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Critical perspectives on the relationship between health and development with a focus on BRIC countries

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Introduction

In the second half of the 20th century, discussions held by sanitarians and economists about the relationship between health and development were obscured as a result of a limited understanding of both terms of this relationship. Firstly, due to the assumption that development would improve the health conditions of the poor and, secondly, because development was identified with economic growth and especially with the manufacturing process.

The concept of development as economic growth and industrialization was established gradually in the period that followed World War II related to international cooperation policies implemented under the leadership of the United States, disseminated using billions of dollars that helped the recovery of the European economy devastated by the war. In other continents, this idea was presented as the ultimate solution to the issue of poverty, including the elimination of endemic diseases and, in particular, although not directly under American influence, it is worth highlighting the role of the doctrine of the Economic Commission for Latin America and the Caribbean (ECLAC) which regarded disease as a component of the structural ills of the peripheral economy in Latin America.

In the final decades of the 20th century, the policies pursued by the World Health Organization (WHO) moved towards addressing not only the diseases of the poor, but also the so-called global risks, which expressly do not depend on the income level of social groups. One begins

to wonder how the different dimensions of health can contribute to development, through two lines that are highlighted in this article, namely: 1) Amartya Sen's approach, who considers health to be a decisive form of human capability to enable development; and 2) the Schumpeter-inspired approach that seeks to link health to the international market based on public policies that encourage innovations produced at the technological frontier.

The human capability approach asserts that health must be prioritized by public policies as a matter of justice and also as an important factor that induces development but not in a restricted view of human capital. Sen believes that the ultimate goal of development is to provide economic and social conditions that ensure the freedom of each individual to choose what he aspires to be and do. In turn, the more economic approach to innovation in health considers that the broad field of health technology is very important in the economic front of intellectual property, being able to ensure the achievement of important competitive positions in the international market. The assumptions of these two approaches are briefly summarized next and critically discussed according to international policies in force in each context and issues related to the possibilities and limits of the development of BRIC countries.

Development and health according to international policies after World War II

The concept of development as economic growth and rising industrial production arises in the period of peace and cooperation for the economic recovery of Europe following the end of World War II. It is associated with the strategic purposes of the Marshall Plan, which, between 1947 and 1951, funneled billions of dollars for the recovery of the agricultural and industrial base of the European countries most affected by the war (ARRIGHI, 2007). The idea that all national societies could go through successive stages of economic changes, eventually reaching the level of development already achieved by the United States (WALLERSTEIN, 2004) was spread in this context. This concept of development as a linear process that

progresses through stages was also useful to raise hopes for a better future among the economically backward countries of Asia and Latin America and was later consolidated as an economic doctrine through Rostow, whose work, from 1960, has a significant title and subtitle: *The Stages of Economic Growth: A Non-Communist Manifesto.*[1]

Therefore, the understanding of development as the growth of economic output and mostly the industry is clearly linked to the U.S. effort to rebuild Europe after the war and the social and economic policies disseminated by international agencies in this context. Developing national economies was part of the U.S. strategic option to prevent the option for socialist regimes.

The cooperation provided by the Marshall Plan favored the gradual establishment of the political and economic foundations of the welfare state in European countries between 1946 and 1960. Health itself would henceforth be understood as welfare. In 1946, at a meeting of health ministers from around the world, in New York, the World Health Organization launched the well-known formulation of the concept of health, incorporated as an article of its Constitution: "a state of complete physical, mental and social well-being". This official definition linking health to social welfare certainly came as something very convenient at a time when it was necessary to ensure good outcomes by social and economic policies, also to overcome the threat of the introduction of new socialist regimes in many parts of the world.

It is precisely the winning and more than ever hegemonic nation of the world capitalist system, the United States, that announced at that time the opening of a new horizon of international cooperation, an initiative that later on inspired the creation of an agency specialized in this purpose: the U.S. Agency for International Development (USAID). In 1961, many of the goals and implicit strategies of the Marshall Plan were incorporated into the Alliance for Progress program launched by John Kennedy specifically for Latin American countries that implicitly sought to induce

1 Several Latin American economists have criticized Rostow's concepts on development; see, for example, what Caio Prado Junior (1991) says in the first chapter of his book "*História e Desenvolvimento*" (*History and Development*, free translation).

them to adopt a democratic-capitalist development alternative due to the ominous precedent created by the Cuban revolution.

The idea of development that is outlined in this period is clearly based on utilitarian assumptions. Development is ethically justified because, as a long-term process, it tends to maximize the population's well-being, that is, as the result of a sum of utilities, it provides well-being to the greatest possible number of people. This utilitarian assumption turns development into a good thing in itself, a value to be pursued by all nations. Therefore, this assessment does not include considerations on equity and freedom, as will occur later through different approaches.

