

A telescope malfunction:

Economic myopia in decision making.

Is there a need for mandatory refractive surgery?

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Abstract:

Economic agents can make bad decisions based on short term satisfaction, since in some specific cases such as retirement savings, they see nearby satisfaction produced by spending clearly, but have blurred vision when confronted with far away rewards. Putting aside the standard theories of discount utility (DU) and focusing on more realistic alternatives such as hyperbolic discounting, decision making can be seen through new lenses. DU is an inappropriate model for inter-

temporal choice, and its assumptions and motives are not in accordance with the behavior of real economic agents.

Economic Myopia (EM) may have a high incidence, and its symptoms are sometimes obvious and its causes have been long discussed in the literature. This thesis reviews them in order to analyze their policy implications. Government might make decisions for the people in certain cases, and I discuss which ones and if it should be mandatory that people save for retirement in order to protect them from the tyranny of their blurred vision. Refractive surgery can be done in order to give the appropriate treatment to these individuals, but should it be mandatory or should people be allowed to suffer the consequences of their disease?

Not reducing the disease on time might have consequences for everyone, not only for those who make the wrong decisions. Moreover, protecting the people is the actual purpose of government; this can be done by preventing short term gains of individuals that can have long term effects which might harm all. Is this an expected function of the government, the limit of freedom, or a case of libertarian paternalism? This thesis makes an effort to answer all these questions.

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“While he alone enjoys the short-term gains derived from his action, the disastrous long-term effects harm all the people. His deed is a crime because it has detrimental effects on his fellow men.”

Ludwig von Mises, 1949

I. Preface

Economists since Smith and Edgeworth have for centuries written reflections about individual behavior and suggesting how important it is for economic analysis to understand motives in decision making. Psychological insights into economics stood still for a while, since it was believed that they provided an

unsteady basis for economic analysis (Camerer and Loewenstein, 2003). Only recently this again became a field of research.

Alternate formal theories are being proposed as candidates to replace standard theories, and further research is still going on. Rationality no longer holds, instead bounded rationality is considered, a term coined by Simon in the 1950's which implies that most people are only partly rational, and in the remaining part of their actions are in fact emotional and irrational. Moreover this new way of understanding economic behavior which includes psychology, gives a truthful understanding of real economic agents as a substitute for the utopian economic man presented by Neoclassical economics. There is not only a need for useful economic analysis but for a realistic one as well.

Discounted Utility (DU) is an inappropriate model for inter-temporal choice, since assumptions and motives are not in accordance with the behavior of real economic agents. Moreover, this model intended as a descriptive theory of inter-temporal choice by Fisher in 1930, implies that instant and deferred consumption have a fixed value, which turns out to be far from reality. An alternate formal theory is hyperbolic discounting; it replaces standard DU theory and assumes that people have instantaneous utilities from their experiences at each moment, and that they choose options which maximize the present discounted sum of these utilities. Therefore, people prefer smaller sooner payoffs than greater but later payoffs. Research in this field started with Strotz in 1955, Herrnstein in 1967, and later by Ainslie in 1974, but it was not worked in depth until Loewenstein and Prelec in 1992 in "Choice over Time".

Taking into account that economic agents seek short term satisfaction instead of preferring far away rewards, economic myopia is present in decision making. Real agents can clearly see nearby satisfaction produced by spending, but have

blurred vision when confronted with far away rewards. As myopia as a refractive defect or telescopic malfunction gets better with age, so does economic myopia. The younger the agent the higher value given to short term satisfaction, compared to more mature agents who begin to overcome the blurriness and start caring about those 'not that far away' rewards; for example in specific cases such as savings for retirement. Therefore it might be observable that as age increases so does the amount of individual savings intended for retirement. Sadly enough in some cases agents start caring when it is too late or even worse, they never start saving and when they get to retirement age, third parties then receive the burden and costs of these people who made bad decisions based on short term satisfaction.

Field studies carried by Carroll in 1997 give some empirical evidence by constructing models of life-cycle saving behavior and criticizing Euler equation estimations. Carroll and Samwick in 1997 and Gourinchas and Parker in 2001 report confirmed the savings behavior which shows that individuals start saving for retirement purposes as they grow older. Age is also a factor mentioned by Laibson in 1997 and earlier by Thaler and Shefrin in 1981.

Freedom of choice on whether to save for retirement or not should end when myopic agents harm third parties. This opens the door for establishing measures to prevent these individuals from their asocial behavior. A myopic patient can get a refractive surgery to improve his disease, but should it be mandatory? Is it a paternalistic measure to intervene, libertarian paternalism, or is it indeed one of those functions of the government which define the social apparatus that prevent individuals from doing harm in society? These myopic agents who indulge in the short term might produce long term damage.

This thesis starts with an overview of the Behavioral Economics approach, along with some conceptual differences between standard economic theory and alternate proposed theories. It then focuses on Hyperbolic Discounting and the relation of the theory to economic myopia in decision making. Incidence, symptoms, causes and treatment follow. Additionally policy implications for the specific case of savings for retirement will be discussed. Policies that can be taken in order to avoid or improve economic myopia can be related to Libertarian Paternalist measures, and issues regarding this follow. At the end I make some concluding remarks.

The aim of this thesis is to analyze, given that people value more short term satisfaction than long term rewards, in which cases government might make decisions for people. I argue that the reunification of psychology and economics leads to better policies which in the end is what it is needed in society. Therefore it seems important to begin with an overview of the Behavioral Economics approach.

“Behavior is determined to a substantial extent by motives other than profit”

Daniel Kahneman, 2003

II. Behavioral Economics Overview

Behavioral Economics offers a realistic alternative to the rational economic man of Neoclassical Economics. A person makes choices in an environment of limited information and limited computational capacity, finding solutions satisfactory for the situation at hand, employing heuristics to facilitate decision making in a less than perfect environment (Wade Hands, 2001). It tries to place bounds on rationality which makes economics more in touch with actual behavior of

economic agents. Moreover, better predictions result from theories that take into account more realistic assumptions.

Behavioral Economics uses models of decision making under uncertainty and inter-temporal choice where humans have limited cognitive abilities, interests in short term benefits and the presence of social preferences in behavior. Loss aversion, Prospect Theory, and hyperbolic discounting utility are just some of the many models which are taken into account in solving the problems related to utility and profit maximization under perfect rationality assumed in neoclassical thinking.

