“... SAPs have not only affected the health sector; they have fuelled inflation. Prices of commodities have gone up at a time when salary increases have remained stagnant. Cutbacks in government expenditure have squeezed salaries and the high cost of living has reduced real earnings of health workers. The monthly wages offered to health personnel do not correspond to the monthly household cost of living. This has bred corruption in the medical sector. Drugs are sold illegally while prescriptions and medical attention are mostly available to those who can pay or have influence. Kickbacks have become the medium of exchange for medical attention.”. Lugalla J [1995]

Health system financing has been the area where serious concerns have been voiced by the anti-adjustment activists. It has been claimed that under structural adjustment programs developing countries were forced to cut-back their spending on health and other welfare services. The budgetary contraction is believed to have caused serious deterioration in the levels of health system performance, including the aspects of accessibility, utilization and quality of care. The poor are asserted to have been particularly hit be the structural adjustment effects on health care financing.

The current chapter examines these claims by comparing three aspects of health system financing among adjusting and non-adjusting countries. The first aspect is the levels of financial and economic resources devoted to the health system. Indicators used to examine this component include 1) the total expenditure on health as percent of the gross national product, 2) the per capita total spending on health in international dollars, 3) the public spending on health as percent of the
total spending on health, 4) the out-of-pocket expenditure as percent of the total expenditure on health and the per capita out-of-pocket expenditure on health in international dollars.

The second aspect of health system financing examined in this chapter is the trends of changes in health system financing in adjusting and non-adjusting countries. Indicators used to examine this component include 1) the change in total health expenditure as percent of gross national product between 1985 and 1998, 2) the change in per capita total expenditure on health in international dollars between 1985 and 1998, 3) the change in public expenditure as % of the total expenditure on health between 1985 and 1998, 4) the change in out-of-pocket expenditure as % of the total expenditure on health between 1985 and 1998, and 5) the change in per capita out-of-pocket expenditure on health between 1985 and 1998.

The third aspect is the level of governmental commitment to health care financing. For that purpose the military expenditure was taken as an background variable. Indicators used to examine this aspect included 1) the total military expenditure as percent of gross national product in 1998, 2) the change in total military expenditure as percent of gross national product between 1985 and 1998, 3) the per capita total military expenditure in 1998, 4) the change in the per capita total military expenditure between 1985 and 1998, 5) the military expenditure as percent of combined health and education expenditure in 1995, and 6) the change in the military expenditure as percent of combined health and education expenditure between 1960 and 1995.

Furthermore, the association between the indicators of these three aspects with the duration with structural adjustment implementation was examined. Non-adjusting countries were given a duration of 0 and included in the analysis to improve the comparability of the results.

The analysis included a total of 90 developing countries, 63 were adjusting countries and 27 were non-adjusting countries. The countries included 38 adjusting and 11 non-adjusting countries of the low income category, 18 adjusting and 7 non-adjusting countries of the lower middle income category, and 7 adjusting and 9 non-adjusting countries of the upper middle income category. Countries belonged to four geographic regions. There were 29 adjusting countries and 10 non-adjusting countries from sub-Saharan Africa, 6 adjusting countries and 8 non-adjusting countries from the Middle East and North Africa, 17 adjusting countries and 4 non-adjusting countries from the Latin and Middle American region, and 11 adjusting countries and 5 non-adjusting countries from the Asia and Pacific region.
Review of literature

Reforming the public health finance under structural adjustment aims at reducing the budget deficit through reducing expenditure and increasing revenues. Details of these reforms are given in chapter 1. Almost all adjusting countries have made significant cuts in each category of expenditure, especially in subsidies and social benefits. Cuts in health budget have caused great anxiety about the impact such cuts might have on the quality and the provision of health care.

The “Adjustment with a human face” voiced serious concerns about the fall in the expenditure per capita on health witness in a large number of countries in Africa and Latin America in the early 1980s. Furthermore, it critically refuted a previous analysis which indicated that the share of the social sector from the governmental budget had not declined and in many instances increased under adjustment expenditure cuts. The critique was based on the notion that the focusing on the shares in of the social sector expenditure in total government expenditure rather than on the real levels of expenditure per capita is misleading and tends to mask this negative impact.

However, the budgetary contraction were indicated to be more concerning in Latin America and Asia. The experience in Sub-Saharan Africa has been subject to less scrutiny.

With the economic crisis and the introduction of structural adjustment, few countries in Latin America maintained or even increased public health spending. These include Bahamas, Haiti, Nicaragua, Panama and Trinidad and Tobago. All remaining countries of Latin America and the Caribbean showed a decline in real spending on health per person in comparison with 1980-81. This decline was about 20 percent in Colombia, Honduras, Jamaica and Uruguay; near 25 percent in Barbados, Chile, Ecuador and Dominican Republic. This pattern of budgetary contraction was found in three other studies by the Pan-American Health Organization.

The impact of structural adjustment on health expenditure is indeed difficult to assess because until the 1980s, health expenditure in developing countries had seldom received attention in research. Before the 1980s, few studies were carried out to explore and compare health expenditure. The history remembers Abel-Smith as the first to carry out (two) comparative studies of national health expenditure in the 1960s. He provided estimated for health expenditure in Sri Lanka and Chile in the first study and in 14 countries from four WHO regions. Throughout the 1970s, the WHO had taken the lead in establishing a standard methodology for accounting and comparing health expenditure in its member states.
STRUCTURAL ADJUSTMENT AND HEALTH

It was the economic crisis in the 1980s that stimulated research of health expenditure in developing countries. This occurred because 1) reforming public expenditure including health was an integral part of the adjustment programs; 2) the World Bank and other international organizations commissioned consultants to estimate health expenditure patterns before sponsoring any project; and 3) increased concerns had been raised about the negative impact of contracting health expenditure during adjustment.

Since the 1980s, the World Bank has been the leading international organization in providing data about health expenditure and in providing assistance to improve the quality of these data. The World Bank provided the first review of health expenditure in low income countries in its report Financing Health Services in Developing Countries: An Agenda for reform” in 1987 and followed this with the first comprehensive global review of health expenditure in its 1993’s World Development Report “Investing in Health”. The report was supplemented by key background papers.

The first report to provide an account on health expenditure worldwide was developed by Murray et al., who analyzed levels, patterns and determinants of national health expenditure in every country of the world for 1990. Data were collected on government, parastatal and private health expenditure directly from governments, supplemented with reports and data from the WHO, the World Bank, the International Labor Organization, regional development banks, and the United Nations Statistics Division as well as the published literature. For countries whose data were not available, multiple regression equations were used to predict the overall health expenditure and the share of the public and private sub-sectors.

The study revealed that the world as a whole was estimated to have spent US$ 1.7 trillion on health in 1990, which constituted 8% of the global GDP. The
Established Market Economies (EME) accounted for over 87% of the total. This figure mounted to 90% when the Formerly Socialist Economies (FSE) were included in this category. Spending on health in the United States alone was estimated to be 41% of the global health expenditure, while spending in all developing countries was only 10% or US$ 167 billion. This figure included external assistance.