In 1948, the United Nations create ECLAC. According to the doctrine of that commission, there was a need to break free from the vicious circles of the economy in Latin American countries. The vicious circles were tied to the conditions of reduced labor productivity and low levels of savings and education of the population, something that could only be overcome through an industrialization process that would ensure greater autonomy of these peripheral countries vis-à-vis the central ones (BIELSCHOWSKY, 2009).

The solution initially arbitrated by Raúl Prebisch and other ECLAC economists indicated that the industrialization of the economy in exchange of exporting primary products represented the right way to achieve development with better living conditions for all. In theory, the vicious circles of the economy should be interrupted from the moment that each Latin American country ceased to be a mere exporter of raw materials and was able to increase the formal labor market through an "endogenous" industrial development process.[2]

2 In this analysis context, it is worth mentioning the importance of the contribution of the thought of Celso Furtado, ECLAC former advisor, who, in countless formulations, ruled against the simplistic visions of Latin American development, unable to cope with the chronic problems of poverty and social exclusion. In an article published in the ECLAC Journal, he insists on this point as follows: "[...] to understand the logic of industrial civilization, one must first find a justification for the process of increasing the purchasing power of the population, i.e., the salary mass increase. This justification necessarily goes beyond the scope of traditional economic analysis, since income distribution is determined by factors of institutional and political nature" (FURTADO, 1998).

One version of the vicious circles said that poverty causes disease, which deepen poverty, which, in turn, aggravates the economic and social consequences of the diseases. In a text of the 1950s, the health and poverty vicious circle doctrine was explicitly mentioned by the then president of the IDB, Felipe Herrera (apud BERLINGUER, 1978, p. 91):

The health of a nation and its economy depends on one another. When diseases are frequent, productivity decreases and, thus, wages, housing conditions and education levels are affected.

That approach[3] considered communicable and endemic diseases of the poor as obstacles to development and perpetrators of the condition of vulnerability and social exclusion of the poor. Some of these diseases, such as malaria, still linger as serious public health problems, so much so that malaria control is included as one of the goals to be achieved internationally by 2015 as part of the Millennium Development Goals (MDGs). In conclusion it can be said that, throughout the 1950s and 1960s, theories and policies linking health to development used to consider poverty as the main cause of diseases, failing to see that there are other types of health problems which, in turn, monitor development.

The emergence of control policies on global health risks

In the second half of the 20th century, communicable diseases significantly reduced their importance in the mortality and morbidity structure of many Latin American countries. In the Brazilian case, from the 1980s and encompassing the results of the developmental momentum of the "Brazilian miracle"in the previous decade, an increase in the prevalence of chronic and degenerative diseases was noted, together with a high incidence of deaths from traffic accidents and homicides, concentrated precisely in the more industrialized regions of the country. However, at least

3 Only a more detailed historical investigation could establish whether this approach was formulated by the Inter-American Development Bank based on ECLAC's interpretations of the vicious circles of underdeveloped economies or designed within ECLAC itself and then adopted by the IDB. In any case, it should be noted that, throughout the 1960s, these two institutions have maintained close intellectual collaboration ties, which involved in the first instance their leaders, namely, Raúl Prebisch and Felipe Herrera.

two positive trends were associated with the national development process during this period: the decline in fertility and infant mortality rates.

In the 1980s, the Brazilian experience convinced sanitarians that there are certain types of health problems that inevitably accompany development and that health should be incorporated in the Constitution as a duty of the State and a right for all. This understanding was established in frank confrontation with the neoliberal policies of certain international agencies which recommended the adoption of programs focused on health care for the poor.

The current situation of proportional mortality in Brazil, according to the main groups of causes, is presented in Table I, which shows the great importance achieved by non-communicable diseases and other health problems.

Major communicable diseases currently account for less than 5% of the country's mortality, despite the impact of AIDS mortality, gradually softened over the last two decades through effective therapies that ensure longer survival for patients.

Currently listed as significant causes of death are cardiovascular disorders, various types of cancer, external causes (homicides and traffic accidents) and endocrine, nutritional and metabolic diseases. For many of these diseases, overweight and obesity are the triggering or aggravating factors. From the 1990s on, it became clear that the excessive caloric intake was increasingly responsible for serious health problems instead of the nutritional deficiency. Obesity, diabetes and hypertension became known serious health problems in Brazil and worldwide.

Table I. Brazil, 2010. Proportional mortality rate (%) per groups of causes ICD-10

Mortality: group of causes – 2010	%
I. Certain infectious and parasitic diseases	4.3
II. Neoplasms (tumors)	15.7
IV. Endocrine, nutritional and metabolic diseases	6.2
IX. Diseases of the circulatory system	28.6
X. Respiratory diseases	10.5
XI. Digestive diseases	5.1
XX. External causes of morbidity and mortality	12.5
Other defined causes	17.1
Total	100.0

Source: DATASUS, 2010; preliminary data.

