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C N R H

TEXTO PARA DISCUSSÃO

Nº 07/82

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Brazilian Health Services:  
can it heal?

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MEDICAL SCIENCES  
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The Invisible Hand in  
Brazilian Health Services:  
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The Invisible Hand in Brazilian Health Services:  
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Regardless of the form of delivery, health services have to be paid for. Indeed, doctors and nurses have to be remunerated. The market configuration and the price structure prevailing will have consequences upon the delivery system. In other words, a market place is created, distributing income, generating incentives and, eventually, distorting the intention of planners or administrators.

There is an all pervasive Invisible Hand. It may heal or, to paraphrase Joan Robinson, it may strangle.

Therefore, the planning of health services requires, inter alia, the lucid utilization of micro-economic analysis. The market is not a deus ex machina, generating deterministic and uncontrollable outcomes. Yet, it cannot be taken for granted or treated with naïveté. This paper discusses four examples of market functioning in the health sector:

(i) Market forces may prevail over the intentions of administrators, generating patterns of service and income levels that greatly differ from the original blueprints. For instance, university-trained nurses do not treat patients directly, as planned. Instead, they work as ward administrators. Thus, patients are cared for by less-educated personnel. Supply and demand conditions are incompatible with the deployment of people with such high levels of schooling in relatively simple tasks.

(\*) The views and opinions of the authors do not necessarily reflect official positions of IPEA

(ii) Rigidities, guilds and cartelization may restrict the free play of market forces. As a result, price adjustments may be replaced by novel means of conveying health services. Extremely fast growth in the supply of doctors was expected to reduce the mean value of medical appointments. The medical associations, however, set minimal levels for consultations. The accommodation of the additional supply of doctors was solved by the creation of organizations that hire doctors on a contract basis (v.g. by month) and sell services on an actuarial basis or through arrangements made directly with voluntary employer associations. The salaries normally paid to doctors, if translated into consultation fees, yield prices significantly lower than the medical association minimum. In other words, the attempt to control "retail" prices lead to the creation of schemes to buy "wholesale" in a less controlled market and transfer part of the price differences to consumers.

(iii) Fees paid to the doctors hired by the Federal Social Security System are considered by them as being too low, in comparison with perceived alternatives. To compensate, doctors readjust their hourly rates by working less time than legally prescribed. Their minimum quotas of appointment are kept but the duration of each consultation is reduced. In those cases in which payment is a fixed fee per consultation, some compensation is obtained by postponing part of the procedures to a subsequent appointment.

(iv) Naïve attempts to predict market behaviour may fail. Irrationality? Different welfare functions? Or, perhaps, just poor predictions? Medical schools were traditionally located in the larger cities. Continued concentration of training facilities was tolerated under the assumption that regional imbalances in the distribution of doctors would create the income differentials required to stimulate their emigration to less populated areas. This has not happened in Brazil. Maybe the large city attractions are worth the income foregone by not moving to areas where doctors are scarcer. Maybe the income differentials are not significant due to the greater affluence of the large centers and to a supply-induced expansion in the demand for physicians.

A. Market Logic and Planners' Logic:  
Which decides who: is a nurse?

This section explores a case in which educators created solutions which run counter to market logic. Relative scarcities turned out to be more important than technical requirements in determining just how nursing care is to be delivered.

Medical doctors in Brazil follow a six year post-secondary course of studies. This is much in line with the European tradition where medical education is at the undergraduate level.

By contrast, nursing which is a profession of more recent development, had its profile shaped at a moment when North American influence in Brazilian education was much stronger, namely the post-war period. The decision to train nurses for four years at the University may have been influenced by the American tradition of postponing the vocational or professional content of schooling. In fact, many professions offered elsewhere at the secondary level (or not formalized at all) are offered in the United States as University training. It is worth noting that more than an idiosyncrasy, this pattern merely reflects the relative abundance of people enrolled at university level programs.

As a result, Brazilian doctors and nurses are prepared at the same schooling level. Doctors only take a little longer to finish. Hence, both are recruited from the same sub-set of people who finish high school and are able to pass the University entrance examination. For the country as a whole, this means a relatively small number of people. Consider that, today, of the 100 who ever go to school, 10 will finish high school and 6 will enter a university-level program. Recruiting from such a small subset of the population means that the supply function is made up of people with previous qualifications which are in short supply. Hence, their income expectations are high.

In terms of schooling costs, the difference is immaterial. In fact, many nursing schools being small or underutilized, have larger costs per student/year than medical schools.

