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WP/88/58

INTERNATIONAL MONETARY FUND

Fiscal Affairs Department

Fiscal Restraint, Demographic Change, and Social  
Services in Israel, 1985-87, and Application  
of the Methodology to Latin America

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July 8, 1988

Abstract

The paper analyzes the development of government social expenditure during the economic stabilization period, with specific reference to the changing needs for such expenditure arising from the change in Israel's demographic structure. The results reveal a real cut in direct services. The implicit strategy applied a mere restraint, for some two to three years, with real erosion in services arising from the growth in the size of beneficiary groups. This strategy proved attainable, even though it took more time than an alternative shock-like strategy that would have had little, if any, chance of being implemented. A partial application to six Latin American countries shows that even though the increase of the elderly dependency ratio is more than offset by the declining child-dependency ratio, there will be an overall increase in dependency-related expenditure.

JEL Classification Number

3221

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### Summary

Given the policy priority of curbing inflation, this paper analyzes the development of government social expenditure in Israel during the economic stabilization period beginning in July 1985. Specific reference is made to the changing needs for such expenditure arising from the change in Israel's demographic structure; actual expenditures are compared with those that appear "demographically warranted." The results suggest that there have been a real cut in direct services and a sustained real increase in social security transfers. The paper evaluates the significance of budget developments for the three major publicly provided services: education, health, and income maintenance.

One of the lessons that might be learned from the Israeli experience is the strategy of budget cuts. As shown in this paper, if measured properly--taking into account demographic structure--the direct services were cut, on an age-adjusted per capita basis, by some 15 percent. Such a reduction would be quite difficult to introduce formally or explicitly. The implicit strategy applied restraint to total expenditure for two to three years, to produce a real erosion in services per recipient arising from growth in the size of beneficiary groups.

That the applied analytical framework may be useful for other countries is demonstrated by a partial application to six Latin American countries. According to the simulation results of the study, even though the increase of the elderly dependency ratio is more than offset by the declining child dependency ratio, there will be an overall increase in the dependency-related expenditure (and in total social expenditure). Thus, in most of the countries surveyed, even though there is a decline of some 20 percent in the overall dependency ratio, the need for social services may increase more than the rate of population growth.

These results are based on pure demographic change. For a comprehensive evaluation, more information is needed, inter alia, on the institutional structure of social services, the adequacy of the present quantity and quality of services, rates of enrollment, and the ratio of health services coverage.

## I. Background and Introduction

Israel's economic environment in the first half of the 1980s was characterized by high inflation, stagnant economic growth, and a deteriorating balance of payments. Inflation gradually became a dominant concern as it became more hyperinflationary in character. 1/

Curbing inflation thus emerged in the mid-1980s as the principal target of economic policy. In November 1984, a "package deal" was signed between the Government, the trade unions, and the employers' organizations consisting of agreed price controls and a wage freeze. When this agreement expired, another followed. In a sense, these agreements were an overture to the stabilization program, adopted in July 1985, 2/ which called for a drastic cut in the government's budget deficit, which amounted to 17 percent of GNP in 1984. 3/ Government spending was sharply cut and tax revenue increased. The current deficit turned into a surplus in the second half of 1985, 4/ reaching 6 percent of GNP (the domestic component 1 percent and the external 5 percent). 5/ In 1986 the government maintained this fiscal policy stance.

The social implications of a restrictive fiscal policy stance are likely to have three dimensions. First, changes in the tax system will affect the "fiscal welfare" of the population. Second, reduced commodity subsidies will have an impact on the consumption of necessities. And third, expenditure on social services may be restrained, particularly those on transfer payments through the social security system and direct services (for example, education and health). This paper concentrates on the third dimension.

As Table 1 demonstrates, given the importance of social spending in total government expenditure, it is thus not surprising that the stabilization program affected social programs. This paper analyzes the development of government social expenditure during the economic stabilization period, with specific reference to the changing needs for such expenditure arising from the change in Israel's demographic structure. The applied analytical framework may be useful for other countries, as demonstrated by a partial application to six Latin American countries.

To understand the underlying demand pressures for social expenditures arising from a changing population, Section II examines the

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1/ See Haim Barkai, "Israel's Attempt at Economic Stabilization," The Jerusalem Quarterly, No. 43 (Summer 1987), p. 3.

2/ See Michael Bruno and Sylvia Piterman, "Israel's Stabilization: A Two-Year Review" (paper presented at the Conference on Inflation Stabilization, Toledo, Spain, June 1987), p. 4.

3/ H. Barkai, op. cit., p. 15.

4/ All references to years are on a fiscal year basis (for example, April 1 to March 31).

5/ Bank of Israel, Annual Report 1986 (Jerusalem, May 1987), p. 63.

Table 1. Israel: Share of Social Expenditure in Total Government Expenditure, GNP, and Total Resources, 1980-87 <sup>1/</sup>

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Year	Social Expenditure as Percent of		
	All Government Expenditure <sup>2/</sup>	GNP	Total Resources Available to the Economy
1980	23.9	17.9	11.2
1981	23.8	17.9	11.1
1982	24.3	18.1	11.6
1983	22.0	16.8	10.6
1984	18.6	15.8	10.0
1985	18.2	16.6	10.3
1986	21.5	17.0	10.7
1987 <sup>2/</sup>	22.2	...	...

