

**Structural Reform and Medical Commerce:
The Political Economy of Cuban Health Care in the Special Period**

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I. Introduction *

This paper proposes a hypothesis to explain a seeming paradox: despite a sharp reduction of imports of medical and pharmaceutical products during the 1990s, which limited surgical procedures and contributed to new epidemics of disease, and in the midst of profound economic crisis, many of Cuba's basic health indicators continued to *improve* over the course of the so-called Special Period.¹ Between 1990 and 2000, for example, the infant mortality rate declined significantly, from approximately eleven to six deaths per 1,000 live births, life expectancy improved slightly, and primary care increased its reach through expansion of the family doctor program. How did the health care system, which was deeply compromised by economic contraction, nonetheless produce an improvement of basic health indicators?

We argue that the pattern of health care expenditures during the Special Period, and the economic and political factors that have shaped this pattern, help account for the apparent paradox. The termination of Cuba's trade and credit relationship with the Soviet Union and the countries of the socialist block relationship seriously undermined the country's ability to purchase medical products in the world market, exacerbating widespread crisis in the health care system. Medical equipment failures became common, hospital supplies were scarce and many medicine and other pharmaceutical products were difficult if not impossible for ordinary Cubans to obtain. Faced with the emergence of new threats to public health and the reality of a declining external sector, the state sought to protect basic health care services from the costs of structural adjustment. It concentrated resources for health care within the internal, Cuban-peso denominated sector and emphasized the expansion of the family doctor system, primary care and other low-tech but human-capital intensive investments. As we show below, although state spending for medical imports dropped precipitously, budgetary support for internal, Cuban peso-denominated health-care expenditures remained relatively strong during the Special Period. These peso-denominated resources were in turn allocated to those types of health care provision most likely to lead to a decrease in the infant mortality rate and an improvement of other basic health indicators.

But can peso-denominated spending patterns alone explain the seemingly paradoxical improvement of health indicators during a time of prolonged challenges to the health care system? The Cuban health care system of the 1990's had to contend not just with the impact of declining medical imports but also with the indirect effects of market-oriented economic reforms. The state declared health care among the few sectors off-limits to foreign investment and implicitly presumed health care to be distinct from market-oriented reforms such as the legalization of the holding of U.S. dollars in 1993, the creation of legal private markets, and the sanctioning of small-scale self-employment. Ironically, this structural detachment of the health care sector had unintended consequences. For one, the increasing importance of the dual monetary economy after the legalization of dollars had the counterproductive effect of financially hurting medical professionals, who as a rule are paid in Cuban pesos rather than U.S. dollars. Indeed, unlike private farmers, employees of foreign joint ventures, small-scale entrepreneurs and many workers in the tourist industry, most doctors and other medical professionals

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appeared to gain little or no access to U.S. dollars through their employment.² Thus as a greater percentage of Cuban economic consumption shifted to the local dollar economy, and as local prices for a range of goods increasingly converged with world prices, the attempt to protect the health care system had the unintended effect of shifting some of the costs of adjustment onto doctors.³

Thus this paper represents an attempt to explain health care outcomes by examining patterns of resource allocations in the context of state spending and Cuba's dual monetary economy. In section two, we examine the pattern of medical shortages. We then illustrate the fiscal response to this pattern in section three. In section four, we hypothesize that the improvement of basic health care indicators is correlated with patterns of budgetary support for different types of health care services, then evaluate this hypothesis by responding to several potential objections. Most significantly, if the state has concentrated resources for health care on internal, peso-denominated expenditures at the expense of the external sector, we might expect to observe a worsening of health care statistics related to hospital care and high-tech medicine - for example, morbidity rates for heart disease or cancer to increase due to the decline of state spending on high-tech medical imports. While the lack of evidence for such declining statistics appears to be an anomaly, we suggest that this fact may well be due to the role of humanitarian aid from developed countries during the 1990's. Although no centralized data for the amount of humanitarian aid in the medical sector exists, we pool several secondary sources for the amount of medical assistance that various countries have provided to Cuba. This amount appears to surpass – and even dwarf – the decline in spending for medical imports during the Special Period.

Finally, in section five we describe the impact of the dual economy on health care more fully, and here we describe more fully the unintended consequences of the attempt to protect health care from the costs of adjustment – particularly, the transfer of some of the material costs of adjustment onto doctors. The prestige of a medical career, once one of Cuba's most respected professions, appears to have dwindled, at least among Cuban youth.⁴ Material disincentives for medical professionals have threatened not only to jeopardize the standard of living of individual doctors but also to imperil the long-term well-being of the health care system as a whole. The conclusion, then, proposes some thoughts on the sustainability of the current model.

II. Patterns of medical scarcities during the Special Period

The causes of Cuba's health care crisis, and indeed of Cuba's economic decline in the early 1990's as a whole, are controversial mostly as a matter of emphasis. Should one point more to the effects of the demise of the Soviet Union, Cuba's increased exposure to the effects of the U.S. embargo (and the embargo's subsequent tightening in 1992 and again in 1996) or to administrative inefficiencies and incentive problems associated with Cuba's command economy? The answer to this question is not essential for the present paper, but it is important to give some description of the contours of both the crisis and the recovery in order to understand how state spending patterns have been shaped by them.⁵ Our account of the decline of medical imports, in section three below, stresses the decline of the Soviet Union, in part because economic and health care crises began prior to the tightening of the U.S. embargo through the Torricelli Act of 1992 and in part

because we particularly want to underscore the effects of the structural changes that have accompanied the process of re-linking to the world economy (this process has of course been made more problematic by the U.S. embargo itself).

Whatever the source of scarcities, shortages of medicine, medical equipment and even food clearly had a deleterious impact on health and nutrition in Cuba, particularly in the first few years of the Special Period.⁶ The objective of this section of the paper is not to detail exhaustively a litany of problems with health care delivery in Cuba. However, a few paragraphs can nonetheless serve to describe the general nature of the problems and lay the basis for the discussion of medical commerce and health care expenditures that follows in section three.

The decline of medical and pharmaceutical imports beginning in 1990 put stress on the health care system in a variety of ways. First of all, the disrepair of antiquated medical equipment limited the capacity of the system to undertake higher-tech procedures, including major surgeries. Scarcities of non-equipment supplies posed similar problems, and medical pharmaceuticals of all varieties were in scarce supply. These shortages have had a variety of effects on the provision of health care. Some of the evidence is necessarily anecdotal, but definite types and patterns of shortage effects are strongly suggested both by evidence from the author's personal field work in Cuba at a variety of dates over the past three years and by numerous other studies of health care crisis in Cuba.⁷

First, the number of major surgeries performed at national and provincial hospitals appears to have dropped substantially. At the Saturnino Lora Provincial Hospital in the city of Santiago de Cuba, which I visited in September 2000, only ten out of twenty surgical rooms were operational at the time of my visit. As indicated in Table I, between 1991 and 1993 the number of major surgeries performed annually fell from 9,742 to 6,409, a reduction of over 34 percent in just two years. While the numbers of operations had increased to 8,487 by 1996, a dengue epidemic dropped major surgeries back to 6,862 in 1997, as available space in the hospital was reserved for dengue patients. The number of surgeries has recently recovered to pre-Special Period levels (9,264 in 1999, compared to 9,592 in 1989). However, the number of major operations performed in the hospital's cardiac center, known for pioneering the use of open-heart surgery in Cuba, has fallen from three hundred per year prior to 1990 to around one hundred in the year 2000. These trends appear to be generalizable in outline to national and provincial hospitals around the country, according to interviews with Cuban medical professionals. While the situation appears to have recovered moderately from the worst years of the Special Period, patient care facilities continue to treat far fewer patients than the number of hospital beds would imply, a fact partially attributable to a chronic lack of working equipment.