When health planners prescribe the deployment of medical personnel, they merely describe the conventional roles of nurses and doctors. University-trained nurses are supposed to take care of patients and the nursing curriculum reflects the perceived technical requirements for optimal delivery of such services. This is the usual exercise performed by people involved in occupational analysis and educational planning.

But also trivial is the ex post facto observation that such exercises are worth very little when they run counter to supply and demand conditions. As a matter of fact, educational requirements - not only for health professions - depend more on the current supply of schooling than on truly technical requirements.

It is conventionally said in Brazil that for every doctor, five "nurses" are required. This has been a dogma frequently repeated. It is easy to demonstrate the vulnerability of such a careless statement if literally interpreted.

If there is some proportionality between educational effort and rewards, i.e. between costs and benefits, one should expect similar educational levels to generate income profiles that are not too different. In other words, one should expect nurses and physicians' salaries not to differ too much, despite the fact that the bulk of the nursing services is immensely simpler and intellectually less demanding than the doctors'.

Quite clearly, university trained nurses would not be willing to work for much less than the average university graduate, for low prestige careers - which still earn significantly more than high school graduates. They would simply take other jobs or choose other careers. And those in charge of health management would not pay similar salaries for the intrinsically simpler tasks predominantly performed by nurses.

Looking at the numbers involved leads to equally obvious findings. Brazil has 100,000 medical doctors. Hence it would need 500,000 nurses. In an equilibrium situation, five times more nurses than medical students would add 128,000 students to a university enrollment of 1,500,000. But to catch up, say, in ten years, this population would have to be 150,000 larger, adding up to 278,000 nursing students. This would require expanding nursing schools by a factor of 17. These scenarios are clearly unfeasible. In addition, there is no political will to bear the cost of such a tour de force.

However, as we examine the current situation we find that the market has redefined the job descriptions as well as the occupational roles of nurses. The market for university-level nurses is indeed stable, except that they do not work as nurses but rather as ward administrators. Essentially they supervise the nursing services performed by other personnel and earn income levels compatible with the responsibility and difficulty of management positions.

Patient care is performed by nursing aids and other people, sometimes with precarious on-the-job training. To these functions correspond very modest wage levels, several times smaller than those of doctors or university-trained "nurses".

When we look at the numbers, for instance in the state of Rio de Janeiro (which displays the record of one doctor per 250 inhabitants), we find 18,000 doctors, 4,400 university-trained nurses and 27,000 "other" nursing personnel. Clearly, nursing services are performed by the "other" category. Adding this "other" group to the university-trained nurses and comparing to the number of medical doctors we find a ratio of 1.7:1. In fact, PAHO\* prescribes a ratio of 2,4 which it hopes to attain in Latin America by 1980. The solution makes more sense than the 5 to 1 ratio prescribed by common lore.

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\* ORGANIZACIÓN PANAMERICANA DE LA SALUD - plan Decenal de Salud para las Américas; informe final. Washington, OMS, 1973 (Documento Oficial, 118) "Reunión Especial de Ministros de Salud de las Américas, Santiago, 1972"



Notwithstanding the inept attempts of health planners to respond to nursing demands with unrealistically high schooling requirements, the market for University-trained nurses is stable with one nurse for every 5 medical doctors. This probably corresponds to the demand for ward administrators, surgery room nurses and other sophisticated specialities.

Yet, from the point of view of optimizing health delivery systems, this solution involves two errors. First, insufficient attention has been devoted to the preparation of those people who are going to be the real nurses. At modest costs, a much higher level of proficiency could be obtained for the enormous army of secondary and elementary level personnel really in charge of the nursing chores. At present, their training is deplorable. Barely literate housemaids are often put in positions of considerable responsibility without any training - this may partly explain the very high levels of iatrogenic diseases.

Secondly, doctors end up performing simple tasks such as record-keeping and taking temperature which could be delegated to other people\*, releasing time for more careful examination or attending more patients. This results from the fact that the competency gap between the doctors and the attendants in charge is too wide, since insufficient attention has been devoted to preparing intermediate personnel.

The lesson is quite clear: market forces may prevail over the naive intentions of planners. The ultimate results are not necessarily the best that would be warranted by the given resources.

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\* This is functional to keep "demand" for doctors at higher levels that it would be the case since there is an excess supply in large cities, this helps keeping their income levels relatively high.

B. What Happens When There Are Too Many  
Doctors and the Price of Consultations  
Is Not Permitted to Drop?

About two decades ago there were 2,200 inhabitants for every doctor in Brazil. Mortality and morbidity statistics were dismal. It was assumed that more doctors would mean more health care and, supposedly, the competition among them would reduce the quasi-rents, derived from their monopoly power over health services.