The share of developing countries in global health expenditure increased to 20% when expenditure was corrected by purchasing power parity (PPP). The share of EME and FSE slightly decreased to 80%, with the US alone spending 37%. External assistance to the health sector was estimated to be 0.7% of the total health expenditure in developing countries measured in international dollars, as opposed to 1.7% in US$.

Breaking down expenditure by sector revealed that approximately 60% of the global health spending was from the public sector (inclusive of external assistance), while private sector financing constituted the other 40%. These figures did not change significantly after adjusting for PPP. The public share was shown to be lower in developing than developed countries when external assistance was excluded from the calculations. For example, the share of the public sector was estimated to be 44% only in Sub-Saharan Africa and 20% in India. Interesting was the finding that the public share of health financing rose with income, reflecting high levels of spending on social insurance and public health programs by governments in richer countries and much reliance on out-of-pocket purchases in poor countries.

The study revealed also that the total expenditure as a share of GDP was in general higher in the EME region (9%) than in developing countries and that among the developing countries the share of GDP spent on health was remarkably similar, ranging from 3.5% to 4.5% in US$ and from 3.5% to 3.9% in PPP terms. This similarity was attributed to the effect of external assistance to health sector. When external assistance was subtracted from the total, the shares were more varied and
more correlated with income: poorer countries spend a smaller share of GDP out of their resources. Sub-Saharan Africa was shown to spend the lowest share of GDP on health, and for many countries in this region aid exceeded half of the total health expenditures. This was true for Burkina Faso, Guinea-Bissau, Liberia and Mozambique.

Finally, per capita spending on health was shown to vary greatly among regions. This was estimated to be 1859 US$ in EME, 144 US$ in FSE, 103 US$ in Latin America, 97 US$ in the Middle East Crescent, 61 US$ in Asia, 23 US$ in Sub-Saharan Africa, 21 US$ in China, and only 11 US$ in India. Adjusting these figure by PPP the gap among region became narrower. The PPP adjusted per capita spending was 1793 I$ in EME, 241 I$ in FSE, 181 I$ in Latin America, 167 I$ in the Middle Eastern Crescent, 111 I$ in Asia, and 50 I$ in Sub-Saharan Africa.

However, these figures should be handled cautiously since the resources available for compiling these estimates were limited. A review of these figures found that only 42 non-OECD countries for which there were reasonably reliable estimates of private health expenditure. Of these, revised estimates for 36 countries differed from those mentioned previously.

Whether structural adjustment has resulted in health budgetary contraction was a subject of research by the World Bank. Trends and levels of real per capita public spending on health and private consumption were compared among four groups of countries. These groups were 1) early adjustment lending countries (EAL), 2) other adjustment lending countries (OAL), 3) non-adjustment lending countries whose economies were growing during the period 1985 – 1990 (NAL+), and 4) an non-adjustment lending countries whose economies did not grow (NAL-).

EAL countries included countries that received at least two structural adjustment loans or three or more adjustment operations effective by June 1990. Countries included in this group were Argentina, Bangladesh, Bolivia, Brazil, Burundi, Central African Republic, Chile, Colombia, Costa Rica, Cote d’Ivoire, the Gambia, Ghana, Guinea, Guinea-Bissau, Indonesia, Jamaica, Kenya, Korea, Madagascar, Malawi, Mauritius, Mexico, Morocco, Mozambique, Nepal, Nigeria, Pakistan, Philippines, Senegal, Tanzania, Thailand, Togo, Tunisia, Turkey, Uganda, Uruguay and Zambia.
OAL adjustment lending countries were the countries that had at least one adjustment operation effective by June 1990. They included Algeria, Benin, Burkina Faso, Cameroon, Chad, China, Congo, Dominica, Ecuador, Gabon, Guyana, Honduras, Hungary, Jordan, Lao, Mali, Mauritania, Niger, Panama, Senegal, Somalia, Sri Lanka, Sudan, Trinidad and Tobago, Venezuela, Zaire and Zimbabwe.

NAL+ countries were countries that had received no adjustment operations as of June of 1990 and that had positive real per capita growth during the 1985-90 period. They included Botswana, Bulgaria, Dominican Republic, Egypt, El Salvador, Ethiopia, Guatemala, Greece, India, Lesotho, Malaysia, Mongolia, Paraguay, Portugal and Vietnam.

NAL- countries included countries that had received no adjustment operations as of June 1990 and that had negative real per capita growth during the 1985-1990 period. These were Albania, Comoros, Haiti, Iran, Liberia, Myanmar, Namibia, Nicaragua, Oman, Papua New Guinea, Peru, Rwanda, Romania, Saudi Arabia, South Africa and Syria.

Figure 113. Health expenditure indicators and adjusting lending
The study revealed that real per capita spending during the early 1980s was much higher, in all groups, than in the seventies. It continued to grow for adjusting countries, albeit slowly, during the 1985-1988 period, but declined in the NAL countries. Statistical comparison of per capita expenditure on health among the four groups indicated no significant differences. It was contested that the favorable growth performance, a smaller reduction than expected in the overall government budget, and the relative protection of the health sector, especially during the late 1980s and early 1990s, all combined in adjusting countries to maintain and even increase real per capita public spending on health care. Furthermore, the study reported a significant growth in real per capita health spending in the period 1989 – 1993.

With respect to private spending on health, the study revealed that trends in private real per capita consumption had gone up in EAL countries and down in NAL-countries. However, the figures for NAL+ and OAL countries were confusing. The per capita private consumption in NAL+ countries increased in parallel to EAL countries and declined in OAL countries in parallel to NAL- countries. It was argued that some middle-income countries (Algeria, Cameroon, Gabon) in the OAL group had done particularly poorly and therefore affected the average of the group. From these results it was contended that adjustment policies did not affect private income and therefore did not affect access to private health care.

The importance of this study stems from the fact that it is the only study of health expenditure in adjusting and non-adjusting countries. However, several methodological problems can affect the conclusion it drew. First, the classifications of countries into these groups was arbitrarily to a large extent. Second, comparisons were done among the averages of the four groups, which included countries with different historical, political and economic backgrounds. Such an approach masks intra-group variability, which is in some cases too big to ignore. Third, analysis of private expenditure was based on trends of overall private consumption data, which do not necessarily reflect private spending on health.

Analysis of the impact of structural adjustment policies on health spending can also be found in literature, which monitored global or regional trends of health expenditure.
A recent study analyzed the change in health expenditures between 1990 and 1995, the five-year period following data analyzed by Murray et al. in 1990. The study examined the change in four basic indicators in 44 low income countries. These indicators were 1) total national health expenditure as a percentage of GDP, 2) government health expenditure as a percentage of GDP, 3) private health expenditure as a percentage of GDP and 4) total health expenditure per capita.