**Table I. Number of Major Surgeries Performed at
Saturnino Lora Provincial Hospital, Santiago de Cuba
1989-1999**

Year	# surgeries		Year	# surgeries
1989	9,592		1995	6,293
1990	9,339		1996	8,487
1991	9,742		1997	6,862
1992	7,485		1998	6,948
1993	6,409		1999	9,264
1994	7,203		2000*	5,135

Source: Staff at Hospital Saturnino Lora, Santiago de Cuba. * Includes procedures up to the end of June 2000 (most recent available data). If this rate were maintained, total major surgeries for 2000 would have equaled 10,270.

What factors have caused this drop in surgeries? The most prominent include mechanical failures of antiquated equipment and attendant difficulties with replacing parts. This appears to have been both an economic and bureaucratic problem in which both hard currency shortages and purchasing inefficiencies have played a role. At Saturnino Lora, only four out of eight Life Scope II cardiac monitors, made by Nihon Kohden, are currently operational due to deteriorated cables. According to hospital staff, although there is an agency in Havana that would sell new cables, replacements have not been purchased. In consequence, after their first or second day in the Cardiac Center's Intensive Care Unit, patients are rotated to Cuban-assembled monitors which do not allow the same level of precision, and fewer patients can be seen as a result. Purchasing inefficiencies also play a role in these shortages. As just one example, a thermometer at Saturnino Lora uses a rechargeable nickel-cadmium battery made by Eveready. Although the battery was recharged and used for several years, this essential item was not replaced when it finally faltered because it is a small item that is not bought in bulk.

Indeed, interviews with doctors at several hospitals suggest that surgical medicine since 1990 has been a matter of constant improvisation, due to a lack of dependable supplies appropriate for demand. According to one surgeon, in the 1980's there was always a flow of available supplies, but since the initial "very hard years" of 1990-1991, the situation has been critical with respect to material resources. As another physician, a cardiologist, noted, surgery consists of a delicate chain of supplies and procedures, in which any missing link may disrupt the chain. Thus hospital staff must take great care to ensure all required elements are available before beginning a procedure.

Secondly, a lack of medicine for patients has seriously compromised many physicians' treatment options. The so-called "reduction in therapeutic options," which has limited drug protocols available to patients, became pronounced during the Special Period. Prior studies have particularly emphasized the chronic scarcity of anti-cancer (citostatic) medications, drugs to treat the side effects of radiation therapy (including anti-emetics), a range of antibiotics, analgesics and anti-HIV protocols, among many other medicines. For many Cubans, difficulties with obtaining over-the-counter medications were almost as severe as for prescription medicines.

Finally, food production plummeted in the early 1990's, with serious attendant health care consequences. Meat, fish and cultivated production was almost halved, as was average caloric intake, which fell from 3,130 calories in 1988 to 1,863 in 1993, with a marked fall in fat and protein intake. Serious iron, calcium and essential vitamin deficiencies resulted, and a neuropathy epidemic that struck in 1992 was widely attributed to nutritional deficiencies (the first manifestation of the epidemic was a wave of optic neuritis, which leads to blindness). According to some Cuban doctors, toxic elements may have also played a significant role in provoking the epidemic.⁸ Material obstacles have also posed challenges to Cuban health in many other areas, including water supply quality, and various communicable diseases, including tuberculosis, have staged a resurgence.

In the next section, we turn to the role of health care expenditures in exacerbating shortages of imported medical equipment and medicines. However, it is important to note here that the specific pattern of medical shortages corresponds to the decline in the economy's external sector. A number of prior studies of Cuban health care during the 1990's, including a well-known study of the impact of the U.S. embargo on health and nutrition that was sponsored by the American Association for World Health (AAWH), have failed to give enough emphasis to the role of economic crisis.⁹ Although the AAWH report makes frequent reference to "hard currency shortages," it does not extend its analysis to systematically link the lack of foreign exchange spending to shortages of a range of medical products. Thus it fails to note that a range of pharmaceuticals, both low-cost and more expensive varieties, are directly marketed to Cuba by Latin American and European companies with branch offices on the island. The fact that many of these vital drugs, which are readily available in the country, have also been in short supply suggests the important role of hard currency shortages and inadequate spending in the external sector.

For example, the AAWH report suggested that Cuba has been denied a choice between domestic manufacturing of ciprofloxacin, which doctors cite as an important antibiotic, and cheaper imported versions of the drug.¹⁰ Yet according to their catalogues of products sold to Cuba, both Bayer, the German multinational firm which has an office in Havana, and the company Gautier-Bagó sell "c-flox" (ciprofloxacin) in oral and injectable form. During my field work in Cuba, ciprofloxacin appeared to be more heavily marketed than any other antibiotic, judging by the number of posters for the drug which appear on the walls of certain health clinics and dollar pharmacies. The AAWH report also cited shortages of vancomycin, a powerful anti-infectious drug, in Cuban hospitals,¹¹ but one doctor compared this drug to "a Cadillac rather than a Chevrolet," a particularly Cuban way of emphasizing the luxury nature of this antibiotic of last resort. Furthermore, Gautier-Bagó's Cuba catalogue, which I examined along with catalogues of other multinational pharmaceutical firms operating in Cuba, includes "Vancotie" (vancomycin), along with a range of antibiotics, such as ampicillin, penicillin, amoxicillin, and norfloxacin. Lack of analgesics in hospitals in the Special Period has often meant discomfort for Cuban patients, as the pain treatment options have been limited to mild painkillers and strong drugs like morphine. Yet Gautier-Bagó markets a wide range of analgesics in Cuba, including "Dioxadol" (dipirona magnesica), an analgesic, antifebril, anti-inflammatory, and anti-rheumatic drug which may be taken

orally, and a range of over 13 other analgesics, including “artrilase” (piroxicam), “dioxadol” (dipiron magnésica), and “dioxaflex” (diclofenaco sódico).

The AAWH report found that the U.S. embargo was directly responsible for up to six month delays in anti-HIV treatments for a total of 176 infected patients in Cuba. Particularly problematic, it argued, has been locating suppliers willing to sell even small amounts of AZT at prohibitive cost. While the fact that many anti-HIV medications have been developed recently and thus are still under U.S. patent undoubtedly denies such medications to Cuba, it is worth noting that Gautier-Bagó’s catalogue of products actively marketed in Cuba includes zidovudine, or AZT (“z-tie”). Gautier-Bagó also sells azatioprin (“azamun”), an immunosuppressor used in HIV protocols. Finally, the AAWH report states that a lack of broncodilators and asthma medication has caused pediatric deaths from asthma to rise,¹² yet Gautier-Bagó, for one, markets broncodilators and Drilyna (teofilina anhidra), an asthma medication.¹³ Atropine, cited as in short supply because of the embargo, is widely sold by third-country companies and it is furthermore manufactured in the country in pills and injectable form.¹⁴ 5-fluorouracil (a chemotherapy drug) is manufactured in China, allegedly at the lowest prices in the world, and Gautier-Bagó makes Septilisin (cefalexina), a 1st generation cephalosporin and Cefalomicina (cefazolina).

The objective of pointing to the specific examples above is to illustrate the evidence that medical shortages are often, simply put, due to hard currency shortages and deficient expenditures in the external sector. These examples underscore the role of economic crisis and state spending patterns in shaping the character of the health care crisis, to which we now turn in more detail.

