few, Peter Ho, Mark Evers, Andrew Clark, Fang Yang, Shehan Jayatilaka, Audrey Edward, Hantin Wang, and Jolida offered unwavering supports for my project. I am also extremely grateful to the valuable comments I received from faculties and students from both University of Massachusetts – Amherst and The New School at their Annual Graduate Conference.

Finally, I thank my parents for their encouragement, love, and support throughout my educational endeavors.

## Table of Contents

Introduction.....	1
Chapter One: Basic Neoclassical Theory .....	3
Part 1: Human Being, Utility, Health and Health Care .....	3
Part 2: Uniqueness of Health Care Commodity .....	6
Part 3: Three Analytical Tools .....	8
Part 4: Normative Implications .....	10
Chapter Two: Scholarly Critiques and Neoclassical Responses.....	12
Part 1: Interdependent Utility and Externalities .....	12
Part 2: Imperfect Information.....	15
Part 3: Needs, Fairness and Ethical Concerns.....	18
Part 4: Observations and Evaluations of the “Dialogue” .....	20
Chapter Three: A Critique of Philosophical Foundations of Neoclassical Theory of Health Care Consumption.....	26
Part 1: Three Fundamental Problems.....	26
Part 2: Existing Critiques and The “Two Problematic Categories” Revisited...	33
Chapter Four: Some Possible Directions for An Alternative Theory of Health care Consumption .....	38
Concluding Remarks .....	51
Bibliography .....	53
Appendices.....	56
Appendix A .....	56
Appendix B .....	58
Appendix C .....	60
Appendix D.....	62
Appendix E.....	64
Appendix F .....	66

## Introduction

Health economics has been an applied field of economics since the publication of Kenneth J. Arrow's article *Uncertainty and the Welfare Economics of Medical Care* in 1963. Over the past 40 years, this sub-discipline of economics has been witnessing growing impacts in academia, medical parlance, and policy arena. (Culyer, Newhouse, 2000) Neoclassical theory of health care consumption is a matured theory constructed by many brilliant minds. It is also the basis of many neoclassical normative analysis of health care market. More interestingly, health economics is also one of the very few sub-disciplines of economic that still relies its analysis on welfare economics; thus, its normative content is still deeply grounded in welfare economics. Recently, growing literatures have been pointing out the problems and inconsistency of this theory and demand alternative approaches to explain and analyze human consumption of health care. This thesis intends to respond to such demand in a unique way.

It is extremely important to understand that in order to construct alternative theory of health care consumption, or more precisely, a *better* alternative, it is imperative that we understand the true merits and limitations of the existing standard theory, so that we know what to avoid and what to keep when we build a new one. To understand *true* limitations of a particular theory, instead of arbitrarily pointing out its problems we see and disagree with, we need to "work with" or "play around" with the subject patiently, so

that during this process, its true problems and limitations will emerge by themselves. This method is simply called “method of critique”, which corresponds to a particular Western philosophical line of thought that began with Kant and extended by Hegel, Marx, Freud, and many post-modern thinkers.

This thesis is divided into four main chapters each has a unique and necessary place in the project of critique. Chapter one introduces the basic neoclassical theory of health care consumption; the word “basic” here means that standard textbook version of their theory. The purpose of this chapter is to show how the consumption of health care is theorized and analyzed in the neoclassical framework on a basic level. Chapter two explores the existing critiques of this theory, as well as some major developments of this theory in response to these critiques. Moreover, this chapter also analyzes, to what extent, the theoretical developments and responses address the exiting critiques. This chapter is essentially a “playing around” part of the project of critique, which plays the key role in the project of critique. Based on what was revealed in chapter two, chapter three present my own critique of the neoclassical theory of health care consumption by looking into the philosophical and methodological foundations of this theory. This chapter identifies three fundamental problems with this theory, which, I argue, caused the problems emerged in chapter two. The last chapter tries to explore an alternative theoretical framework to analyze health economics by bringing in works done by people in different disciplines. Surely, this chapter is grounded in the critique performed in chapter three.

## Chapter One: Basic Neoclassical Theory of Health Care Consumption

### Part One: Human being, Utility, Health and Health Care

The neoclassical understanding of human being is embedded in philosophy of utilitarianism.

“ Nature has placed mankind under the government of two sovereign masters, *pain* and *pleasure*. It is for them alone to point out what we ought to do, as well as what we shall do... They govern us in all we do, in all we say, in all we think: every effort we can make to throw off our subjection, will serve but to demonstrate and confirm it.” (Bentham, 1789)

Mankind, in this line of thought (also in the neoclassical economic thought), is understood as individualistic and rational calculating beings, who are constantly trying to avoid pains and gain pleasures. Pleasure and pain are the basis for the concept of utility in utilitarian and neoclassical line of thought. Since utility is the ultimate end of human actions, then, any human behaviors can be reduced to the behavior of utility maximization.

In neoclassical economics, health is “defined broadly to include longevity and illness-free days in a given year – is both demanded and produced by consumers.” (Grossman, 1972) Since human beings are nothing but individualistic utility maximizers, then, it logically follows that health is desired by human beings because it generates utilities. In neoclassical economics, utility is generated from health in two ways. First, ill-health is painful, which is a source of disutility. Therefore, health enters into the individual utility function directly with a positive influence on the welfare. Second,



health is viewed as a special kind of human capital. Better health means more sick-free days available for an individual. With these sick-free days, people can go to the market and produce income (which ultimately turns into commodities), and leisure that ultimately generate utility. Therefore, health is not only a consumer good, but also it is a human capital, an investment good for the household production function.

Health is a source of utility. The next question is: what determines this source of utility? In other words, what are the determinants of health? In neoclassical framework, health care, age, income and education, environmental and lifestyle factors, and genetic factors are viewed as the determinants of health. (Henderson, 2005) An individual begins with a stock of health, which depends on the genetic factors of the individual. As time goes on, the individual's age, and the health stock depreciates. The rate of depreciation depends on the rest of the determinants mentioned above. (Santerre and Neun, 2007) Given these determinants, the production function for health can be constructed as  $H = f(HC, t, Z)$ , in which, HC stands for health care, t stands for time, and Z is the other determinants of health. Before moving on to the concept of health care, it is important to point out that in the neoclassical framework, health is overall viewed as determined by individual preferences and responsibilities despite of the existence of those socioeconomic factors such as income, education and environment.

“Regardless of the level of income and education, health status depends to a large degree on personal behavior. Lifestyle factors including diet, exercise, sexual behavior, cigarette smoking, substance abuse, and brushes with violence are important determinants of health status. The observed relationship between health status and socioeconomic status is interesting. But insufficient evidence prevents a determination of whether we are actually witnessing a link between socioeconomic status and health, or lifestyle behavior and health.” (Henderson, P133 – 134)

The emphasis of life-style and individual responsibility determination of health instead of socioeconomic factors is actually very typical in neoclassical framework, and the reasons will be explored much later in this thesis.

The discussion above about the determinants of health reveals the role of health care in neoclassical framework – one of the determinants of health. Neoclassical theory defines health care as composite of “myriad goods and services that maintain, improve, or restore a person’s physical or mental well-beings.” (Santerre and Neun, P24) Health care, like other commodities, is produced and distributed in the market place. However, unlike other commodities, health care exhibits four distinct characteristics. Intangibility – most health care services cannot be seen, smelled, tasted, felt or heard. Inseparability – production and consumption in most cases happen simultaneously. Inventory – due to the characteristic of inseparability, most times, providers cannot stock or maintain an inventory of health care to meet the demand. Inconsistency – the composition and quality of medical services consumed vary across different cases. In other words, health care is kind of commodities with heterogeneous nature. (Santerre and Neun, P25) The heterodox nature of health care makes it difficult to quantify. However, in term of producing health, it is still subjected to the law of diminishing return; therefore, a downward sloping marginal product of health curve can be drawn. Another special characteristic of health care mentioned by Evans is that the health care alone is a source of disutility too due to the side effects generated from consuming health care. (Evans, 1984)

With both health and health care defined, it is easy to see the relationship between health care and utility. A utility function that shows this relationship can be written as:

$$U = f[X, HC, HS(HC, t, Z)]$$

where, health care (HC) enters into the utility function directly, at the same time, it contributes to utility indirectly through the health status (HS) yielded from consuming health care. There are several implications can be yielded from this general model according Hurley. A consumer's utility (which is also consumer's welfare) depends on three marginal values. First is the marginal utility from yielded directly from consumption of health care alone, which is the  $dU/dHC$  in a direct sense. This value is normally negative due to the side effects yielded from receiving health care. The second is the marginal contribution of improvements on health status to utility –  $dU/dHS$ . This value is a very subjective one, which depends purely on the individual's own feelings, and it is only known by the individual. The third marginal value is the marginal productivity of health care in producing health –  $dHS/dHC$ . This relationship is a technical one. It answers the questions like: how much health care improvement can certain treatment bring? Presumably, this value can be known by scientific researches. (Hurley, 2000)

## Part Two: Uniqueness of Health Care Commodity

It is important notice that there is a number of unique characteristics of health care as a commodity that are commonly recognized by neoclassical health economists ever since the ground breaking article *Uncertainty and the Welfare Economics of Medical Care* written in 1963 by Arrow.

First, the demand for health care is irregular for most of time because people go and get health care only when they get sick or injured. Except for the small amount of preventative cares, a consumer will not demand health care when he or she is healthy. Second, patients normally have very limited knowledge about the product – health care, therefore, they tend to heavily rely on their physicians to give medical advises. Given this imbalanced distribution of information, minimum educational standards and professional licensing (barriers) for providers are created and justified for the reason of protecting the interest of uninformed lay public. Third, transactions of health care are surrounded by uncertainties. Individuals are uncertain about the onset of an illness, so they are uncertain about their own demands for health care. Physicians are also uncertain about the results (including the side effects) of the treatment. Fourth, there is a widespread of not-for-profit providers in the health care market. This phenomenon is also explained by the fact that the information about health care is so unevenly distributed between patient and physician, so trust plays an important role in health care market transactions. Non-for-profit providers are viewed as more trustable because people tend to believe that profit motives would cause providers to abuse the information they have and induce patients to purchase health cares that are not necessary. Fifth, the consumption of health care generates externalities. For example, the consumption of immunization of communicable diseases generates positive externalities for other members of the society. Moreover, an individual's access to health care is concerned by others for caring reasons. Therefore, the failures of accessing adequate health care generates negative externality in the society. (Arrow, 1963)

As mentioned earlier, the uniqueness of health care as commodity has been recognized ever since the genesis of the discipline of health economics. More importantly, these unique characteristics are also signs of limitations of applying standard economic theory to analyze health care market behaviors. However, despite of these unique characteristics and limitations, three analytical tools are developed to study the consumption of health care.

Part Three: Three analytical tools – Demand for Health, Demand for Health Care, and Demand for Health Insurance.