With respect to total national health expenditure as a percentage of GDP, the study reported a substantial decrease across the period in both the unweighted average, falling from 4.9 per cent to 3.7 per cent, and the population-weighted average which fell from 3.9 per cent to 3.0 per cent. Ten of the countries in the sample reported a decline, and six an increase in total health expenditure as a percentage of GDP.

Relating the national spending on health to the growth in national income revealed interesting results. These low income countries reported an average growth of 2.1
per cent per annum over the period, which was described as surprising given the reported fall in total health expenditure as percentage of GDP for the group. In discordance with previous reports which suggested that when countries grow richer, the share of public finances increases, the study revealed that out of the ten countries reporting a decrease in the percentage of GDP devoted to health, were actually recorded economic growth. For example, Bangladesh experienced an increase in GDP of 25 per cent over the period, but health spending fell by almost one percentage point as a proportion of national income. Two explanations of this discordance were proposed. First, the economic growth might need longer time than the period covered in the study to affect health spending. Second, limitations of the analysis might fail to reflect this relation.

With respect to government health expenditure as a percentage of GDP, a decline in both unweighted and population-weighted averages was reported in 23 out of the 32 countries for which data were available. Whether structural adjustment or the lack of economic growth was the main constraints to increases in tax-based financing was beyond the scope of the study. However, what is of significance here is the reversal of the relationship typically observed between national income and government expenditure.

Data on private health spending as a percentage of GDP were available for only 14 countries, much of which was based on estimates using household surveys and officially reported information on cost recovery. An increase in private expenditure as a percentage of GDP was reported in half these countries, with the unweighted average rising from 1.7 per cent to 2.2 per cent. The population-weighted average was revealed to rise only slightly from 1.8 per cent to 1.9 per cent.

In terms of wider economic change, of the seven countries in which private spending rose as a percentage of GDP, three experienced significant economic growth. At the same time, however, five of the seven reported a corresponding fall in government expenditure as a percentage of GDP. In the other two countries, Uganda saw slightly negative economic growth over the period, whilst Mauritania saw growth of 7 per cent. Not only has private health spending increased in many countries at a faster rate than public spending, but also at a faster rate than the economy as a whole. Again these findings are not entirely surprising given that one of the primary objectives of economic reform programmes over the past decade, has been to control public expenditures more tightly. The belief expressed in key donor documents (Akin, 1987) and amongst government officials that entirely free health care at the point of service is unaffordable, and in fact wasteful, has led in many countries to reductions in levels of government health spending and greater emphasis on private financing.
However, the study raised concerns over the observation that private health spending appeared to be substituting for public health spending, even in those countries experiencing economic growth.

Data about total health expenditure per capita were compared among 16 countries. The study found out that the unweighted average fell by just over US$ 2 over the 5 years to US$ 13.3, with the population-weighted average falling by US$ 1 to US$ 8.7. Seven of these 16 countries reported an increase in total per capita health spending, with nine countries reporting a decrease. Each of the seven countries
reporting an increase also experienced a rise in private health spending per capita, with interestingly, four countries reporting a fall in public health spending per capita.

Of the nine countries showing a fall in per capita health spending, eight were indicated to experience a drop in public spending. Of the three countries that saw a growth in per capita GDP, two saw a fall in total health spending per capita. It is expected that per capita spending will fall when there is high population growth coupled with low economic growth. Out of nine countries showing a fall in per capita income however, four saw total per capita health spending increase, in each case due to a significant shift away from reliance on public health expenditures.

Interestingly, correlations were calculated between changes in national income and three indicators of health financing: total, public and private per capita health spending. For national income the average annual percentage change in per capita GDP across the five years was calculated. The percentage change in per capita health spending in 1995, compared with 1990, was then calculated. The correlations showed positive associations for each of the three health expenditure indicators against per capita annual growth in GDP, but the results were not significant. The lack of countries with available data in order to calculate correlations was suggested to be one reason for the lack of significance.

Noteworthy, the
study reported a stronger positive correlation private spending and economic growth, with a slightly weaker association with public per capita spending.

Several studies evaluated the trends of health expenditure at a regional level. Such studies provides a useful source to identify patterns of financial reforms under structural adjustment.

A recent review of health expenditure in Latin America in the 1980s revealed that health spending as a share of GDP was 6.2% with the private sector accounting for exactly half that proportion. Total health expenditure as a share of GDP ranged from 9.6% in Guyana and 9.7 percent in Argentina, to 3.7 percent in Ecuador and 3.1 in Peru. There was also a variation in the public/private mix. The public sector accounted for 81.7% of total health expenditure in Costa Rica, while it accounted for only 25 percent in Paraguay. Meanwhile, the private sector accounted for 8.8 percent in of total health expenditure in Guyana, but 70.7 percent in neighboring Surinam. Furthermore, it was revealed that countries with lower per capita incomes such as Haiti, Bolivia and Guatemala had considerably higher proportion of private expenditures. The only exception were countries where aid flows accounted for a significant proportion of total health expenditures such as Guyana, or socialist economies such as Nicaragua.

External aid was shown to play a very small role in total health financing in the region, accounting for just less than 1 percent of the total health expenditure. There was, however, a considerable variation in foreign aid dependence among the countries of Latin America and the Caribbean. While aid accounted for 47.5% of all health expenditure in poorer countries such as Guyana, in the richer Caribbean islands of Bahamas and Barbados little or no health expenditure came from external aid.

Per capita total health spending in 1990 the region was about US$ 162 (280 I$), with a considerable variation among countries. The range was from over US$ 600 in the Bahamas and the Cayman Islands, to less than US$50 in countries like Bolivia, Ecuador, Guatemala, and Haiti. The same pattern that richer countries had very high levels of per capita expenditure on health remained even after adjusting figures for purchasing power.

Analysis of time trends revealed five discernable patterns of health expenditure during the period 1980-90. They were indicated to be a rising, falling, or constant trend; or a pattern of spending where expenditures grew, initially, followed by a drop, or vice versa. Peru, Paraguay and Venezuela were noted to have experienced steady declines in health expenditures as a proportion of GDP. Ecuador, Jamaica and Mexico had consistently increasing expenditures. Finally, countries such as El Salvador and St. Vincent had had a relatively constant level of expenditure over the 1980s. Another pattern of was observed in Argentina, the Dominican Republic and
Uruguay, where expenditure as a proportion of the GDP declined initially before climbing back by 1990. Other countries such as Barbados, Belize, and Trinidad experienced declines in health expenditures by 1990, following a rise in the 1980s.

It was concluded from the analysis that all Caribbean countries, with two minor exceptions, experienced no major declines in health expenditure as a proportion of GDP. The opposite was true for Latin American countries, which with the exception of Nicaragua and Panama experienced declines in health expenditures. The political orientation of the government was suggested to be the determinant of health budgetary contraction.