III. Health care spending

Prior to 1990, the Soviet Union and the Eastern European socialist camp, through the Council for Mutual Economic Assistance (Comecon), provided Cuba with its major trading partner and primary source of development assistance. Cuba entered into long-term (often five-year) bilateral export-import agreements with Comecon at substantially subsidized prices. For example, the Soviet Union bought Cuban sugar at above-market prices and sold the country petroleum below world rates, and it almost automatically provided credits to finance Cuba’s bilateral commercial deficits. In addition, re-export of derivatives of Soviet petroleum allowed Cuba to earn hard currency with which it conducted trade with the West, amounting to 15% of the country’s total external commerce.¹⁵ This trade included imports of pharmaceuticals and medical equipment, valued at \$55 million in 1990.¹⁶

But the end of the trading relationship with Comecon exposed the Cuban economy not only to the world market prices from which its external sector had been sheltered but also to the extended decline over time in the value of its primary commodity exports (namely sugar) with respect to manufactured goods. According to Cuba’s Ministry of Economics and Planning, the country’s principal primary commodity exports today have one quarter of the buying power that they had at the beginning of the 1960’s, a claim confirmed at least in broadest outline by comparisons with other primary commodity exporters.¹⁷ Between 1980 and 1989, declining terms of trade caused a ten percent decline in the buying power of the exports of the Dominican Republic, the

economy of which has some similarities with Cuba, and in Latin America as a whole the drop was 24 percent.¹⁸ One study of the long-term performance of the relative prices of primary commodities in general estimated these declining terms of trade at 1.3 percent per annum.¹⁹

The impact on economic output (in part because raw inputs to domestic manufacturing became more expensive) was dramatic. Most calculations now place the decrease in Gross Domestic Product between 1990 and 1993 at approximately 35 percent; that is, in just four years the economy lost more than one-third of its value. The decline brought tremendous hardships to the Cuban population: long electricity blackouts, food shortages, and an unstable (unofficial) exchange rate.²⁰ More impressive, and more relevant to the present topic, was the decline in imports due to a scarcity of foreign exchange, which was widely blamed for declining economic output. Foreign exchange scarcities resulted in a substantial drop in medical imports. For example, total expenditure in foreign exchange for the health care sector fell from US\$227 million in 1989 to US\$56 million in 1993, according to the Ministry of Public Health.²¹ In 1990 the country imported about \$55 million in medical and pharmaceutical products, while by 1996 this figure had dropped to \$18 million, a decrease of around 67%.²² Imports of raw materials for the manufacture of pharmaceuticals decreased from \$43 million to \$10 million in the same period.²³ Indeed, in the wake of the loss of trade with the socialist bloc, according to the European Community Humanitarian Office (ECHO), Cuba was only able to meet 30% of its medicine and medical import requirements, “seriously jeopardizing its capacity to effectively meet the population’s needs.”²⁴ By 1998, imports of medical supplies had recovered to around \$27 million²⁵ (See Table II).

**Table II. Decline in foreign exchange expenditures for health care
(U.S. millions of dollars)**

	First year in series	Last year in series
Total health care spending, 1989-1993	227	56
Imports of medical and pharmaceutical products, 1990-1996	55	18
Imports of raw materials for pharmaceutical manufactures, 1990-1996	43	10

Sources: Ministry of Public Health (MINSAP), in “European Union Humanitarian Aid to the Cuban People,” European Community Humanitarian Organization (ECHO), 1997 (line 1). Lines 2 and 3 based on Anuario Estadístico de Cuba, 1996 and World Bank data.

Medical expenditures in the external sector may leveled off and even registered a mild increase in more recent years. For example, Cuba’s imports of medical supplies and equipment reached more than US\$21 million in 1997 and more than US\$26 million in 1998. Yet as Table III demonstrates, the single largest category of medical imports, both in terms of absolute dollar value and as a percentage of total medical imports, was comprised of bandages, dressings and other supplies. Relatively expensive items such as high-tech equipment make up a relatively small proportion of medical imports. For example, X-ray apparatuses comprised just 9.5 percent of imported medical supplies and equipment in 1998 (US\$2.5 million), while orthopaedic/prosthetic products comprised 8.4 percent (US\$2.2 million).

Table III. Imports of Medical Supplies and Equipment By Category

	1997 (US\$000)	% of Total	1998 (US\$000)	% of Total	% Change 97-98 *
Bandages, dressings & other supplies	8,187	38.5	6,770	25.5	-17.3
X-ray film	555	2.6	1,436	5.4	158.7
Surgical gloves	427	2.0	1,336	5.0	212.9
Electromedical equipment	574	2.7	1,190	4.5	107.3
Syringes, needles & catheters	1,979	9.3	3,057	11.5	54.5
Other medical instruments & appliances	4,472	21.0	6,569	24.7	46.9
Orthopaedic/prosthetic products	1,410	6.6	2,224	8.4	57.7
X-ray apparatuses	2,062	9.7	2,516	9.5	22.0
Others	1,622	7.6	1,480	5.6	-8.8
Total	21,288	100.0	26,578	100.0	24.8

Source: Espicom Business Intelligence, mediSTAT, February 2000. Figures are based on reported data of countries exporting medical supplies and equipment to Cuba. * % change registers increase or decrease in dollar value; thus a particular import category may make up a lower percentage of total medical imports in 1998 than in 1997, even though its dollar value increased.

Table IV, which like Table III is based on data reported by countries exporting to Cuba, further highlights the composition of Cuba's medical imports. It also provides interesting information about the national source of imports. Perhaps surprisingly, the single largest supplier of medical equipment and supplies to Cuba in 1997 was China, with 58 percent of the total. These imports were largely of inexpensive and low-tech items. For example, in 1997 Cuba's single largest category of medical imports in total value was non-adhesive medical dressings (US\$5,853 million), 100 percent of which were supplied by China. Other categories in which China dominated the supply are indicative: sutures, dental fillings, wheelchairs, and syringes. Germany also had significant exports to Cuba but these were of a more high-tech variety: pacemakers, electrocardiographs, x-ray film and appliances, radiation apparatus, hearing aids.

Table IV. Leading Suppliers of Medical Equipment and Supplies by Category, 1997

	Total, US\$000	Leading Supplier	Shipments, US\$000	% of total sent by leading supplier
MEDICAL SUPPLIES				
Medical dressings (adhesive)	259	China	217	83.8
Medical dressings (non-adhesive)	5,855	China	5,853	100.0
Sutures, sterile, surgical & dental goods	1,080	China	1,060	98.1
Sutures, sterile, surgical & dental goods	1,080	China	1,060	98.1
Blood grouping reagents	6	Germany	6	100.0
Opacifying preparations	967	China	18	100.0
Dental cements and other fillings	18	China	18	100.0
First aid boxes & kits	2	Netherlands	2	100.0
Medical x-ray film (flat)	554	China	554	100.0
Medical x-ray film (rolled)	1	Germany	1	100.0

Surgical Gloves	427	China	411	96.3
Medical, Surgical Sterilisers	5	Spain	4	80.0
Wheelchairs, not mechanically propelled	103	China	81	78.6
Wheelchairs, mechanically propelled	494	China	494	100.00

Contact Lenses	0	~	0	~
MEDICAL EQUIPMENT				
Electromedical				
Electrocardiographs	193	Germany	143	74.1
Other electrodiagnostic apparatus	381	Spain	195	51.2
UV/IR Apparatus	0	~	0	~
Syringes, Needles & Catheters				
Syringes (with/without needles)	669	China	547	81.8
Tubular metal needles/needles for sutures	58	China	58	100.0
Other needles, catheters, cannulae etc.	1,252	China	767	61.3
Dental Instruments & Appliances				
Dental drill engines	0	~	0	~
Other instruments and appliances used in dentistry	244	Spain	236	96.7
Ophthalmic Instruments & Appliances				
	56	China	54	96.4
Other Medical & Surgical Instruments				
	4,172	Spain	1,428	34.2
Therapy Apparatus				
Mechano-therapy apparatus	138	Spain	118	85.5
Therapeutic respiration apparatus	354	Germany	261	73.7
Orthopaedic & Prosthetic Appliances				
Artificial joints	81	Spain	48	59.3
Other orthopaedic or fracture appliances	34	Germany	25	73.5
Artificial teeth	0	~	0	~
Other dental fittings	35	China	35	100.0
Other artificial body parts	330	UK	229	69.7
Hearing aids, except parts & accessories	80	Germany	80	100.0
Pacemakers, except parts & accessories	614	Germany	614	100.0
Other orthopaedic appliances	236	China	117	49.6
Medical X-ray, Alpha, Beta, Gamma Ray Equipment				
Medical X-ray apparatus	1,341	Germany	1,194	89.0
Medical alpha, beta, gamma ray apparatus	428	Canada	428	100.0
X-ray tubes	60	Germany	43	71.7
Parts & accessories for radiation apparatus	233	Germany	181	77.7
Medical Furniture				
Dental & similar chairs (inc. parts & accessories)	16	Germany	14	87.5
Other medical, surgical, dental furniture	479	China	331	69.1
Total	21,288	China	12,353	58.0

Source: Espicom Business Intelligence, mediSTAT, February 2000. Figures are based on reported data of countries exporting medical supplies and equipment to Cuba.