The expansion in medical education has been impressive, the number of graduates jumping from 1,500 in 1960 to 8,000 in 1980 and the inhabitant/doctor ratio falling to 1,200:1. In the state of Rio de Janeiro, yearly graduations went from 350 to 1,360 between 1960 and 1980.

These are very significant numbers, reflecting an enormous financial effort. With a relatively more abundant supply of doctors one would expect the "over-the-counter" price of medical services to drop considerably. However, this did not happen - except in very restricted circumstances. As it turns out, medical associations have been very active in the cartelization of private practice, effectively preventing the price of consultations to drop. In fact, choosing Rio de Janeiro as an extreme example of a place where this drop should have taken place, we may observe that consultations have remained expensive. The minimum price set up by the medical association is currently US\$16 per consultation.

On the other hand, one of the most powerful factors preventing a reduction in consultation prices has to do with the medical code of ethics which explicitly condemns price competition\*. In addition, the commonly-accepted notion that quality of medical attention is measured by the price of consultation may also prevent their reduction. Smaller fees may fail to attract an additional number of patients sufficient to generate higher revenues.

\* Conselho Federal de Medicina. Código de Ética Médica.  
Diário Oficial da República, Jan. 1965.

It is in fact perplexing that such fees do not fall. Peer pressure, union manipulation and consumer ignorance probably contribute to this price inelasticity. But the fact remains that this is a free entry market for all those with a MD degree.

Prima facie evidence suggests that such price rigidities may have contributed to the stagnation and even the shrinkage of the private practice in medicine. In the early eighties in the city of Rio, only 2.4% of doctors in private practice were less than 30 years old, while 33% were 50 or more years old.

What happens to this growing number of young doctors who face inelastic consultation prices and a quantity of consultation demanded that grows much slower than their numbers?

They sell their services in other unregulated markets. Obviously, the social security system is expanding very fast, absorbing today in its own hospitals and medical centers 25,400 doctors in Brazil and 8,700 in Rio. But this is only part of the story. Standard social medicine contracts - 20 hours per week - leave much free time and a significant deficit in the doctors' personal budget since monthly pay for these contracts averages about US\$450.

In addition, only the poor have to comply with the hardships of getting medical attention under the social security system (waiting in lines etc.) and accept the casual or downright inadequate quality of the services.

That leaves ample available time for doctors and ample demand for medical attention. Yet, not at the regulated prices. Notice that services are regulated at "retail", leaving the "wholesale" market free of binding restrictions. As a result, one can observe a clear tendency towards the creation of schemes that permit "retail customers" to purchase at "wholesale" prices.

Ultimately, these involve hiring doctors on a monthly basis rather than by consultation. These solutions require an intermediate organization to hire doctors and distribute their services.

Several schemes are in existence. Firms may hire doctors and offer their services free-of-charge or at nominal fees to their employees. Health delivery firms contract with big corporations to serve their employees. Actuarial plans sponsored by health service corporations permit the participants to utilize medical services as needed and settle the accounts with doctors at "discount prices".

Schemes such as these and their numerous possible permutations seem to be growing very fast. They seem to cater to an expanding middle class which either cannot afford private practice or wants to get more value from its money.

It may be worthwhile describing one of the more common varieties. Large corporations offer their employees fringe benefits on health care. One common scheme is to hire doctors and offer consultations free-of-charge to the employees. What matters for our argument is that the consultation cost to the firm is much less than the employee would have to pay resorting to private practice. In other words, the fringe benefits are worth to the employee much more than the firm pays for it.

An alternative which becomes increasingly more common is the "package deal" between corporations and participant doctors. The firm - as wholesale buyer of medical services - bids for a "discount" price for its employees. Depending on the price offered they may attract a different segment of the market. With 10% to 30% below going prices, even some of the best-known doctors join. To them it means attracting a significant number of new clients - an application of the old "cheaper-by-the-dozen" logic. Alternatively, the firms may set much lower prices, aiming at younger doctors, who do not have a wide clientele. In those cases, a clinic or a hospital may contract with the sponsoring corporation.

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\* Group medicine today employs 30,000 people, including 12,000 doctors, catering to 11 million people.

Costs for such schemes are shared by the corporation and their employees. Usually, employers agree to bear the cost of a certain proportion (say, 50%) of their lowest "discount price". Employees who choose more expensive alternatives have to pay a larger share of the consultation price.

Again, the subsidy or the fringe benefit is besides the point. The issue is the reduction in the pay that goes to the doctors.

A variant of the above schemes are the health service firms that cater to corporations. This may be the most transparent example of what we are trying to describe in this section. These health organizations hire doctors for a monthly salary, and sell consultations to corporations at discount prices. They usually make a handsome profit but are still able to offer consultation prices that are much lower than "retail".

