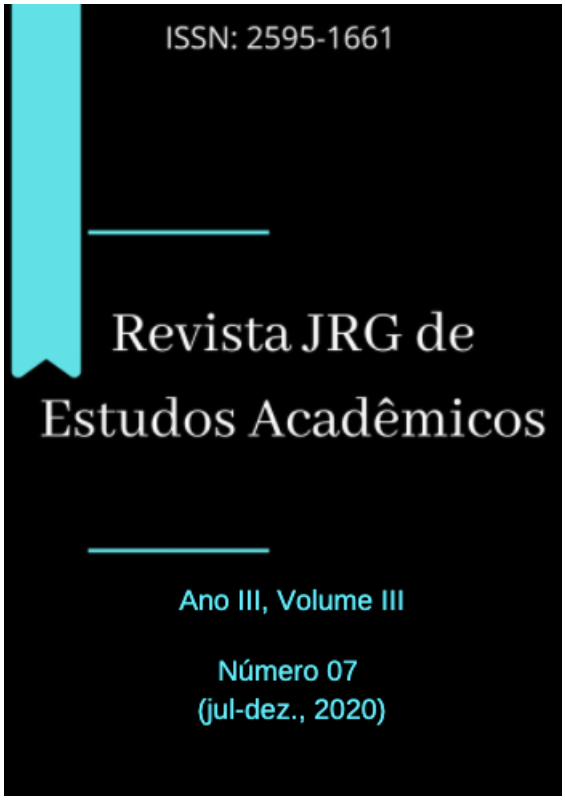

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POST-MODERN HEALTH ECONOMY
DEMAND PARADOX IN ECOMICS MODELS, EVIDENCE AFTER COVID-19

ECONOMIA PÓS MODERNA DA SÁÙDE
REFLEXÃO SOBRE O PARADOXO DOS DETERMINATES DA DEMANDA, AVALIANDO AS EVIDÊNCIAS TRAZIDAS DA COVID-19

Alessandro Aveni[1]

Abstract

The paper seeks determinants of health demand using the economic analysis in order to clarify what could change after the market failures due to the Covid-19 pandemic during 2020. The economic models stated that the increase in public spending on health and in universal health systems had positive impacts on the economy of health and in general on collective health. This is a paradox because the opposite have been occurred in all economy and all over the world. Exploring the determinants of demand with bibliographic evidences form economic theories, the paper point out elements of reflection on what should be considered the demand for health for the public and private health. The results of the paper explain such paradox and underline the real demand determinants that must be assessed. The paper allows us to think how to overcome the past centuries health paradigm centered on offering medical assistance to the population through controlled markets, public health systems and the “health demand” assessment considering

[1] Pós doutor pela UnB. Doutor em Ciências Políticas Universidade Statale de Milano, em Administração pela Universidade Cormerciale Luigi Bocconi di Milano. Mestre em Geografia e Graduação em Administração pela UnB. Docente na Universidade de Brasília. CV:http://lattes.cnpq.br/0679425851663633. E-mail: alessandro@unb.br

health as a capital good. The finals remarks of the paper could be used as a bridge to a postmodern health evaluation centered on the human being and not as an asset.

Keywords: Health economics, Covid-19, Health demand, Economic health models

Resumo
O trabalho resume a analise econômica e nas determinantes da demanda de saúde para esclarecer o que poderia mudar depois as falhas mostradas a frente da pandemia em 2020. Entre os modelos econômicos e a atual situação não está claro porque o aumento de gastos públicos em saúde e no uso dos sistemas de saúde universais houve impactos negativos sobre economia e em geral sobre a saúde coletiva. Isso porque os gastos em saúde determinam um aumento do PIB nacional. Explorando as determinantes da demanda se percebe que há fortes elementos de reflexão sobre o que deve ser considerada a demanda de saúde para o publico e o privado. Os resultados da reflexão são apontar aos determinantes reais e que devem ser reavaliados, sobre o que é uma verdadeira demanda de saúde. O artigo aponta a respostas que permitem superar o paradigma da saúde dos séculos passados que até agora está centrado em ofertar assistência médica para população por meio de mercados controlados, sistemas de saúde públicos definidos pelas elites nacionais e tornar, a demanda da "saúde", uma analise pós-moderna centrada no ser humano e não somente na economia e nas políticas publicas atuais.