Peso-denominated health care spending

The evidence cited above shows the contraction of medical imports over the Special Period (particularly in the first years of the crisis) and demonstrates that remaining imports were dominated by inexpensive, low-tech equipment and supplies. However, although outlays in foreign exchange for medical imports declined precipitously, the same did not occur in terms of the state's overall, peso-denominated health care spending. Fiscal indicators show that the government struggled to maintain health care spending, at least in absolute terms and relative to expenditures on other sectors, even as the economy went into a tailspin. Current expenditures on health during the 1990's registered absolute increases in every year except one, climbing from 937 million current pesos, or 6.6 percent of the budget, in 1990 to 1,410 million current pesos, or 10.7 percent of the budget, in 1999 (see Table V). Current expenditures on health as a percentage of Gross Domestic Product also increased slightly during the 1990s, from 4.5 percent in 1990 to 5.2 percent in 1998.

Table V. Selected Fiscal Expenditures in Millions of Current Pesos, 1989-1999

	1989	1990	1991	1992	1993	1994	1995
Total Expenditures	13,904	14,213	14,714	14,132	14,567	14,178	13,809
Current Expenditures	10,844	11,327	11,089	11,776	12,529	11,495	12,064
Total of Budget*	7,380	7,054	6,214	5,990	6,298	6,566	6,510
<i>Of which:</i>							
Education	1,651	2,620	1,504	1,427	1,385	1,335	1,359
Health	905	937	925	938	1,077	1,061	1,108
Defense/ Internal Order	1,259	1,149	882	736	713	651	610
	1996	1997	1998	1999a			
Total Expenditures	12,814	12,663	13,062	13,190			
Current Expenditures	10,770	10,824	11,481	11,440			
Total of Budget*	6,939	6,808	7,082	7,648			
<i>Of which:</i>							
Education	1,421	1,454	1,510	1,585			
Health	1,190	1,265	1,345	1,410			
Defense/ Internal Order	497	638	537	630			

Source: CEPAL, 2000. (a) Figures for 1999 are estimated and are as budgeted in December 1998, prior to the promulgation of salary increases in the areas of health, education, police and the judiciary. * Other budgeted activities which comprise current expenditures include social security, administration, habitation and communal services, productive spheres, culture and art, science and technology, sports, and well-being.

It is important to point out that while central government spending on health increased in absolute terms between 1990 and 1998, the real value of government peso-denominated health expenditures actually declined. According to the Economic Commission for Latin America and the Caribbean, total spending on health at constant

1981 prices decreased from 914 million pesos in 1990 to 859 million in 1998. Between 1993 and 1994, after the legalization of the holding of dollars in Cuba, the real value of spending on health fell from 929 million to 751 million pesos (see Table VI below).

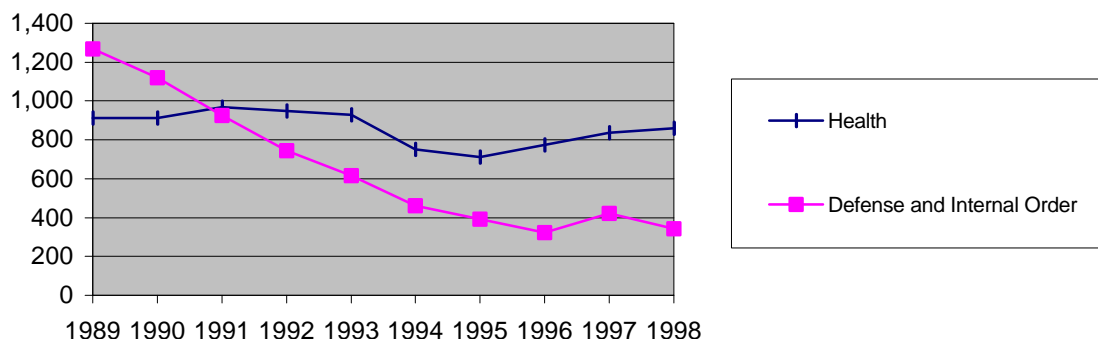
Table VI. Selected Fiscal Expenditures in Millions of Pesos at 1981 Prices, 1989-1998

	1989	1990	1991	1992	1993	1994	1995
Total Expenditures	14,041	13,852	15,436	14,312	12,564	10,035	8,866
Current Expenditures	10,930	11,039	11,633	11,926	10,806	8,136	7,746
Total of Budget *	7,438	6,875	6,519	6,067	5,432	4,647	4,180
<i>Of which:</i>							
Education	1,664	1,578	1,578	1,445	1,194	945	872
Health	912	914	970	950	929	751	712
Defense/ Internal Order	1,269	1,120	925	746	615	461	392
	1996	1997	1998				
Total Expenditures	8,326	8,368	8,344				
Current Expenditures	6,998	7,152	7,334				
Total of Budget*	4,509	4,499	4,524				
<i>Of which:</i>							
Education	924	961	964				
Health	773	836	859				
Defense/ Internal Order	323	421	343				

Source: Comisión Económica Para América Latina (CEPAL), 2000. *Other budgeted activities which comprise current expenditures include social security, administration, habitation and communal services, productive spheres, culture and art, science and technology, sports, and well-being. As budgeted in December 1998, prior to the promulgation of salary increases in the areas of health, education, police and the judiciary.

Yet the fact that peso-denominated health spending declined in real terms also points to the overall shifting of the economy to dollar-based spending and consumption. This provides an important clue to an ongoing structural problem in the Cuban economy – one to which we will return in section five of this paper. Nonetheless, as Figure I below demonstrates, budgetary support for health care remained strong compared to spending on defense and internal order, another key component of the central government budget..

Figure I. Spending on Health and Defense, 1989-1998
(in millions of pesos at constant 1981 prices)



Source: Author based on CEPAL, 2000.

In sum, those expenditures which depended on foreign exchange – such as the purchase of imported medical products – decreased substantially during the Special Period, while budgetary support for peso-denominated health care expenditures remained strong, at least in terms of the current value of peso expenditures. Attempts to blame medical shortages in Cuba on resource misallocation are thus misguided, or at least wrongly nuanced.²⁶ Spending in areas such as defense and internal order declined during the same period, a fact related not only to economic decline but also to evolving foreign policy and defense considerations in the 1990's.²⁷ This fact contradicts, for example, the statement of the U.S. State Department that “the Cuban government made a deliberate decision to continue to spend money to maintain its military and internal security apparatus at the expense of other priorities – including healthcare.”²⁸

IV. Evaluating the hypothesis

We have described evidence of the impact of medical scarcities on health care provision and explored the Special Period's patterns of health care expenditures, which were characterized by a dramatic decline in medical imports. In spite of these various problems, basic health indicators in Cuba have continued to improve over the course of the 1990s. The most notable, but by no means the only, of these basic indicators is the infant mortality rate. Between 1990 and 2000, for example, Cuba's infant mortality rate declined from 11 deaths per 1,000 live births to just six. Compare this to Latin America's average infant mortality rate of 30 deaths per 1,000 live births, or statistics to the performance of the United States, and the apparent performance of the health care system becomes all the more impressive. In 1999, life expectancy in Cuba was 76.1 (compared with 76.8 in the US),²⁹ while the probability of dying under the age of five was about nine per thousand, compared to about eight in the United States.³⁰