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Sources: Computed at the Center for Social Policy Studies, based on the following sources: Israel, Central Bureau of Statistics, Statistical Abstract of Israel (various years) and Statistical Bulletins (various issues); Ministry of Finance, The Accountant General, Annual Reports; and Ministry of Finance, Bureau of the Budget, Budget Law 1987/88.

<sup>1/</sup> Fiscal years, starting April 1 of specified year.

<sup>2/</sup> All figures are for actual expenditure, except in 1987, where the budget estimate is provided.

dynamics of Israel's population growth and develops an analytically useful simulation model. Section III examines the problems of estimating changes in real government outlays in an environment of rapid inflation. It shows the need for multiple deflators for fully analyzing the impact of budget cuts. Actual expenditures are compared with the amounts that would appear "demographically warranted." The results suggest that there has been a real cut in direct services and a sustained real increase in social security transfers. Section IV evaluates the significance of budget developments for the three major publicly provided services: education, health, and income maintenance. Using various output indicators, it illustrates the differential developments in the three sectors. The educational system, for example, kept increasing its outputs while the government's share in its financing fell.

Section V traces future trends in the need for services and raises some policy issues that should be considered in the medium-term planning of sectoral expenditure. It notes possible differences in short- and long-run goals. While short-term economic pressure would probably call for greater budget restraint, a developing lag between needs and availability (and quality) of services may need to be closed over the longer term. Section VI partially applies the above simulation model to Latin America. The demographic characteristics of future populations (as projected by the World Bank) of the six largest Latin American countries are discussed. Following this, the paper calculates the impact on expenditure needs of changes in the size and composition of the dependency ratio (for example, including changes in child dependency and aged dependency ratios).

## II. Demographic Determinants of Social Expenditure

### 1. Population dynamics

Israel's population in 1980 was 3.9 million. Within five years it recorded a 9 percent increase, reaching 4.3 million. Israel's population structure lies between the developed and developing countries: at 9 percent, the share of the elderly population is larger than for all developing countries, but smaller than in most European countries. On the opposite end of the age spectrum, the share of the 0-14 age group, 33 percent, is larger than that of most western countries but substantially lower than in many less developed countries.

This unique age structure is only partially the result of such demographic parameters as the fertility and mortality rates. Total fertility in Israel now amounts to 3.1. <sup>1/</sup> This represents a decline not only in comparison with the early 1950s but also relative to the

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<sup>1/</sup> The average number of births a woman is likely to have throughout her lifetime.

mid-1970s; in 1975, the total fertility rate was 3.7. <sup>1/</sup> Life expectancy at birth for males has increased from 67.7 in the early years of the state to 70.5 in the beginning of the 1970s, and to 73.9 in 1985. For females, life expectancy has risen from 73.7 in the early 1970s to 77.3 in 1985.

Greater longevity, combined with changes in the basic age mix of the population, accelerated the aging process of the Israeli society. The share of the elderly almost doubled within a short period--from 5 percent of the population in 1960 to 9 percent in 1980 (the figure for Jews is 9.7 percent in 1980). Another important factor explaining the unique age structure of the population has been the pattern of immigration. There was an initial mass immigration in the early years of Israel's statehood, followed by secondary waves of immigration in later years. <sup>2/</sup>

The age profile is likely to change considerably in the future. In fact, a turning point has already been reached in the early 1980s, with the share of the elderly no longer likely to increase and the share of children starting to decline. Thus, during the rest of the century, the overall dependency ratio should decline, mainly due to a decline in the child dependency ratio along with a stabilization of the elderly dependency ratio (Table 2). In order to evaluate the impact of a changing young/old combination of the dependency ratio, it may be useful to start with a conceptual framework to analyze the operation of the dependency ratio as a determinant of social expenditure.

## 2. Dependency ratio and its expenditure effects

A conventional graphic presentation of the subject is composed of two subratios: the child dependency ratio (CDR) and the aged dependency ratio (ADR), as in the following chart.

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<sup>1/</sup> Most of the decline in recent years has taken place among the non-Jewish part of the population. For Moslems the fertility rate has declined from 7.8 in 1975 to 4.6 in 1986. Among the Jewish population the declining trend started much earlier, bringing down the rate from 3.6 in 1955 to 3.2 in 1975. Since then the rate has stabilized at close to 3.0 (2.83 in 1986). These differential patterns among the various parts of the population have a major impact on some services.

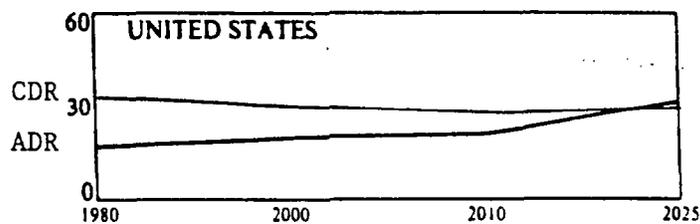
<sup>2/</sup> See Y. Kop, "Changes in the Age Structure and Their Implications for Demand for Social Services," JDC-Brookdale Institute of Gerontology (Jerusalem, 1980).