Medical plans on an actuarial basis are also becoming common. Some hospitals will sell health insurance on a monthly payment. The actuarial calculations to find the going value of consultations cannot be performed by the authors but it seems reasonable to believe that it could be below market prices.

What can we learn from examining such cases? First of all, the cartelization is only partly successful.\* If the price of private consultation cannot fall, some participants will find other formats for contracting medical services. These tend to converge to lower equilibrium prices that permit a larger volume of services to be transacted.

To the doctors and clients, this is a second best solution. These schemes permit the market to be cleared, bypassing a "retail" price rigidity. However, they introduce a class of "brokers" in the market who earn a profit and charge fees for their work. This

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\* In fact, pressure is mounting now to freeze or even reduce enrollment in medical schools. "Saturation" of market and poor quality of medical education are the explicit justifications.

consumer's surplus could have been appropriated by clients and doctors. In addition, it bureaucratizes medical services in hospitals, medical organizations and sponsoring corporations. Redtape and the wages of bureaucrats are added to the system.

Who benefits? Mainly the more experienced doctors with a private practice who can protect themselves from the price competition of the newer crops of doctors joining the market. At lower fees, some clients would accept less experienced doctors but if the fees are the same, why settle for less than experience and notoriety?

#### C. What Happens When the Largest Employer of Doctors Pays too Little?

The Brazilian social security system hires on salary basis 25% of the 100,000 Brazilian doctors; another 16% (16,000 doctors) are hired on fee for services basis. This is, of course, the largest employer of physicians and other medical personnel. Given the large expansion of medical schools and the cartelization of medical practice, social security is oligopsonistic operating in a buyer's market, hence it sets prices that are very low, compared to the conventional and traditional prices of private practice or even the more middle-class oriented medical organizations. Yet, given the market structure prevailing, they have no problems in finding candidates for their positions. In fact, the number of candidates for their 1976 examination amounted to 77% of all Brazilian medical doctors.

Yet many doctors are unhappy with their pay rates. They find it at odds with their idea of a fair price for their services.

Such subjective perceptions would be of no consequence if health unit management were not made up of medical doctors who sympathize with their colleagues. The solution to increase wage rates is to reduce the total number of hours worked. According to the established rules, doctors have a minimum quota of

patients to be taken. A fairly common practice is to dispatch these patients in less hours than those contracted and leave earlier. It is beyond the scope of this paper to try to quantify the frequency of such reductions in work load.

The social security system also purchases services from private hospitals and clinics. The usual format is to charge a standard fee per consultation. This fee is rated today as 13% of the minimum fee imposed by the medical associations for private consultation.

Again, this fee is perceived as too low by doctors, even though supply and demand conditions indicate that it is not below equilibrium levels. The way to bypass this rate is to procrastinate and thereby multiply the number of consultations. For instance, laboratory examinations are requested in order to postpone diagnosis, procedures that could be performed in one single consultation are transferred to the next, and so forth. To sum up, this section described a case in which institutions which hire doctors redefine equilibrium prices against market tendencies and against their own interest. The explanation seems to result from notions about what fair price for consultations on the part of administrators who are also doctors.

#### D. Why Don't Doctors Emigrate From a Saturated Market?

Textbooks economics assume that producers are profit maximizers. Market disequilibria among regions are expected to stimulate emigration flows from places in which the glut of producers drives the prices down. Conversely, in sites in which supply is scarcer, prices move up, attracting additional suppliers.

As mentioned before, Rio de Janeiro is a good example of a culturally-developed center. In addition to having a large number of medical schools, it also attracts medical doctors from

other states\*. The outcome of such polarization around Rio is a ratio of medical doctors to inhabitants well above the national average.

It was a trivial matter to predict an imbalance in the supply of medical doctors in Rio, as compared to other parts of the country. However, this imbalance was expected to be self-correcting. The over-supply of doctors would bring down their income levels making other locations more attractive to the newly graduated.

However, this does not seem to have happened. Despite what is perceived as clear signs of a depressed market, emigration does not take place in considerable numbers. According to a medical union report published in 1979, only 12% of doctors leave Rio after having worked there.

What has gone wrong? Why was there no migration? Does the market theory fail to describe their behaviour? Is the behaviour of doctors irrational, as alledged?

Before proceeding, some questions of method are in order. What is the meaning of the two propositions: "irrational behaviour", "market theory does not function"?

Economists have a very narrow definition of rationality - or its inverse. Behaviour is said to be irrational only if it is inconsistent or intransitive. Namely, if A is preferred to B, B cannot be preferred to A the next time. In addition, if A is preferred to B, B is preferred to C, then A must be preferred to C.