Indeed, Cuba's continued improvement of basic health indicators has not gone unnoticed in development and public health circles. According to the World Health Organization's “Health 2000” report, Cuba ranked 39th among 191 surveyed countries surveyed with respect to overall health system responsiveness in 1997 (the United States,

ranked 37th).³¹ Cuba, not a member of the World Bank or the International Monetary Fund, has been increasingly celebrated as a kind “anti-model” even in mainstream development and public health circles. After Cuba’s health indicators topped all other poor countries in the World Development Report 2001, the president of the World Bank was inspired to declare that Cuba has done a “great job” in health care and education.³²

Public health scholars and Cuban officials themselves have posed a number of different explanations for Cuba’s performance on basic health indicators. Chief among them are the family doctor system, which provides Cubans throughout the island with primary care, and the strength of Cuba’s medical education, which has turned out an ever-increasing supply of physicians. The number of doctors has risen from slightly more than 3,000 at the time of the Revolution to more than 78,000 today, giving Cuba a doctor-civilian ratio of nearly 1:172. Medical education is free to all Cubans, physicians must qualify as family practitioners before progressing to the practice of specialties, and talented graduates are assigned to family practices in rural areas before beginning specializations. In fact, over 50 percent of Cuban physicians remain family practitioners. There has been a major expansion in the numbers of family doctors during the past decade – from 9000 in 1989 to 31,500 in 2001.³³ Indeed, one might argue that Cuba today has a surplus of doctors. The numbers allow Cuba to continue the policy of sending Cuban doctors to assist in other developing countries: 2500 Cuban doctors are currently working in 54 developing countries, and more than 140,000 Cuban medical personnel have taken part in international aid efforts since 1963.³⁴

This emphasis on high per-capita numbers of doctors resonates with the Revolutionary system’s emphasis on preventative health care: family doctors are essentially clinicians who in most cases have few medicines and even fewer sophisticated machines to help their work. They promote healthy habits in their communities and screen community members for referrals to other institutions. Other explanations of Cuba’s success in improving basic health indicators include the resurgence of alternative or traditional therapies during the Special Period. Economic crisis, the argument goes, has forced a new – and healthy – creativity upon Cuban medicine (as well as Cuban agriculture, with the development of new organic productive techniques). Still another explanation points to a renewal of domestic pharmaceutical manufacturing, though this has been perhaps less successful than predicted.

If we can assume that one or a combination of these factors does account for Cuba’s success in improving basic indicators – an assumption on which our argument admittedly rests³⁵ – then it is important to notice that the above explanations share a similar economic logic. With the possible exception of domestic pharmaceutical manufacturing (see section five of this paper on this point), all of these strategies depend on budgetary support for peso-denominated expenditures. Because they share an emphasis on low-cost, doctor-intensive care, to some observers Cuba represents a kind of health care anti-model that stands in stark contrast to the high per-capita spending associated with health care in the United States and other advanced industrialized countries. Yet Cuba has managed to achieve results that are comparable to many developed countries in terms of basic indicators.

One might raise a number of possible objections to the hypothesis that an economic logic underscores the de facto health care strategy adopted during the Special Period, and to the idea that peso-denominated public health strategies like the education of doctors

lead to more intensive primary care, rather than high-tech hospital care, thus positively affecting basic indicators like the infant mortality rate. On a most basic level, one might wonder to what extent one can trust the data, which after all often comes from Cuban authorities themselves; indeed, a number of scholars have raised critiques of statistical reporting from Cuba and of health care statistics in particular. If statistics are inaccurate or systematically biased towards improved indicators, this would indeed call into question the premises of this paper. However, I have largely chosen to ignore this potential problem, for the following reasons. Cuban health care statistics are often released in conjunction with the internationally respected Pan American Health Organization, which has an office in Havana and whose representatives help review national health statistics. These statistics have in turn been used in the reports of international development and lending agencies such as the World Bank. The reporting of economic statistics (such as health expenditures), meanwhile, has been greatly aided by two publications on the Cuban economy, in 1997 and 2000, of the widely respected Economic Commission for Latin America and the Caribbean, an arm of the United Nations.³⁶ The measure of legitimacy accorded by the use of these statistics by international agencies, while by no means ensuring the reliability of the data, does seem to make the assumption of innocent until proven guilty a scholarly defensible one.

A slightly more sophisticated critique, at least of Cuba's infant mortality rate, concerns the high abortion rate on the island, an argument actually frequently raised by opponents of the Castro regime.³⁷ While it is true that Cuba's abortion rate is comparatively high, there is nothing to suggest that abortions in Cuba exclusively or even disproportionately target high-risk pregnancies, which would be necessarily true if the high abortion rate is to explain the low infant mortality rate. Even if it were true that the high abortion rate accounted in part for low infant mortality rate, however, this would not explain the *decrease* in the infant mortality rate during the Special Period. The author is unaware of any evidence that the abortion rate has heightened during the Special Period, which would have to be true in order for the abortion rate to be correlated with the decrease in the infant mortality rate during the time frame in question.

However, there is a third possible objection to the hypothesis that health care spending patterns help explain improved basic health care indicators. If it is true that preventative care and the importance of primary physicians is a low-cost strategy that is correlated with improvements of basic indicators like the infant mortality rate, shouldn't crisis in the external sector, which we have argued has negatively impacted high-tech medicine and hospital care, produce a deleterious impact on other national health statistics?

In fact, morbidity rates from Cuba's leading natural causes of death – such as diseases of the circulatory system and neoplasms – do not appear to have increased over the course of the Special Period. This is not what one might expect, given the difficulties that equipment failures and supply limitations appear to have posed for major surgeries in Cuban hospitals. There is, however, one apparent explanation for this tendency. While the crisis in the external sector has clearly had a damaging effect on health care, as outlined in section two above, one might argue that the crisis has been partially offset by unilateral transfers of equipment and medicine from developed countries – i.e., humanitarian aid.

The value of unilateral transfers of medicine and medical equipment in the 1990's has been impressive. The European Union Humanitarian Organization began relief efforts in Cuba in 1993. By 1995, ECHO was dedicating 15 million ECUs a year to a coordinated food and medicine relief effort. Between 1992 and 1996, total European funding for humanitarian actions (including ECHO and other European Union projects) reached 84.9 million ECUs. Between January 1997 and September 2000, humanitarian aid of European Union member states to Cuba totaled more than 1.1 million Euros.³⁸ Numerous international groups have contributed to the European humanitarian effort, including Medicos Sin Fronteras (Doctors Without Borders), Medicos del Mundo (Doctors of the World), the Red Cross, Cáritas, the Save the Children Fund, and many others.³⁹

In the United States, a range of non-governmental groups and individuals have facilitated the donation of medical products. Among them, Disarm Education Fund's Cuban Medical Project alone has donated \$47 million in medicine and medical equipment, and estimates the value of medical services provided at \$4.7 million between May 1997 and June 1999. This latter category involves procedures performed by U.S. doctors on surgical visits to Cuba as well as education of Cuban colleagues by U.S. lecturers on the island, a type of humanitarian or non-governmental aid which has become more frequent in recent years.⁴⁰ One should note that as with medical sales, the value of actual humanitarian donations from the United States is far lower than the value of approved licenses for donations, reflecting transportation obstacles and other difficulties posed by the U.S. embargo. Nonetheless, the Commerce Department reports approving more than \$3.4 billion dollars in humanitarian donations (which commingle medical products with food and other items) between 1992 and 1999 (See Table VII). Along with non-government groups, direct humanitarian donations by individuals from the United States and Europe have played an important role, as have transfers from multinational medical equipment and pharmaceutical companies.