The ideas behind the Behavioral Economic approach have been in economics for centuries. Smith in “The Theory of Moral Sentiments” reflects on social preferences in individuals (Camerer, 1999) and gives a preliminary explanation of loss aversion, where he specifically mentions how human beings suffer more when dropping from a better situation to a worse one compared to enjoying the change from a worse situation to a better one (Camerer and Loewenstein, 2003). Smith presents in this work, other motives different from the self-interest one in which he focused in “The Wealth of Nations”. In here, he presents benevolence as dependant of familiarity as well as morality in agents, as key factors in decision making (Otteson, 2002). His contributions on “The Theory of Moral Sentiments” regarding motives are disregarded in order to focus on self-interest as the unique one. Several insights in this book are precursors of later research in behavioral economics.

Edgeworth back in 1881 in his “Theory of Mathematical Physics” brings formal mathematical techniques into the explaining individual economic behavior, introducing indifference curves for the first time into economic analysis. He also includes behavioral approaches in his model of social utility in this book, were

utilities and payoffs in agents are dependable from each other. This social utility approach has been a catalyst for theories in fields like behavioral game theory, especially in regard to how players learn and influence others, informing mathematical models of cognitive limits (Camerer, 2003).

Afterwards, Fisher and Pareto did research on how people make choices including feelings as motives, and Keynes also included some psychology in his work.

Simon, with his Theory of Satisficing and Bounded Rationality, complained about the problem of unrealistic assumptions in Neoclassical thinking. He was a revolutionary in the field of economics, and his notion of uncertainty and lack of complete information, present in agents in the process of decision making, earned him a Nobel Prize in 1978. Simon explained that perfect rationality of Neoclassical was unrealistic and does not relate to the behavior of real economic agents. He argues that the economic man in Neoclassical thinking requires perfect knowledge of all available choices, and all relevant information in order to execute the optimal choice. He argues that real economic agents have limited information and will make a choice which will be the best for the situation at hand, employing heuristics to facilitate the decision making process. Simon started with a problem in economic methodology, the problem of finding a scientifically satisfactory theory of economic rationality; his search for a more adequate economic theory led him to bounded rationality. (Wade Hands, 2001).

The work of Kahneman and Tversky, is considered the most influential in the developing of the behavioral economics approach. In 1979, with "Prospect Theory: Decision Making under Risk" they used cognitive models of decision making under risk and uncertainty against economic models of rational behavior. Kahneman earned a Nobel Prize in 2002 for integrating psychological

research into economic science, especially concerning human judgment and decision making under uncertainty. Prospect Theory starts from empirical evidence and describes how individuals evaluate losses and gains. Different choices reflect heuristics, where there is a bigger impact of losses than of gains (loss aversion), taking into account risk aversion from individual agents.

Cumulative Prospect Theory, which is the revised version of Prospect Theory, includes a probability weighting function derived from the rank-expected utility theory rather than from the probability of individual outcomes. People tend to overweight extreme but unlikely events but underweight average events, independently of their relative outcomes. Cumulative Prospect Theory (CPT), incorporates this modification by replacing final wealth with payoffs relative to a reference point of weighted probabilities. Prospect Theory, explains why individuals prefer action a over action b for two functions, v and π , such that the decision-maker (strictly) prefers action a over action b if and only if $\sum_i \pi(p_i)v(\Delta w_i) > \sum_i \pi(q_i)v(\Delta w_i)$; where $\Delta w_i = w_i - w_0$ is the deviation in wealth from some reference level w_0 (Kahneman and Tversky, 1979)

Another alternate formal theory from behavioral economics is Hyperbolic discounting theory. It replaces standard DU theory and presupposes that people have immediate utilities at each moment and that they choose options which maximize the present discounted sum of these utilities. This theory will be discussed further, since it is important for the aim of this thesis and is the foundation of economic myopia in decision making.

Additionally, other theories like reference dependent preference theory can be used as a substitute for utility maximization. Preferences exist, but are sensitive to current consumption or another reference point, and this differs from the reference independent preferences in standard economic theory. The formula for

the new utility is: $U(F|G) = \iint u(c/r)dG(r)dF(c)$; where c is consumption and r is reference level of consumption.

Availability and representativeness are formalizations of cognitive heuristics that can replace Bayesian updating. Availability is when information which is easily recovered is overweighed. People tend to base their prediction on an outcome, on the vividness an emotional impact instead of actual probability (Kahneman and Tversky, 1973). Moreover, representativeness, is when the evidence of a hypothesis is significant, and we assume commonality among objects of similar appearance (Kahneman and Tversky, 1973b). Bayes theorem usually results in lower estimates than this proposed theory.

Theories of self-interest can be replaced by theories of "social preference", where people not only care about themselves, but about others well-being as well. Altruism is a motive in decision making, and nevertheless sometimes altruist shave preferences over other people who are generous as well (Rabin, 2002).

All the previous theories are revisions of standard economic theory and enrich economic analysis by taking into account realistic behavior in decision making. Some of them are already very formal and well established, whereas others still need research and formal presentation. Nevertheless, the contributions in this field are widely recognized as useful alternatives.

a. Rationality vs. Bounded Rationality

The emergence of bounded rationality as an assumption about human behavior in economic analysis is a response to the problem in neoclassical thinking which by assuming perfect rationality does not deliver proper policies for the well being of a society. Neoclassical Economics leaves out reality of human behavior,

ignores that most people are only partly rational, and assumes that in the remaining part of their actions people are emotional and irrational. Neoclassical Economics takes perfectly rational behavior as an assumption to formulate theories which are used to recommend policies in economic life, which sometimes are doomed to fail because of the unrealistic foundations.

The assumption that human behavior is guided by reason presupposes that individuals always choose what they believe to be the best means to achieve their desired ends, even though the foundational theories of economics fails to explain well enough “why” choices are made or not made. Behavioral economics through bounded rationality solves this wrong assumption and takes us a step closer to representing the real world in our models.

b. Discounted Utility (DU) vs. Hyperbolic Discounting

DU theory was first presented in 1930 by Fisher as a descriptive theory of inter-temporal choice, and later was axiomatized by Koopmans in 1960. It presupposes that immediate and delayed consumption each has a fixed value, and that both, the positive value of speeding up consumption and the negative one of delaying it, should be equal to the difference between these values (Loewenstein, 1988).