Palavras chave: Economia da saúde, Covid-19, Demanda de saúde, Modelos econômicos de saúde

According to the current neoclassical economy the increase in expenditures for health goods and services, should have a positive impact on the economy and national GDPs, as they increase the sum of goods and services produced every year and consumed by the public, and increases human capital due to better quality and improved people health. A decline in expenditure for health will be positive correlated to higher education and increase of wages. Thus According to OECD data, it can be seen that there is a large international difference in health spending that can generate different impacts. There is a huge difference between the United States that has a private health care system that spends almost 17% of GDP on health and other nations that have a universal system and spend an average of 10% of GDP (OECD 2020).

We point at the paradox here because a negative impact on the economy is reported and estimated as negative average of 5% in June 2020 despite increase on health markets expenditures (IMF 2020). It is not clear why the increase in public spending in the USA had one of the worst scores in terms of deaths and has a decrease of health like Brazil that spends less per capita. It is also not clear why the impacts were negative in the whole and overall economies.

It can be answered that there were increases in health markets but failures in the risk management and lockdown decisions of most of the world governments (AVENI 2020a, 2020b) these policies transformed an opportunity of growth into a threat to the economy. In fact the increase in health economy because of the outbreak of covid-19 was followed by a decrease in salaries. So the wages are used to spend more for health. But in reality the cause of decrease in salary and less expenses for other goods than health was determined by government restriction and

not a split into types of personal expenditures. However, looking for more detail, there is a more complex chain of causes / effects that can be outlined to understand health economy market impact in the overall spending as: failures in the health economics market, corruption in the public system, failure in companies' decision processes in relation to security protocols, in unpreparedness in the education of families in relation to ethics, responsibility (AVENI 2020a).

There is an intriguing question that link the demand to the intrinsic nature of the good, the “health”, which presents itself, in the economist academics as human capital, a public and substitute good. Health, in addition to be a good, it is also a right and an experience, that is, more than a variable in economic models. The demand for health cannot be reduced to the production or the offer of assistance for illness (which is the offer of only part of the demand), but into we must consider the demand to remain healthy, or continue to be healthy.

The goal of the paper is to understand and explore health economics models in search of the determinants of demand based on the observed problems of the pandemic outbreak and an unforeseen growth in health demand, trying to clarify the paradox. The study is justified, as there is little analytical analysis related to the economic demand models used and evidences in front of pandemics. To achieve the goal, the article is divided into a reference section of the demand and the health market and the discussion of determinant of health demand. The analysis follows a bibliographic based method using current economic health models. A conclusion completes the research. Thus, the article presents itself methodologically as an essay on the economic determinants of health demand related to the Covid-19 pandemic.

ENOMICS OF HEALTH DEFINTIONS

Until the 18th century health care doctors and hospitals have been part of the third sector and religious entities. Finally, using medical protocols, new vaccination techniques and the growth of a pharmacological industry, we had tools available to improve health, especially chronic and endemic diseases. Following science progress, following rational and positivist ideas, and after having secularized parts of the church's assets with republican revolutions, the Republican State took responsibility for the health of its citizens in the 19th century. After the experience of the democratic and republican revolutions the republican governments extended the idea of public health as the responsibility as a natural right to be write into the republican constitutions of most of democratic government of the world.

Thus, the idea of universal health, which is doesn’t mean free assistance and free services to all citizens, came only from the 19th century on. Must be underline that in Europe, the pressure of socialist parties and workers who had already fought for collective health systems in the workplace, urged national legislation of the 20th century and forced health private systems to be protected by the government. Health at work is still today a relevant part of national spending and fundamental to preserve the population of workers.