Demand for health as a human capital is a mathematically sophisticated analytical tool that was developed by Grossman in 1972. In his model, a consumer starts with an initial stock of health, and it depreciates over the time as the consumer gets older. And more importantly, this stock can be increased by investing in health capital. The shadow price of health depends not only on the price of health care, but also other variables such as education, diet, exercise, recreation etc. And the return to health capital investment is the reduction of the time lost to engage into market and non-market activities due to illness calculated in monetary term. The marginal return to capital, or the marginal efficiency of capital (MEC) is diminishing due to the fact that the production of health days per year is bounded below 365 days, but the health stock can increase. Therefore, as the health stock increases due to investments in health capital, within a year, the total healthy days produced must be increase at a decreasing rate due to the existence of the upper boundary of 365 days. When the healthy days are valued in monetary terms, a

downward sloping demand curve can be constructed, which show the diminishing marginal return to health investment. (Grossman, 1972, 2000) <sup>1</sup>

As the analytical model of demand for health is constructed, the analytical tool for demand for health care becomes possible. As mentioned in part two, in neoclassical framework, health care is defined as one of the determinants of health. Moreover, despite of the heterogeneous nature of health care, it is still subjected to the law of diminishing marginal return in producing health. Therefore, a downward sloping demand curve for *health care* can be simply derived from the demand for health. It is extremely important to understand that, in neoclassical line of thought, demand for health care is a *derived* demand from the demand for health. In other words, as Hodgson puts it nicely, demand for health care is “a demand that is not for the good or service itself, but for its outcomes” (Hodgson, P 238)

Another important phenomenon in health care market is the widespread third party payers and the vast demands for health insurance. Therefore, there is the third analytical tool – demand for health insurance. It was mentioned in part three that one of the distinct characteristic of health care commodity pointed out by Arrow is uncertainty. In the theory of demand for insurance, firstly, each health care consumer in the presence of uncertainty is assumed to be risk-averse, which means that she can make herself better off by risk-pooling. It is very important to understand that risks can be pooled only for phenomena that are exchangeable. For example, pooling the risk of illness is impossible, but financial risks associated illness can be pooled. By pooling the financial

---

<sup>1</sup> Please see Appendix one for graphical explanations.

risk, within a reasonable range of premium cost, a risk-averse consumer is able to reach a higher level of utility, which makes the consumer better off. (Henderson, 2005; Arrow, 1963; Hurley, 2000)<sup>2</sup>Essentially, in neoclassical framework, the existence of health insurance is justified by the risk-averse nature of consumer and the uncertain nature of health care. However, a list of problems that exist in the market for health insurance are also commonly recognized by neoclassical economists, these include consumer moral hazard, adverse-selection, economy of scale, imperfect information etc. Among them, the problem of consumer moral hazard received most attention from health economists.

#### Part Four: Normative Implications

The neoclassical theory of health care consumption is not only an explanation of human behavior, but also, it yields a set of normative implications. With ideas and analysis borrowed from welfare economics such as optimality, efficiency, money-metric utility, revealed preference etc. the three aforementioned analytical tools start to have normative meanings, and policy relevant analysis started to spring from this framework. A great example of which is Mark V. Pauley's 1968 paper on consumer moral hazard. In this paper, he adopted a typical welfare analysis to study consumer's behavior with and without health insurance. Essentially, Pauley argues that the existence of health insurance makes the cost of health care irrelevant to consumers, so a rational consumer would engage into the act of "moral hazard" – over consume health care, which consequently causes welfare loss in the society. The solution to this problem Pauley prescribes is through demand side cost-sharing mechanisms such as insurance co-payments and

---

<sup>2</sup> See Appendix two for numerical explanations

deductibles. (Pauley, 1968)<sup>3</sup> Not long after the publication of his paper, insurance companies and government policies started to respond positively, and then, it marked the beginning of high co-pay/deductible years in the U.S. Essentially, just like what Schumpeter said about any social theories, neoclassical theory of health care consumption is far from being a positive theory; instead, it contains a set of subjective meanings and reflects certain ideologies. To understand how these meanings and ideologies can affect our analysis of the distribution of health care in our society, an in-depth theoretical critique is needed.

---

<sup>3</sup> See Appendix three for a numerical example.



## Chapter Two: Scholarly Critiques and Neoclassical Responses

The neoclassical theory of health care consumption has existed for more than 40 years. In the past 40 years, there also has been a growing volume of scholarly critiques about this theory. At the same time, neoclassical health economists have been developing their analytical tools in order encounter and deal with these critiques. This chapter intends to review the literatures on those existing scholarly critiques as well as the development of the neoclassical theory of health care consumption in response to these critiques.

### Part One: Interdependent Utility and the Existence of Externalities

#### Critique:

The neoclassical fundamental conception of individualistic human being and independent utilities are heavily challenged by Donaldson and Gerard. Donaldson and Gerard argue that human preferences are interdependent instead of independent in many regards, especially in the case of health care. The problem with interdependent utilities is mostly associated with the concept of externality. They argue:

“In health care, there may be certain positive externalities whereby people benefit from other people’s consumption of the commodity. Benefit may arise from knowing that others can consume a public health intervention, such as vaccination, which has direct effect on risks to one’s own health (a ‘selfish’ externality). Benefit may also arise from knowing that on one’s own health status (a ‘caring’ externality). This caring externality is often characterized by the concern some benevolent, rich and healthy members of society may have for those who are poor and/or unhealthy, although clearly the poor can be similarly concerned.” (Donaldson and Gerard, P38)

Essentially, they point out that the level of consumption of health care generates externalities due to either selfish or caring reasons. The problem with externality is that it makes the argument that social welfare is maximized when each individual's welfare is maximized no longer true. Therefore, with the existence of externalities, social welfare is NOT maximized when each individual's welfare is maximized.

Response:

Culyer and Simpson (1980) have documented three phases in the development of the economic analysis of externalities of health care consumption in their article in 1980. Economists started to be interested in the idea of externalities of health care in 1960s. During that period of time, economists were seeking an explanation for the existence of National Health Services (NHS) in England and New Zealand in a neoclassical welfare framework. The literature at that time was quite thin. Works during this period mainly recognize the "physical" existence of externalities in health care e.g. communicable diseases, but argue that, regarding to the externalities cause by social concerns for others' lack of access to health care, it is no different from externalities cause by any other social concerns. Regarding to the existence of NUH, so they conclude that it is the result of irrationality and it is determined to lead to economic inefficiency.

The second phrase of the study of externalities of health care was mainly led by Pauley (1970) and Lindsay (1969). During this period of time, health economists argue that people are concerned about inequality of access to health care in the society. They view externalities as something that is generated by good-specific interdependent nature of utility functions. Pauley models the interdependency by relating individual's utility

function to others' *absolute* level of health care consumption; and Lindsay models it by relating the individual's utility function to the *relative* level of other people's consumption. Pauley models externality by a hidden social demand curve, such curve is the marginal benefit of a person receives by knowing that others in the society are receiving adequate health care. In other words, it is the "demand" for others' demands. Hence, the socially optimal level of health care consumption is determined by the private individual demand PLUS the social hidden demand, and the marginal cost of producing health care. (Pauley, 1970)<sup>4</sup> Lindsay's model asserts that the source of externality is the inequality or the difference of the levels of health care consumption among people in the society. Therefore, the solution he subscribes is to eliminate such difference. Moreover, in his paper, he conducted a rigorous cost-benefit analysis to find the least costly method if the government were to close the gap between two consumers' levels of consumption. (Lindsay, 1969)<sup>5</sup>

The third period has shifted the emphasis from health care to health status. During this period of time, health economists started to see that what generates negative externality in health care market is not the levels of consumption of health care per se. Instead, they embrace Grossman's theoretical perspective that demand for health care is derived from the demand for good health, and argue that it is the different levels of health status that generate negative externalities. In other words, people are not really concerned with other people's access to health care; instead, they are concerned about other people's health. An important move health economists made during this period of time is taking

---

<sup>4</sup> See Appendix four for a graphical example.

<sup>5</sup> See Appendix five for a graphical example.

the models we have seen in the second period and replaced level of consumption with health status. However, such move led them to a difficulty – measurability of health status. Unlike the level of consumption of health care, health status is much more difficult to measure. Therefore, in the past twenty year, enormous amount of inks were spilled on how to measure of health status. However, there is still no settled view on this issue. (Culyer and Simpson, 1980)

## Part Two: Imperfect Information

### Critique:

It has been mentioned that problems with imperfect information and uncertainty have been pointed out by Arrow ever since the genesis of the discipline of health economics. However, despite of these problems and limitations, the three analytical tools, namely demand for health, demand for health care and demand for health insurance, are developed to study the health care market. Along with these analytical tools, a list of assumptions was made, which includes perfect information and certainty. Rice (2003), Donaldson and Gerard (2000) revisited and elaborated these problems. They argue that the assumptions of perfect information and certainty simply do not hold in health care market.

Recalling the three marginal values that health care utility function depends on -  $dU/dHC$ ,  $dU/dHS$  and  $dHS/dHC$ , there are always surrounded by information problems. For example,  $dHS/dHC$  is the marginal contribution of health care to health status. First of all, no one is certain or have perfect knowledge about this marginal value. Secondly,

physicians tend to have more knowledge regarding to this value in comparison to patients; therefore, it gives rise to the problem of asymmetric information to. The value of  $dU/dHS$  is even more problematic following Grossman's human capital model. Because it also involves measuring values of expected sick-free-days in terms of market prices and leisure. Therefore, since the assumption of perfect information do not hold, then consumers simply cannot maximize their utility when they are left alone in the market, and ultimately, the demand curve losses its normative meaning, and the theory losses its analytical power.

Response:

Pauley recognizes that the main factor that differentiates health care from “traditional” commodities is information imperfection. He points out that the existence of this particular market failure also explains the existence of non-for-profit institutions in the health care market, “because such firms are thought to be less willing to constrain quality in order to increase profits.” (Pauley, P235) Nevertheless, the role of non-for-profit firms in health care market creates another concern for neoclassical health economists – production inefficiency due to the lack of profit incentives. However, Pauley observes that in the past 20 years, there has been growing amount of data on outcome-based performance measures became available to the public by professional associations such as he Joint Commission on Accreditation of Hospitals, the American Board of Internal Medicine etc. At the same time, an industry that furnishes measures of severity, outcome, and quality of health care providers has emerged. In other words, information market for health care started to emerge. According to Pauley, these “are all

reasons to suspect that the medical market is on the verge of remedying much of its information deficit.” (Pauley, P231). However, he is also puzzled about the fact that this process of change is going at a very slow rate, and collected information does not get revealed to the public easily.

A theoretical response towards the problem of asymmetric information is the agency theory. In traditional literature, the principal and agent are assumed to be utility maximizers with independent utility functions. Moreover, both principal and agent are assumed to be risk-averse. Therefore, for the principal, the only information he or she has is the result of his or her own consumption, therefore, the optimal fee schedule the principle pays to the agent is a function of outcomes, because this way, both principal and agent share the risk. Moreover, such fee schedule can be roughly determined.

(Sappington, 1991) However, Mooney and Ryan pointed out that there are some major differences between the physician-patient relation and the traditional agent-principal relation. First of all, there is interdependence between the physician’s utility function and the patient’s utility function. For a typical physician, there is at least part of his or her own utility is derived from the wellness of the patient. In a simpler term, they have the good will of seeing patients getting better. So the physician’s utility function includes the patient’s utility function. At the same time, a physician would also have other interests included in his or her utility function that might contradicts with the patient’s utility function. Secondly, unlike traditional markets, in health care market, the real outcomes of the consumption of health care are not often observable. Lastly, they argue that, unlike the traditional “agents”, physicians’ behaviors are also constrained by professional ethics, which adds another layer of complication in the agency theory in health care. (Mooney

and Ryan, 1993) Due to these peculiarities in the physician-patient relation, coming up with an *optimal* method of remunerating physicians remains to be very difficult. Mooney and Ryan concluded their article:

“The standard theory of agency has concentrated on devising optimal methods of remuneration. When we apply the theory to health care, the emphasis needs to be on researching in more detail into first, the patient’s utility function, second, the doctor’s utility function and, only then, into optimal methods of remunerating doctors.” (Mooney and Ryan, P134)

### Part Three: Needs, Fairness and Ethical Concerns

#### Critique:

Reinhardt and Williams point out the limitation and impotence neoclassical welfare economics in regards to analyzing ethical concerns such as needs and fairness. The demand curve in neoclassical welfare framework normally is viewed as consumer’s willingness to pay. However, considering how demand curve is constructed, regardless it is Marshallian or Hicksian, personal income is always an integral part of consumer demand. Thus, consumer demand is not only a representation of consumer’s willingness to pay, but also, his or her *ability* to pay. Reinhardt points out that the theory of consumption itself does not concern us; the actual problem is embedded in their method of evaluating social welfare. When some allocation of resource is viewed as “efficient” in a strict neoclassical welfare economics sense, it is always conditioned by *given* income distribution, so it might very well have nothing to do with equity, fairness or the satisfaction of basic human needs. In other words, an economically “efficient” allocation

is not necessarily a socially desirable one. (Reinhardt, 2002)<sup>6</sup> In the context of health, the concepts of need, equity and fairness are quite sensitive subjects. Williams argues that health care is a different kind of commodity; unlike traditional commodities such as chocolate or automobile, health care determines human beings' very existence and state of being. Therefore, leaving its distribution to free market exchange is problematic because it links the accessibility to health care to the economic resource of an individual. (Williams, 1981) Therefore, the idea of "efficient" allocation of health care in neoclassical framework is very easily biased toward the consumers who are equipped with higher income. The social and ethical concerns about health such as "needs", "fairness" and "equity" are generally undermined in this analysis.