**Table VII. Value of Licensed U.S. Exports to Cuba*
(US dollars), 1992-1999**

	1992 10/26- 12/31	1993	1994	1995	1996	1997	1998	1999
Humanitarian Donations	\$28.0 million	\$559.8 million	\$517.5 million	\$526.3 million	\$538.6 million	\$340.7 million	\$452.4 million	\$446.5 million
Medical Sales	\$0	\$74,600	49,600	17,200	73,600	22,500	\$19.2 million	\$61.7 million
Telecom	\$0	\$0	\$936,800	\$1.3 million	\$127,100	\$2.2 million	\$0	\$347,000
Weather, Air Traffic Control & Scientific	\$0	\$862,000	\$68,900	\$654,000	\$71,300	\$83,000	\$263,000	\$21,000
News Bureaus and NGO's	\$0	\$0	\$0	\$0	\$0	\$190,000	\$626,000	\$102,000

Sub-Total	\$28.0 million	\$560.7 million	\$518.5 million	\$528.3 million	\$538.9 million	\$343.2 million	\$472.5 million	\$508.9 million
Temporary Plane/Other Exports	\$9.0 million	\$57.5 million	\$105.2 million	\$127.7 million	\$28.1 million	\$11.6 million	\$208.0 million	\$79.6 million
Total	\$37.0 million	\$618.2 million	\$623.7 million	\$656.0 million	\$567.0 million	\$354.8 million	\$680.5 million	\$588.5 million

Source: U.S. Department of Commerce, Bureau of Export Administration. * These figures should be viewed with great caution, because the value of licensed exports represents the value approved for shipment and not the actual value shipped, which may be and often is substantially lower.

But how important is humanitarian aid? Can it really explain the lack of evidence about declining morbidity rates in high-tech health care categories, like heart or cancer surgery, that should be particularly susceptible to weakness in the external sector? It is difficult to say, because data about humanitarian donations from various countries is not centralized, but the numbers are impressive. Compare, for example, the drop in medical imports during the Special Period cited in section one of this paper: total expenditure in foreign exchange for the health care sector fell from US\$227 million in 1989 to US\$56 million in 1993, while imports of medical and pharmaceutical products alone fell from \$55 million in 1990 to \$18 million in 1996. If the figures are correct, this means that a single non-governmental organization, Disarm Education Fund, has facilitated donations of almost as much medical equipment and pharmaceutical products (\$47 million) as Cuba imported in 1990 (\$55 million). And this is a single organization! If we add the aid from the European Community cited above, and assume that even a fraction of U.S.-approved humanitarian donations in fact made it to Cuba, the numbers are even more impressive. It seems clear that whatever the quantity of donations that actually arrived in Cuba, this figure more than offset the reported drop in medical imports during the Special Period. And since these were donations rather than purchases, they did not add to the current account deficit.

Humanitarian donations, of course, are no substitute for well-ordered medical commerce, as Cuban doctors have emphasized to the author. Donations by their nature are often sporadic and inconsistent; indeed, they exacerbate the basic problem of unpredictability in the availability of supplies and equipment parts that has characterized the crisis in the high-tech sector of the health care system. To some extent, Cuba has attempted to procure a consistent supply by keeping priority medications on constant request from humanitarian donors. For the purposes of this paper, the important question is whether, in spite of the aggravations and challenges inconsistent supply has caused to Cuban doctors, and in spite of the ways in which this might have compromised the quality of care (as described in section three above), humanitarian donations might account for the apparent lack of decline in key health indicators related to high-tech hospital care. It may be impossible to make a certain judgment on this matter, but the evidence seems to suggest that this is a strong possibility.

VI. The implications of structural reforms for the health care system

We have argued that understanding Cuban health care outcomes requires an illustration of the impact of patterns of health care spending. Yet we have treated peso-denominated expenditures as if they took place within a closed economy – as if the external sector had no impact on economic and political decisions about how to allocate human capital and other factors within the peso-denominated, command economics of health care. In reality, this is not the case. Since the process of re-linking to the world economy began in earnest in the early 1990's, dollarization of the economy through limited market-oriented reforms has had an implicit and de facto effect on the political economy of health care.

Consider, for example, the increased role of dollars in Cuban household consumption at large.⁴¹ The circulation of U.S. dollars, which were legalized as currency in 1993 and have entered the country through remittances of Cubans living abroad, tourism, foreign direct investment (joint ventures), and other sources, has occurred largely through the informal employment market. Yet as dollars have played a more important role in Cuban consumption, and as prices in private markets and dollar stores have converged more closely with international prices, the dollar economy has effectively devalued the peso-based salaries paid by the state. Unlike many other workers (such as a self-employed mechanic or a porter in a tourist hotel), most doctors have no ready access to dollars, at least through their formal employment.

This has posed a serious incentive problem for medical professionals. The story of one Cuban taxi driver in Santiago de Cuba who provides the bulk of household income for two families, including his wife (a medical doctor), his daughter, and his wife's sister's family of four, is not atypical. Although an extremely successful, in-demand automobile mechanic in the informal economy in Havana could make three or four thousand dollars a month, a prestigious, leading physician totals four or five hundred pesos, or twenty-five dollars. It is perhaps not surprising, then, that anecdotal evidence and interviews in the field suggest that increasing numbers of doctors have left the practice of medicine to seek less skilled, non-medical employment with greater access to hard currency. This internal "brain drain" is paralleled by a rise in external emigration by doctors, according to the government. In 1999, for example, 1,449 professionals, including 244 medical doctors, left the country permanently, many for the United States.⁴² The significant penetration of both dollars and international prices into the economy has also apparently caused young people to rethink careers in medicine, once one of revolutionary Cuba's most prestigious professions. According to several sources, applications to medical have dropped among the young (there was no further empirical evidence of which the author is aware with which this assertion can be evaluated). According to numerous Cuban physicians, it is not that people are seeking riches or foregoing the medical idealism of the Revolution, but rather that basic needs go unmet. It may therefore not be an exaggeration to suggest that these significant disincentives to beginning the pursuit of a career in medicine may pose the most serious long-term threat to health care in Cuba.

Recognizing the significance of the radical decline in the real value of salaries, in 1999 the Cuban government raised salaries by 30 percent in sectors such as health,

education, the police, and the judiciary.⁴³ The state has also begun to experiment with the payment of dollar-denominated bonuses in key export industries, including biotechnology, but this practice does not yet appear to have significantly penetrated the public health sector. Indeed, the overall strategy continues to be the program adopted in 1992 by the Ministry of Public Health, a program that emphasizes preventative care, the family doctor system and Cuba's traditional strength in the "human capital" of its many doctors.⁴⁴ Many Cuban health professionals themselves widely attribute these successes to the famous "human capital" of the country's doctors and to the system's traditional emphasis on preventative care. As one family doctor said, "What doesn't go into the statistics is the backbreaking work of Cuban physicians, under less than ideal conditions."

Indeed, the government has emphasized clinical care and diagnosis and what it calls "political will" – the constant dedication and hard work of its many doctors. What this suggests is that the health care outcome we are trying to explain is more "overdetermined" than we have so far suggested in this paper. In other words, political and ideological factors may be as important as economic ones in shaping the outcome we have described. Indeed, political decisions and resource allocations should not be thought of as separate realms, and particularly so in what is still a strongly command economy. The strength of budgetary support for peso-denominated health expenditures on the family doctor system and primary care suggests a political decision about who would bear the costs of structural adjustment in the economy. The distinction between the peso and dollar economies is a useful concept in terms the health care sector: those elements of the Cuban health care system which are credited with helping to improve basic indicators are also elements which largely represent a peso cost to the government. Yet the economies co-exist as one "political economy." Why, for example, is the education of medical professionals a comparatively low-cost affair in Cuba? As a fiscal matter, the salaries of professors and the costs of medical students represent a peso cost to the state, at a time when imports have fallen and foreign exchange has been at a premium. Yet the marshalling of resources and their allocation to the peso-based health care economy depends not only on command economics but also on political resources. It is obvious that there is an important political element to the economic question of "human capital," one that should not be shortchanged in an analysis of the Cuban system.