Health systems, health economics and markets

In order to understand health economics and its economic impacts in the current democratic and republican context, it is necessary present health in economic theory. In this first section, it is necessary to face two parts of health economics: first definition of health economics and economic models such supply and demand and provide data on health statistics and health market; second how to

answer to questions like what demand determinants are included in the models? Is the human life cycle and health problems assessed and the risks and causes of death assessed? What is the definition in the “Good / Health service” models for individuals and communities? How to assess pain, minimum values, value delivered to the client, that is, what service is delivered to the client of a health system ?
To define the health economy can be done starting clarify the health systems present in each nation, as they are the ones that are best known to the public. What is a modern "Health System"? The World Health Report 2000 (WHO 2000) defines a health system as:

> "All activities whose main objective is to promote, restore or maintain health." So it is not a universal right to health (and so much less free health for all) that is proper to the human being because a system is the definition of the care processes from the conception of the human being. (WHO 2000)

Thus, in each nation, the objectives of a health system in general should: 1). Improve health, 2) Increase the capacity to respond to the legitimate demands of the population, 3). Ensure that financial burdens are distributed fairly. In the first two measures, it should improve the level and reduce inequalities. The latter objective is linked to social and collective determinants of health. It is noteworthy that the objectives implicitly include preventive actions such as health education, healthy eating, psychological counseling, which, unfortunately, have the lowest expense in the package of services available to the community. In other words, the systems are more oriented to care (to restore and maintain) than to prevention (to promote).

Regarding the demand itself, we can mention the important facts that have the greatest economic impacts for future trends, namely:

- People are living longer, this increases the risk of having sick and elderly citizens, increasing the number of citizens and years of life. It is the same problem that exists with retirement payments. (EU 2020, WHO, 2003, 2019a, 2019b)
- Health spending is an increasing share of the economy. This is due to the increase in population, new services and the cost of producing goods and services. (EU 2020,WHO, 2003, 2019a, 2019b)
- There is a difference in spending depending on the health systems defined in different nations. Health spending is especially high in the United States, which has a nominally private system. There is thus a difficulty in making comparisons. A notable difference concerns pharmaceutical product prices. I.e. Canadians spend about 30% less on drugs than Americans and in most Europeans spend even less. The explanation may be because a centralized health care system, administered by the government, maintains strict controls over the prices of drugs and patents. However, on the other hand, these rules may reduce the incentives for pharmaceutical companies to participate in research on new drugs. (EU 2020, OECD 2020, WHO, 2003, 2019a,2019b)
- Direct out-of-pocket expenditures are a declining share of expenditures in healthcare systems that tend to offer more and more services. (EU 2020, WHO, 2003, 2019a, 2019b)

So what the health economy studies? Health economists study the functioning of healthcare systems and health-affecting behaviors (BRANDON 2020). The health economy as discipline is credited to Kenneth Arrow (1963) that fixed conceptual distinctions between health and other goods. Economy of health study of the management and dynamics of scarce resources destined to health and this system, through markets, which are the places where demand and supply are found. Health economics could be distinguished from other areas for extensive government intervention, uncertainty in several dimensions, asymmetric information, barriers to entry, externality and the presence of a third-party agent. In healthcare, the third-party agent is an health insurer, who is financially responsible for the healthcare goods and services consumed. In some system this agent is exclusively the government. The collective health economy today is regulated and financed by the State and defined as a public good. It is up to the executive to offer services and goods to the community and citizens with their families, defining national public policies and which are developed in programs and projects.

So health markets are different from other markets. This is because health is not only a good, but also a human right and condition. Medical assistance certainly implies a human right. When a person becomes ill, it seems wrong that a low income would be a reason to deny treatment. Health is an asset as well as food and serves to survive, however, in terms of economic analysis, there is a difference between food and health. Over time, food prices rose more slowly from incomes, so food took on a declining share of the typical family budget. On the other hand, health care and the costs of goods and services in the health market have increased more than income, demanding an increasing share of the typical family budget.

Thus we come to the relationship with income, that is, with own and collective resources necessary for the health market to exist. It should be noted that in many countries, such as Canada and European countries, the government administers a health system that offers collective goods and services, financed mainly by taxes and regulating markets. The system is sometimes called a single payer because there is an entity, the government that pays all bills. The systems do not prevent out-of-pocket payments or out-of-pocket and voluntary payments for health goods and services (EU 2020).

There are nations like the United States where most people have private health insurance, mainly through their employers, and the government pays part of collective services, for example with Medicare, which offers health insurance for people aged 65 and over; Medicaid, which provides health insurance for the poor; the Veterans Health Administration offers medical assistance to former members of the armed forces; and other programs. Unfortunately in many countries, especially the poorest, there is neither an adequate private nor a public service.