In sharp contrast to Latin America, the process of structural adjustment in Africa has little effect on the total health expenditure. A recent review revealed the following peculiarities in the African adjustment experience. First, total expenditures (and lending minus repayments) as a percentage of GDP showed no discernable trend in the 1980s, after a rather sharp rise from 23.7% in 1977 to 28.9% in 1980. Government’s share of GDP did, however, fluctuate between 28 and 30% during the 1980s, with some tentative signs of an upturn toward the end of the decade. It was indicated, however, that the maintenance in the size of the state was due, in part, to the enormous increase in the quantity of World Bank adjustment (i.e., policy-based) lending, which increased from $135 million in 1980 to $1545 million in 1989. Thus, the international financial institutions played a critical role in supporting and perpetuating a large state sector in the economy.

With respect to intersectoral allocation of health expenditures, the review suggested no general pattern of decline in real expenditures on health and education, those social services which are likely to have the most direct impact on human resources. When these data were examined by country, no general pattern of change was witnessed in terms of the share of government spending in the wake of the beginning of adjustment. However, the study revealed considerable variation from one country to the next. For example, while Ghana’s real expenditure on health, and expenditures on health as a share of total expenditures increased dramatically after adjustment, neighboring Togo witnessed a decline, albeit a much lower magnitude. Similarly, health expenditures as a share of total discretionary expenditures fell markedly in Uganda, although, real expenditures actually increased, reflecting the growth in the overall budget. Finally, data from the low index numbers for countries such as Madagascar for health, both before and after adjustment, showed that real government spending fell dramatically during the crisis that preceded the beginning of the formal adjustment program sponsored by the international financial institutions.

Nonetheless, while not being able to resolve the accounting and definitional problems, our review of existing data paint a picture that despite the assertions of
For example, in Burundi there is a disproportionate share of the budget that has been allocated to hospitals. This has resulted in inadequate health care staffing at the primary levels. In Chad, health centers and preventive medical care each received only 19% of the recurrent budget, while twice that amount went to hospitals, with an additional 23% destined for management. Similarly, in Comoros, hospital services alone received 34% of current expenditures in the early 1980s. Capital expenditures, too, have been concentrated in the hospital sector, where for the most part they have been squandered owing to the lack of corresponding staff, equipment and supplies to make them functional. Even in Angola, during the period it was under the tutelage of Cuba and the Soviet Union, there was a marked skewing of current expenditures and investment toward hospital services, primarily in Luanda, and to a lesser extent in other urban areas.

Cote d'Ivoire had a public health system with a strong curative care bias. Almost 54% of total recurrent expenditures and 61% of development expenditures were allocated to the tertiary level in 1990, compared to only 35 and 22% to recurrent and development expenditures, respectively, being allocated to the primary level. This contributed to a variety of problems, including technical inefficiencies such as the channeling of demand towards the highest level of the health infrastructure. The excessive number of patients seen at hospitals, often by physicians instead of more appropriate paramedics, contributed to these inefficiencies. Furthermore, the fiscal costs of such misallocation was shouldered almost entirely by the government, as less than 6% of the expenses of the tertiary level were recovered through fees paid by patients.

Likewise, in Madagascar during 1991, 42.7% of recurrent expenditures were spent on secondary and tertiary health services, with an additional 39.0% spent on administration and other services. This left only 18.3% of the budget designated for primary care. Zimbabwe too had a health system that is top-heavy and urban-oriented, with curative services comprising a disproportionate amount of the budget. In 1987/88, only 12.0% of the budget was allocated to preventive services with only 6.4% of the salaries allocated for preventive care. Another statistic that was perhaps more revealing was that out of the total health budget, around one-half was for tertiary care hospitals, and 30% for secondary level hospitals in the districts and mission hospitals. Only one-fifth of the total was for primary health care clinics in rural and urban areas, combined. In Nigeria there was also too little attention accorded to preventive care, accounting for only one-fifth of total spending in 1985. This fact, coupled with inadequate emphasis on primary health care, institutional fragmentation and duplication, inadequate manpower planning, and poor cooperation between private and public sectors contributed to the ineffectiveness of the health care system.
A rare example of the allocation of resources within the health sector being consistent with stated policy of according priority to primary and preventive health care was observed in Mozambique. Only one-third of the recurrent budget was allocated to the central hospital. Despite the truly good intentions and follow-through of the Ministry to use resources in an equitable manner, however, the severe budgetary constraints of the state nonetheless has squeezed the operating budget, heightening the importance of improving efficiency through training and improved management. In addition, cost recovery to expand the resource base was also of importance to address the shortage of budget resources.

Experiences from several countries also indicate that like for education, donor finance has sometimes exacerbated distortions. For example, in Burundi, 80% of the government recurrent budget was for hospitals. There were similar distortions in the investment budget financed by donors. In particular, between 1983 and 1987, the investment programs allocated 70% to the hospital sub-sector (half of which was for one hospital). Of this investment budget, 70% was covered by foreign aid. Such cases exemplify how the same political economy factors, and the conspicuous plight of urban dwellers, particularly in the capital city, captures the attention of donors, just as it does politicians. This was again well illustrated by the case of Angola, where after the end of the war, there was a notable concentration of external investment resources on rehabilitation of municipal hospitals despite the fact that most of the primary and secondary health facilities needed to be replaced or repaired.

While the static picture is not encouraging, of paramount importance are the changes in resource allocation that have occurred. In Kenya, the evidence through the end of the 1980s suggests no reorientation of spending away from the heavy emphasis on curative activities. While the most recent budget estimates for 1990 showed a substantial increase in planning allocations for preventive services, a considerable amount of skepticism exists as to whether these will actually occur. No data, however, is available to determine whether this skepticism is warranted; although, the facet that during the 1980s, the ratio of budgeted to actual spending has been less for preventive/promotive care, than for curative care, suggests that such a concern is warranted.

This consistency over time in the low share of budgetary resources being allocated was observed in a number of other countries. For example, in Madagascar, primary health care's share of recurrent expenditures remained virtually unchanged between 1986 and 1991. While there was a surge in the share of the development budget allocated to primary health care in 1987 and 1988, since then, the figures have fallen closer to the level of 1986.

In a number of other countries, it is also difficult to discern any change in policy, although the short time series for which data are readily available precludes reaching
firm conclusions. For example, in Uganda, the share of expenditures allocated to primary versus other spending was relatively stable between 1988 and 1990. And in Ghana, despite financing for the health sector from the World Bank, the share of the recurrent budget for primary health care remained at between 23 and 24% between 1988 and 1990.

While no discernable change was found in most countries, there were exceptions. For example, in Cote d'Ivoire, the share of the health budget allocated to hospital-based care rose from 40.2% in 1980 to 56.2% in 1986. Most of this increase was due to higher spending at University hospitals, which nearly doubled. This was at the expense of spending on pharmaceuticals, as primary health care maintained its low share of around 10% of total spending throughout the period.