A recent report from the World Health Organization (WHO, 2009) states that global mortality risks affect countries in all income levels and include: a) hypertension (13% of global deaths); b) smoking (9%); c) high blood glucose (6%); d) sedentary lifestyle (6%); and e) overweight and obesity (5%). Independent of the income level of the population and even the capacity of investments made in the provision of health services, global health risks cannot be eliminated solely based on the results of developing countries. The regulatory actions of governments can have some success through, for example, laws restricting smoking and cigarette advertising, but, crucially, reducing the incidence of these risks requires changing certain behaviors based on social resources available to the population. The wide recognition of this fact has led to international health promotion policies at the 1986 Ottawa Conference. The Ottawa Charter (WHO, 1986) states that health promotion aims at"reducing differences in current health status and ensuring equal opportunities and resources to enable all people to achieve their fullest health potential."

The precept "to enable all people to achieve their fullest health potential" certainly raises many questions of philosophical and ethical nature, but its debate is complex and exceeds the scope of this article. What should be stressed here is that, through this statement, the most important entity in the formulation of international health policies emphasized

that "health for all" is a necessary condition for achieving development in a broad sense (people, society and economy) and health is understood as a resource for social life and also as an individual capacity that can and should be improved. But what is termed equity indicates that this new guideline of international health policies cannot be solely based on fostering lifestyle changes as if they were restricted to personal responsibility, but requires access to public policy actions, such as educational processes and adequate preventive means.

The Ottawa Declaration is just one of many testimonies that the analytical focus of the relationship between development and health in the 21st century began to aim at the problems of equitable access to various types of social resources and to health equity goals to ensure improved living conditions for different social groups of the population.

Health approach as a human capability

The concept of development as economic growth, measured by the annual increase in the Gross Domestic Product, was opposed by countless currents, especially the liberal thought of Amartya Sen. Sen's approach on human capability is often presented as an antidote to this narrow understanding of nations development and was originally conceived as a reference for justice issues and, specifically, as a repair to John Rawls' *justice as fairness* doctrine. Sen's interpretation notes that, in general, the idea of equality is unable to provide guidance on what should be done to adequately respond to concrete situations of injustice, that is, to support equity decisions and policies. As a principle, Sen (1982; 1992) believes that human capabilities are directly involved in the response to the question: equality of what?

In a decisive essay, Sen (1982) refers to the paradigmatic case of a person with physical disability, specifically, the paraplegic. The paraplegic lacks the health capability of someone with bodily integrity, which entails being able to move freely using the legs. When thinking about equity as public policy objective or value, one should bear in mind the concept of capability as a source from which a set of "operations" is originated to

ensure the realization of what individuals aspire to be and do. Public policies should seek to remedy or at least minimize the consequences of deprivation of human capabilities, mainly health, education and participation in the political life of society. According to Sen's liberal thought, the concept of capabilities as enablers of individual aspirations is interchangeable with that of substantive freedoms. This stance is established in clear conflict with the utilitarian assumptions, according to which the ultimate goal of development is to maximize the well-being of the population.

In an essay that specifically addresses health equity, Sen (2004) emphasizes the broad scope of health as a human capability that, in terms of the ability to do justice and to ensure freedom, is correlated with several other dimensions of life in society and that, therefore, "health equity cannot but be a central feature of the justice of social arrangements" (SEN, 2004, p. 24) and cannot be limited to equity of access to health services, no matter how important this is. Sen's contribution to the assessment of health equity has to do with equating illness or physical and mental disabilities to the incapability of being free in the daily life and in practicing other capabilities, leading, ultimately, to the limitation of citizenship. What he calls the discipline of health equity is not limited to considering only the concrete inequalities of health conditions and access to medical care services.

Thus, Sen believes that health equity deals with multiple and complex dimensions, which can be summarized as follows: 1) health as a fundamental capability, which enables the exercise of other capabilities; 2) the individual's capability to achieve or maintain health; 3) the social distribution of resources and the set of social arrangements that help maintain health or to recover it in case of illness; and 4) the conditions of social integration and the personal characteristics of each individual.

Sen (2004) emphasizes that, in general, people tend to choose health when such opportunities are socially offered to them, although one may also choose harmful habits that act as risk factors. He says that what modern epidemiology calls risk behavior, such as smoking, can result from a lack of freedom generated by psychological influences that prevent a person from mastering the compulsion of a habit. Sen's ethical-philosophical position on the relation between personal autonomy and risk fac-

tors of non-communicable diseases is not clear enough, which is a notable omission since controlling health risk behaviors has been the subject of endless controversy.