Strotz in 1955 developed a critique to DU theory, focusing his attention on time inconsistency, where economic agents behave myopically. Motives like impulsivity in decision making conform to some of the explanations to such behavior. Another development in this direction was made by Herrnstein in 1967, who formulated the matching law, which explains that choices are spread according to rates that support the making of those choices. After this work on delays, Ainslie in 1974 demonstrated in pigeons the hyperbolic shape that is produced by preferences from the large delayed to the small immediate rewards.

Research since these contributions, mostly in human subjects, demonstrates the hyperbolic shape of time discounting and shows the inconsistency in the rates of immediate versus delayed choices over time. Some of the outstanding contributions are made by Green, Fristoe and Myerson in 1994, Kirby and Herrnstein in 1995, Laibson, Repetto and Tobacman in 1998 and Loewenstein in 1987, 1988, 1991 and “Choice over Time” in 1992.

The functional equation for hyperbolic discounting is as follows:

$\phi(t) = (1 + \alpha t)^{-\beta/\alpha}$, with $\alpha, \beta > 0$, where $\phi(t)$ is the discounted payoff, α is the degree of discounting, t is the duration of delay and β is the non-discounted payoff or a predefined common constant which for different values of α will result in different time preferences which can be compared within (Loewenstein and Prelec, 1992).

There are several applications of the hyperbolic functions, the more well known being the ones used in addiction, procrastination, financial markets and savings for retirement. These applications help explain why immediate events are discounted at a higher rate than events in the far-away future. Nevertheless, I will concentrate on the application of savings for retirement.

“We tend to pursue immediate gratification in a way that we ourselves do not appreciate in the long run”

(O’Donoghue and Rabin, 1997)

III. Economic Myopia in Decision Making

Myopia is derived from the term “muopia” which in Greek, means to close the eyes. It manifests itself as blurred distance vision, hence the popular term “nearsightedness” (American Optometric Association, 1997). Those with myopia usually can see close-by objects clearly, but far-away ones appear blurred. Moreover, there are several types of myopia and certainly different treatments for each type. For the subject of this thesis I will concentrate on one type of myopia: Early Adult Onset, which occurs between ages 20 and 40. I will use it as an analogy for the definition of Economic Myopia (EM) in decision making.

EM is when economic agents make bad decisions based on short term satisfaction. Those who are diagnosed with EM can see nearby satisfaction of their choices clearly, but have blurred vision when confronted with far away rewards.

a. Incidence and Prevalence

The prevalence of myopia varies with age and other factors (American Optometric Association, 1997)

In the specific case of savings for retirement, which is the subject of this thesis, it might be the case that the younger the individual the more severe the case of EM, therefore it makes sense that adults of the ages between 20 to 40 will show higher preference for short term satisfaction given by spending, and procrastinate with respect to their savings for retirement. Procrastination in savings for retirement might be a result of EM in this specific group of economic agents, since it seems that saving can start later in life when retirement is far away from happening. Further experiments will have to be made to confirm that EM is indeed common worldwide in this group. In this matter we should note the work by Laibson in 1997 where he suggests in his model of ‘Golden Eggs’ that financial innovation

increases liquidity and therefore reduces commitment for saving by 'early selves' lowering the level of capital accumulation. This financial innovation allows people to borrow easily against illiquid assets and therefore eliminates the need for partial commitment (Laibson, 1997).

Additionally, in "Self Control and Saving for Retirement", Laibson, Repetto and Tobacman elaborate on the large gap between intentions and actions in the lifecycle of saving, discuss and the value of external commitments to prevent overconsumption (Laibson et al, 1998). They also note the findings of a survey from Merrill Lynch of baby boomers in the United States, which supports the existence of EM in the group previously identified. They also build up and assess a simulation model of hyperbolic agents that shows the divergence of the self-acknowledged error of real and desired saving rates which challenge standard economic theory and view of the maximizing agent. Their work demonstrates that the distinction between actions and intentions is an indication of the absence of rational behavior in the savings conduct of young workers.

There is a higher incidence of EM in lower socioeconomic groups, since their elasticity for their income in regard of their savings might be logically higher than for higher socioeconomic groups. An individual, as soon as income becomes higher than the one required for covering basic needs, starts saving for different purposes. At first, such savings might be delayed consumption of 'luxury goods' instead of saving for retirement. And this confirms that there is preference for short term satisfaction given by the luxury goods instead of the long term benefit of a secure retirement. Details regarding level of income go beyond the scope of this thesis but it can be mentioned that Lawrence in 1991 focused on how household time preference differed across different socioeconomic groups, and her field studies confirm that there is evidence supporting 'level of income' as a factor of EM.

Incidence and prevalence of EM depends in my view primarily on two factors: Age and level of income. Those younger and with lower income should show a stronger EM. Other factors such as default plans offered by the employers, saving habits in the family, access to health insurance, etc. might also have high correlation with the level of EM present. Regarding to age, evidence is provided by Carroll and Samwick in 1997 and Gourinchas and Parker in 2001 whom focused and reported on how most households “tend to engage in ‘buffer stock’ saving early in their lives –they save primarily for emergencies- and only conduct ‘retirement’ saving later on” (Frederick, Loewenstein and O’Donoghue, 2001) . Laibson in ‘Golden Eggs and Hyperbolic discounting’ mentions as well age as a factor in the manipulation of individual cash flows and the composition of assets. Regarding to level of income, field studies by Lawrence in 1991, support lower socioeconomic groups have higher discount rates for immediate gratification and therefore a higher EM on the subject of savings for retirement. Thaler and Shefrin in 1981 also argue that both age and social class are fundamental in predicting individual intertemporal choices, since the younger the individual the higher impatience and the lower the presence of self-control, in addition to an observed social class difference.

b. Symptoms and Signs

“The most common symptom associated with uncorrected myopia is blurred distance vision” (American Optometric Association, 1997).

A clear vision of immediate benefits and a blurred view of long term rewards is the most common symptom of EM. The symptoms regarding savings for retirement include behavior like spending all income immediately, saving only

for delayed consumption of 'luxury goods', and any other short term use for savings. The observation of these symptoms and signs either in isolation or together as a whole indicate the existence of EM in the economic agents in question. These symptoms are first noticed in young adults as soon as they start receiving an income when facing the decision of how to spend the income received, if they will save or not, and if they will save, for which purpose. This signs should give an alert, since not starting to save at an early age for the purpose of retirement ends up harming others who will pay taxes when these myopic agents reach the retirement age. In the next chapter, this will be discussed further.

c. Causes

Other conditions that may have myopia as a complication may potentially be an underlying cause of myopia (Wrong Diagnosis, 2007)

With rational economic man of Neoclassical Economics there is a fixed discount rate for immediate and delayed events, though a myopic agent as explained before prefers immediate benefits when given the chance to choose in between these and far away rewards. This behavior might be present for several reasons and once recognized the presence of EM identifying them could definitely help in the early detection, prevention or even treatment to avoid further harm.