Response:

The theoretical responses toward this line of critique are quite limited. Regarding to the concept of fairness and equity, some neoclassical economists incorporated these ideas into their analysis of externalities. Many examples can be seen in the earlier discussions on externalities. Regarding to the concept of needs, a group of economists have tried to establish an objective criteria/definition of human needs, but they never reached to a common ground. (Hurley, 2000) A standard theoretical incorporation of "need" into the theory of consumption was done by Intrilligator (1981). Intrilligator argues that the shape of demand curve for health care is essentially nonlinear with quantity demanded approaches to a minimum level the price increases to infinity. In standard welfare language, at this minimum level of quantity demanded, the consumer is

---

<sup>6</sup> See Appendix six for Reinhardt's example



willing to pay infinite amount of money to this particular health care. It logically follows that this is the level of health care that is “needed” by the consumer. (Santerre and Neun, 2000)

Recently, there have also been some interesting literatures in the field regarding to income distribution. Nyman (1999) views the existence of health insurance as the mechanism of income redistribution, which results welfare gain for the society. In his work, he points out that the primary effect of the existence of health insurance is simply the rightward shift of individual demand. However, unlike the Pauley’s theory of moral hazard, he argues that the ones to shift their demands with the existence of health insurance are the ones who are ill and in need to health care, because there is no reason for a healthy individual to demand more health care just because it is cheap. More importantly, the health cares that are consumed by those ones who need are essentially paid by those who are healthy and wealthy in the same insurance pool. Therefore, the existence of health insurance ensures income redistribution from those who are wealthy and healthy to those who are poor and ill. Ultimately, an appropriate insurance system will respond well to the unequal access to health care due to unequal income distribution in the society. (Nyman, 1999)

#### Part Four: Observations and Evaluations of the above “dialogue”

The final question in this chapter is: to what extent, do the neoclassical theoretical developments and responses address to the existing critiques? The above “dialogue” between the critiques and the responses reveal an interesting theoretical phenomenon, that is that all the responses tend to systematically fall into two troublesome categories,

namely, the trade-off between theoretical determinacy and reality, and free market rational behavior resolution. Following will examine this interesting phenomenon.

#### Trade-off between Theoretical Determinacy and Reality

In Pauley's model in response to the critique about interdependent utility and externalities, the existence of this "hidden" social demand for other people's consumption for health care is recognized. Comparing to the original theory of health care consumption, this modified version is more *realistic*. However, as matter of fact, it is extremely difficult for anybody to know what exactly is the social demand like.

Conducting a national survey about such social demand is almost an impossible task; and not only that, even if such task is possible, no one is sure that validity of the research results, which is exactly why neoclassical economists tend to rely their analysis about welfare and choice on the theory of revealed preference. However, the theory of revealed preference does not apply here too because, according to the theory, preference can only be revealed in market. There is clearly no market for this social demand for others, so it will never be validly revealed. Consequently, this hidden social demand will remain to be hidden and indeterminate, and no concrete policy recommendations can yield from this theory.

Lindsay's model suffers from the other end. It is indeed determinate, because it tells us precisely where source of negative externality is – difference in the levels of health care consumption. And clearly, the solution is simply to eliminate such difference. However, this theory relies on a grand assumption about individual preference – people prefer to have no difference in the levels of health care consumption – which makes the

theory more even more unrealistic than before. In other words, this model trades theoretical determinacy off with the “realness” of the model.

In third phase of the theoretical development of externalities, the theories became more realistic because it recognized the fact that what generate negative externality is the knowledge that some people in the society are not getting adequate health. However, the theory becomes indeterminate as soon as people start to replace health with health care on the x-axis of the demand diagram, because by doing so, we force the concept of health on a quantitative scale. Regardless the efforts made by both economists and public health professionals, coming up with a theoretically sound quantitative measure for health still seems to be impossible. Therefore, in the third period, the model becomes more realistic, but they end up with something strange called health on the x-axis without knowing what does it mean by, let's say - *20 healths*.

The agent-principle model applied to health in response to the critique about information problems fall into the same old trap. This theory gains “realness” by considering the utility functions of physician and patient to be interdependent, as well as considering the existence of ethic and professional constraints on physicians' behaviors. However, once those considerations are modeled into the physician's utility function, indeterminacy emerges. Different physicians would have different set of professional and ethic constraints that are determined by various factors such as the physician's professional experience, up-bringing, family background, education etc. Physicians facing different patients would have different patient utility functions included in their preferences. Moreover, the interactions among the physician's self-interest, patient's

utility, and ethical and professional constraints, will yield a set of decisions that varies with time, space, and individual. This is also why Mooney and Ryan said in the end of their paper that in order to come up with the optimal way of remunerating physicians, we have to really understand the nature of the physician' and patient's utility functions. It is interesting to see that the "nature" of the utility functions was not hard to understand in the traditional abstract principal-agent model until they made it more realistic to analyze health care market.

#### Free Market Rational Behavior Resolution

Free market and rational behavior tends to be a quite prevalent solution to the problems posed by the critiques. First, despite of the problem of indeterminacy, Pauley's solution to externalities in health care market is heavily dependent on the demand curve of a rational individual who "cares" about the others. Externality exists because that particular individual demand exists, and the solution he prescribes to the government is heavily dependent on the shape and slope of this individual demand. If this demand does not exist, then, according to this theory, people not getting adequate health care is not a problem. Second, Pauley's response towards information problem clearly suggests that as long as we leave the market alone, rational individuals will demand more information about medical providers, so it will give pressures to government and public institutes to collect and publish data, on the other hand, information market will emerge allocate information to consumers by market mechanisms. Third, Intrilligator's model clearly attempts to use rational consumer behavior to determine human needs, because he is essentially arguing that an individual's needs can be revealed simply by observing his or

her demand schedule. Forth, Nyman's work on income distribution is indeed a very insightful one. But again, the solution essentially is left to the insurance market, because ultimately, it is the emergence of insurance market that redistributes income and solves the ethical problem of inequality.

The free market rational behavior resolution is inherently problematic for two reasons. First, it does not address the critiques well. What the critiques point out is the problem with rational consumer behavior in the free market, and its incapability of achieving an optimal or socially desirable level of allocation. But yet, the solution still relies on using the problem itself – consumer behavior – to solve to problem. Second, seeing the emergence of other markets (e.g information, insurance) as the solution is problematic because it simply ticks the trouble to somewhere else. As we know, both information and insurance markets are very unconventional and complicated just like the market for health care. If we look into these markets, we will encounter the same set of problems (if not more).

The existing scholarly critiques spend a great deal of attentions on the uniqueness of health care commodity and market in their critiques of the neoclassical theory of health care consumption. According to the critiques provided by Rice, Donaldson and Gerard, neoclassical theory of consumption and welfare analysis fail to analyze the market for health care because of the particularities of health care commodity (e.g. externalities, lack of information, asymmetric information, uncertainty etc.). Reinhardt and William's critique point out that neoclassical welfare theory of consumption is a very limited one because it tends to undermine ethical concerns such as needs, fairness, and equity.

Unfortunately, these limitations are amplified in the context of health care because, unlike other commodities, health care, as Williams said, is something that determines human being's very existence. However, by reviewing the neoclassical responses toward these critique, an interesting theoretical phenomenon is observed, which is that they tend to systematically fall into the aforementioned two problematic categories. What this phenomenon is suggesting is that the problem with the neoclassical theory of health care consumption is deeper than the uniqueness of health care commodity and market, for that if it were the only problem, then, it would have been solved simply by relaxing or revising some assumptions to make the theory more appropriate or relevant to health care market, but it is clearly not the case as we reviewed the neoclassical theoretical responses toward the critiques. The real problem with this theory (that is overlook by the existing critiques) is actually embedded in the fundamental neoclassical theory of consumption itself. This argument will be fully developed in next chapter.

## Chapter Three: A Critique of Philosophical and Methodological Foundation of Neoclassical Theory of Consumption

Neoclassical theory of health care consumption can be simply separated into two parts – health care and neoclassical theory of consumption. Since the health care part cannot be the source of the problems as demonstrated in the last chapter, then, we shall look into the neoclassical theory of consumption itself, to see if there is anything problematic about this theory even before it is applied to health care.

### Part One: Three Fundamental Problems in Neoclassical Theory of Consumption

The best way to uncover theoretical problems is to focus on the theorization process, and try to identify the apparent problems that emerged during this process. This part of the chapter will identify three fundamental problems that emerged in the neoclassical theorization process for consumption.

#### 1. Quantitative Utility

Jevons in 1911 said: “a true theory of economy can only be attained by going back to the great springs of human action, *the feeling of pleasure and pain.*” (Jevons, 1911) Therefore, the starting point of neoclassical economics theory is utility. Even though the utilitarian perspective on human nature is subjected to many rigorous critiques, but it is not the subject of critique in this paper, for that the nature of such

discussion will ultimately be a metaphysical one. However, we will soon see that problems and inconsistencies emerge as we start to explore what economists did with the concept of utility in their process of constructing their theory of consumption.

It is important to notice that utility is a general and abstract idea, which is about human experiences of pleasure and pain. In order for such a general and abstract idea to be operable (being able to build a consistent theory on it), a set of specific characteristics has to be either identified or assumed. The characteristics of utility have gone through some interesting transformations in the history of economic thoughts. The old consumer theorists view utility as something that is measurable on a quantitative scale. Since utility is about pleasure and pain, and pleasure and pain seem to have different magnitudes and degrees, then, it makes sense to give utility a quantitative characteristic and argue that it is cardinally measurable. Putting utility on a quantitative scale opens the ground of building a logically consistent theory of human acquisition by employing the psychological principle of diminishing marginal return of marginal utility.

However, by putting utility on a quantitative scale leads to a thousand-year-old philosophical difficulty – commensurability issue, which has been a puzzle for philosophers and social scientists ever since Aristotle. The quantitative characteristic of utility necessarily implies that human experiences are commensurable on a single quantitative scale. But if we reflect on our everyday ordinary experiences, our life seems to be consisted of sets of qualitatively distinct experiences that are simply incommensurable on a single quantitative scale. This apparent inconsistency between the quantitative characteristic of utility and ordinary human experiences poses what I identify



as the first fundamental problem of neoclassical theory of consumption – quantitative utility. Nevertheless, this is not the end of the story. Neoclassical economists themselves were aware of this issue long time ago. The transformation from the “old” theory of consumption to the “new” theory of consumption pioneered by Pareto and Hicks is precisely a theoretical response toward the issue of quantitative utility.

Pareto first realized that it is problematic for economists to follow utilitarianists to assume that utilities are quantitatively (or cardinally) measurable. He came up with a solution by giving utility an ordinal characteristic – a consumer can specify that he or she prefers one bundle of commodities to another or they are indifferent to them. Then he came up with an important theoretical tool called indifference curve, on which, different combinations of commodities would yield the same amount of total utility. Each consumer has a family of indifferent curves corresponding to different amount of total utility. Then Hicks took on the project and developed Hicksian compensated demand function. In his model, consumers instead of maximizing their utilities under budget constraint, they minimize their expenditures subject to their highest indifference curves. Hicks argues that his theory of consumption is no longer dependent on the theory of utility, instead, consumption is explained in terms of marginal rate of substitution, and ordinal rankings of consumer bundles. The advantage of this “new” theory of consumer is that it is able to analyze the relationship between preferences, income, and demand. This new theory of consumer is now accepted as the standard theory of consumer behavior.