The state's ability to allocate human capital effectively, even as the returns to labor in the peso economy diminish and as a greater portion of the typical Cuban's consumption basket is acquired with dollars, may increasingly depend on wider political resources, rather than simply on peso-denominated budgetary support. We have not presented an analysis here of what these wider political resources may be and will leave that for another paper. Suffice it to suggest here that in relying on human capital, hard work and the competence of the country's doctors to produce good health care outcomes, even as material resources are stretched to the breaking point, the state has clearly relied on political and moral incentives as much or more than material incentives. In the end, this reliance may represent something of a Faustian bargain, given the morale-robbing conditions of work in the medical profession today and the real devaluation of salaries in the health care sector. The conclusion will take up the question of sustainable solutions to this dilemma.

V. Conclusion: Prospects for sustainability

Cuba's achievements in health care provision over the last forty-two years are well-known. They include dramatic improvement of some key health indicators, on a par with many developed countries, and the historical construction of a relatively equitable system of access to medical services. Indeed, many analysts have heralded health care, along with education, as central accomplishments of the Cuban Revolution.⁴⁵

On the face of the data, even the profound economic crisis of the early 1990's did not significantly alter this pattern. This paper has so far examined the pattern of health care expenditures in Cuba during the 1990's and found that while imports of medical products have been compromised, budgetary support for peso-denominated spending – i.e., labor costs of medical professionals, operational costs of hospitals and clinics – has remained strong. We have used this evidence to try to explain Cuba's success, in the midst of profound economic crisis, at improving basic health indicators such as the infant mortality rate, by arguing that those programs and strategies which have been widely credited with Cuba's public health success – the family doctor program, emphasis on primary care and prenatal intervention, the expansion of medical education, and the reliance on the “human capital” of resourceful and hardworking Cuban doctors – all reflect peso-denominated health care expenditures. We have suggested that morbidity rates for diseases that should be highly correlated with the external sector – i.e., that require procedures that depend on high-tech, imported equipment – may have been partially compensated for by the strength of humanitarian donations from developed countries during the 1990's. Furthermore, we have initially suggested that these strategies have a strongly political component – that the state's ability to allocate resources to the health care sector, particular the “human capital” of Cuban physicians, has relied on political and even moral incentives which should be the subject of further research.

In the end, this same reliance on political and moral incentives may prove to be the Achilles' heel of Cuban health care if the process of income distribution continues to marginalize medical professionals. We have argued that the process of re-linking to the world economy has significantly skewed material incentives for doctors. Needless to say, if these were the only incentives to which physicians responded, they would all be taxi drivers. Yet there is enough evidence of internal and external brain drain that correcting this incentive problem may be the most pressing of reforms for the health care sector.

How, then, can this problem be corrected? In broadest outline, we would suggest that the future of Cuban health care depends on being able to transfer foreign exchange earnings from tourism and other new sources of hard currency to the health care expenditures. The role of health tourism, whereby foreigners pay hard currency for generally low-cost but high-quality treatment by Cuban physicians, is one promising example of the transfer of foreign exchange earnings to public health care. Foreigners are currently treated for a range of disorders in Cuban hospitals, including Cuban-developed or Cuban-refined treatments for retinitis pigmentosa (a condition which inhibits vision), vitiligo (depigmentation of the skin and other areas), psoriasis (a skin disorder), neurological disorders, and a range of oncological, cardiac and other surgeries. By 1998, according to the Economic Commission for Latin America and the Caribbean,

the Cuban health sector had risen to occupy around two percent of total tourism.⁴⁶ Some of these revenues are in turn transferred to health care for ordinary Cubans, although the size and importance of these transfers is both unknown and controversial.⁴⁷ At one nationally prominent hospital/research institute, hard currency payments by foreigners have financed the construction of a new bathroom in the splenic surgery wing; anecdotal evidence suggests that this pattern is common in Cuban hospitals.

Another source of hard currency transfers could be sales of Cuban-developed pharmaceuticals and vaccines, for example the Cuban vaccine for type-B meningitis.⁴⁸ A joint venture has recently taken up the problem of developing and marketing this vaccine abroad. Although by 1994 external sales of medicines had already reached 6% of exports, the export of biotechnology products has generally not performed as well as planned in Health Ministry directives early in the Special Period.⁴⁹

These measures, in combination with the humanitarian aid discussed in section three of this paper, may have already succeeded to some measure in softening the impact of the weakened external sector on public health care in Cuba. But more is needed. The economy has staged an impressive recovery of late, due in large part to the growth of tourism.⁵⁰ The future well-being of the health care system may well now depend on increased transfers from this sector and perhaps on a spate of new reforms aimed at addressing the significant incentive problems of the dual monetary economy.

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¹ President Fidel Castro proposed the term “Special Period during Peacetime” to describe Cuba’s challenges after the fall of the Soviet Union.

² Like many Cubans, some doctors may gain access to dollars from remittances of family members abroad, which has been estimated to reach \$1 billion dollars this year (conversation with a Cuban economist). It should be noted that many Cubans who gain access to dollars through their employment do so unofficially or semi-officially, through tips, dollar pay-offs from foreign joint ventures and the like. But dollars now circulate in Cuba to such an extent that many of the self-employed – or those moonlighting with small-scale entrepreneurial enterprises – also earn dollars.

³ The evidence for price convergence is largely anecdotal. There has, however, been some economic research on the matter. See for example Claes Brundenius and John Weeks, eds., Globalization and Third World Socialism: Cuba and Vietnam. New York, NY: Palgrave, 2001.

⁴ This observation was frequently made to the author by Cuban doctors, and anecdotal evidence suggests a decrease in applications to medical school.

⁵ There have been numerous studies and articles on the impact of the U.S. embargo on health and nutrition in Cuba. See, for example, “Denial of Food and Medicine: The Impact of the U.S. Embargo on Health & Nutrition in Cuba,” a report from the American Association for World Health, March 1997 (an executive summary of the report is available at www.disarm.org); Dr. Anthony Kirkpatrick, “Role of the USA in shortage of food and medicine in Cuba,” *Lancet*, 30 November 1996, Vol. 348: p. 1489-1491; “President Fidel Castro’s Cuban Health Care System,” *Lancet*, 1 April 2000; Vol. 355, No. 9210: pp. 1191-1196, “US Commits Child Abuse In Cuba,” *Tampa Tribune*, August 26, 2000; Dr. Michèle Barry, “Effect of the U.S. Embargo and Economic Decline on Health in Cuba,” *Annals of Internal Medicine*, 18 January 2000, Vol. 132: p. 151-154; Macdonald, Theodore, A Developmental Analysis of Cuba’s Health Care System since 1959, Lewiston, NY: The Edwin Millen Press, 1999.

⁶ *Ibid.*

⁷ See footnote 5. While we take some issue with the causes to which many of attribute the shortages, as noted elsewhere in this paper, as a group the studies nonetheless provide an extensive survey of shortages of medical products themselves. Particularly helpful in this regard is the AAWH report.

⁸ As evidence, some doctors have offered the fact that the neuropathy epidemic worsened during prolonged electricity blackouts in 1993 when refrigerated meat often spoiled. Indeed, some doctors offer the fact that even the country’s nouveau riche, those with ready access to dollars, were treated for neuropathy as evidence that nutritional deficiencies may not have been the only cause of the epidemic. The neuropathy epidemic, which put at gravest risk those between the ages of 45 and 64 years, was originally diagnosed as a toxic nutritional deficiency, but over time the nutritional element has come to receive more emphasis in official explanations.

⁹ AAWH report, *op. cit.*

¹⁰ AAWH report, *op. cit.*, p. 113.