One of the relevant questions inspired by the thought of Sen is: what style of development favors the reduction of health inequalities and fosters human capabilities? Sen (2000) criticizes the fact that only the increase of the volume and value of economic transactions is valued in the concept of economic growth, ignoring that economic growth should pave the way for the State to fund social security, health and other equity--oriented public interventions. Development cannot be assessed based on the narrow view of annual growth rate of Gross Domestic Product, but has to consider the broad scope of services offered to the entire population and, in particular, the creation of social opportunities through services such as education and public health. Improved levels of health, education and public freedoms (such as the guarantee of a free and active press) can contribute both to economic growth and to significant reductions in mortality rates. The basic freedoms are influenced, on the one hand, by the guarantee of individual rights, the environment of tolerance and the free exchange of goods and services and, on the other, by the maintenance by the State of an adequate structure meeting health and education needs that are crucial to the establishment and use of human capabilities. Sen's thesis on the fact that famines never occurred in nations with democratic regimes is well-known.

Reluctantly, Sen never produced a detailed list of basic human capabilities, that is, something similar to Rawls's basic freedoms. Apparently, he intends to leave them as a broad and flexible concept that inspires initiatives of public policies and of justice institutions in each society, thus, outside strict definitions and standards. A disciple of Sen, co-author of some of his books, philosopher Martha Nussbaum (2011, p. 33), aims to overcome this limit and defines a number of core capabilities, some of which are clearly health-related, namely:

- Life. Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living;

- Bodily health. Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter;
- Bodily integrity. Being able to move freely from place to place; being able to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.

In this field, Nussbaum's contributions are reportedly affiliated to the defense of human rights, with a strong influence of the feminist thought. Nussbaum stresses that this is a point of view she holds in common with Sen's thought, although, as a political strategy, she makes more intensive use of the ideal of human rights. However, the emphasis in the analysis of aspects of development is absent in this author, and is, on the contrary, a point of emphasis in Sen's thought, who implies that there should be a direct relationship between the level of instigation of human capabilities and the development of each nation.

In the work that could be considered a full synthesis of his ideas on the subject, *Development as Freedom*, Sen (2000, p. 42-43) foresees the need for nations to reach a certain level of investment in healthcare infrastructure before setting a decisive impulse towards development. One of the examples adduced in this regard is based on a comparison between China and India. These two countries have made considerable efforts to open a development cycle through an economy largely internationalized and open to foreign markets – China, after the 1979 reforms and India since 1991. But the success achieved by China was incomparably superior to that of India, due to having made considerable investments in health and education during the Maoist period. When the opening to world markets occurred in 1979, China already had a population that was highly literate and with a level of differentiation on education of the young generation not very different from other Asian countries who opted for development, such as North Korea and Taiwan. But India was still facing enormous structural barriers to achieve universal access to primary health care services and education, and this situation persists to the present day.

As an addendum to Sen's remarks, it is important to emphasize that these differences relate to the potential for effective modernization of society and equity results obtained in these two nations, something that cannot be evaluated only on the basis of GDP growth in India, which in recent years has shown rates at around 8%, close to those of China.

Regarding these aspects, it is convenient to resort to the Human Development Index (HDI) to collate the socioeconomic situation of the BRIC countries. HDI was designed in 1990 by UNDP as a proxy for human capabilities. Currently, due to successive changes in methodology, HDI results from the geometric mean of three indexes: 1) long and healthy life (based on life expectancy at birth); 2) knowledge (through two indicators: average schooling and education life expectancy); and 3) decent life expectancy index (according to Gross National Income per capita, compared with international purchasing power parity values, PP$).[4]

HDI has many limitations as a human capability assessment tool. One is the fact that it is based on Gross National Income (GNI) and depends on rather cyclical circumstances of the economy. Even when adjusted for purchasing power of each country, the GNI per capita is only one indicator linked to the pace of economic growth and is far from being a good indicator of the potential well-being of the population. However, as Sen stresses, economic growth provides the necessary foundation to achieve greater equity in public policies focused on human capabilities.

Table II. BRIC Countries. HDI components

Components	Brazil	Russia	India	China
HDI 2010*	0.718	0.755	0.547	0.687
Health	0.844	0.770	0.717	0.843
Education	0.663	0.784	0.450	0.623
Income – Gross National Income p/ cap.	0.662	0.713	0.508	0.618
Country ranking	84	66	134	101

Source: UNDP, 2012 HDI Report; * obtained from the geometric mean of health, education and income indexes.

4 The latest revised version of the technical details of the composition and weighting variables of the three HDI indicators can be seen in the 2011 edition's notes: http://hdr.undp.org/en/media/HDR_2011_EN_TechNotes. pdf. Accessed on: May 2012.

In Table II, the HDI of the BRIC countries is split into its components to provide clues about where lie the social problems of each country. The Russian Federation stands out with the best HDI for 2011, although none of the four countries has a prominent position in the world ranking. Russia has the best indexes both in education and in income per capita, although in terms of health conditions is less well placed than Brazil and China. Brazil has a position very close to China in health and education, but with a higher per capita income. In turn, India is ranked last in all three HDI components.

As will be seen later through other indicators, the prominent position of Russia in the HDI compared to other BRIC countries is due to the economic and social investments made in education during the Soviet period, while its biggest health problem is more due to the external causes of mortality arising from widespread violent behaviors than on the supply of public services.