In such healthcare markets there are consumers (patients) and producers (doctors, nurses, etc.), but also other agents whose actions complicate the analysis of their interactions. In particular (EU 2020) :

> 1. Third parties - insurers, governments and involuntary spectators - generally have interest in health outcomes.
> 2. Patients generally do not know what they need and cannot evaluate treatment they are receiving.
> 3. Health professionals are usually paid not by patients, but by private individuals or government with collective health plans.

4. Governments, whose established rules, rather than market prices, determine the allocation of supply resources, determining the structure of production costs.

Rules in the markets reduce the use of medical services based on agents estimated costs and benefits. For example, a patient may be able to have a routine check-up at most once a year, may have access to only a limited number of doctors, or may need a referral from a general practitioner before making an appointment with a specialist. Summing up in the health economy, markets are not always activated directly from demand because there are externalities and failures and processes that require agents and market rules.

Quantitative models

All the elements of demand cited led to an attempt to analyze health economics with quantitative models. For economists, health is part of the human capital Mushkin (1962), Fuchs (1966),Wagstaff (1986, 1993). The most well-known model of health economics has its origins in Grossmann's work published in 1972 and its review in 1999 (GROSSMANN 1972, 1999). In this, health is considered as a component of exogenous human capital, that is, derived from causes external to the model.

> According to human capital theory, increases in a person's stock of knowledge or human capital raise his productivity in the market sector of the economy, where he produces money earnings, and in the nonmarket or household sector, where he produces commodities that enter his utility function (GROSSMANN 1999 pg. 4)

With this approach, the main difference between health capital and other human capital such as education capital is that health increases income through the addition of working days (increased life or increased use of human capital), while education does improving productivity (this implies better work and income) (GROSSMANN 1999).

The approach on demand of this quantitative model states that Health is a choice variable because is demanded by consumers for two reasons: 1) as a consumption commodity the model uses sick days as a source of disutility, 2) as an investment it determines the total amount of time available, or an increase in the stock of health reduces the amount of time lost from other activities. Due to this assumption the monetary value of the reduction of health is an index of the return to an investment in health.

In the health economy, the health care service is one of the main inputs because it impacts the price. Considering the market if its price increases, the cost of healthcare will inevitably increase and this will decrease the demand for healthcare. This is because there will be less income to pay for health care, unless other goods can be reduced in the basket of products required by the consumer.

We use the analytic presentation of model as in Grossmann (1999 p. 8) model. Here the basic utility function (demand) is

$$U = U(\Phi_t H_t, Z_t),\ t = 0, 1, \ldots, n, \qquad (1)$$

where H_t is the stock of health at age t or in time period t, Φ_t is the service flow per unit stock, $h_t = \Phi_t H_t$ is total consumption of "health services," and Z_t is consumption of another commodity. The rates of depreciation of the stock are exogenous but depend on age.

The goods budget constraint equates the present value of outlays on goods to the present value of earnings income over the life cycle plus initial assets and the time constraint requires that □, the total amount of time available in any period, must be exhausted by all possible uses:

$$TW_t + TH_t + T_t + TL_t = \square, \qquad (2)$$

where TL_t is time lost from market and nonmarket activities due to illness and injury TW_t is hours of work TH_t and T_t are time inputs. Part of this wealth is spent on market goods, part of it is spent on nonmarket production, and part of it is lost due to illness. Optimality conditions for gross investment in period t-1 are

$$G_t\left[\frac{W_t}{(1+r)^t}+\frac{Uh_t}{\lambda}\right], \qquad (3)$$

where G_t is the marginal product of health capital--the increase in the amount of healthy time
caused by a one-unit increase in the stock of health□ W_t is the hourly wage rate, r is the market rate of interest. Uh_t/□□measures the discounted monetary value of the increase in utility due to a one-unit increase in healthy time. If the supply price of capital is

$$\pi_{t-1}(r-\tilde{\pi}_{t-1}+\delta_t) \qquad (4)$$

where□□□$_{t-1}$, the marginal cost of gross investment in health in period t-1 is equal where $\tilde{\pi}_{t-1}$ is the percentage rate of change in marginal cost between period t-1 and period t.. Then the optimal stock of health in period t (if gross investment in period t is positive) is,

□□ $$G_t\left[W_t+\left(\frac{Uh_t}{\lambda}\right)(1+r)^t\right]=\pi_{t-1}(r-\tilde{\pi}_{t-1}+\delta_t), \qquad$$ □□□