In Senegal, the share of the health budget spent on primary health services declined from 50 to 42% between 1982 and 1990, representing another setback in the government’s pursuit of a primary health care strategy designed to improve allocative efficiency. Problems such as the poor management of the non-hospital sector, lack of essential drugs, inadequate training of personnel, and inequitable regional distribution of care, particularly in rural areas where 60% of the population lacks access to health services, were for the most part not addressed.

In contrast, one case of success in reorienting at least part of the budget, particularly capital spending, was Zimbabwe. Since independence, there was a major improvement in preventive health activities and improvements in facilities serving rural areas. Financed primarily by external sources, capital expenditures in immunization programs, rural water supplies and latrines, training of public health workers, construction of training centers, and so forth has been extensive, and shifted the balance in favor of the needs of the rural poor. Nonetheless, the urban bias persists, and efforts to improve allocative efficiency are still required.

In many instances, the lack of change in priorities that we could empirically verify was matched by pronouncements and plans suggesting that change was imminent. For example, in Burundi, the 1988-92 public investment program indicated that primary health care's share of the investment budget will more than double from 18% to 45% during the period. The fact that 80% of the budget was being financed from foreign aid, of course, was suggestive that some external pressures underlie the re-ordering of priorities. Benin’s action plan for health consists of strengthening basic health services, particular mother and child health, family planning, and immunization programs. Malawi’s National Health Plan (1986-1995) seeks the expansion of a PHC approach by strengthening community-based services. Due to budgetary constraints, the Plan assumes no real increase in the Ministry of Health’s recurrent budget, emphasizing instead, improved cost recovery and cost effectiveness. Similarly, Tanzania, facing a serious budget crisis, intends to introduce reforms which will improve the personnel incentive structure and adequately
finance the requisition of pharmaceuticals and medical supplies. Finally, Zimbabwe also recognizes that in order to overcome its inability to adequately finance its health sector, measures must be implemented to mobilize resources through the introduction of user fees, to promote greater allocative and technical efficiency, and to improve the Management of the health system. Such ambitions, however, are not easily distinguished from those not fulfilled in the past. For example, in Cote d'Ivoire, the Fifth Plan (1986-90) gave central attention to an intensification of policies promoting health education and prevention, yet in 1991, the World Bank reported that health expenditures were still biased toward hospital care. In Kenya, despite the stated intentions by the Ministry of Health, budgeted allocations for preventive health services have been consistently underspent. And similarly, in 1989, Senegal adopted a National Health policy that gave priority to PHC promotion. However, the Ministry of Health has not attempted to restructure the hospital sector despite the preponderance of hospital expenditures in the health budget. A healthy skepticism about official statements, coupled with careful monitoring of whether policy change actually occurs, therefore, would be an important complement to any external finance conditioned upon such reforms.

Empirical Analysis

levels of health financing

Analysis of the levels of health system financing indicated that globally adjusting countries spend in average 5% of their gross national product on health. This is compared with a 4.1% figure in non-adjusting countries. The difference was statistically significant. To examine whether or not the aggregate averages were influenced with the country income category and the region, the analysis was broken down by these two variables.

With respect to income groups, the analysis revealed that there exist a significant statistical difference between the three income categories in their levels of spending on health. The average health expenditure as percent of GDP was 4.4%±1.4 in low income countries, 5.1%±1.9 in lower middle income countries and 4.9%±2.2 in upper middle income countries. The difference was statistically significant.

Comparing the expenditure between adjusting and non-adjusting countries within each income category revealed that the levels of total spending on health as percent of gross domestic national product did not differ significantly between adjusting and non-adjusting countries in the low and lower middle income groups. In low income economies, the average total spending on health was 4.5% (±1.4) in adjusting countries and 4.1% (±1.2) in non-adjusting countries. The averages for the lower middle income economies were 5.3% (±1.8) and 4.7% (±2.2) for adjusting and non-adjusting countries, respectively.
Figure 118. Total Health Expenditure of Gross Domestic Product in Adjusting and Non-adjusting Countries by National Income

Figure 119. Total Health Expenditure of Gross Domestic Product in Adjusting and Non-adjusting Countries by Region
However, adjusting countries of the upper middle income categories appeared to spend almost two-folds what the non-adjusting countries in the same category spend. The averages for both groups were 6.7% (2.2) and 3.6% (0.6), respectively. The difference was statistically significant.

The inter-regional differences of total health expenditure as percent of the gross national product were statistically significant. Latin and Middle American countries spending on health was significantly higher than the three other region, which showed similar allocation patterns. The averages for the four regions were estimated to be 4.3% (1.3) in sub-Saharan Africa, 4.0% (0.9) in the Middle East and North Africa, 6.4% (1.8) in Latin and Middle America and 4.1% (1.6) in Asia and Pacific.

The within-region comparisons between adjusting and non-adjusting countries revealed that there was statistical differences in total health expenditure on health as percent of gross national product in all regions but Latin and Middle America. Adjusting countries in this region allocate an average of 6.9% (1.6) of their GNP to health, compared with 4.3% (1.6) for non-adjusting countries. The average was estimated to be 4.3% (1.2) and 4.4% (1.6) in sub-Saharan Africa, 4.5% (1.0) and 3.6% (0.6) in the Middle east and North Africa and 4.1% (1.4) and 4% (2.0) in Asia and Pacific, for adjusting and non-adjusting countries respectively.

Figure 120 indicates that the duration of structural adjustment implementation in years does not correspond with particular levels or patterns of spending on health as
indicated by proportion of the gross national product allocated to health. The level of spending on health in non-adjusting countries varied within a range of 6 percent. Similar variations exist between early and late implementers of structural adjustment. Statistical examination of these data revealed that the Pearson correlation coefficient and the β linear regression coefficient were estimated at 0.2 and 0.1, respectively. Both values were statistically insignificant.

The per capita total health expenditure calculated in international dollars was estimated at 169 I$ for adjusting countries and 157 I$ for non-adjusting countries. The difference was not statistically significance. Breaking down the analysis by country income category revealed that there exists statistically significant differences in the levels of per capita total health expenditure among different income groups. For example, the average per capita expenditure in upper middle income countries was five times higher than low income countries. The average was estimated to be 74 I$ in low income countries, 200 I$ in lower middle income countries and 389 I$ in upper middle income countries.

Within-income-category comparisons between adjusting and non-adjusting countries of the per capita total health expenditure indicated that there was a statistically significant difference in the upper middle income group only. The difference was in favor of the adjusting countries, whose per capita spending was
twice that of non-adjusting countries. The averages in this income category was estimated at 275 I$ for adjusting countries and 134 I$ for non-adjusting countries. For the low and lower middle income economies, the averages were 83 I$ and 208 I$ for adjusting countries and 45 I$ and 180 I$ for non-adjusting countries, respectively.