Literature within the Behavioral Economics approach mentions these factors, without actually linking them directly as causes of EM. These underlying causes of EM can be found from Strotz who started the discussion, to the work from Ainslie, Read, O'Donoghue and Rabin. Their extensive work is evidence of the existence of these causes in the context of savings for retirement and the texts I consider fundamental will be reviewed in order to define these causes.

There are various underlying causes of EM in decision making but they all relate to two main ones: Inconsistency of preferences and Self-control problems which influence behavior. I propose in this thesis a third one: CONTEXT. These three results in EM and at the end, they contribute to explaining the existence of procrastination in planning for retirement. The first work on **Inconsistency** was done in 1955 by Strotz. In his “Myopia and Inconsistency in dynamic utility maximization” he presents the idea of time inconsistency and focused his attention on certain cases where the economic agent is more myopic in the present than intended. This model is a challenge to DU theory since it introduces the idea that anticipation of upcoming events influences instant well being. When this happens and there is failure to consume as intended, this hampers the agent’s ability to enjoy other types of delayed consumption.

Decisions regarding delayed consumption on the other hand concern self-control problems and methods involved to solve such problems. Therefore, the second underlying cause of EM is **self-control problems which influence behavior**. Research regarding these problems is extensive in the behavioral economics approach in view of the fact that it is evidence that non-rational motives are present at the time when real economic agents solve problems and make decisions. The literature in self-control problems is extensive and within this research several can be mentioned. I will choose Impatience, Temptation, and Impulsivity.

First, Impatience can be defined as restlessness or the dislike on anything that causes delay (American Heritage Dictionary, 2007), but in the economic framework given by Fisher, is the preference for advanced timing of satisfaction (Koopmans, 1960). Koopmans’ work in 1960 on “Stationary ordinal utility and Impatience” is fundamental in linking Impatience to decision making analysis.

Koopmans argued that there are zones of impatience and that there is in all circumstances a preference for immediate consumption. He axiomatized the descriptive theory of inter-temporal choice focusing on impatience as a cause of immediate preference. Bohm-Bawerk brings in impatience in the economic analysis of decision making but only as concerned a predetermined time horizon, while, Koopmans' research instead considers an undetermined time horizon, therefore independence from calendar periods and a broader use of programs.

More recent research on impatience has been done by O'Donoghue and Rabin in "Doing it Now or Later" in 1999. They examine self-control problems and present people as naturally impatient, since they come into contact with rewards soon and postpone costs until later. They investigate the repercussions on behavior of present-biased preferences: Procrastination and Preproperation. Procrastination occurs when you wait for actions if they imply immediate costs and preproperation is when you do it when you are supposed to wait. Considering these preferences, classification of people can be made into two groups: Naives and Sophisticates. Naives are influenced exclusively by the present-bias effect and Sophisticates act earlier than Naives given the same preferences, moreover not considering that costs are instant. Naives can have certain amount of sophistication and the other way around, specially when making decisions in different areas of their lives.

The second self-control problem is: Temptation. Gul and Pesendorfer in "Temptation and Self-control" in 2001, create a model where an agent has self-control if there is defiance of temptation and the individual opts for an alternative with superior ex-ante utility. Temptation can be defined as the desire to have or do something that you know you should avoid (American Heritage Dictionary, 2007). Moreover, in their opinion, rather than inconsistency, temptation might be the explanation for the existence of commitment. For them,

self-control happens in the moment the choice is made and commitment happens in advance. Therefore, removing temptation can result in economic agents who are better off.

“...people are characterized by self-control problems: We would ‘like’ to behave in one manner, but instead ‘choose’ to behave in another” (O’Donoghue and Rabin, 1997)

The third and last self-control problem to be reviewed is: Impulsivity. It can be described as the inclination to act spontaneously rather than on thought (American Heritage Dictionary, 2007). Several authors have worked on this problem, and the following are the ones I consider outstanding.

Schelling in 1984 in “Self-Command in Practice, in Policy and in Theory of Rational Choice” deals with impulsivity and how anticipatory self-command can restrict the individual’s options against what it is identified to be the preference at the moment the specific action will take place. He defines self-command as what you may not require if you previously have courage, generosity and other virtues which Smith in his “Theory of moral sentiments” defined as self-command. Schelling goes further and sets strategies and tactics which can be very useful to fight impulsivity, including rules which stand out and are enforceable. He contemplated the fact that fighting this impulsivity can result in the denial of freedom of choice and the unawareness of the actual revealed preferences of individuals either by themselves or by others. This subject will be elaborated in more detail in the next chapter of this thesis.

O’Donoghue and Rabin argue that human nature is left out from the standard model of intertemporal choice, which instead of considering inconsistency in preferences through time deals with impulsivity at the moment of making the

decision. This predilection for immediate gratification makes real economic agents over-indulge in choices which result in instantaneous rewards and deferred costs. In “The Economics for Immediate Gratification” they demonstrate that even a mild predilection for immediate gratification can hurt an individual’s welfare severely, depending on the nature of the activity to execute, while a pleasant one with delayed costs or an unpleasant activity with costs upfront. Saving for retirement can be categorized as an unpleasant activity since you replace immediate gratification and incur upfront costs for receiving future gratification. Addiction is one of the major activities studied in their work and it is explained by these models of immediate gratification. Nevertheless, inclination for immediate gratification result in procrastination, and to battle it and stimulate efficient choices, incentive plans must be put in practice. One example of these incentive programs has to do with deadlines, cooling off periods for purchasing and default programs for employee’s savings. An individual can do severe harm to himself when preference for immediate gratification makes him procrastinate for years regarding the implementation of a plan for saving for retirement.

Soman et al, in “The Psychology of Intertemporal Discounting: Why are Distant Events Valued Differently from Proximal Ones?” also investigates the matter of Impulsivity and Self Control. They argue that dynamic inconsistency implies that individuals might make cautious choices for the upcoming periods but that the temporal immediacy to the stimuli frequently guide them to impulsively change from their earlier selection. They do not make a difference in between inconsistency and impulsivity as different causes as I do, but imply that one is included within the other. Also, their work focuses on the need for self-control devices referred to as ‘personal rules’ or ‘precommitments’ as in previous literature on the field.