Development and health condition indicators in BRIC countries

In a recent article published on the Internet, Dixe & Sen (2011) make a comparative analysis of India with China and other Asian countries, widely criticizing the lack of results of economic growth in India for the health of its population, emphasizing that economic growth is only a means and not an end in itself. However, the authors justify the need for accelerated growth for India because its average income is so low that it cannot sustain anything near a reasonable standard of living, even with wide income redistribution. This is because even today, after 20 years of fast growth, India is one of the poorest countries in the world.

Dreze and Sen then mention that a situation similar to India's, that is, of accelerated economic growth with no good results in the social field, occurred in Brazil during the military dictatorship. They extol the consecration of health as a right for all in the 1988 Federal Constitution and the policy of direct distribution of income to the poor through the Bolsa Família (Family Grant) program.

These references to the socioeconomic conditions of the three countries – India, China and Brazil – make it appropriate to add here a brief comparison of health conditions between the countries that constitute the BRIC group.

The following tables bring a set of indicators that show that, in fact, India is still very backward in terms of health conditions and public investment in the area when compared not only with China, but also with Brazil and the Russian Federation.

Table III. India, China and Brazil. Indicators of health conditions and public investment in the area, 2009

Indicator	Brazil	Russia	India	China
Fertility*	1.8	1.4	2.7	1.8
Life expectancy**	73	68	65	74
Infant mortality***	17	11	50	17
Neonatal mortality***	12	6	34	11
Public expenditure on health per capita****	385	633	40	126

Source: WHO (2011), World Health Statistics.

*Number of children per woman; ** at birth, in years, both sexes; *** standard rate per age for both sexes, per thousand live births; **** equivalent of international purchasing power parity (PPP int. $); 2008 data.

Table III shows that, with a fertility rate of 2.7 children per woman, India is the only BRIC country above the threshold of stable breeding population (that is, 2.1), which implies that its population will continue to grow in the current decade. According to estimates from UN agencies, India's population will surpass China by 2035. Moreover, India displays an infant mortality rate of 50 and a neonatal mortality rate of 34 per thousand live births, extremely high values compared with many other Third World countries, except in Africa. Public expenditure on health per capita in India is one third of China's and about a tenth of Brazil's.

The following analysis points can be highlighted to compare the four BRIC countries:

Health conditions indicators are relatively favorable to Brazil compared to India, partly favorable when compared to Russia and with a simi-

lar situation when compared to China, although China has a proportionally much lower expenditure on health;

Public expenditure on health per capita in Brazil is only lower to that of Russia (according to the purchasing power parity indicator); and

Russia has seemingly disparate health indicators. Due to the deterioration of living conditions peculiar to the post-Soviet period, there has been a setback in the life expectancy of the Russian population, which resulted in a loss of 20 years of life expectancy and only recently reached an index similar to the late 1980s. However, Russia has the advantage of having a network of health services with good public coverage that comes from the Soviet period, which ensures, for example, relatively low rates of infant and child mortality in the country.

It is no surprise that the finding stating that health conditions of the Brazilian population are very similar to the Chinese population, although Brazil has a much larger public expenditure on health. It is well-known that health levels depend on many other social and living conditions, as well as access to medical/health services corresponding to that expenditure. Here it can be assumed that the Chinese population benefits from greater equity in relation to other public services (such as education) and greater job opportunities, income, housing quality and environmental sanitation conditions and, in some regions, certain traditional lifestyles that promote health and longevity.

In turn, Table IV shows the considerable burden of communicable diseases in the mortality structure of India compared with the three other countries referred here. In India, the mortality rate due to communicable diseases accounts for 53% of the mortality rate due to non-communicable diseases, while in China it only accounts for 9.6% and 18.2% in Brazil. The persistence of a high incidence of mortality due to communicable diseases in India shows that this country is still at an incipient stage of the epidemiological transition, unlike the other three countries.

Table IV. BRIC Countries. Mortality rates for group-specific causes, 2008

Cause*	Brazil	Russia	India	China
1. Communicable diseases	97	71	363	58
2. Non-communicable diseases	534	797	685	604
3. External causes	76	159	99	70
% 1 in relation to 2	18.2	8.9	53.0	9.6

Source: WHO (2011), World Health Statistics.

* Standard rate per age, per 100,000 inhabitants.

It is noteworthy that all BRIC countries have very high mortality rates from external causes. But Russia stands out with an extraordinarily high rate of 159 per 100,000 inhabitants, which is related mainly to the high incidence of homicides in the country, one of the highest in the world. After reviewing the literature on public health in Russia, Pridemore (p. 1921-1922) concluded that the increase of this rate is linked to marked increase in alcohol consumption and the deadly violence that accompanies it. Quoting Durkheim, he states that the hike of mortality due to external causes in this republic after the Soviet period is related to the situation of social anomie experienced in the last two decades by that nation.