Any economics students with sober mind would understand that the Pareto and Hicks’ s attempt of building a theory of consumption that transcends from the theory of

utility failed on an philosophical ground. First, Pareto's conception of ordinal utility does not go beyond the quantitative nature of utility at all. For anything to be measurable, no matter ordinally or cardinally, it has to be on a single quantitative scale. A case that we can ordinally measure quantitatively different things is simply unimaginable. If we want to compromise this difficulty by saying that the utilities are simply incommensurable, then there would be no way for anyone to measure them either cardinally or ordinally because they are qualitatively different to begin with. Moreover, in the Hicksian theory of consumption, the convexity of the indifference curve depends on the principle of diminishing marginal rate of substitution (MRS), which is essentially the reformulation of the theory of diminishing marginal utility. Therefore, we can see that new consumer theorists simply transformed the appearance of the problem of quantitative utility. Utility remains to be quantitative, and the Aristotelian puzzle remains to be unsolved.

## 2. Intensified Subjectivity in Utility

The new theory of consumption did not solve the problem of incommensurability of utility, but it gave another crucial characteristic to the nature of utility arbitrarily—interpersonal incomparability. To the old consumer theorists, utility is somewhat subjective, but they see the social welfare as the *sum* of the all individuals' utilities. Furthermore, the social or total welfare can be improved by appropriately redistributing income in a society. Therefore, it is clear that, in the old theory of consumption, there is a large component of objectivity in their concept of utility. Pioneers of the “new” theory of consumer such as Pareto and Hicks argue against this argument by saying that there is no ground for the “old” consumer theorists to believe that people's utilities are comparable

and addible since utilities are human experiences, and human experiences are entirely dependent on the individuals who experience them; in other words, utility is *purely* subjective. Pareto therefore puts forward the argument that consumers' utilities are interpersonally incomparable and we cannot sum people's utilities to get the total social welfare. Instead, social welfare simply depends on individual utilities, and social welfare is maximized if and only if each individual utility is maximized.

The transformation from the old to the new theory of consumption in this regard is a process of intensification of the subjective nature of utility. If utility is nothing but human experience, then, by arguing that utility is purely subjective, they made a grand metaphysical leap of faith. The question of subjectivity versus objectivity is a thousands yearlong philosophical paradox which is not the focus of this paper. However, once again, a reflection on our ordinary human everyday life will pose doubts on this extreme version of subjectivity, for that if it were true, then, the existence of many essential things and phenomena in our life such as language, culture, and human relations would be unexplainable. Secondly, on a more practical ground, by giving utility a purely subjective characteristic, the entire theory of consumption that was fundamentally built basing it would be restricted to a purely subjective realm, and it is determined to be impotent or biased once it is confronted with issues and concerns that are socially objective in nature.

### 3. An Interlocking Structure Secured by the Theory of Revealed Preference

In order to give analytical power to the neoclassical theory of consumption, it is necessary to come up with some sort of measure for individual social welfare, otherwise, the theory would only have explanatory power. However, if the abstract concept of utility

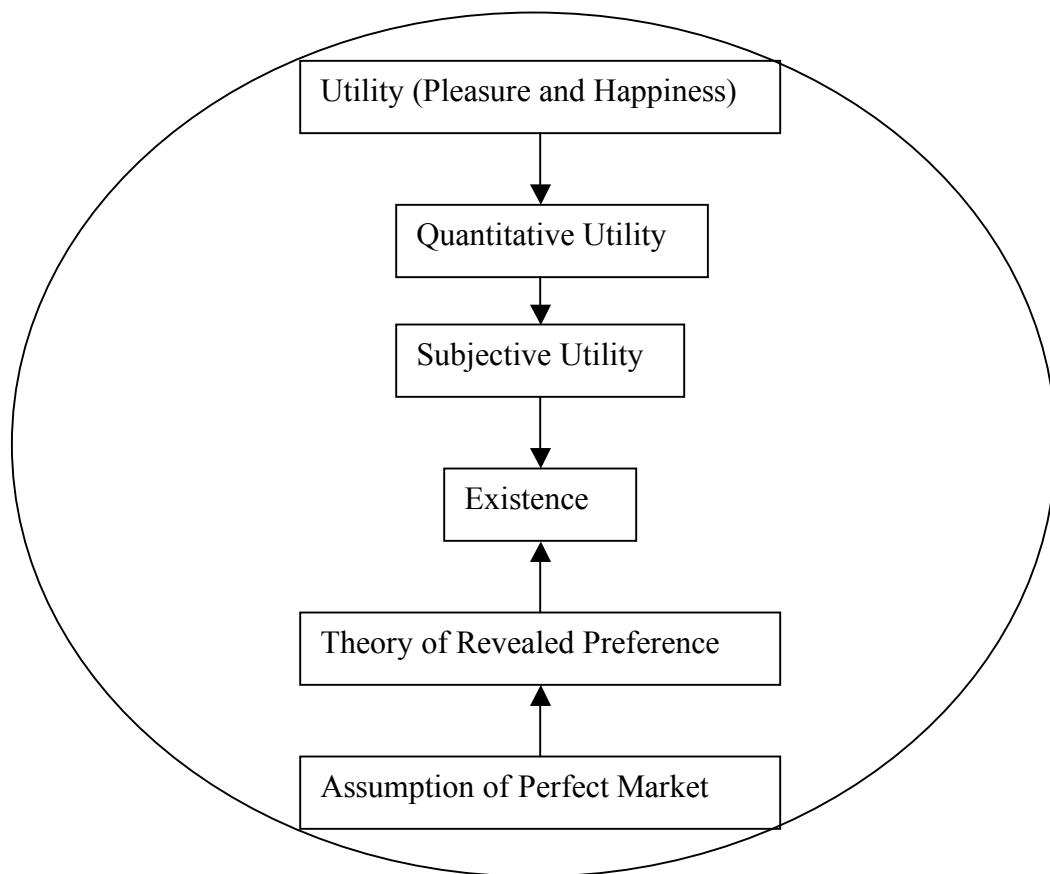
is asserted as something that is *quantitative* and *purely subjective*, then, the measure of utility (social welfare) will be tricky. First of all, such measurement has to be quantitative because utility itself is quantitative in nature. Second, the whole purpose of coming up with a measurement of social welfare is to establish an objective standard; but yet, such standard also has to preserve the subjective nature of utility. The perfect and only candidate for such measurement is *purchasing decisions*. First, purchasing decisions are described by the amount of *money* one is willing to pay. Without a doubt, money is quantitative inside out. Also, money is objective in the sense that it is the universal measure of wealth and medium of exchange for all commodities. But more importantly, how money is valued and spent during the purchasing decision making process are completely up to the individual subjectively. Therefore, there is no surprise that neoclassical economists end up using purchasing decisions (willingness to pay) to measure preferences. Once the prices on the y-axis of the demand curve become the measure of marginal utilities of a consumer, the demand curve started to have normative content.

What has been discussed so far shows that purchasing decision is a *necessary condition* for measuring utility and social welfare so that the theory has analytical power. However, it is not a sufficient condition. In order for purchasing decisions to reveal consumer welfare (utility), another condition has to be satisfied – perfect market (zero externality, perfect information, certainty etc.) Therefore the assumption about perfect market is a matter of methodological necessity in neoclassical economics, and they simply cannot proceed with their analysis without it. Chapter one mentioned that failures of the market for health care were recognized by health economists ever since of genesis of this discipline. But despite of these market failures, we saw that neoclassical health

economists went ahead and built their analytical tools based the assumptions of perfect market. The reason for doing so is no longer puzzling as soon as we understood that the assumption of perfect market is a methodological necessity.

For clarity, the diagram one below intends to summarize the aforementioned three fundamental problems of the neoclassical theory of health care consumption.

Diagram One: The Theoretical Structure of Neoclassical Theory of Consumption



The diagram above shows the methodological foundation of neoclassical theory of consumption. It begins with the general and abstract concept of utility, and then this concept is executed into something that is quantitative and purely subjective arbitrarily. To guarantee the existence of such quantitative and purely subjective idea so that

meaningful analysis can be possible, the theory of revealed preference is put in place. And finally, to secure the theory of revealed preference, the assumption of perfect market is necessarily made. It is clear that the overall structure of neoclassical theory of consumption is an interlocking one, from the concept of utility to the assumption of perfect market, each step in their theorization process secures one another, which forms some sort of “protection shell” which makes this theory internally consistent. However, we will soon see in the next part, when this theory is applied to the real world to explain and analyze real social phenomena, as soon as an essential part of the theory is contradicted by the real world, the structure loses its analytical power.

#### Part Two: Existing Critiques and the Two Problematic Categories Revisited

With the three fundamental problems of neoclassical theory of consumption in hand, this part intends to explain what was seen in chapter two. The existing critiques point out several aspects of neoclassical theory of health care consumption that contradict with realities of health care market. In order to respond to these critiques, two things can be done: one, relax or change some of the assumptions in the model and see what happens; or two, leave it alone and hope that it will get better.

Relaxing assumptions does not work, because the assumptions are there to secure the theoretical foundation of quantitative and subjective utility. Once the assumptions are altered or relaxed, the theoretical foundation becomes vulnerable, and the theory eventually becomes indeterminate. For example, Pauley relaxed assumption of independent utility, and recognized the existence of social caring demand for others. However, this new demand is something outside of the interlocking structure, because

since there is no market for which, it cannot be secured by the theory of revealed preference. And since only the theory of revealed preference can secure the quantitative and subjective utility, this external demand becomes indeterminate for that any concrete guess about what this demand is like would contradict with the subjective nature of utility, which is the theoretical foundation. This is the exact same case when the principal-agent model is applied to health care in response to the problem of imperfect information. The relaxation of the assumption of independent and self-interested nature of physician's utility function renders the theory of revealed preference to be impotent, so any thing to say about the physician's utility would contradict with the subjectivity utility.

Leaving everything alone and hoping things will get better is nothing but the free market rational behavior resolution. The question now is, why market resolution is so popular among neoclassicals? Does the objectivity of market system contradict with the subjective nature of utility? It is important to remember that, within the neoclassical framework, market is a *natural* result of individual utility maximizing behaviors. Since human beings are nothing but calculating and endlessly utility maximizing animals, then they must be constantly looking for the most efficient (least costly) way to acquire as much goods and services as possible. This motive necessarily leads them to engage into exchange with each other because some people produce something more efficiently than others. With the establishment of exchange relations, market comes into existence. Therefore, in this regard, any solution that goes in accordance with free market would be appropriate; and more importantly, any *alternative* system that is non-market orientated would contradict with the subjective nature of human utility maximization behavior.

However, again, the problem with free market rational behavior resolution is that it simply does not address the posed issues and critiques adequately.

Problems emerge not only when the assumptions of free market are questioned, but also, when this theory is *directly* confronted with elements of the world that contradicts with the quantitative and purely subjective nature of utility.

Pauley's (1968) paper on consumer moral hazard was severely criticized by scholars on the basis that it fails to understand the "limit" of demand for health care, because it is simply absurd to argue that if price of heart transplant drops, an individual will go and consumer more heart transplant. In this regard, Nyman's (1999) treatment on limited increase in demand on the basis of "needs" seems to be more appropriate. However, the "unlimited" characteristic of consumer demand can find its root in the quantitative nature of utility. As Hegel and Marx pointed out long ago, *quantity* necessarily pertains the characteristic of "unlimitedness"; but *quality* allows the characteristic of "limitedness". With utility as the ultimate goal for consuming health care:  $U = f[X, HC, HS (HC, t, Z)]$ , the demand for health care is determined to be limitless in the sense the U here as the goal of consuming health are is quantitative and unlimited. From this perspective, there is no surprise at all that Pauley's article on consumer moral hazard is very popular and influential among neoclassical health economists. When people criticize this theory on the basis of limited human needs, what they are ultimately pointing out is the inconsistency between the quantitative nature of utility and the qualitative human experiences as well as the qualitative characteristics of commodities. Another examples of such inconsistency can be found when people at



various points of time, try to follow Grossman's work and build a downward sloping demand curve for health. Health, to a large extent, is qualitative in nature, and different kinds of health are qualitatively different from each other. For example, the health of an eye is qualitatively different from the health of a hand. However, constructing a demand curve for health requires of using a single quantitative scale to measure health, which simply contradicts with the qualitative nature of health. Therefore, it is determined to result theoretical indeterminacy.