In “An economic theory of self control”, Thaler and Shefrin discuss the individual as an organization, and refer to them as planners and doers, planners when farsighted and doers when myopic. Doers present problems of impulsivity and are the foundation of the model they develop, which assumes that people will rationally make the decision to limit their own behavior, specially when costs and rewards arrive at different times. They talk about mandatory saving plans and complex strategies in the event the previous are absent, and this aspect of their view will be discussed further in the next chapter.

The last underlying cause of EM and my contribution to this matter is **Context**. Context is the set of circumstances or facts that surround a particular event or situation (American Heritage Dictionary, 2007). Moreover, as context has everything to do with why an individual would prefer immediate satisfaction rather than a far-away reward, context is deeply related to EM in decision making.

It is easier to see that within all models which consider hyperbolic discounting, each individual is living in *ceteris paribus* conditions, and has access to equal amount of benefits given by their employer or government, though in reality it is not the case. This brings me to the F-twist, Friedman’s famous statement “The more significant the theory, the more unrealistic the assumptions” (Friedman, 1953) and how even though it is contested by many economists, the reality of the assumptions when it comes to policy effectiveness does matter. This famous statement by Friedman has become a pretext for not embracing real behavior in economic modeling, whereas economic analysis not only needs useful but truthful models which can lead to effective policy making. “This failure is partly due to invalid assumptions-e.g. that choices are made in isolation, that utility is linear in amount, or that people are certain about the receipt of future rewards (Frederick, Loewenstein and O’Donoghue, 2001)

Assumptions in my view give the context to a theory and should be defined in a correct way. Musgrave (1981) defines three types of assumptions: Negligibility, Domain and Heuristic. Negligibility assumptions state conditions not really absent but irrelevant for the specific phenomena explained. Domain assumptions are applicable in cases of certain kind. And Heuristic assumptions constitute steps towards the prediction that wants to be made.

Boumans, on the other hand distinguishes in between three different conditions: *Ceteris Neglectis*, *Ceteris Absentibus* and *Ceteris Paribus*. In his work he draws on Hasok Chang's (1999) discussion of the development of thermometers which is an outcome of "Measurement in Physics and Economics" research project at the London School of Economics and the University of Amsterdam (Morgan, 2003). He argues a difference between *Ceteris Neglectis* for not absent but irrelevant circumstances, *ceteris absentibus* for those that might be declared absent if experiment rules them out, and *ceteris paribus* for the conditions which remain constant. These types of assumptions might not be all present in a model for EM, but the ones present should be correctly expressed in order for the model to give a truthful explanation of the real world. In "Time Discounting: A Critical Review" Frederick, Loewenstein and O'Donoghue argue over the importance of valid assumptions and the motives which explain intertemporal choices. This valid assumptions contradict the invalid ones present in the DU model, such as the existence of discount rates which are assumed to be constant across time and the same for all types of goods. Valid assumptions and motives regarding human behavior are relevant in order to get an efficient and explanatory model of EM.

In the case of EM in decision making, sometimes assumptions do not take into account that the myopic individual might be surrounded by circumstances in his or her environment which might make him avoid commitment in order to be

able to confront certain situations that might show up. For example, an individual might postpone commitment to a retirement plan if he does not have access to an appropriate insurance or one provided by his employer. Moreover, in the event he or any member of his family gets sick, liquid savings can help. Therefore in order to compare the decision making between myopic individuals first it is necessary to properly define assumptions like equal access to insurance, access to loans, developed or developing country, etc. These assumptions give the context for the model and can help contribute to explaining the existence of EM in an individual. This a different cause than Inconsistency and Self-control problems, and is more like facts that surround an individual and give the context in the moment the decision will be taken, which in the case of savings for retirement can result in procrastination.

d. Treatment

The vast majority of individuals with EM are overlooked in the policies formulated in the matter of savings for retirement. Treatment can be provided by against-EM measures which might be default measures in the society a person is living in. These procedures prevent the individual from doing harm to himself and to others in the long term. The goal for management of the myopic individual is clear: to reduce the incidence of his actions on society. I believe increasing awareness measures can be designed in order to motivate the individual to not harm himself in the long run, but a stronger treatment is required when it is not about protecting the individual from himself, but protecting the society from the incidence of decisions taken by myopic individuals.

1. Mild measures: Increasing Awareness

“Treatment directed to slowing the progression of myopia is referred to as myopia control...(it) results in less severe myopia... than would otherwise have occurred” (American Optometric Association, 1997)

Increasing awareness might help in EM control and whether this is preferred to more radical measures depends upon several factors including conditions of living, access to benefits, and socioeconomic group. Each of these mild measures has particular advantages and some of them are more economical and safe to implement than others. The following have been mentioned in the literature of the behavioral economics approach and related specifically to the subject of savings for retirement:

First, there are cooling off periods. This measure increases awareness for the consumer. It helps them fight their impulsivity in spending when falling into the temptation of buying any good they do not need. The implementation of this mild measure will depend mostly on the insistence of organizations which protect consumers since it would not have the desired effect if it is done as a governmental policy. Cooling off periods will result in less unnecessary spending, nevertheless leaving the myopic individual the opportunity to do something else with his income. This is a mild measure since it does not guarantee that the money not spent will be saved specifically for retirement purposes. Most likely this will be transformed into delayed consumption for a luxury good or other priority that the myopic individual has in mind far from being savings to protect its future. Colin Camerer in 1999, refers to cooling off periods as conservative paternalist measures. In this section I refer to private implementation not as a normative governmental policy.

Second, there are default savings implemented by the employer. An employer can watch over its employees' retirement directly and indirectly. Directly is when the employer offers access to retirement plans and sometimes motivates employees to save more by matching the employee contribution to the plan. Indirectly it can be made by setting default withdrawals from the employee monthly earnings redirected to a retirement plan which the employee can opt out and cancel, and increase or decrease the amount of the contribution at any given moment. This default measure is likely done by the organizations and not as a public policy, since the second needs more research to learn all the implications which I do not mention since it is beyond the scope of this thesis. This is still a mild measure since the individual has the option of cancelling the plan, withdrawing the entire sum for other purposes, borrow against it, but most important, because it is done privately.