¹¹ *Ibid.*

¹² *Ibid.*, p. 184.

¹³ Laboratorios Gautier-Bagó (Havana), Practiguía 1999.

¹⁴ AAWH report, p. 113.

¹⁵ Comisión Económica Para América Latina y El Caribe (CEPAL), *La Economía Cubana: Reformas estructurales y desempeño en los noventa*. Mexico City: Asdi, Segunda Edición, 2000.

¹⁶ Anuario Estadístico de Cuba, 1996. Figures have been rounded to whole numbers throughout this paper.

¹⁷ Alejandro Aguilar, head of the external section of the National Institute for Economic Investigation of Cuba’s Ministry of Economy and Planning, quoted in Granma.

¹⁸ Comisión Económica Para América Latina y El Caribe (CEPAL), *La Economía Cubana: Reformas estructurales y desempeño en los noventa*. Mexico City: Asdi, Segunda Edición, 2000.

¹⁹ David Sabsford and V.N. Balasubramanyam, "The Long-Run Behavior of the Relative Price of Primary Commodities," *World Development* 22, no.11, 1994. The notion that the value of primary commodities declines over time with respect to manufactured goods was originally argued separately by both Raul Prebisch and Hans Singer.

²⁰ Cuba has two exchange rates, an official rate used in joint ventures and other calculations (one peso=one dollar) and an unofficial or extraofficial rate, which is now available at local exchange houses around the island). In 1993, when holding of the dollar was legalized, the unofficial rate was 78 pesos to the dollar; in 1994 it was 95:1; in 1996, 32.1 peso to the dollar; while since 1997 it has stabilized, hovering around twenty pesos to the dollar. See CEPAL, *op. cit.*

²¹ Enrique Comendeiro Hernández, Ministry of Public Health (MINSAP), in "European Union Humanitarian Aid to the Cuban People," European Community Humanitarian Organization (ECHO), 1997.

²² Anuario Estadístico de Cuba, 1996. See "Measures Not Taken – A Future Full of Problems," remarks delivered by Gary H. Maybarduk Ph.D. at the Cuba Transition Workshop, former Economic and Political Section Chief of the U.S. Interests Section, Washington D.C., March 25, 1999.

²³ CUBANALYSIS #8, "Cuba's Other Drug Problem," based on World Bank Anuario Estadístico de Cuba 1996. CUBANALYSIS is an international e-mail list providing data on Cuba.

²⁴ "Ayuda humanitaria de la Unión Europea a la población cubana," European Community Humanitarian Office (ECHO). Comitato Internazionale per lo Sviluppo Dei Popoli, 1997.

²⁵ Espicom Business Intelligence, Medistat, "Cuba Country Profile," February 2000.

²⁶ The U.S. State Department has said that "The health care available to the average Cuban has deteriorated because the Cuban Government has directed its increasingly scarce resources elsewhere." See the Fact Sheet entitled "The U.S. Embargo and Health Care in Cuba: Myth Versus Reality," released by the Bureau of Inter-American Affairs, U.S. Department of State, August 4, 1997.

²⁷ See CEPAL, *op. cit.*, Chart A-15, on the decline in defense spending. For an analysis of changing foreign policy and defense objectives and their impact on defense spending, see Hal Klepak, "Cuba's Foreign and Defence Policies in the 'Special Period.'" Policy Paper published by the Canadian Foundation for the Americas (FOCAL), February 25, 2000. See www.focal.ca.

²⁸ See endnote 13.

²⁹ PAHO, Basic Country Health Profiles, 1999

³⁰ World Health Report 2000, WHO, Geneva, Switzerland, 2000. See also Phillip Caper, "Letter from Cuba" (forthcoming in a health policy journal).

³¹ World Health Report 2000, WHO, Geneva, Switzerland, November, 2000

³² James Wolfensohn, cited in Jim Lobe, "Learn from Cuba, Says World Bank," Inter Press Service Finance, April 30, 2001.

³³ Based on briefings at the Ministry of Public Health in Havana, Cuba May 2-5, 2001

³⁴ Cuban Ministry of Economy and Planning, Havana, May 3, 2001. Thanks also to Dr. Phillip Caper of the School of Public Health, Harvard University, for sharing his paper (pending publication) on the Cuban health care system.

³⁵ According to a number of public health experts, the assumption that primary care interventions are directly correlated with a decrease in the infant mortality rate and an improvement of other basic indicators is almost incontrovertible. However, this is nonetheless a central assumption of this paper, which is not public health scholarship so much as a description of the political economy, or the interaction of the politics and the economics, of public health in Cuba.

³⁶ CEPAL, *op. cit.*

³⁷ This argument was put forward by Dennis Hays, Vice President of the Cuban American National Foundation, at a briefing given to a group of Americans traveling to Cuba, December 2000.

³⁸ European Community Humanitarian Office statistics based on reports of member countries. See www.europa.eu. This figure includes not just medical aide but also food and infrastructure aid.

³⁹ "European Union Humanitarian Aid to the Cuban People," European Community Humanitarian Office (ECHO), 1997.

⁴⁰ See website for the Disarm Education Fund's Cuban Medical Project, www.disarm.org.

⁴¹ For an excellent summary of the household budget of Cuban families, and the relationship to dollarization, see Mona Rosendahl, "Household Economy and Morality during the Special Period," in

Brundenius and Weeks, eds., Globalization and Third World Socialism: Cuba and Vietnam. New York, NY: Palgrave, 2001.

⁴² Instructive Round Table of the Revolution, “The Cynical Migration Policy of the United States.” Televised in Havana on August 30, 2000.

⁴³ CEPAL, *op. cit.*

⁴⁴ This strategy also included a limitation on hospital stays, development of the national pharmaceutical and traditional, natural medicine industries, and emphasis on research institutes, in recognition of the role of basic science in producing exportable scientific products.

⁴⁵ For a less generous view of the accomplishments of the Revolution in comparison with the pre-Revolutionary period, see “Zenith and Eclipse: a Comparative Look at Socio-economic Conditions in Pre-Castro and Present Day Cuba,” released by the Bureau of Inter-American Affairs, U.S. Department of State, on January 12, 1998. This report notes that although Cuba’s infant mortality rate is the best in Latin America today, and 24th lowest in the world, it also was the best in Latin America – and 13th lowest in the world – in 1957. While this indicator has improved, argues this source, it has declined with respect to the rest of the world, and in any case inherited a low infant mortality rate from the pre-Revolutionary period. However, other indicators show wide improvement, and particularly demonstrate the Revolution’s success in spreading free medical services throughout the population, bringing particular improvement to rural regions. Cuba’s infant mortality rate in 1957 was 32 deaths per 1,000 live births. Moreover, this argument must account for the continuing decline in the infant mortality rate over the last decade, during a time of economic crisis.

⁴⁶ CEPAL, *op. cit.*

⁴⁷ In a fact sheet released August 5, 1997, the U.S. Department of State claimed that “the Cuban government has chosen to develop a two-tiered medical system – the deliberate establishment of a kind of ‘medical apartheid’ – that funnels money into services for a privileged few, while depriving the healthcare system used by the vast majority of Cubans of adequate funding.” U.S. Department of State: Fact Sheet, August 5, 1997, reproduced in “Health and Nutrition in Cuba: Effects of the U.S. Embargo,” Olof Palme International Center, 1998.

⁴⁸ For an interesting treatment of the development of Cuban science during the Revolution, see Ernesto Mario Bravo, Development within Underdevelopment? New Trends in Cuban Medicine, Havana: Editorial José Martí, 1998.

⁴⁹ See CEPAL, *op. cit.*

⁵⁰ In 1994, change to Gross Domestic Product was positive but nearly flat, while the Cuban economy grew 2.5% in 1995, 7.6% in 1996, 2.5% in 1997, and 1.3% in 1998 (measured at constant 1981 prices). CEPAL, *op. cit.*