It is also interesting to notice that the theory become very weak every time it is confronted with issues and concerns that are objective in nature. For example, chapter one mentioned that neoclassical economists recognize the fact that socioeconomic factors such as education, income, and environment determine people's health, but in their analysis, they disregarded these factors, and put enormous amount of emphasis on individual choices and responsibilities. It is clear that socioeconomic factors that determine health status pertain strong social objectivity, and such objectivity directly contradict with the subjective nature of utility, which will eventually lead to either theoretical indeterminacy or inconsistency if neoclassicals do decide to dwell upon these factors. The path of least resistance is to rely on individual choices and responsibilities, because they are more in harmony with the subjectivity of utility. Similar examples can be found when the theory needs to address ethical issues and concerns raised by Reinhardt and Williams. Literatures on human needs, fairness and equality are thin for obvious reasons, because these issues and concerns necessarily contain some degrees of social objectivity too, and it is such objectivity that keeps the literatures thin. Few people tackled these issues by relying on the theory of utility. For example, Pauley and Lindsay

explained the concept of fairness and equity in term of externality, which is ultimately a sort of externally generated utility/disutility. Grossman explains the need for health in term of household investment that would yield leisure and income (commodities) that enter into individuals' utility functions directly. More interestingly (or absurdly) Intrilligator even explains need for health care as the special case when a consumer is willing to pay infinite amount of money for some quantity of health care. But clearly, as mentioned earlier, these attempts all failed on the grounds of either theoretical indeterminacy or free market rational behavior resolution.

A formal critique of neoclassical theory of health care consumption by tracing through the neoclassical theorization of consumer behavior reveals the source of the problems we observe in chapter – the interlocking structure of its basic theory of consumption with quantitative and purely subjective utility as the methodological foundation. With this knowledge in hand, I argue that in order to confront with the problems and difficulties in the neoclassical theory of health care consumption, simply doing surfaces works such as changing some of the assumptions and setups simply do not work. Instead, it is necessary that we look into some alternative theoretical frameworks about human being and human behavior that are fundamentally different from the neoclassical one. Such exploration will be attempted in the next chapter.

## Chapter Four: Some Possible Directions for an Alternative Framework

It is extremely important that we do not get lost in the process of critique. After all, as mentioned in the introduction, the ultimately goal for critique is to find a direction towards which an alternative theory can be developed. It is quite clear now that the fundamental problems with neoclassical theory of health care consumption is not really in the uniqueness of health care market and commodity; instead, it is in the philosophical foundation of the neoclassical theory of consumption. Therefore, if an alternative theory or approach were to be constructed, it has to be on a different theoretical foundation, and such foundation ideally would be able to analyze both quantitative and qualitative elements of the economy, and it is equally important that it should allow the possibility of addressing objective issues and concerns in a society. Moreover, the interlocking structure of the neoclassical theory of consumption needs to be abandoned in order to avoid the aforementioned tradeoff between theoretical determinacy and reality.

To bring quality and objectivity into the analysis of health care consumption, the first thing we need to do is to put the key concepts such as health care, health and human being in a social and historical context, re-evaluation their meanings, and based which, as we will soon see, we will derive a set of very different implications and evaluations of the current form of distribution of health care in the U.S. The goal for this last chapter is clearly new and ambitious, and it is not my intention to build a solid groundbreaking alternative theory of health care consumption. However, fortunately, there are some very

interesting works done in the field of sociology, anthropology, economics, philosophy and public health that I am bring together hoping to at least shed some lights on the grand goal of building an alternative theory of health care consumption.

### An Alternative Approach to Health Care

In neoclassical framework, health care is treated as something indifferent from any other goods and services – something that is consumed to achieve utility ultimately. However, this treatment of health care completely ignores social and historical processes, a more fruitful approach is study how health care turns into the current form in the U.S history.

In the U.S, health care, to a large extent, is acquired through market; in other words, it is a commodity. However, health care as commodity is a mere result of some interesting historical processes. Paul Starr (1984) in his book *Transformation of American Medicine* conducted a detailed historical and sociological inquiry into this process. Before the emergence of the market for health care, illness was mostly treated at home because family was the center of social and economic life in early American society. Females in most households had the responsibility of caring the sick by using native herb and folk remedies, and every household was expected to keep storage of herbs and traditional medicines. During that period of time, people had a naturalistic outlook on health and medicine; and more interestingly, ordinary people are believed to be capable of treating their own illness. Many books on natural and native remedies were written to help people to treat themselves or others in their households. (Starr, 1984) In the late 19th century, Europeans educated physician in United States started to organize

and fought against the popular naturalistic outlook on health and medicine. “Having constructed and established authority and sovereignty of the profession, medical market in the US was created and expanded by a series of social, institutional, economic, and political transformations. The transition from self-sufficient and self-reliant agrarian society to an urbanized, industrial one began with technological changes in medicine, transportation, and communication. These in turn resulted in industrialization, urbanization and specialization. Such socioeconomic changes created an environment and demand for health care services for a professional who is specialized in this particular task.” (Yasar, P11)

Noticing that, by looking into how current health care commodity came into being, we realize that health care went through an amazing historical and socioeconomic transformation. Before, health care was not a commodity because it was a useful thing that was produced in private sphere for domestic *use*. After a series of socioeconomic changes, it becomes a useful thing that is produced for *exchange*. Such transformation magically turned health care from a non-commodity into a commodity; in other words, this transformation is precisely so-called the *commodification* of health care.

Understanding the transformation from domestic health care to commodified health care has several theoretical implications. First, recalling chapter one, neoclassical economists such as Arrow recognizes the several uniqueness of health care commodity such as imperfect information, monopolistic market power, and uncertainty, but they could not explain why the uniqueness existed in the first place. By looking into the commodification process of health care, it is clear that, in the commodification process,

medical professionals intentionally unionized among themselves (American Medical Association) and created a social distance between patients and physicians (barriers to enter into the profession, complicated and inaccessible professional languages etc.) so that it in turn increased patient's dependency. Essentially, this story tells us that the uniqueness of health care, namely informational problems, market power, and uncertainty, were intentionally created by medical professionals in a social and historical process.

Second, neoclassical economists always had the difficulties in defining what type of good health care is, either it is private good, or merit/public good. Yasar argues that health care belongs to a special category of commodities – fictitious commodity. The idea of fictitious commodity was originated from Polanyi's work *The Great Transformation* (1944). Commodities are things that are produced for sale, but fictitious commodities, according to Polanyi, are things that were not produced for sale but became treated as commodities in the process of market expansion and capitalist social development. He identified three fictitious commodities – land, labor and money. Treating fictitious commodities as “real” commodities creates internal contradiction and conflict which puts so-called “double-movements” in motion. On one hand, market moves to commodify these non-commodities; on the other hand, social institutions and systems emerge to protect the original purposes of those fictitious commodities. (Polanyi, 1944) In our context, in the light of Starr's work, it is definitely possible to consider health care as a fictitious commodity. It is evident that health care was originally something that was produced for curing human illness and fulfilling the human need of being health, so by nature, it is not a commodity (for sale); but in the historical and social processes, as Starr

pointed it, it becomes commodified. By classifying health care into the category of fictitious commodity, we are able to explain the existing health care system in United States as the result of the “double movement”. The expansion of the market that commodifies health care is the first movement, and the emergence of public health policies, systems and institutions (Medicare, Medicaid, CHIP, DOD and VA Medical Care etc. in USA and the NHS in England) to protect health care as the means to the fulfillment of human needs is the second movement (or the countermovement for the first movement). Recalling that neoclassical economists always have so much difficulty in explaining the existing mixed and complicated health care system in the U.S. Even the theory of externality and interdependence of utility cannot provide an adequate explanation. But with this approach, the struggle between these two “movements” might provide very powerful and insightful explanations to many phenomena that exist in our current health care system. Unfortunately, Polanyi’s anthropological work has been overlooked by most contemporary health economists; I think his work is an interesting and new direction health economists should explore.

### An Alternative Approach to Human Health

An alternative approach to human health that allows the existence of objectivity and qualities requires the abandonment of the utilitarian (or neoclassical) conception of human being, for that if we stick with which, there would be not room for quality and objectivity. In the light of Hunt’s paper in 2005, Aristotelian model of human being might be a good alternative. Aristotle views phenomena and social realities as the results of the actualization of potentialities. (Hunt, 2005) Human beings are all different; they all

have their own individualities, own ways of thinking and acting; but these are all actualities of human beings. Actualities of human being allow the existence of subjectivity. However, objectivity and universality come into existence when we consider human potentialities. For example, writing is an actuality because people write different things. However, the potentiality of *being able to write* is objective and universal for all humans. Furthermore, for this potentiality to be actualized, a set of objective social conditions needs to be satisfied (for example, some sort of education system has to be at least available). Noticing here that Aristotelian notion of human being allows the coexistence of subjectivity and objectivity ever since the beginning. Also, if we take a step further and look into Maslow's (1954) work, we would roughly see a hierarchical structure exists in human potentialities for that some of the human potentialities would not be fulfilled without the fulfillments of the others.

With the Aristotelian notion of human being in hand, health then, to a large extent, is associated with some very basic human potentialities positioned in the basis of the hierarchical structure of human potentialities, because we can argue that without being healthy, many other potentialities such as learning, exercising, working, or utility maximizing if you like, would be impaired. Therefore, from this regard, it is theoretically sound establish health as a human right, instead of a human choice in neoclassical framework.

If health is associated with potentialities, it necessarily pertains universal and objective characteristics. If health care as a commodity is consumed to achieve health objectively, then, the use-value of different health cares needs to be looked at to



determine, in what way, these use-values (or these characteristics of health care) correspond of human potentialities. As we can see that this requires mostly a qualitative approach instead of the neoclassical strict quantitative approach. Therefore, to work toward this direction, I think Amartya Sen's works on capabilities and characteristics of commodity are very worth to look into.

Finally, we shall look into the determinants of health. Recalling the beginning of chapter one, neoclassical health economists view health as something that is mainly determined by individual choices and responsibilities. At the same time, they do recognize the fact that socioeconomic factors such as income, education and environment determine health too. But they always ignore the latter factors in their analysis and put a lot of emphasis on the earlier ones. After going through the detailed theoretical critique in chapter three, it becomes clear that the reason the neoclassical economists ignore socioeconomic determinants of health because these factors contradict with the theoretical foundation of neoclassical theory of consumption – purely subjective utility. Now, with the Aristotelian notion of human being in hand, what would be the determinants of health? If human actual choices and behaviors are what determine actual health, then, we have to understand what is the nature of human choices and behaviors. Human choices and behaviors are nothing but actualities, and like any other actualities, they are the results of the actualization process, and such process is determined by the interaction between the potentiality of making personal choices and the external conditions that actualize the free choice. Therefore, it is fruitless to see the actual human choices and behaviors as the “first cause” of individual health. Instead, actual individual choices and behaviors need to be considered within the *social context*

The alternative approach to health that takes the “external conditions” into account is called the social determinants of health (SDH), which is widely studied and adopted in the discipline of public health. And there has also been a growing interest in this approach among European health economists. The SDH approach views health as the result of the interaction among individual choices, biological factors, as well as socioeconomic factors such as income, environment, education, job function etc. It is empirically observable that people in a lower income class with lower levels of education have significantly more tendency to smoke, drink, and abuse drugs, so that consequently, they are more susceptible to health problems. Moreover, people who are living in dangerous, highly populated and heavily polluted environments are more susceptible to diseases. (Diderichsen, F. et al, 2001) This approach establishes the argument that, instead of individual choices and behaviors that cause ill health, to a large extent, it is poverty, conflict and problematic social systems and relations that deprive health from people in a society. It is also important to realize that, unlike neoclassical economics, the SDH approach has the concept “social” built in ever since the beginning, which means that social and objective issues and concerns can be easily addressed within this framework. As the alternative of the neoclassical determinants of health, I think SDH is a fruitful research area for health economists.