Equation (5) fully determines the optimal quantity at time t of a capital good that can be bought and sold in a perfect market. This means that gross investment cannot be nonnegative (GROSSMANN 1999)

These conditions can be different in relation to the wage rate (which defines income) and the services offered in the public systems that are reflected in the value of time (the unit of time of the functions in the model). If the wage rate increases, earnings for working days (health) will also increase. But in the market, a general increase in wage rates can affect health production and increase health production time, an increase in wage rate makes health production more expensive. Thus, the effect of the wage rate on health demand is twofold or ambiguous. It should be pointed out that it is believed that the first effect dominates the last and that the wage rate must have a positive effect

Thus the restriction rule of the function in the model of time (and age) has dual implications. If the consumer works harder, he will have less time to improve his health, so that his health will decrease, even increasing his salary and his general income, besides having stress effects that can worsen his health. The wage rate and the price of health services reflect the shadow price (that is, the price that could be charged in a completely competitive market) for health.

Do to discussions after the first edition of the model (GROSSMANN 1972, 1999) about the way the model deal with length of life as endogenous, the author define also that an individual is alive in period n and dead in period

n+1(GROSSMANN 1999). The-order conditions for the optimal stocks of health compactly is

$$V_t G_t = \pi_{t-1}(r - \tilde{\pi}_{t-1} + \delta_t),\ t < n \quad (6) \text{ and}$$

$$V_n G_n = \pi_{n-1}(r + 1) \quad (7)$$

the person behaves as if the rate of depreciation on the stock of health is equal to 1 in period n. suppose maximization for a fixed number of periods equal to n results in a stock in period n+1 that exceeds the death stock (GROSSMANN 1999 p. 17). Then lifetime utility should be re-maximized under the assumption that the individual will be alive in period n+1 but dead in period n+2. Then if this assessment continues we can develop an iterative process for the selection of optimal length of life. For this new arrangement of the model Grossmann (1999) the process amounts to maximizing lifetime utility is less than or equal to the death stock (H_{min}), and adding one period to the horizon and re-maximizing the utility function.

The explication of the model deal with other scholars that discuss part of the assumptions and he replies to them with math. As Grossmann says on the final remarks of this paper The model likes to emphasize the difference between health as an output and medical care as one of many inputs into the production of health. It provides a theoretical framework for making predictions. (GROSSMANN 1999)

In relation to the health system and the price that regulates the health markets, recent surveys such Zhong Zhao (2007) on China, Halliday and park (2009) on the Medicare model and Julfikar Ali and Noman (2013) that evaluate the Bangladesh model are examples that the quantitative models of analysis of Health Systems (or of the public system) use economic models but the analysis of the expenditures of a health system are determined by the regression technique and econometrics based on the evidence of expenditure over time. Researchers evaluate the historically produced relationships between variables such as education, wages, age, sex, etc.

In other words, models are used not to predict but to evaluate ex-post situations. Executives decide public system spending based on the public budget structure. Spending is defined as a percentage of GDP and broken down into policies, programs and projects that can fit in the pocket of the nation that determines them. What does not fit into the public budget remains as a pocket expense for the community and depends on income differences.

In order to define health expenditures, demographic groups and diseases are evaluated to understand which shares should be allocated for each probable disease. This is what caused the problem of lack of pandemic preparedness. Such an analysis must come after a risk analysis (AVENI and PINHO 2020). Historically, a pandemic was not foreseen and, therefore, no expenses were foreseen for this risk of death, which today is between 3 and 6 deaths per 10,000 inhabitants, or between 30 and 60 deaths per 100,000 in 2020.

DISCUSSION AND RESULTS

Real things are more complicated than the model, because it is possible to understand that health can be affected by several diseases at the same time, as well as the cause of death that can happen from different causes at the same time. Therefore, models should cross demographic and disease data to establish a basic demand for collective services, all of which are probabilistic and dynamic variables.

To date, I am not aware of such complex models actually used to assess the population's health demand.

So we agree with the classic analysis by WAGSTAFF (1986), that shows all economic models present several fronts of concern regarding demand. This has developed from a demand for medical care for non-medical services as well. However, how is prevention evaluated that has difficulty in quantitatively evaluating the relationship between prevention and results? How are the socio-economic determinants that face the difficulty of analyzing social groups and related lifestyles evaluated? In the socioeconomic analysis front of assessment there is a difficulty in segmenting the groups of age, sex, vulnerability relating optimum health objective. A model of investment or consumption, as the Grossmann´ is very simplistic.