Liking yellow better than green, liking leisure better than money, liking traffic jams better than mosquitoes are preferences whose legitimacy is taken for granted and implicit in the "revealed preference" of individuals. No

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\* About 30% of all Brazilian medical doctors work in the city of Rio de Janeiro.



competent economist would claim that behaviour is determined by pecuniary reasons alone. Hence "irrational behaviour" is a term that describes a very unusual type of behaviour.

Is price theory wrong? Not likely. It may be tautological, which is worse but not wrong, unless we were equating price theory to competitive pricing (or perfect competition).

The problem with the introduction of market imperfections and complexities is that theory loses its predictive power. Since the relative importance of several factors cannot be quantified - or even gauged, the outcome is unpredictable. In that sense, it becomes somewhat tautological. Observed behaviour is what allows the identification and choice of this or that explanation.

Be that as it may, it is an instructive exercise to mull over the excess supply of doctors in Rio, as an example of their concentration in the large metropolitan areas of Brazil. It is a fact that there is an imbalance in the density of doctors as compared to smaller towns. It is also a fact that emigration is no higher than immigration. Therefore, we can say that either economic attractions to emigration are non-existent or they are overwhelmed by non-economic considerations.

Several explanations are possible:

- i) The decrease in income as a result of competition is not sufficient to create a net advantage to emigration. Large centers such as Rio may have a per capita income so much higher than other areas that doctors there may be still better off. It has been observed that the supply of medical services creates its own demand.\* This may be the case in

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\* Karen Davies "Implications of an Expanding Supply of Physicians: Evidence from a cross-sectorial analysis" The John Hopkins Medical Journal 150 n° 2 (February 1982).

Rio: there is no glut, just more doctors and more demand for them. Unfortunately, complete data on personal income are not easily available to verify this hypothesis.\*

- ii) The decision to emigrate is practically irreversible. It takes several years to develop a reputation and a circle of clients. Neither can be brought back to Rio later on. Doctors do consider smaller towns as undesirable from the point of view of their careers. The logistics, the support services and the flow of information are vastly inadequate in view of the highly specialized career profiles emulated by the graduates of medical schools. In other words, doctors take a long run view of their careers and see large centers as a better choice despite the initial hardships.
- iii) Another explanation has to do with risk and lack of information. Moving to an unknown place, lack of information on the potential of the market, fear of excessive responsibilities in places with little medical assistance may be sufficient deterrents to emigration.
- iv) Frequently mentioned reasons are the amenities and plurality of leisure options available in large cities. Life-styles and cultural patterns of big cities cannot be compensated by the prevailing income differentials. In other words, doctors are willing to forego some economic benefits in order to preserve certain habits and life-styles.

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\* Unpublished tabulations from income tax returns suggest that salaries (not income) in Rio are lower than in most other states. Unfortunately the interpretation is not straightforward because of possible differentials in the prevalence of multiple job-holding (the national average is close to two).

Whatever the explanation, doctors prefer to stay in places where the density statistics suggest oversupply. They have their own reasons - economic or otherwise.

The lesson to be derived from this example is that one cannot expect unbalances in the density of doctors to generate compensatory migration. It is not clear whether wage rates do not reflect such quantitative discrepancies or whether the economic incentives are not sufficient to overcome perceived locational preferences. But the conclusion is quite clear: one cannot specialize large urban centers as producers and exporters of medical doctors. Physicians have to be trained not very far from where they are expected to work - if complete freedom of choice is to prevail.

#### E. Lessons

This paper discussed four examples of market structures in the health sector. In the case of nurses, market forces were ignored by educators. Yet they were powerful and lead to results totally different from what was expected. In fact, nurses found another market and never accepted the tasks prescribed to them.

The opposite happened with the geographical unbalances in the supply of doctors. Market incentives were supposed to lead to migration. However, it never materialized, doctors remained in the large centers from which they graduated. For some reason, the incentives were not sufficient.

Price rigidities somehow prevented the increased supply of doctors to lead to lower consultation fees. Instead, other less expensive forms of health delivery were developed. Private practice remains protected while the increased supply of doctors is directed to institutionalized medicine.

Equilibrium wages for doctors employed by the social security system are considered too low, contrasting with their expectations. Strangely enough, these preconceptions about

"fair price" do play a role because government administrators are doctors who also share such views.

To sum up, the health sector displays complex and less than obvious market structures. They are difficult to understand and sometimes go counter to unsophisticated predictions. Yet, they critically influence health delivery patterns. Therefore, they cannot be ignored or taken for granted. Sound economic analysis is all the more necessary.