Indeed, data on three types of risk factors (Table V) show that Russia has the highest rate of alcohol consumption, with Brazil in second place. In contrast, the magnitude of alcohol consumption in India is negligible. Obesity is much higher in Brazil and Russia than in China and India. Finally, as an additional risk factor, smoking is present among more than half of the male population in Russia and China, while it covers only a fifth of males in Brazil, although the gap between the two sexes is relatively small.

Table V. BRIC Countries. Indicators of health risk factors, 2006 to 2008

Indicator	Brazil	Russia	India	China
Obese adults*	16.5 and 22.1	18.4 and 19.8	1.3 and 2.5	4.6 and 6.5
Alcohol consumption **	6.2	11.0	0.6	4.4
Smoking (%)**	19.4 and 12.0	70.1 and 27.7	33.2 and 3.8	59.5 and 3.7

Source: WHO (2011), World Health Statistics.

* Percentage of, respectively, obese men and women, among adults ≥ 20; ** consumption equivalent to liters of pure alcohol per person per year among adults aged ≥ 15; *** percentage, respectively, of men and women smoking any type of tobacco, among adults aged ≥15.

The interpretation of these indicators related to the last two decades ratifies what Sen claims about the superiority historically achieved by China in relation to India in terms of enhancement of human capabilities. In turn, in spite of having an efficient public health system, the Russian Federation faces the challenge of recovering with regard to the social conditions of anomie, which have strongly favored the external causes of mortality due to alcohol abuse.

Regarding Brazil, the most worrying aspect is the increasing prevalence of overweight and obesity in both sexes, a condition that is related to increased risk of cardiovascular disease and diabetes. Finally, the broader comparison leads to the conclusion that, with regard to the health of its population, Brazil is not currently facing any comparative disadvantage within the BRIC group and is clearly paired with China.

Health and the new economy of innovation

In the 1990s, the facts of trade integration on a global scale and, in addition, the phenomenon of the economic rise of China and other Asian countries have created serious questions about the viability of industrialization in the peripheral countries along the lines originally designed by ECLAC's structuralist thought. The search for alternatives led this entity to consider new courses for the achievement or consolidation of certain competitive advantages on the part of Latin American countries. A doctrinaire line then emerges, called neo-structuralism, which, under the gene-

ral policy of "productive transformation with equity" is characterized by emphasizing "the systemic nature of competitiveness, prioritizing the creation of physical infrastructure, training human resources and innovation and technological advancement policies to achieve higher and sustained growth, as well as a successful international integration" (BIELSCHOWSKY, 2009, p. 179).

According to Carlota Perez, Latin America should seek alternative strategies, taking advantage of the abundant natural resources in the region, which would imply boosting on one side a development approach oriented to promote the production of high added value, related to technological innovations or improvements and, on the other, a production process approach based on natural resources. Pérez (2010, p. 124) confirms this idea on the assumption that "it is very important to identify areas with technological potential where Latin America has comparative advantage over Asia".

The proposal to maximize the benefit of Latin America's natural resources should be widely debated considering the possibilities always very probable of a conflict with the environmental protection policies and movements. The environmental cost entailed by this development model is not usually properly considered, to the extent that such proposal involves a big boost for agribusiness and the exploitation of export-oriented metal and energy commodities (PORTO; MILANEZ, 2009).

The two references retrieved here very briefly and without further analysis serve to indicate the prominence of the developmentalism based on the perspective of technological innovation. In somewhat simplistic terms, this emphasis has been referred to under the motto "overcoming Keynesian policies", as do Aghion & Roulet (2011), authors who consider that if, on the one hand, the theory of effective demand generation was essential to help create the foundations of the welfare state in the postwar period, on the other hand, based on the situation created after the 1980s, due to strong international competition, the economies of the most developed European countries could no longer be sustained by public expenditure, according to an industrial and service economy model more or less closed within itself. In an innovation-oriented economy, "new businesses and new jobs are created continuously, while others are destroyed, hence

the importance of the State not so much directly to control companies, but rather to regulate them" (AGHION; ROULET, 2011, p. 8-9).

Through a similar line of interpretation, Jessop (2002) argues that the Keynesian State of the great post-war welfare systems in Europe are being replaced by what he calls Schumpeterian competition state, which focus on managing the crisis created by the intensification of international competition. This type of State ultimately seeks extraordinary income arising from the monopoly of inventions and the intellectual property system, in that it "depends heavily on a search for technological rents based on continuous innovation, de facto monopolies in advanced technologies or intellectual property rights" (JESSOP, 2000, p. 100). Regarding this aspect of the new developmentalism, the weak position of Brazil and the extraordinary advantage of China in the group can be measured by the indicators in Table VI. Indeed, in 2010, 84.2% of all patents in force obtained by BRIC countries belonged to China, by applying 8.9% of world expenditure on ST&I, more than the sum of the other countries of the group.