Another issue is the impact in the case of joblessness, which also implies psychological impacts. It was not by chance that there was concern in the world about the psychological effects on those who were forced to work at home. All of these problems have an effect on the market efficiency of a theoretical model, in addition to the regulatory problem and externalities. Always according to WAGSTAFF (1986) the demand for health in the model thus provides only part of the information required by policy makers.

Models and empirical analyzes of health demand can indicate which policy measures are likely to be the most effective in solving specific problems, but they cannot indicate for themselves which measures are likely to be most economical. The demand for healthcare facilities provides information only on the benefits of certain measures. To complete the analyzes, a set of tools must be used, such as cost-benefit and cost-effectiveness analysis, which are assessments that

Regarding how much presented in the theory of health economics, the results show that the demand must consider determinants that are not explicit or implicit in the logic of the current mainstream of economists and politicians and that the cause of the pandemic is more evident today. Our discussion ought to point out three basic motivations that can be used to refuse to use only an economic model based on Grossmann´. We suggest the model can be used only for the economy of disease. They are:

> 1) Definition of “good health” and the optimum health investment or consumption. Health is not a human capital but a condition and a right. What is called health demand for economist is in fact disease assistance market.
> 2) Policies and strategies of health systems and theirs markets. The assessment of how much must be spent per capita for health depends on disease risks. The national policy for health must be provide facilities in case of disease and reduce risks with education, control on more healthy lifestyles. The assistance system depends on statistics of disease risks that in fact could be improved with risks decrease.
> 3)Use of quantitative models and scenarios. Which demand forecasting models to use and how to solve the problems of calculations and research in quantitative economic models, how risk analysis enter into these model with probabilistic variables and time implications? In our view there is not a demand but many demand markets depending on social and environmental locations. In fact there is no economy of health but different service markets for disease. The variable that is completely excluded by

the model is social and environmental grassroots that implies different trend on demand and response offer for each social system.

Human capital, "health" as a good.

It must be considered that the expenses for "good health" must substitute expenses for other goods. What effects on increased health demand for example on leisure? According to Krugman and Wells (2007) two goods are perfect substitutes when the demand for one falls when the price of the other falls. In other words, and much simplified, the price increase in health (or also the increased risk of infection) has reduced the demand for leisure and other goods.

Together, the lack of risk management by the government and private companies increased the negative impacts on the economy. (AVENI 2020b). A selective policy and measures to avoid these impacts could be assessed beforehand. World governments and their economic advisers are responsible for this drop in national and world GDP. Certainly, the so-called information asymmetry (STIGLER, 1961; AKERLOF, 1970; SPENCE, 1973; STIGLITZ, 1981; 1989) was the most serious failure in the markets from the Chinese stance ahead of the outbreak of the disease.

We cannot simply accept the justification for these damages that resources have been made available that in a note from IPEA are placed between 2% and 20% of GDP, in aid to companies and people. These are figures are absorbed by large companies and become part of the added value in the same year of public spending (IPEA 2020). In fact, these resources are not available to all those who need them and have given up on diversions as in Brazil, where it is known that part of the resources for vulnerable population were cheated, as well as the practice of over-invoicing of equipment that led to judicial inquiries in states like Amazonas and Rio de Janeiro as recently reported by the press.

All of this, all the more serious as health goods are a particular asset and their demand differs from other goods and services. It is a right and, therefore, the State must be concerned with offering this good if it is not offered in the market at adequate prices According to Krugman, Wells (2007), a public good is both non-exclusive and non-rival, that is , a producer cannot prevent someone from consuming what he produces, and the good can be consumed by more than one person.

It can be said that the public good means that it is the good that defines that we are wealthy, that is, is our right to have specialized assistance, especially when we cannot afford it. So today the good health that determines the demand for health, especially public health, is not only related to the assistance service and the supply of doctors, but it is prevention, health education and is linked to income to pay for care and make a living healthy in addition to having, in the case of illness, a system of clinics available.

Today this system could be moved to any country with telemedicine. Is possible have consultations with any doctor we want. There is thus an opportunity cost in which people decide how much to spend on health in relation to other offers and possibilities of using their time (AVENI 2020b).