The regional averages of the per capita health expenditure in international dollars appeared to be significantly different among regions. The lowest average was in sub-Saharan Africa, estimated at 80 I$ and the highest was in Latin and Middle America, estimated at 322 I$. The Middle East and North Africa had an average of 193 I$ and the Asia and Pacific has an average of 142 I$. These regional aggregate figures should be interpreted cautiously since the hide serious disparities among countries of each region. For example, the per capita expenditure in sub-Saharan Africa varied from 18 I$ in Madagascar to 396 I$ in South Africa. Likewise, the regional average of the Middle East and North Africa hides a huge gap of per capita spending between the 33 I$ figure of Yemen and the 539 I$ figure of Bahrain. In Latin and Middle America, the range varied between 55 I$ in Haiti and 849 I$ in Uruguay. Finally, in Asia and Pacific, the minimal and maximal figures were reported in the neighboring Koreas. The Democratic People Republic of Korea had a spending level of only 39 I$ per capita, compared with 862 I$ per capita in the Republic of Korea.

Figure 122. Per Capita Total Health Expenditure in Adjusting and Non-adjusting Countries by Region
Within each region, there was no statistically significant difference between adjusting and non-adjusting countries in their per capita spending levels in all regions except sub-Saharan Africa. In this region, adjusting countries were estimated to spend an average of 59 I$ per capita, compared with 142 I$ per capita in non-adjusting countries. However, careful analysis of the data revealed that the difference is basically due to the level of spending in four middle-income countries, namely Botswana (219 I$), Mauritius (288 I$), Namibia (312 I$) and South Africa (396 I$). Without these four countries, the levels of spending in non-adjusting countries is reduced to a level of 34, less than the average of adjusting countries.

In the three other regions, the average was estimated at 148 for adjusting countries and 226 for non-adjusting countries in the Middle East and North Africa, 366 I$ for adjusting countries and 137 for non-adjusting countries in Latin and Middle America, and 165 I$ for adjusting countries and 91 for non-adjusting countries in Asia and Pacific.

Figure 123 shows the relationship between the duration of structural adjustment implementation and the per capita total expenditure on health in international dollars. The analysis indicated that the Pearson correlation coefficient and the β linear regression coefficient were estimated at 0.3, which were statistically insignificant. In other terms the levels of per capita spending on health was not determined by the duration of structural adjustment.

![Figure 123. the Duration of Structural Adjustment Implementation and Per Capita Total Health Expenditure](image-url)
The public expenditure on health was assessed by tracing the public contribution to the total health expenditure and the per capita public spending in international dollars. Globally, there was no statistically significant difference between adjusting and non-adjusting countries in the levels of the two indicators. The average public expenditure as percent of the total health expenditure was estimated at 48.7 (16.5) in adjusting countries and at 50.2 (22.3) in non-adjusting countries. The per capita public expenditure averaged around 81 I$ (99) in adjusting countries and around 87 I$ (89) in non-adjusting countries. The aggregate figures did not differ in a statistically significant manner. Furthermore, there existed wide disparities in the levels of public spending on health in each category. This is reflected on the standards deviations of the means of the indicators.

Stratifying the analysis by the national income category, significant inequalities in the public spending levels appeared between the various categories. The public expenditure constituted 44.7% of the total health expenditure in low income countries, which corresponded to a per capita public expenditure of 32.1 I$. The levels of public expenditure in lower middle income countries increased to 52.3% of the total health expenditure and the per capita public expenditure increased to 107 I$. The public contribution to the total health expenditure increased further in upper middle income countries to 57.9% and the per capita public expenditure to 208 I$.

![Figure 124. Public Expenditure as % of Total Health Expenditure in Adjusting and Non-adjusting Countries by National Income](image)
This pattern of spending was related to the national income category and not to the structural adjustment policies. In other terms, richer countries tend to allocate more public money to health than poorer countries irrespective of the structural adjustment policies. Comparing these public spending indicators between adjusting and non-adjusting countries within each income category yielded statistically insignificant differences in all categories.

Public expenditure contributed to 47.5% of the total health expenditure and the per capita public expenditure was 37 I$ in adjusting low income countries. This is compared to a contribution in the magnitude of 35.3% and a per capita expenditure of 14.6 I$ for non-adjusting countries in the same income category. The estimates for the lower middle income countries were 50.5% and 107 I$ in adjusting countries and 56.8% and 93.4 I$ in non-adjusting countries, for the two indicators respectively. In upper middle income countries the contribution of public expenditure to the total health expenditure was 12% less in adjusting countries than non-adjusting countries. However, the difference was not statistically significant since the disparities among non-adjusting countries was so evident. Furthermore, the per capita public expenditure in adjusting countries was 81 I$ higher in adjusting countries than non-adjusting countries. This difference was again statistically insignificant because of the high intra-group variability.

The regional aggregate averages for the public expenditure as percent of the total health expenditure did not show statistically significant differences among regions. The aggregate averages was 50.4% in sub-Saharan Africa, 45.2% in the Middle East and North Africa, 53.4% in the Latin and Middle America and 44.0% in the Asia and Pacific. However, the per capita public expenditure on health did differ among regions. The regional average was only 42 I$ in sub-Saharan Africa, 58 I$ in the Asia and Pacific, 104 I$ in the Middle East and North Africa and 165 I$ in the Latin and Middle America. These differences were statistically significant.

With respect to structural adjustment, the statistical analysis showed that there was no significant differences between adjusting and non-adjusting countries in all region and with respect to both indicators. The exception was the per capita public expenditure in sub-Saharan Africa. The average expenditure was 31 I$ in adjusting countries, compared with 53 I$ in non-adjusting countries. The regional averages of the public expenditure as percent of the total health expenditure were 49.6% and 52.7%, for adjusting and non-adjusting countries respectively.

In the Middle East and North Africa, the share of public expenditure in the total health expenditure was estimated at 41.7% in adjusting countries and 47.8% in non-adjusting countries. The regional averages for the per capita public expenditure were 66 I$ and 132 I$, respectively. The corresponding figures for public expenditure share were 51.3% and 62.7 Latin and Middle America and 46.3% and 39.1% in Asia and Pacific, for adjusting and non-adjusting countries respectively. The per capita
spending figures for the two regions were estimated at 182 I$ versus 93 I$ and 67 I$ versus 37 I$, respectively.

**Figure 125. Per Capita Public Expenditure in Adjusting and Non-adjusting Countries by National Income**

**Figure 126. Public Expenditure of Total Health Expenditure in Adjusting and Non-adjusting Countries by Region**
Figure 127. Per Capita Public Expenditure on Health in Adjusting and Non-adjusting Countries by Region

Figure 128. the Duration of Structural Adjustment Implementation and Public Expenditure Share in Total Health Expenditure
The linear regression analysis revealed that there was no association between the duration of structural adjustment implementation and the levels of public expenditure on health. The Pearson correlation coefficient and the β linear regression coefficient for the duration of structural adjustment and the public expenditure as percent of total health expenditure were 0.2 and 0.1, respectively. The coefficients for the correlation between the duration of adjustment and the per capita public expenditure on health in international dollars were –0.04 and –0.03. The coefficients for both indicators were shown to be statistically insignificant.