Table VI. BRIC Countries. Science, Technology & Innovation Indicators (ST&I)

Indicator	Brazil	Russia	India	China	BRIC
Researchers per 100 thousand inhabitants*	657	3,305	137	1,071	5,170
Share (%) in global ST&I expenditure*	1.8	2.0	2.2	8.9	14.9
Number of patent requests**	22,686	34,287	42,500	391,177	490,650
% of patent requests in the BRIC group	4.6	7.0	8.7	79.7	100.0
Number of patents granted**	3,251	30,322	6,168	135,110	174,851
% of patents granted in the BRIC group	1.9	17.3	3.5	77.3	100.0
Number of patents in force	40,022	181,904	37,334	564,760	670,886
% of patents in force in the BRIC group	6.0	27.1	5.6	84.2	100.0

* In 2007 or more recent year (source: UNESCO); ** in 2010 (source: WIPO Report 2011).

Russia has the largest relative number of researchers and ranks second in the number of patents granted. These indicators fully show Brazil's inferiority in terms of investments and comparative results in this field. Brazil has a large historical backwardness compared to the other BRIC countries not only in the field of education in general, but also, par-

ticularly in ST&I; as Arbix (2010, p. 32) stresses, it was only after 2003 that the state action "opened a new chapter on building a strategy based on innovation".

The strategic importance of health technologies, such as means to a computerized diagnostic, biotechnology, robotics, pharmaceutical innovation, etc., in the "knowledge economy" is well-known, which makes the industrial production and health research complex one of the most important generators of intellectual property rights (VIANA; ELIAS, 2007). In Brazil, some health economists seem to correspond with this Schumpeter-inspired line[5] and they highlight the possibilities offered by the international demand for health products and equipment, both for diagnosis and therapy, involving the discovery of new drugs, robotics, computerized equipment and nanotechnology. These innovations are often presented as being not only of interest to the medical profession but also to sick people and public health, especially when they include methods for the early detection of diseases such as cancer.

In a perspective of equity, however, the emphasis on creating links between health care and high tech industry raises many concerns (GADELHA; COSTA, 2006). The costs of patents and state-of-the-art technology for diagnosis and therapy impact inequitably household expenditure, harming care to the poorest and creating new forms of inequality in the access to goods and health services. Stiglitz (1996, p. 196) underlines this negative peculiarity of patent systems with great forcefulness in relation to drugs, when he warns that "poorly designed intellectual property regimes not only reduce access to drugs, but also lead to a less efficient economy and may even slow the pace of innovation".

The health sector certainly has a very important role to fulfill in the development strategy founded on innovation investments. However, Gadelha (2006, p. 15) says that this course of action is required to enable Brazil to overcome technological dependence and yet the State must implement policies protecting equity interests in public health "toward economic dynamism and overcoming the backwardness in areas critical

5 A systematic outline of the Neo-Schumpeterian view associating the medical-industrial and health innovation complex is available in Gadelha, Quantal and Fialho (2003).

to the mitigation of inequality and social exclusion". This is a strong and relevant argument in order not to lose sight of the complexity of the interaction between health and development, taking into account social inequalities in our country.

Final considerations

The approaches of human capabilities and innovation should be analyzed in their essential differences while formulators of public policy proposals for development. Amartya Sen's theory was developed as the culmination of a lengthy investigation on equity and distributive justice, keeping a close connection with the goals of the international human rights movement. The relationship between health and development is defined by the convergence of these two dimensions toward freedom. Both social health protection and development are justified by the promotion of freedom, since health is the foundation of potentialities relevant to other human capabilities. But it is necessary to always emphasize that Sen assumes that achieving better health conditions will be possible through complementary social achievements, including the elimination of extreme poverty and income distribution during the process of economic growth.

The greatest weakness of Sen's approach on health as a human capability may be manifested in the lack of a consistent interpretation of the risk factors issue, which is evident in his analysis on the smoker as a victim of his psychological difficulties of quitting the habit. Here, paradoxically, Sen does not appear to be consistent with the principle he advocates which says that all human capability consists of freedom of choice and functioning. This weakness possibly stems from the fact that the human capabilities approach was initially designed to account for the living conditions of the poor and the peculiar causality of communicable and food--related diseases in countries like India, which have not yet completed their epidemiological transition.

The identification of this gap in Sen's thought raises the need for an interpretation that does not strengthen the authoritarian policies of controlling health risk factors. What is expected, in contrast, is that the health

promotion approach always takes into account the sense of freedom that is implicit in the understanding of health as a human capability.

In turn, the innovation approach needs to be criticized for essentially consisting in a search for a solution before the deadlock and the merely economic problems generated in the highly competitive environment of globalization. The primordial object of this approach is the economy, more precisely, knowledge economy, to the extent that it can create opportunities for monopoly gains through respect for intellectual property. However, amid the many unfair constraints created by international patent system, one cannot forget to mention the goals of equity in the political debates regarding this issue. The recent episodes of international conflicts around the patents for HIV/AIDS drugs clearly show the validity of this statement.