### An Alternative Approach to Market Allocation of Health Care

The final task is to evaluate the market allocation of health care within the above-mentioned alternative framework for health and health care; such evaluation requires us to understand first the functions and limits of market, as well as the relationship between

human being and market. This line of analysis is largely missing in traditional neoclassical framework because market, according to neoclassical economics, is a natural system resulted by self-interested human nature. In other words, in neoclassical line of thought, market has no objective existence in human society. Fortunately, there has also been some works done by non-neoclassical economists that treat market as a social system or institution that exists in society objectively. Among these works, I think Levine's book *Need, Rights and the Market* (1988) provides great insight for our context.

Market is a place people enter to engage into the act of exchange. In the process of exchange, seller's main goal is to acquire profit, and buyer's purpose is to fulfill a set of qualitatively distinct needs. Levine points out that there are two distinct classes of human needs that deserve attention from us. The first class of need is personal or subjective need. Individuals with personal needs equipped with income go to the market to exchange for goods and services that they can later consume and make them into part of their individualities. For example, I might go to the department store and purchase a shirt that I think the design fits my personality, or how I would like to carry myself in the public, or my aesthetic taste. Market does not guarantee my acquisition of the shirt because for the exchange to happen, I need to have income. However, due to the highly subjective nature of personal needs (the shirt I want to purchase for example), market allocation of goods that fulfill personal needs is more desirable than direct distribution because the fulfillment of personal needs by nature requires individuals to have choices in the exchange process. For example, it is quite difficult to imagine there is a central planner who can directly distribute a shirt to me that fits my individuality. My perceptions and tastes for a shirt, which constitutes my need for which, are extremely

personal and subjective. Levine went on and argued that even the equal distribution of income in a society does not work for personal needs because goods and services are associated with different costs, and people have different kinds of needs. (Levine, P 85) However, in the context of health care, we shall focus the second class of needs – needs do not involve subjective individuality, needs that have universal and objective characteristics.

According to the Aristotelian notion of human being discussed earlier, health is associated with human potentialities, they are objective and universal because human potentialities are. Thus, the need for being healthy is (at least in principle) universal and objective across all human beings. Health care is therefore demanded to fulfill the universal human need for being healthy, and it is extremely important to notice that such fulfillment does not require in principle health care being tailored in accordance to the demander's individuality precisely due to the universal and objective characteristics of health. For example, if I break my arm, I need to see a doctor get a cast. In principle, my broken arm should be treated pretty much as any other broken arms. More importantly, the fulfillment of my need of being able to use my arm and hand does not depend on how the cast fits to my individuality (unless I want a cast also for aesthetic reasons, which is quite rare I believe). A doctor can treat my broken arm and fulfill my need for a healthy arm without knowing anything about my individuality, and in fact, a doctor would know more how to fulfill this kind need for me than myself. Due to the universal and objective characteristic of health, it necessarily follows that market allocation for health care is simply unnecessary; on the opposite side, direct distribution of health care can do quite well in principle because the central planner (the one who directs the distribution) is now

capable of objectively determining the kind of health care that is appropriate for the individual who is in need due to again, the universal and objective characteristic of human health.

Neoclassical analysis tends to argue that direct distribution of health care necessarily leads to economic inefficiencies because it encourages the over-consumption of health care (consumer moral hazard). However, within our present framework, market allocation does the same thing because it encourages people with the ability to pay to over-consume health care regardless the needs, which causes unequal fulfillments of universal human needs for health. Reinhardt's story of the demands of health care from the wealthy Chen's healthy baby and poor Smith's sick baby perfectly correspond to this line of argument. They are also many real examples. In United States, wealthy people are able access the best medical services and technologies in the world, while 47 million people (in 2006) are uninsured. They have to either pay out of pocket directly, which consequently contributes to 50% of personal bankruptcies in the whole nation; or they have to wait until the last minute and use emergency services, which, without further payment, promises only stabilization. Dr. Vivian Ho from Rice University conducted an interesting research on diabetic patients. Vascular surgery is a procedure for diabetic patients to prevent from later amputation. However, since such procedure is not profitable, in many rural and poor regions of United States, there are simply not enough physicians that specialize in this procedure. Dr. Ho's research shows that economically and socially marginalized groups such as Hispanic and African Americans are 1.5 to 2.5 times more likely to go through lower limb amputations. In an interview with New York Time, Dr. Ho said: "There's correlation between the supply of specialists and how

attractive an area is in terms of culture and economy — all the factors you'd find in the Places Rated Almanac ... But doctors will respond to higher rates. Anywhere dollar signs come into play, you'll see an effect.” (NY Times, 11/07/2006) Moreover, if we consider health as not only human need, but also a human right like discussed in the beginning of this chapter, market allocation of health care is not only unnecessary, but also it is an inappropriate form of distribution because such human right can be easily deprived due to the lack of economic resources. As we can see that the evaluation of market allocation of health care within this alternative framework yields a very different conclusion from the neoclassical one.

Finally, if direct distribution, for example, national health care system, were to replace market distribution of health care, several challenges we need to confront. Despite of the largely unequal access to health care in the U.S due to its market orientation, United States enjoy the most advanced medical technologies comparing to other developed countries. This phenomenon can be explained by Schumpeter's argument that profit motivation and monopolistic market power spark innovations and technological advancements. (Schumpeter, 1942) Therefore, if a non-market method were adopted to allocate health care in society, a productive mechanism needs be set up to reward the production of health care that fulfills universal human need for health effectively and efficiently, so this way, the drive for technological advancement and productive efficiency can be secured. Moreover, we shall never forget that, health care is only one of the determinants of health. Health is also determined jointly by genetic factors, human free will, and most importantly, socioeconomic conditions such as income level, environment (living conditions), education, job function etc. If the normative goal

is the fulfillment of universal human need – health, setting up the right mechanism for provision of health care is only a part of it. The second part is to limit and reduce the socioeconomic factors that affect health negatively, which involves poverty and social conflict reduction, education improvement, environmental regulations, labor protection etc. However, discussion and suggestions above are quite conceptual and raw. To come up concrete solutions and policy recommendations, more researches need to be done.

## Concluding Remarks

The alternative framework for analyzing health care market developed in the last chapter is grounded in the theoretical critique that was performed in chapter three. And the theoretical critique in chapter three was inspired by looking into the dominating neoclassical theory of health care consumption itself, its existing critiques, its developments, as well as the problems and difficulties emerged as the this theory developed; and all of these were the works done in chapters one and two. Therefore, these four chapters form a consistent whole. Chapter one and two can be viewed as the detailed exploration of the neoclassical theory of health care consumption. Chapter three is the identification and analysis of the problems (the critique). And chapter four is exploration to an alternative framework.

However, it is worth to point out that the alternative framework that I explored in the last chapter is still raw and much more works need to be done. Instead of building a complete alternative theory, chapter four, to say the least, points out some directions for future researches by looking into the works done in different disciplines. For economics as a social science, I believe that a multidisciplinary approach to the subject matter is necessary; and unfortunately, this is precisely what is lacking in the discipline of health economics. Nevertheless, I would like to point out that the essence of this thesis is the method of *critique*. Critique in contemporary popular sense means either criticizing or problem solving. But the actual meaning of critique, its authenticity, lies in the line of



Western thought that began with Kant and was extended by Hegel, Marx, Freud, and many post-modern thinkers. In this line of thought, critique means *working with* the subject matter patiently, carefully, and passionately, for the purpose of understanding its merits and limitations so that a better and alternative ways of thinking of and dealing with the subject matter becomes possible. This authentic method of critique seems to be lost in the discipline of economics. Many contemporary American economists (as well as economics students) devote their lives in using fancy mathematical tools (real analysis, topology, abstract algebra, optimal control etc.) to either prove some points that are obvious, or to draw some conclusions that were embedded in the unrealistic assumptions ever since the beginning. Inspired by my teachers, my thesis applies the method of critique to the study of health economics. The subject of critique is the neoclassical theory of health care consumption, and the goal is to find the merits and limits of this theory so that alternative approach can be developed. The project I took on is grand and challenging one, and it certainly cannot be done within one thesis, this current work is merely a beginning.

## Bibliography

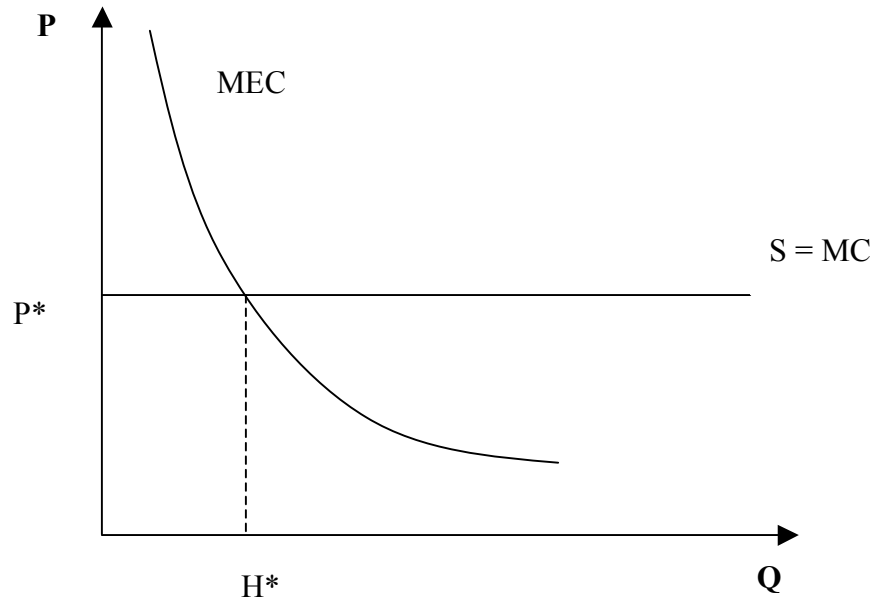
1. Arrow, K. (1963), "Uncertainty and the welfare economics in medical care", *American Economic Review* 53(5): 940-73.
2. Bentham, J. (1907), *An Introduction to the Principles of Morals and Legislation* (Clarendon Press, Oxford).
3. Brouwer, W., and M. Koopmanschap (2000), "On the economic foundations of CEA. Ladies and gentlemen, take your positions!", *Journal of Health Economics* 19:439-459.
4. Culyer, A. (1980), "Externality Models and Health", *Economic Record* 56: 222-230.
5. Culyer, A., and J. Newhouse (2000), *Handbook of Health Economics* (Elsevier, New York).
6. Diderichsen, F et al. (2001), *Challenging Inequities in Health: From Ethics to Action* (Oxford Press, London).
7. Donaldson, C., and K. Gerard (1993), *Economics of Health Care Financing: The Visible Hand* (Macmillan, London).
8. Evans, G. (1984), *Strained Mercy: the Economics of Canadian Health Care* (Butterworth, Toronto).
9. Grossman, M. (1972), "On the concept of health capital and the demand for health", *Journal of Political Economy* 80:223-55.
10. Henderson, J. (2005), *Health Economics & Policy* (Thomson, New York).
11. Hicks, J. (1939), "The foundation of welfare economics", *Economic Journal* 49:696-712.
12. Hodgson, G. (2008), "An institutional and evolutionary perspective on health economics", *Cambridge Journal of Economics* 32: 257-271.
13. Hunt, K. (2005), "The normative foundations of social theory: an essay on the criteria defining social economics", *Review of Social Economy* 63:423-446.
14. Hurly, J. (1998), *Health, Health Care and Health Economics* (John Wiley and Sons, Toronto).
15. Levine, D. (1988), *Needs, Wants, and the Market* (Lynne Rienner, Boulder).