We can summarize that today good health has a demand process that starts from the doctor and becomes a lifestyle, as follows:

I am sick > I go to the doctor / hospital > I go to the psychologist / nutritionist > I change my lifestyle (if necessary)

On the contrary, the path should be as follows:

I don't want to be sick > I change my lifestyle > I go to the psychologist / nutritionist > I go to the doctor / hospital (if necessary)

Thus, demand should not be focused on paying fees for creating assistance and paying for assistance systems (perhaps unusable or avoidable), but a better strategy is in prevention, education and coverage of financial risk. The demand of health must follow determinants as suggested for instance using a client focused demand (ALMQUIST 2016 e ALMQUIST et ali 2018). Definitely health is not a good as education that can be purchased. The demand of health is not the demand of assistance for disease.

Policies.**National health systems and health expenditures.**

It is known that analyzing health economy there are many externalities mostly due to government policy (AVENI 2020a). But the problem is, considering public health mandatory, what is the expense per capita of a national system? We understand that health system as government service provided is a failure. We don´t agree that the US system is better but the foundation of the US system is better because people have to pay for the risk of disease and not to pay for someone (and generally speaking politicians cheating and bribery) decide what assistance could be delivered broadly in the country as in centralized health systems.

The question of defining what a public “health good”, we answer in the section before is not a trivial one because the market must be competitive not regulated. The market sets prices for goods and services. The demand may or may not have services and goods offered in the market to satisfy it. In the market we have private, public and professional entities that offer.

But what will be the ideal cost structure for offering services? Will there be profits entering the market? Companies offer services and goods that generate profits and do not offer goods to those who cannot pay (AVENI 2020a), but is this the consequence or the reason for the government's entry into the offer? If the government decides to offer services, the market price no longer has the price reference. This implies that a fundamental decision element is missing for companies to offer services.

The debate on health systems, when it is necessary to decide economic policies, takes on ideological aspects linked to the role of the government should play in the health system. There are those who would like to see an expanded government believing that private insurance companies are particularly inefficient and often put profit before people. There are others who would like to move towards a single payer system in which the government pays health care for everyone outside of tax revenue. A centralized system run by smart systems argues that managers are better able to reduce administrative inefficiency, eliminate unnecessary treatment, negotiate with suppliers for lower costs and allocate health resources more equitably where they are most needed. A successful example in this case is Canada

There are also those who would like to reduce the government's role in the health system. There must be an orientation in the health insurance market, but less heavy than it is now. Competition for the customer should lead to better health care. A centralized process would limit individual freedom, over-feed, and stifle innovation. For example, in Canada and other centralized systems, waiting times for medical procedures can be delayed and those who can pay sometimes choose not to wait

Quantitative models and scenarios.

But quantitative models must also be reconsidered, if used. We argue that these economic models could be used to define indication of the total health spending for each segment of society for disease assistance. So good health can be restricted to a category of human capital. The dynamics of the variables of formulas (1) to (7) are exogenous and not endogenous (as the model states). In formula (3) and (5) lack a variable that represent the marginal increase of social health at time t.

There are multiple effects on the markets for other goods and is directly linked to age and lifestyles. The total effects must be evaluated using at the end non-quantitative models (cost-benefits) before deciding policies and expenditures and running the simulations. This does not seem to be the process that takes place in all countries before approving and controlling spending measures.

There are also probabilistic factors that must be evaluated, as each one at each moment has a different probability of survival that there is not the solution of formula (6) and (7) because these solves condition of a model with endogenous variables of health, and we consider them exogenous. This means, in our view, that it is impossible to assess an “equilibrium condition”. All we can say is that “optimal conditions” assess only a status indication of a time t of total expenditure of a “health system”, or better for “disease expenditures systems”, for each society segment that can be useful to asses trends, if properly analyzed.

So that it is difficult compare health systems due to the link with the variables of the economic system in each nation and in each place. So each comparison can be in quantitative terms only if we find homogeneous systems and societies, perhaps in blocks such as the 26 nations of the EU and the 52 states of the USA, which are not comparable between them.

Postmodern health demand and economy of health.