Third, there are educational campaigns. The last mild measure which can be used as a treatment to combat EM is the one more obvious for increasing awareness in a myopic individual. Educational campaigns might change behavior which in other ways will be impossible when still considering the individual's free will. I relate these educational campaigns to 'Change Management' in organizations, where the individual is in a current state, will go through a delta or change state, thanks to the campaign and end up in a desired state, which in this specific case will result in an individual with a commitment for saving for the purpose of retirement. Myopic individuals feel comfortable in the current state since they are spending as much as they are able to spend, enjoying the immediate gratification given by such spending and must likely ignore how their retirement stage will workout, or if they will have access to government funds, how much it will be and if it is enough to survive. These campaigns could change the perception of these individuals so they could see clearly that their current state is unsustainable, that their delta state is an easy

step to accomplish regardless of their position against change and the desired state will come full of rewards for them to enjoy (LaMarsh, 2005).

In this change management approach there is need for three types of individuals: the targets of change (myopic individuals), the change agents which are in daily contact with the community and the sponsors of change, which can be private individuals or the enforcers of a public policy related to do the educational campaign.

2. Refractive Surgery: Reducing the disease.

“There are several refractive surgery methods in use; others are in various stages of research and development” (American Optometric Association, 1997)

Refractive surgery is a treatment used to improve the refractive state of the eye and decrease dependency from mild measures which cannot give certainty of their degree of performance. It can be said that it corrects telescopic malfunctions and can be done in order to reduce the disease but not eliminate it.

In EM, public policies take the role of the possible treatment which can be given to myopic economic agents to improve their blurred vision of far away rewards. Moreover if these public policies are done in order to increase the savings for retirement, they can do nothing but benefit those who always planned for their retirement and have nothing to do with the fact that myopic individuals did not.

Those policies which I identify as refractive surgery methods can range from conservative paternalistic measures, to what today is called Libertarian Paternalism or reflections of plain normal functions that a government should perform. This will be discussed further in chapter V. Before this, I will mention

some of the most common policy implications for EM in the framework of savings for retirement.

“We show that the hyperbolic assumption has important implications for both positive and normative conclusions about saving behavior”

(Laibson, Repetto and Tobacman, 1998)

IV. Policy Implications: Savings for Retirement

Successful policies take into account real behavior of economic agents, and therefore those policies that battle against EM lessen the harm for the myopic individuals themselves and the harm that might be done to society due to the bad choices done by these individuals.

a. Short term gains and long term harm

Illiquid assets can be acquired to avoid getting to a retirement age without any secure income to rely on, and therefore depend on government funding, which will of course originate from the contributions of tax payers at the moment of the myopic individual's retirement. As David Laibson has put it, these illiquid assets have the same property as the goose that laid golden eggs. The asset promises to generate substantial benefits in the long run but the benefits are difficult to realize immediately (Laibson, 1997)

Regardless of the large quantity of these illiquid assets and the ever increasing access to them in some countries, still the majority of individuals seem to go for the short term gains of their income and may ignore long term harm they may cause to third parties at the time of their retirement. Individuals not only need to confront the fact that they have to opt for superior choices now, but also that they

need to commit themselves to that choice in order to not do long term harm to themselves and rest of society.

b. Voluntary vs. Mandatory Measures

Several of the policies that have been proposed might give the impression of being mandatory measures against EM, but that is not the case. A good policy is that one that seems a voluntary choice for any healthy decision maker even though they might go against the immediate gratifications of those individuals who can do harm to society. Some of these policies can relate to commitment and precommitment mechanisms. Commitment happens in the moment when the decision is made and the individual is enrolling in the plan and will contribute monthly to it, especially in the case of acquiring illiquid assets; precommitment is before then. Pensions and retirement plans are clear examples of such mechanisms. Some governments give tax incentives for motivating individuals to start contributions or to increase them. Organizations which provide these plans on the other hand have penalties when early withdrawals happen. There are some cases when the individual owner of the account might borrow against the account in question or in general against the plan, but this can result in a penalty as well.

The existence of EM has several policy implications which can open the door for fighting the preference for short term benefits over long term rewards, or rephrased differently, that can be a treatment to myopic individuals. 401 K plans in the United States which can be a good option of treatment are a result of these. This plans offer several benefits such as tax incentives, employer matching the contribution, default deposit system, penalties close to zero for withdrawals at age close to retirement, and others depending on the plan. About half the

workforce does not have a 401 k plan or a pension of any kind (Laibson, Repetto and Tobacman, 1998).

Other plans are Traditional and Roth IRA contributions, which regardless of the type you choose will bring enormous tax advantages. They are one of the best ways of investing if you can manage to do the maximum annual contribution, though this has the limitation of the amount of contributions you can make in a fiscal year. Interest rates are higher than on average for the rest of options. There is no age limit, no employer plan limit, and some can benefit on a compensation or alimony income though always within the limits of the allowed contribution in a fiscal year. Only about 10% of households currently contribute to IRA even though such accounts provide tax savings for almost all households (Laibson, Repetto and Tobacman, 1998)

There are countries where this type of plan is not common and individuals do not have easy access to them and some others where plans are present but workers still do not have access to them. In the first countries, most likely, workers can only have access to a social security system and in some of them it might not work properly. In the latter, it depends on the sector you work for.

Your income at the time of retirement depends on the sum of your contributions and how much is devoted to that specific task at the time of the individual retirement. In any country there might be a considerable number of independent individuals (those who do not work for a firm) who do not contribute to any of these plans, and therefore rely on the fact that when they reach retirement age they will depend on members of their family, the government or that their business will be successful enough to provide for them at that time. I will refer to this sector as the informal sector of an economy. For the aim of this thesis I will refer to the informal sector in advanced or developed economies, since is in this economies where saving can have higher probabilities of being intended for

retirement purposes. Social security contributions are usually mandatory for those who work for a formal firm, but can be a private commitment as well. Moreover 401 k plans can be offered only by the firms in the formal sector. This sector is outstanding in large United States cities and it has turn out to be rising in major Western European cities. Their share of jobs in the US was 23 percent in 1992 and it was projected to rise to 24 percent in 2005 (Sassen, 1997). In Western European cities needs to be researched further.

EM implies that the government can formulate policies to eliminate such behavior or at least lessen its incidence and prevalence in society. Policies can range from conservative paternalism to libertarian paternalism or might in fact be only one of the protective functions of the government for the good of society. Those policies which are considered conservative paternalist might restrict almost entirely the freedom of choice for all the different types of individuals. Myopic individuals might benefit, but the rest of society might be affected as a result of the measure.