16. Lindsay, M. (1969), "Medical care and the economics of sharing", *Economica* 36(144):531-7.
17. Marx, K. (1977), *Capital Volume. 1* (Random House, New York).
18. Mooney, G., and M. Ryan (1993), "Agency in health care: getting beyond first principles", *Journal of Health Economics* 12(2):125-135.
19. Nyman, J. (2006), *The Elgar Companion to Health Economics* (Edward Elgar, Northampton).
20. Pauly, M. (1790), "Is medical care different?", in: W. Greenberg, ed., *Competition in the Health Care Sector* (Aspen Systems, Germantown, MD) 11-35.
21. Pauly, M. (1968), "The economics of moral Hazard", *American Economic Review* 58(3):231-37.
22. Polanyi, K. (1944), *The Great Transformation* (Rinehart & Co, New York).
23. Reinhardt, U. (1998), "Abstracting from distributional effects, this policy is efficient", in: *Health, Health Care and Health Economics: Perspectives on Distribution* (John Wiley and Sons, Toronto).
24. Reinhardt, U. (1992), "Reflections on the meaning of efficiency", *Yale Law and policy review* 79 (2): 337-42.
25. Rice, T. (2003), *Health Economics Reconsidered* (Health Administration Press, Chicago).
26. Rice, T. (1992), "An alternative framework for evaluating welfare losses in the health care market", *Journal of Health Economics* 11(1):85-92.
27. Rima, I. (2002), *Development of Economic Analysis* (Routledge, New York).
28. Samuels, J, E. Biddle, and J. Davis (2003), *A companion to The History of Economic Thought* (Blackwell, MA).
29. Sappington, D. (1991), "Incentives in principal-agent relationships", *Journal of Economic Perspectives* 5(2):45-66.
30. Sen, A. (1999), *Development as Freedom* (Alfred A. Knopf, New York).
31. Sen, A. (1979), *Commodities and Capabilities* (North Holland, Amsterdam)
32. Starr, P. (1982), *The Social Transformation of American Medicine* (Basic Books, New York).

33. Weisbord, A. (1961), *Economics of Public Health* (University of Pennsylvania Press, Philadelphia).
34. Wiliams, A. (1988), "Ethics and efficiency in the provision of health care", in: J.M. Bell and S. Mendus, eds., *Philosophy and Medical Welfare* (Cambridge University Press, Cambridge).
35. Yasar, Y. (2008), "Professor E. K. Hunt's contribution toward a theory of social economics of health care", Conference paper for ASSA (01/2008) and WSSA (04/2008).

## Appendix A: Human Health Capital Model

### Grossman's Human Health Capital Model

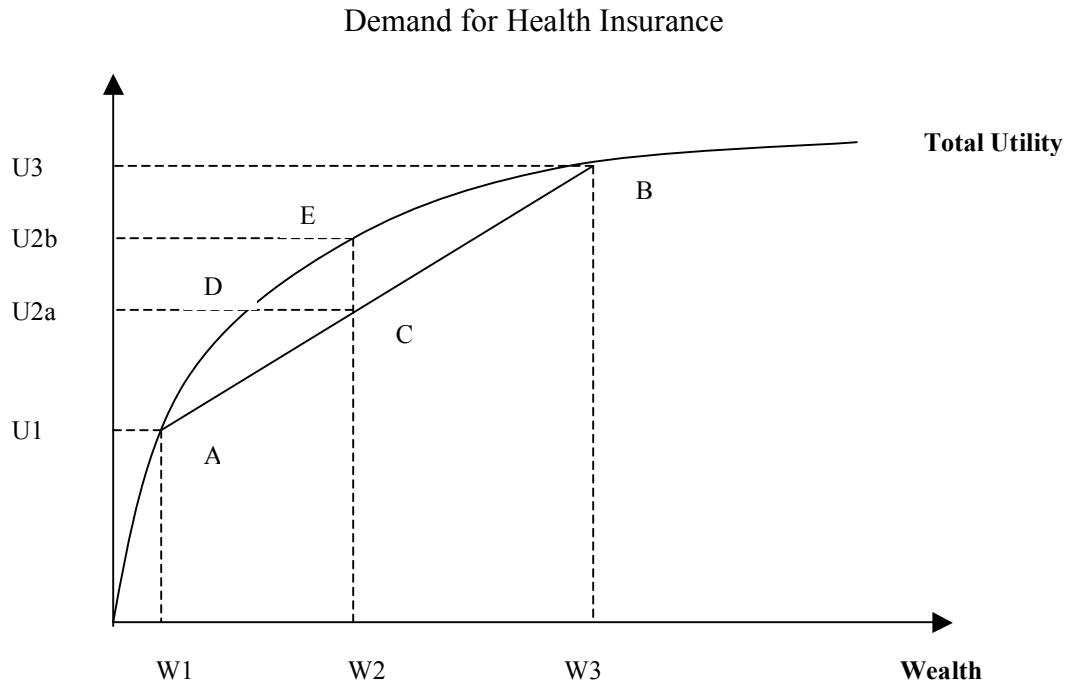


The Graph above shows the market for health capital. The marginal return to capital, or the marginal efficiency of capital (MEC) is diminishing due to the fact that the production of health days per year is bounded below 365 days, but the health stock can increase infinitely. Therefore, as the health stock increases due to investing in health capitals, within a year, the total healthy days produced must be increase at a decreasing rate. When the healthy days are valued in monetary terms, a downward sloping demand curve can be constructed, which show the diminishing marginal return to health investment. According to this graph, the optimal level of health stock  $H^*$  is determined by the interaction between the MEC and the supply curve (S).

Grossman's model is actually more complicated and sophisticated than what has been described above. For example, in his model, he incorporated intertemporal changes

by applying the method of intertemporal optimal control, which involves using time differentials and discounting rates to model a consumer's investment decision making behavior over a lifetime. In the graph above, he traced upward shifts of the supply curve to the increases in the rate of depreciation on the stock of health with age, and traced the upward shifts in MEC to the increases in wage rate and education. Moreover, this model claims to predict an important health care consumer behavior. Over a lifetime, the supply curve (S) would shift up constantly as the depreciation rate of health stock increases. The optimal level of health stock  $H^*$  would reduce. However, if the MEC curve is inelastic (elasticity  $< 1$ ), the upward shift of supply curve (S) will lead to higher expenditure on health care ( $P^* \times H^*$ ). (Grossman 1972, 2000)

Appendix B: Demand for Health Insurance



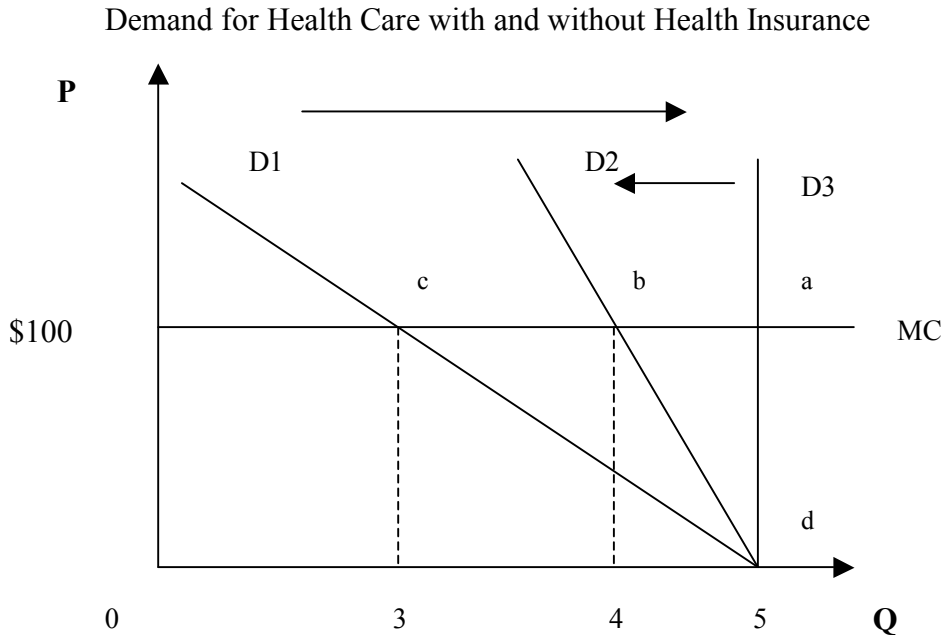
The graph above show the total utility curve of an individual. Her risk-averse character is reflected by the concavity of this curve (diminishing marginal utility of wealth).  $W_3$  is the individual's wealth when she is healthy, and if she gets ill, her wealth will reduce to  $W_1$ . Under uncertainty, the expected wealth will be  $W_2$ , which is in between  $W_1$  and  $W_3$ , and its exact position would depend on the probability for this individual to get ill. In other words, the expected loss is  $W_3 - W_2$ . The corresponding expected utility is found on the straight line that connects point A and B, and in this example, it is point B, which equals to  $U_{2a}$ .<sup>7</sup> Imagine that this individual is able to purchase a health insurance, and its premium equals to the expected loss  $W_3 - W_2$  (this premium rate is also called the *fair premium*). Now, the wealth level of this individual would be  $W_2$ , however, with the existence of insurance, this individual acquires certainty at this wealth level. Consequently, the utility for this individual in this case is found on

<sup>7</sup> The reason for finding the expected utility on the straight line AB instead of the total utility curve is embedded in the mathematic method of calculating expected utility.

the total utility curve, which equals to  $U_{2b}$ . Essentially, in the example above, the existence of insurance leverages the utility level from the expected utility level  $U_{2a}$  to the actual utility level  $U_{2b}$  at the wealth level of  $W_2$ . The welfare increase with the fair premium equals to  $U_{2b} - U_{2a}$ . In the example above, we used fair premium as the price of insurance. However, it is not realistic because each insurance firm needs to charge more than the fair premium to cover their administrative costs. This extra charge above the fair premium is called the loading charge. However, according to the graph above, as long as the loading charge does not exceed  $CD$ , the individual will still be better off if she purchases the insurance, because any point between  $E$  and  $D$  would be higher than point  $C$  – the expected utility without insurance. However, if the loading charge were more than  $CE$ , then the individual would be better off at point  $C$  without purchasing any health insurance. (Henderson, 2005; Arrow, 1963; Hurley, 2000)



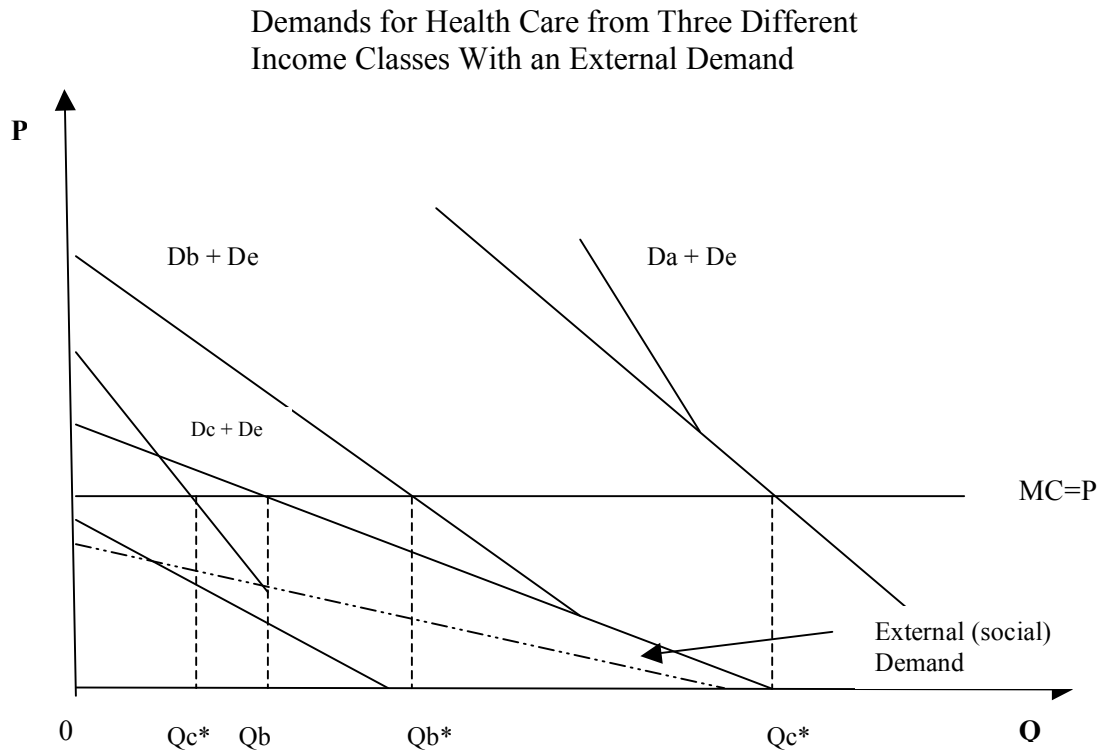
Appendix C: A Numerical Example for Pauley's Theory of Moral Hazard