So health is more than a human capital, it is our lifestyle and something that defines our well being. It cannot have a defined price and quantity of health, even if in the economy evaluations human life has a price. Thus, the economy of health that statues health being merely a capital must be rejected and substituted with economy of consumption spending for disease.

We can say then that there is another paradox in the so-called health economics. The person is healthy when he does not need assistance or care. The paradox is that a healthy person does not need a health market, a health system and the provision of services he needs assistance when he does not have good health. In other words, the healthy person does not need health systems, but only to assess and predict their disease risks and to have a healthy social environment. These risks depend on many factors including social risks and the destruction of the environment. Diseases, in addition to accidents, depend on the characteristics of age, dryness, race and social environment.

The demand for health must be defined by each person differently in relation to age, sex, natural disabilities, etc. In other words, there is no homogeneity in health capital, especially in relation to the places that socially determine health. An universal health system, although it is necessary for the most vulnerable community, will never reach its universal health objective for all and for free, it is not financially viable (WH 2019b).

The Covid-19 outbreak showed that the political system, panicking, not knowing what to do, adopted different and flexible measures in contradiction and conflict. The measures were not used to prevent contagion, but to preserve the

national “health system”. The Covid-19 outbreak demonstrates that “human capital”, on the contrary of what is sustained by the economic model, has been reduced and was increased the life risk of the population.

The perception of future of health is to take care of the risks and assist the sick collectively, but an offer of services must be developed to keep a person's life healthy. Prevention is part but this it is not just the assumption of vaccines, prevention involves exams, assessment of which lifestyle is healthier, etc. Education is part of, but not general education and, above all, health education. This is what we understand for a postmodern health economy and markets.

The public offer was undifferentiated, or homogeneous but from now on must be considered exogenous, variable from place to place, from population segment to another. Thus, assistance production must also depends on the quality and the “country risk”. The real exogenous factor is the “country system” (culture and economy), which can be favorable, for example by having innovation, research and a quality education system for doctors and nurses, or not being favorable because there is quality only in private structures that pay more, or emigration of talent to richer countries, or lack of innovation and research that makes equipment dependent on overseas purchases and maintenance and more expensive parts, etc..

Real demand for economic models of postmodern health imply: ethics, lifestyle, prevention, education, aliments controls, financial solutions to prevent risks of diseases expenditures, aids to assist vulnerable people such child and seniors, ***and*** a public health system with assistance facilities, drugs and medicines, chirurgical centers medical doctors and nurse prepared in case of disease or health controls.

Our conclusion is do not deal with health as a human capital but to restart from a deep understanding of health as a social and personal right and with the question of what every “consumer” of the good need and demand for him and his family in every location with its environmental differences such a metropolitan or forest locations.

We need to stop waste public money for a costly offer of goods to assists eventually. We need to change our assistance offer to prevent and follow every people life progress in order to suggest the best pathway with education and controls of food, alimentation and psychologist support in case of abuse of alcohol, drugs etc. The government must study means to help everyone to have financial funds to be assisted if ill and not support a “universal health system” that permits monopoly or extra rent for professionals. A universal health policy must have less assistance for all and more assistance for who need it.

FINAL REMARKS AS CONCLUSION

The work failed to provide an answer to the initial question about the health demand paradox, as there are no economic models to explain the impacts of Covid-19 and why were there negative impacts on the economy. The Covid-19 outbreak showed how our current knowledge and perception of markets and healthcare systems leads to wrong conclusions because all the policies are focused on assistance and not to health itself. The severity of the pandemic, the lack of research and vaccines, the lack of planned beds and equipment and the flexibility in production, lack of decision-making processes and lack of education and ethics in the populations were all underestimated.

Economic analysis and public policy, based on models and statistics, face different dilemmas: 1) a better definition of what the health good or service is and the “health systems”; 2) model evaluation and problem solving in its structure, 3)

incorporation of important qualitative variables to define supply and impacts on economy as a whole (public policies included), 4) differentiate and split de study of health demand into local and segmented markets.

To explore the demand for health in the future it is necessary to “get out of the box” and think about the health economy with human being as the center of the research. Currently, the definition of the level of demand is made to improve efficiency in public or private service, which implies a focus on the process or production that is not satisfying individual and collective demand. This paradigm of the modern society based on past centuries policies is the production and disease assistance offer. This should be moved to a more adequate perspective on the real demand for the postmodern society.

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