The policies prescribe ways to help myopic individuals defeat errors and the high majority of them are of paternalistic measure, though they better satisfy the notion of asymmetric paternalism which will be explained further in the next chapter.

These measures require that the government set up a default plan for all individuals, but individuals have the freedom of opting out of the suggested plan at a minimal or non-existent cost to place its savings where they consider will give them the most value or is closer to their interests. This is the same as with other decisions such as the monthly amount that should be designated to that purpose.

When individuals do not have a telescopic malfunction, we should not harm them since they would do it anyways if there was not a mandatory investment. Default automatic deposits should solve the issue since they will provide enormous benefits for EM in individuals.

Another policy might be the use of tax incentives to encourage people to invest in retirement plans (O'Donoghue and Rabin, 1998). These incentives increase the cost of the postponement of the commitment. Nevertheless, time limits in taking financial decisions might be another policy which can or can not be related to taxes, depending on whether the government imposes deadlines for making a contribution during the fiscal year. The last proposed policy is educational campaigns as mentioned in the previous chapter, but it might work best if the sponsor of change instead of being an organization is a specific function of the government. In the United States one way of eliminating uncertainty regarding the amount you will receive from the government at the time of retirement is by receiving statements giving you the information of how much you will receive at that time if you retire with your contributions at the moment. This can eliminate ignorance of the retirement issues and reduce resistance to change of the myopic individuals.

All these policies need further investigation and experimentation since it is unknown if the implementation costs will be greater than the actual harm produced by the EM of the individuals in question. Nevertheless it is interesting to review the degree of freedom that it still left in some of these policies, and for doing that, Libertarian Paternalism needs to be discussed.

“The libertarian paternalist insists on preserving choice, whereas the non-libertarian paternalist is willing to foreclose choice”

(Sunstein and Thaler, 2003)

V. A Case for Libertarian Paternalism?

Freedom of choice is a right for any individual, but when there is incidence of EM in some of them, this freedom of choice can be influenced in order to give proper treatment to these individuals, moreover for them to not harm themselves and society in the long run. Libertarian Paternalism seems like a contradiction in terms at first sight but when explained better it makes sense and is an answer to hard paternalism by still allowing the individual to make choices in different aspects of their life which can sometimes be regulated by the government, i.e. Savings for Retirement. Furthermore, hard paternalism defines the course of action of individuals, leaving no choice but to follow the decision made by the government in several aspects including some private matters.

Libertarian Paternalism (LP) is a way of affecting behavior while increasing awareness of the individual's actions. It uses psychology to help in the understanding of how individuals make choices and use this in formulating efficient policies. LP uses this knowledge and promotes a change in myopic behavior by helping the individual remain with the choice taken, since it is easier but not costlier and even helpful to do it in this way. LP is a meeting point between ideas. Libertarians embrace freedom of choice, and so they deplore paternalism and Paternalists are skeptical of freedom of choice so they deplore Libertarianism (Sunstein and Thaler, 2003). Therefore these government policies affect behavior but the individual still has the freedom to choose to opt out of the default measure. They affect behavior but permit freedom.

Sunstein, Thaler, Camerer, Loewenstein, O'Donoghue and Rabin coincide in benefiting a softer version of paternalism in policy making, even though Sunstein and Thaler differ from the rest in not recognizing that this new kind of

paternalism is difficult to monitor unlike hard paternalism in the form of tax rates or bans, and could actually increase support for hard paternalistic measures for specific behaviors, for example in relation to cigarette consumption (Glaeser, 2006). Sunstein and Thaler do not point out any disadvantage on LP but only present it as the best choice among policy makers. On the other hand there are behavioralists such as Glaeser which do not favor any kind of soft paternalism due to the alleged dangers of government benevolence. Hard paternalism is less damaging than soft paternalism and in many cases some type of paternalism is unavoidable (Glaeser, 2006).

LP is a soft type of paternalism since freedom of choice is not eliminated, but still there for the individual to use. There are some minimal costs if the individual opts out from the default choice but are always accessible to those who want to make the move. The policy tries to promote a specific direction to which the individual should move in order to not do harm in the long run especially when it is not true that individuals make the optimal choice by themselves 100% of the time. Individuals act under bounded rationality. Individuals might be myopic and policies can give an effective treatment for that purpose.

There are some starting points given by Sunstein and Thaler in "Libertarian Paternalism is not an oxymoron" which are very helpful in the formulation of LP measures. The measures are the following: Default Rules, Anchors and Framing Effects. Default Rules affect behavior and are there to help the individual overcome myopic choices, the individual still has the power to opt out but the path to the best choice is already chosen. Sometimes these rules can increase the percentage of people who decide to start saving for retirement since they are too lazy to opt out and are aware that in doing so they are taking the right choice. Anchors are starting points. Sometimes people are ignorant or just unwilling to pay, or do not start a commitment for their own benefit, and this minimal

starting point can avoid harm. The last one is Framing Effects. These are important since context is substantial, fundamental and useful at the time of affecting individual choices.

In Figure 1, it can be observed graphically how the framing effects can make the myopic individual see the same square (choice) differently, depending on the frame.



Figure 1

Source: *Maps of Bounded Rationality: A Perspective on Intuitive Judgment and Choice. Prize Lecture 2002. Daniel Kahneman.*

Therefore depending on the context, which can be the information provided, circumstances or just the proper environment to make the choice, the individual can stick to the decision which will diminish the harm in its own future.

When the government still makes the choice of the default rules, starting points and framing, it is indisputable that paternalism is present by definition. LP tries to bring a balance to these by allowing the individual to have the freedom of choosing to opt out, decrease or increase in the specific case for savings for retirement.

The individual can still change the default choice made for him, but the orientation is given already in the direction that most benefit the individual and society. One could say that this could be linked to Welfare Economics, since it is indeed concerned with the welfare of individuals, but the fact that it presupposes that the individual is always the best evaluator of its own welfare and that people at all times have a preference for greater welfare unlike for a lesser one, leaves aside the difficulties in reality occasioned by time inconsistency and moreover forgetting about the possibility of multiple self analysis.

Multiple self models have been used to make sense of the wide range of self control strategies that people use to regulate their own future behavior and provided inspiration for more recent formal models of sophisticated hyperbolic discounting (Frederick, Loewenstein and O'Donoghue, 2001) (Laibson, 1997) . This models basically explain that there is a different approach and characteristics in the way decisions are taken within the same individual. This difference in choices and decision making can be present at the same moment in time but for different situations or through time for the same situation.