The Out-of-pocket expenditure on health was monitored by two indicators. The first is the out-of-pocket expenditure as percent of the total health expenditure. The second is the per capita out-of-pocket expenditure in international dollars. Comparing the means and the standard deviations of these two indicators between adjusting and non-adjusting countries yielded statistically insignificant differences. The aggregate average of the share of out-of-pocket expenditure in the total health expenditure was estimated to be 46.4% in adjusting countries and 47.8% in non-adjusting countries. Furthermore, the per capita out-of-pocket expenditure was estimated at 70 I$ for adjusting countries and 66 I$ for non-adjusting countries.

Breaking down the analysis by national income category yielded wide disparities in out-of-pocket expenditure on health between various income categories. However,
within each income category there was no statistical significance difference between adjusting and non-adjusting countries with respect to their levels of out-of-pocket spending.

The aggregate averages of out-of-pocket expenditure as percent of the total health expenditure for income categories were estimated to be 52.3% for low income countries, 43.6% for lower middle income countries and 35.1% for upper middle income countries. The averages per capita expenditure on health were 38 I$, 86 I$ and 137 I$ for the three groups, respectively. The differences in both indicators among the three income categories were statistically significant.

Within the low income category, the adjusting countries had an average out-of-pocket contribution of 49% to the total health expenditure, compared with 63.5% for non-adjusting countries. The per capita out-of-pocket spending was estimated to be 40 I$ in adjusting countries and 30 I$ in non-adjusting countries. For the lower middle income group, the averages of the two indicators were 44.6% and 87 I$ in adjusting countries and 41.1% and 82 I$ in non-adjusting countries. Finally, adjusting upper middle income countries had an average out-of-pocket contribution of 37.2% to the total health expenditure and an average per capita out-of-pocket expenditure of 190 I$. The corresponding figures for the non-adjusting upper middle income countries were 33.4% and 96 I$, respectively. The differences were statistically insignificant.

Figure 130. Out-Of-Pocket Expenditure Share of Total Health Expenditure in Adjusting and Non-adjusting Countries by National Income
Figure 131. Out-of-Pocket Expenditure Share of Total Health Expenditure in Adjusting and Non-adjusting Countries by Region

Figure 132. The Duration of Structural Adjustment Implementation and Out-of-Pocket Expenditure Share of Total Health Expenditure
Figure 133. Per Capita Out-Of-Pocket Expenditure on Health in Adjusting and Non-adjusting Countries by National Income

Figure 134. Per Capita Out-Of-Pocket Expenditure on Health in Adjusting and Non-adjusting Countries by Region
Comparing the per capita out-of-pocket expenditure share of the total health expenditure between adjusting and non-adjusting countries within each region yielded no statistical significant differences. Adjusting countries of the sub-Saharan Africa had an average of 48%, compared with 45% for non-adjusting countries of this region. The figures in the Middle East and North Africa were estimated at 57% for adjusting countries and 49% for non-adjusting countries. In the Latin and Middle America, adjusting countries had an average of 39%, compared with 34% for non-adjusting countries. The averages in the Asia and Pacific were estimated to be 49% and 61% for adjusting and non-adjusting countries, respectively.

With respect to the per capita out-of-pocket expenditure, inter-regional differences were statistically significant while the intra-regional differences between adjusting and non-adjusting countries were statistically insignificant. The regional averages were estimated to be 37 U$ in sub-Saharan Africa, 84 I$ in the Middle East and North Africa, 115 I$ in the Latin and Middle America and 71 I$ in Asia and Pacific.

The averages per capita out-of-pocket expenditure in adjusting and non-adjusting countries were estimated to be 28 I$ and 63 I$ in sub-Saharan Africa, 80 I$ and 88 I$ in the Middle East and North Africa, 132 I$ and 43 I$ in Middle and Latin America and 80 I$ and 53 I$ in the Asia and Pacific, respectively.
Trends of Health Financing

The first indicator for trends in health system financing is the change in the total health expenditure as percent of the gross national product between 1960 and 1998. Data was available for 71 countries, 54 of them were adjusting countries and 17 were non-adjusting countries. Results showed that the proportion from the gross national product allocated to health increased in all countries. The average for all countries increased by 3.7% of the GNP. The range for the increased varied between a minimum of 0.7% and a maximum of 6.6% of the GNP. The average increase in adjusting countries was estimated at 4% of the GNP, compared with 2.7 in non-adjusting countries. The difference was statistically significant.

With respect to the national income categories, the aggregate average for the increase in the total health expenditure as percent of the GDP appeared to be statistically insignificant. The average increase was 3.5% in low income countries, 4.2% of the lower middle income countries and 3.6% in upper middle income countries.

Comparing the average increase between adjusting and non-adjusting countries within each income category indicated that differences were statistically significant only in the upper middle income group. In this group, the average increase was 5% in adjusting countries and 2.1% in non-adjusting countries. For low income countries, adjusting countries increased the total health expenditure by an average of 3.6% of the GNP, compared with an increase of 2.9% of the GNP in non-adjusting
countries. The figures for the lower income countries were 4.4% for adjusting countries and 3.5% for non-adjusting countries.

The regional averages of the increase in the total health expenditure as percent of the GNP was statistically significant. The biggest increase took place in Latin and Middle America and was estimated at 5% of the GNP. The average increase was 3.3% of the GNP in sub-Saharan Africa, 3.2% of the GNP in the Middle East and North Africa and 3.1% of the GNP in Asia and Pacific.

In sub-Saharan Africa, adjusting countries increased their total expenditure in health by 3.2% of the GNP, compared with an increase of 3.7% of the GNP by non-adjusting countries. The range of increase in adjusting countries varied between 0.7% and 5.6% of the GNP. In Non-adjusting countries the range varied between 2% and 6.6% of the GNP. The differences were statistically insignificant.

Adjusting countries in the Middle East and North Africa had an average increase of the total health expenditure of 3.6%. The increased ranged between 1.9% and 4.6% of the GNP. The average for non-adjusting countries in the region was 2.6 and the range varied between 2.1% and 3.6% of the GNP. The differences were statistically insignificant.

The average increase of the total health expenditure in the Latin and Middle America differed between adjusting and non-adjusting countries in a statistically
significant manner. Adjusting countries had an average increase in the magnitude of 5.7% of the GNP and the increase varied between 3.7% and 8.9%. The average for non-adjusting countries was estimated at 2.5% of the GNP and the values ranged between 1.3% and 3.6% of the GNP.

Adjusting countries in Asia and Pacific had higher average of increase in the total health expenditure than non-adjusting countries. However, the difference was statistically insignificant. The average was estimated at 3.6% for adjusting countries and at 1.7% for non-adjusting countries. The increase in both group ranged between 1% and 6.5% in adjusting countries and between 1.3% and 2.5% in non-adjusting countries.