What is common between the two approaches discussed here arises from the possibility that one understands innovation as a specific human capability. Indeed, nothing prevents innovation to be considered as such, consisting of a specific educational capability to be duly fostered by the State through ST&I policies. But this common feature does not ensure the convergence between public health interests and companies' objectives; e.g. in the area of pharmaceutical assistance. Firstly, innovation approach is geared to save national economies and not to save lives based on a concern for equity, a concern that would ensure universal access to goods produced by innovation. Regarding this point, Amartya Sen's thought is very relevant, always focused on human capabilities and equity objectives (and not on economic indicators), demanding that everyone can participate democratically in the public debate that needs to occur around the question: "what development do we want and what for?"

Bibliography

AGHION, Ph.; ROULET, A. **Repenser l´État: pour une social-démocratie de l´invention**. Paris: Seuil, 2011. 128p.

ARBIX, G. Caminhos Cruzados, Rumo a uma Estratégia de Desenvolvimento Baseada na Inovação. **Novos Estudos CEBRAP**, n. 87, p. 13-33, July 2010.

ARRIGHI, G. **Adam Smith in Beijing: Lineages of the Twenty Century**. London & New York: Verso, 2007. 418p.

BERLINGUER, G. **Medicina e Política**. São Paulo: Hucitec, 1978. 199p.

BIELSCHOWSKY, R. Sesenta años de la Cepal: estructuralismo y neoestructuralismo. **Revista CEPAL**, n. 97, p. 173-194, April 2009.

DREZE, J.; SEN, A. **Putting Growth in Its Place: It has to be but a means to development, not an end in itself.** 2011. Available at: http://www.outlookindia.com/article.aspx?278843. Accessed on: January 26 2012.

FURTADO, C. El nuevo capitalismo. **Revista CEPAL**, special n., p. 17-20, October 1998.

GADELHA, C. A. G. Desenvolvimento, complexo industrial da saúde e política industrial. **Revista de Saúde Pública**, v. 40, special n., p.11-23, 2006.

GADELHA, C. A. G.; COSTA, l. Integração de fronteiras: a saúde no contexto de uma política nacional de desenvolvimento. **Cadernos de Saúde Pública**, Rio de Janeiro, v. 23, sup. 2, p. 214-226, 2007.

GADELHA, C. A. G.; QUENTAL, C.; FIALHO, B. C. Saúde e inovação: uma abordagem sistêmica das indústrias da saúde. **Cadernos de Saúde Pública**, Rio de Janeiro, v. 19, n. 1, p. 47-59, jan./feb. 2003.

JESSOP, B. **The Future of the Capitalist State.** Cambridge: Polity, 2002. 344p.

NUSSBAUM, M. **Creating Capabilities: The Human Development Approach.** London: Belknap Press of Harvard University Press, 2011. 256p.

PÉREZ, C. Dinamismo tecnológico e inclusión social en América Latina: una estrategia de desarrollo productivo basada en los recursos naturales**. Revista CEPAL**, n. 100, p. 123-145, April 2010.

PORTO, M. F.; MILANEZ, B. Eixos de desenvolvimento econômico e geração de conflitos socioambientais no Brasil: desafios para a sustentabilidade e a justiça ambiental**. Ciência & Saúde Coletiva**, v. 14, n. 6, p. 1983-1994, 2009.

PRADO JUNIOR, C. **História e desenvolvimento: a contribuição da historiografia para a teoria e prática do desenvolvimento**. São Paulo: Brasiliense, 1999. 144p.

PRIDEMORE, W. A. Vodka and Violence: Alcohol Consumption and Homicide Rates in Russia. **American Journal of Public Health**, v. 92, n. 12, p. 1921-1930, December 2002.

SEN, A. Why Health Equity. In: ANAND, S.; PETER, F.; SEN, A. **Public Health, Ethics, and Equity**. New York: Oxford University Press, 2004. 328p.

_____. **Development as Freedom**. New York: Anchor Books, 2000. 384p.

_____. **Inequality Reexamined**. London: Harvard University Press, 1992. 224p.

_____. **Choice, Welfare and Measurement**. London: Harvard University Press, 1982. 480p.

STIGLITZ, J. **Globalização: como dar certo**. São Paulo: Cia das Letras, 2007. 528p.

VIANA, A. L. D.; ELIAS, P. E. M. Saúde e desenvolvimento. **Ciência & Saúde Coletiva**, v. 12, sup., p.1765-1777, 2007.

WALLERSTEIN, I. **World-System Analysis: an introduction**. Durham: Duke University, 2004. 109p.

WHO. **Global Health Risks: mortality and burden of disease attributable to selected major risks**. Geneva: WHO, 2009. 62p.

WHO. **The Ottawa Charter**. Available at: http://www.who.int/hpr/NPH/docs/ottawa_charter_hp.pdf. Accessed on: January 26 2012.

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