In the graph above, D1 is an individual's demand curve for health care. The area under the demand curve is therefore this individual's welfare. For simplicity, the supply of health care is assumed to be perfectly competitive and it is represented by the horizontal marginal cost curve equals to \$100. The interaction between these two curves results the equilibrium point c, which yields the equilibrium level of health care consumption  $Q = 3$ . Recalling what was mentioned before, the demand curve is read as marginal benefit. Noticing that at the equilibrium point c, the marginal benefit (utility) equals to the marginal cost, and under this condition, it is mathematically provable that welfare is maximized. Therefore, the market equilibrium level of health care consumption is viewed as the efficient or optimal level of consumption. Imagine that the graph above represents the demand of a consumer with health insurance, and his or her health insurance plan covers the entire cost of his or her physician visits. With the existence of health insurance, the consumer as a self-interest individual is no longer concerned with the market price of

health care. What he or she will do is to consume until his or her marginal utility equal to zero assuming that the consumer is rational. With the example provided in the graph, the existence of health insurance shifts the demand curve from D1 to the vertical demand curve D3 at  $q=5$ , which means that the consumer will acquire 5 units of health care regardless the cost of producing these cares. However, Pauley argues that, the marginal cost for producing physician services is always there, which is \$100 in our example. When the 4<sup>th</sup> unit of health care is purchased, the cost for producing the 4<sup>th</sup> one is \$100, the consumer's willingness to pay (or marginal utility) is \$50. Thus, it imposes a social welfare loss that equals to  $\$100 - \$50 = \$50$ . And at the 5<sup>th</sup> unit of health care, the welfare loss equals to \$100. Therefore, with health insurance, the consumer behavior causes a social welfare loss totals to  $\$50 + \$100 = \$150$ . The next question is, what should be done for the welfare loss? Pauley argues that the way to reduce the welfare loss is through cost-sharing mechanisms, which means that consumers should be required to have co-payment and insurance deductibles. With co-payments and deductibles, D3 is shifted to D2. With the downward sloping D3, cost now becomes relevant to the consumer. Under this condition, in our example, the consumer will consume 4 physician visits instead of 5, which reduces the welfare loss from abc to bcd. (Pauley, 1968)

Appendix D: A Graphical Example for Pauley's Treatment of Externality

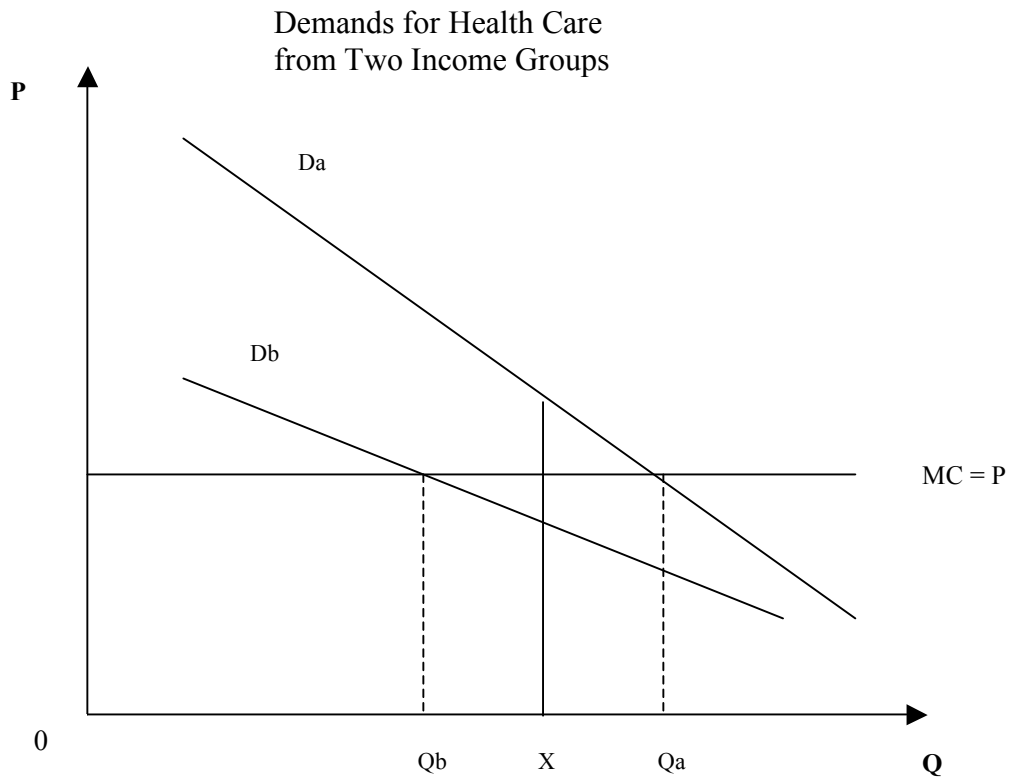


The graph above shows the demand for health care from three individuals from three different income classes. The demand curve  $D_a$  is from the wealthiest individual, and  $D_b$  is from the poorest individual. The dashed demand curve  $D_e$  is the external demand for health care for each of them. For each individual, the external demand  $D_e$  would shift the original demands to the right. Therefore, we see two demand curves for each individual in the graph above. For poor individual C, without external demand, C would demand no health care. But with the external demand, C would demand  $Q_c^*$  amount of health care, which is the socially desired level for this individual. For average income individual B, without external demand, B would demand  $Q_b$  amount of health care, but with the external demand, B would demand  $Q_b^*$  amount of health care, which is

the social optimal amount. For wealthy individual A, without external demand, A would demand  $Q_a^*$  amount of health care. However, with the external demand added on, the marginal benefit would actually be zero; therefore, without the external demand being added on, the private level of consumption  $Q_a^*$  is already the social optimal level.

According to this theory, in order to achieve the optimal allocation,  $Q_c^*$  amount of health care should be subsidized to individual C,  $Q_b^*-Q_b$  amount of health care should be subsidized to individual B, and person A should not receive any subsidy. In other words, according to Pauley, subsidies should be given selectively according to needs, which are ultimately determined by income levels.

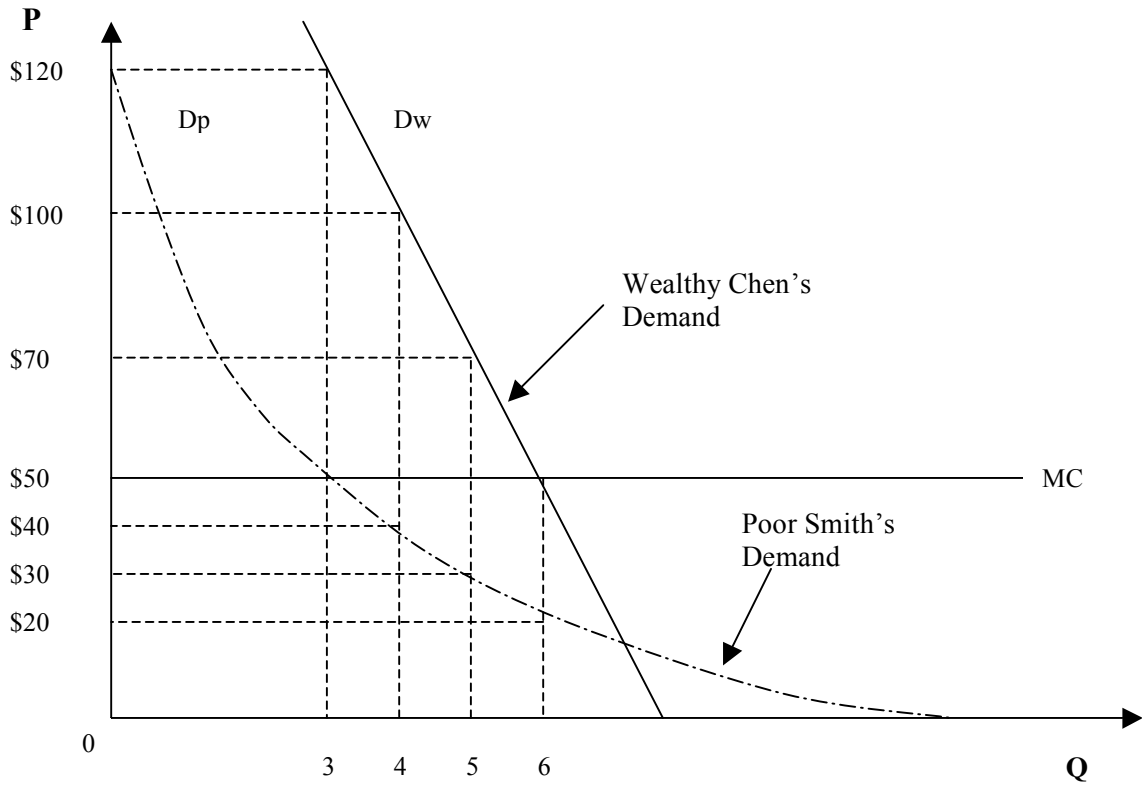
Appendix E: A Graphical Example for Lindsay's Treatment of Externality



In Lindsay's model, it is the difference in levels of consumption of health care (inequality) that creates negative externality. The graph above shows the demand curves for health care for person A and person B. Due to various reasons (largely due to income differences), person A consumes  $Q_b$  amount of health care and person A consumes  $Q_a$  amount of health care. Lindsay asserts that it is the difference between  $Q_a$  and  $Q_b$  that generates negative externality.  $Q_a - Q_b$  is the amount of inequality. Since the problem comes from this inequality, then, he argues that interventions should subject to eliminating the gap between  $Q_a$  and  $Q_b$ . Subsequently, he analyzed four different ways of eliminating the difference. First, the sacrifice method – person A throws away his own consumption. Second, the gift method – transferring  $X$  amount of health care from person

A to person B. Third, the abstention method – A abstains from, or is denied, demand for health care. Fourth, the subsidy method – paying B the difference between his marginal benefit (demand) and the price. After series of cost-benefit comparative analysis by using neoclassical welfare method, he concludes that the least costly method to achieve equality is to combine the abstention method and subsidy method at the level when the marginal costs of both methods are equalized.

Appendix F: Demands for Pediatrician Visits



The graph above is an imitation of the graph Reinhardt presented in his foreword of Tomas Rice's *Health Economics Reconsidered*. The graph shows two family's demands for pediatrician visits each year. Dw is the demand from a wealthy family with a healthy child. As we can see, because they are wealth, their demand is quite inelastic. Dp is the demand from a poor family with a sick child. And due to their income limitation, the demand curve is quite elastic.

Now, let us use willingness to pay approach analyze this graph. At the third pediatrician visit, the wealthy family is willing to pay \$120, but the poor family is only willing to pay \$50. In other words, the third pediatrician visit yields an additional \$100 worth of benefit to the wealthy family but only \$50 worth of benefit for the poor family.

However, as matter of fact, we know before hand that the poor family is the one with a sick child. This sick child actually needs more health care than the healthy child from the wealthy family. This example vividly demonstrates the fact that demand curves are heavily determined by consumer's ability to pay. The sick child's actual need for health care cannot even be revealed due to the income limitation of his or her family. Let us now assume that the market price for pediatrician visit is determined by the horizontal marginal cost curve that equals \$50. If the market were left alone, the sick child from the poor family would get 3 pediatrician visits per year, and the healthy child from the wealthy family would get 6 pediatrician visits per year. This distribution is considered efficient in neoclassical theory because at these levels, the marginal benefit of each family equals to the marginal costs; in other words, the total welfare is maximized under this distribution. However, the poor family's sick child needs more pediatrician visits, but the market only allocates him or her with 3 visits. The wealthy family's healthy child does not need many pediatrician visits, but he or she is allocated with 6 visits by the market.