Figure 138 shows the association between the duration of the structural adjustment implementation in years (Axis X) and the change in the total health expenditure as % of the gross national product between 1960 and 1998. It is evident that there is no particular patterns of spending can be described with non-implementers, late implementers and early implementers. The Pearson correlation coefficient and the β linear regression coefficient were estimated at insignificant levels of 0.03 and 0.02, respectively.

To contrast the levels and trends of expenditure on health, the levels and trends of expenditure on the military is compared between adjusting and non-adjusting countries. The first indicator used for this purpose is the military expenditure as percent of the gross national product. The average military expenditure for adjusting
countries was estimated at 2.2% of the GNP, compared with 4.9% for non-adjusting countries. The difference was statistically significant.

The military expenditure was not shown to significantly differ between national income categories. Low income countries allocated in 1996 an average of 2.6% of their gross national product to the military. The average for lower income countries was 2.8% and for upper middle income countries 4.4%.

Within the low income category, adjusting countries had an average of 2.1% of the GNP, compared with 4.3% for non-adjusting countries. The difference was statistically significant and evident in figure 139. Within the lower middle and upper middle income categories, the average spending on military was not statistically different. The average values for adjusting and non-adjusting countries were 2.5% and 3.5% in the lower middle income category and 1.6% and 6.6% in the upper middle income category, respectively.

Inter-regional comparisons of the military expenditure revealed statistically significant differences among regions. The regional averages were estimated at 2.5% for sub-Saharan Africa, 4.5% for the Middle East and North Africa, 1.5% for the Latin and Middle America and 4.5% for the Asia and Pacific.

In sub-Saharan Africa and Asia and Pacific there was a significant difference in the levels of military spending between adjusting and non-adjusting countries. Adjusting countries in these two regions allocated less resources to defense than non-adjusting countries. For example, in Asia and Pacific, the average expenditure on defense was
2.4% of the GNP in adjusting countries, compared with 9.4% of the GNP in non-adjusting countries. In sub-Saharan Africa the estimates were 2.1% in adjusting countries versus 3.8% of the GNP in non-adjusting countries. In the Middle East and North Africa and the Latin and Middle America adjusting and non-adjusting countries have comparable levels of military spending. The averages for the two groups were 4.4% and 4.6% in the Middle East and 1.3% and 2.4% in Latin America, respectively.

The average military expenditure declined between 1985 and 1996 by 0.8% of the GNP in adjusting countries and by 2.9% of the GNP in non-adjusting countries. The difference was statistically significant. The cutbacks in the military expenditure were witnessed in all income category. Low income countries reduced the military expenditure by 0.9% of the GNP, lower middle by 2% and upper middle by 1.7%. The differences in the cutbacks were not statistically significant.

Comparing the magnitude of reduction within each income category revealed that there was no statistically significant differences between adjusting and non-adjusting countries in low income and upper middle income countries. However, there was a statistically significant difference in the lower middle income category. Non-adjusting lower middle income countries reduced their expenditure on defense by 7% of their GNP, compared with only 0.3% cutbacks made by adjusting countries.
in the same income category. In the low income category the cutbacks were estimated to be 0.9% of the GNP for adjusting countries and 0.6% of the GNP for non-adjusting countries. The estimated for the upper middle income countries were 1.7% and 1.1% for adjusting and non-adjusting countries, respectively.

Regional estimates showed that the reduction in the defense expenditure as percent of the GNP differed significantly among regions and that there were wide differences within each region. For example, the figures in sub-Saharan Africa varied from a cut-back of 5.9% of the GNP to an increase in the defense expenditure of 3.4%. The average regional decline was estimated at –2%. The average reduction for the Middle East and North Africa was estimated to be 4.6% of the GNP. However, the average reduction in Middle East appeared to be greatly influenced by Iran, a country which managed to reduced its expenditure on health by 31% of the GNP from the levels of the mid 1980 during the war with Iraq. Latin and Middle America has an average reduction of 1.2%. The region had a maximum increase in the military expenditure of 3% and a maximal reduction of 6.9% of the GNP. The Asia and Pacific had an average reduction of 1.4% of the GNP and a range between a reduction of 8.3% and an increase of 4.2% of the GNP.
Figure 142. Military Expenditure as % of Combined Health and Education in Adjusting and Non-adjusting Countries by National Income

Country income category

Figure 143. Military Expenditure as % of Combined Health and Education in Adjusting and Non-adjusting Countries by National Income
The duration of structural adjustment implementation was not shown to be related with the magnitude of reduction in the expenditure on defense. It was shown that there were wide variations in the magnitude of reduction among non-implementers, late implementers and early implementers of structural adjustment. The Pearson correlation coefficient and the $\beta$ coefficient of the linear regression model were estimated at non-significant levels of 0.03 and 0.02, respectively.

An indicator so the commitment of the policy makers to health and welfare in the society is the ratio of the military expenditure to the combined expenditure on health and education. The indicator used here is the military expenditure as percent of combined expenditure on health and education. The average for the 1990s is compared between adjusting and non-adjusting countries first. Then, the change in the average from the 1980s average is then compared between the two groups of countries.

Results showed that non-adjusting countries expenditure on military in the 1990s constitute 64% of the combined expenditure on health and education. The average for adjusting countries was 36%. The difference was statistically significant. However, it must be interpreted with caution, since the differences within each group are evidently wide. For example, the range for adjusting countries varied between 2% and 97%. Likewise, the range in non-adjusting countries was between 3% and 373%.
The average was estimated to be 45.3% for low income countries, 43.2% for lower middle income countries and 38.8% for upper middle income countries. The difference between national income categories was not statistically significant, neither was the difference between adjusting and non-adjusting countries in each income category. The averages for adjusting and non-adjusting countries were estimated to be 40.7% and 66.3% in low income countries, 30.3% and 77.7% in lower middle income countries and 25.4% and 50.8% in upper middle income countries, respectively.

The regional averages showed that the average for the Middle East and North Africa was significantly higher than all other regions. The average was estimated at 80.8% in the Middle East and North Africa, 39.3% in sub-Saharan Africa, 36% in Latin and Middle America and 43.2% in Asia and Pacific.

In each region, the difference between adjusting and non-adjusting countries was not statistically significant. However, in the Middle East and North Africa, the average was 38% in adjusting countries and 108% in non-adjusting countries, which was shown in the statistical analysis to be significantly different. In sub-Saharan Africa, the average was estimated at 36.5% in adjusting countries and 48.9% in non-adjusting countries. The average in Latin and Middle America was 39.1% in adjusting countries and 22.8% for non-adjusting countries. Finally, the averages for Asia and Pacific were 26.1% and 21% for adjusting and non-adjusting countries, respectively.

Figure 144 shows the relation between the duration of structural adjustment implementation in years and the military expenditure as percent of the combined expenditure on health and education. The figure shows that there is a weak tendency for the military expenditure as percent of combined expenditure on health and education to decline with the increase in the duration of structural adjustment implementation. Data were not shown for Syria, Oman and Angola which reported very high ratios.