Some of these models involve “planners and doers” as presented by Thaler and Shefrin in 1981 in where ‘doers’ are myopic and ‘planners’ care about the present and future in a more even handed fashion (Frederick, Loewenstein and O'Donoghue, 2001). There is concern with the fact that it is difficult to define the moment and the reasons of the existence of these multiple selves. Nevertheless, it can be linked with the arguments made in the preface and chapter III regarding how EM might have higher incidence in younger agents.

If indeed age makes us myopic, LP policies can diminish the harm done to us by our younger ‘doer’ self by receiving the right orientation specially in regarding

to saving for retirement, since the earlier saving starts the less probability to harm society later on, due to irresponsible choices.

a. Asymmetric Paternalism

In the same year that LP was introduced by Sunstein and Thaler, Camerer et al published "Regulation for Conservatives: Behavioral Economics and the case for Asymmetric Paternalism" where the authors expanded on the idea of 'cautious paternalism' which was previously mentioned by O'Donoghue and Rabin in 1998. This asymmetric paternalism is based on the fact that people make errors when making important decisions such as saving for retirement but policies which can avoid this behavior can be good if formulated right, since they might not have high costs for those people who are not myopic and made a good decision from the beginning.

Camerer et al. base their policies on two ideas: First, individuals tend not to opt out from default plans unless they really have an urgent reason and second, these policies can fight the preference for immediate gratification. Default options, tax incentives, work-place seminars and deadlines are examples of Asymmetric Paternalism measures.

Some economists might prefer to call it Libertarian Paternalism rather than Asymmetric Paternalism, Cautious or even Soft Paternalism since it may sound more like a meeting point instead of a contender to their ideas. Regardless of the name there is one fact: these policies can indeed be successful since they take into account real behavior of real economic agents. Behavior is being affected but there is not a complete restriction of freedom of choice. The individual receives a treatment for his myopic behavior; and is being oriented to follow a healthy path without being confined by the government's will.

b. The actual meaning of Freedom of Choice

The individual's freedom at the time of making choices can be compromised when the government policies choose a unique way of behaving. Government policies should only decide for the individual in those cases where undeniable harm might be done to the society.

For centuries, individuals in society have fought for their right to Freedom. This Freedom should be respected when there is no harm to third parties involved. It is one of the actual functions of the government to protect individuals who are part of society, but it is not a function to eliminate freedom of choice.

That is another of the reasons why Libertarian Paternalism is a useful and an attractive way to formulate policies, since it still respects Freedom of Choice. This can be done by considering when formulating policies that they should prevent short time gains of individuals that can have long term effects which might harm all, but will cause change to those individuals who have healthy perspectives.

The actual meaning of freedom of choice is freedom which allows you to make a choice with the information at hand and together with the result for yourself, your action, does not harm society. As long as policies respect this, they should be in accordance with the proper role of the government.

VI. Concluding Remarks

Real economic agents are affected by Economic Myopia (EM), and this means that they often make bad decisions based on short term satisfaction. An

individual diagnosed with EM, can see nearby satisfaction of their choices clearly, but have blurred vision when confronted with far away rewards. This challenges the standard theory of Discounted Utility and opens the door for an alternate theory: Hyperbolic Discounting. Hyperbolic Discounting is a theory developed in the behavioral economics approach and it is a more appropriate model for intertemporal choice than DU, since it considers real assumptions and motives. This theory has several applications like addiction, procrastination, financial markets and savings for retirement. Hyperbolic Discounting helps to explain in all of them that immediate events are discounted at a higher rate than events in the far away future. I used Hyperbolic Discounting as a foundation for EM in decision making, moreover focusing on the application for savings for retirement.

In the framework of savings for retirement, there might be a higher incidence for EM on adults between ages of 20 and 40, since they may show higher preference for short term satisfaction, and procrastinate in saving for retirement. Procrastination in savings for retirement might be a result of EM in this specific group of economic agents, since it seems that saving can start later in life given that retirement is far away from happening. This should be researched further.

There are various underlying causes of EM in decision making. I name three: Inconsistency of preferences, Self-control problems which influence behavior and Context. Inconsistency on preferences is the most well known cause but Self-control problems are fundamental as well. I discuss three types of the latter: Impatience, Temptation, and Impulsivity. Context is not usually seen as a cause of such behavior, but in my view is an obvious determinant.

Regarding treatment, there are mild and more severe measures which can diminish the effects of EM. Increasing awareness might help in EM control, given

that several actions in order to pursue a greater awareness can be made. Each of these mild measures has particular advantages but can be costly. Further experiments need to be done to determine if they are easier and cheaper to implement rather than the cost produced by EM.

Some policies might be proposed which give the impression of being mandatory measures against EM, but there are options which still leave some choice to the individual. A good policy is one that affects and orients in the right direction the choice for any decision maker, still leaving him the freedom of keeping the path he wants to follow, whenever this decision is not doing harm to third parties. These policies go against the immediate gratifications of those individuals who can do harm to society. Policies that consider these in the framework of savings for retirement are those which take into account default rules, anchors, framing effects, tax incentives and educational programs. When these measures come from public policies instead of private initiatives they can be seen as mandatory measures.

In certain cases even though mandatory measures are needed to correct the telescopic malfunction occasioned by EM, the better way for dealing with it seems to be with Libertarian Paternalist measures. LP is more a balance or meeting point between ideas since freedom of choice is not eliminated, but still there for the individual to use. For example, even though default options are established, the individual can opt out or change the default conditions of the deposits the employer is automatically making for him on a retirement plan. These policies when applied might be successful in protecting the individuals from the tyranny of their blurred vision. Behaviorists have different positions in regarding whether soft or hard paternalist measures are better, but coincide that paternalism is unavoidable.

Allowing individuals to experience the long lasting effects of avoiding refractive surgery (a treatment for severe myopia) is not an option; an individual loses his freedom when he starts affecting third parties with his decisions. Not reducing the disease can have consequences for everyone not only on those who made the wrong decisions.

One of the basic government functions is to protect. Even if it seems that savings for retirement should not be a matter for government involvement or on the other hand a decision that should be made by government and not the individual, the truth is that policies should orient and affect decisions in the correct direction while always respecting the choice of the economic agent. Therefore there is a need for mandatory refractive surgery, due to EM, but it has to be done with the correct method.

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