Table 2. Israel: Population Age Structure, 1970-2005

(In percent)

Age Category	1970	1980	1985	1990	1995	2000	2005
0-14	32.9	33.2	32.5	30.6	29.0	28.1	28.0
15-64	60.4	58.2	58.7	60.2	61.6	62.8	63.0
65+	6.7	8.6	8.9	9.3	9.3	9.2	9.0
Total	<u>100.0</u>						

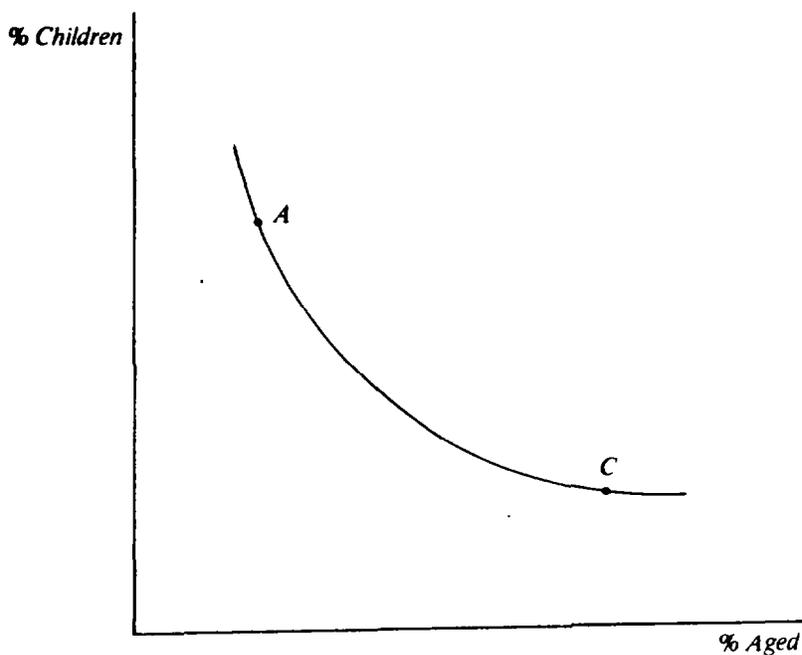
Sources: 1970-85: Israel, Central Bureau of Statistics, Statistical Abstract of Israel, respective years; 1990-2005, author's projections.



Source: Peter S. Heller, Richard Hemming, and Peter W. Kohnert, Aging and Social Expenditure in the Major Industrial Countries, 1980-2025, Occasional Paper No. 47 (Washington: International Monetary Fund, September 1986), p. 26.

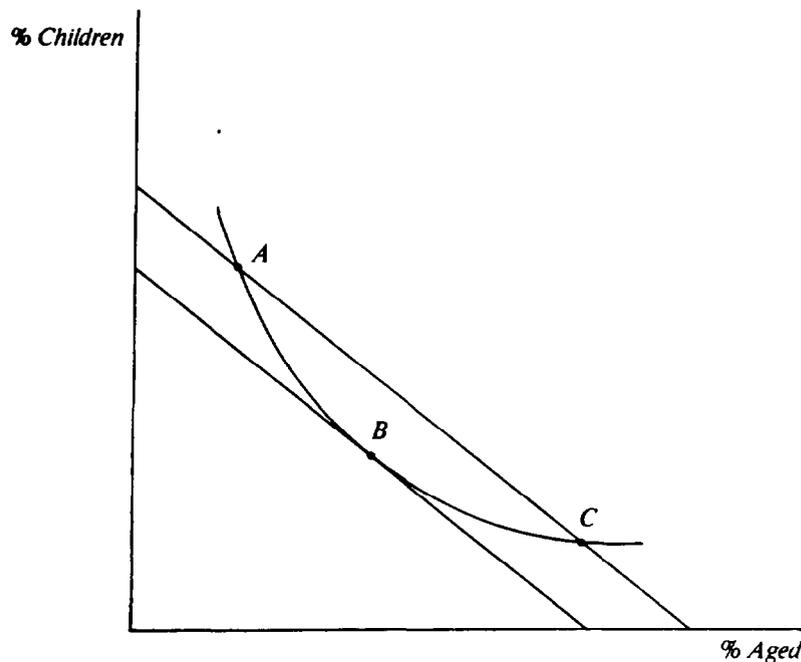
Others would add a third line to represent the total dependency ratio (DR) as well.

An alternative graphic presentation, suggested here, incorporates the two subratios into one curve, as follows:



This is a schematic curve that demonstrates the movement of the age structure of the population in a country from A to C. <sup>1/</sup> The shape applied derives from the fact that in the process of demographic transition, the declining share of children in the first stage is only slightly offset by an increased share of the aged; in later stages the share of the aged increases rapidly while the share of children declines only slowly. This is expressed by differing slopes of the tangent to the curve at points A and C.

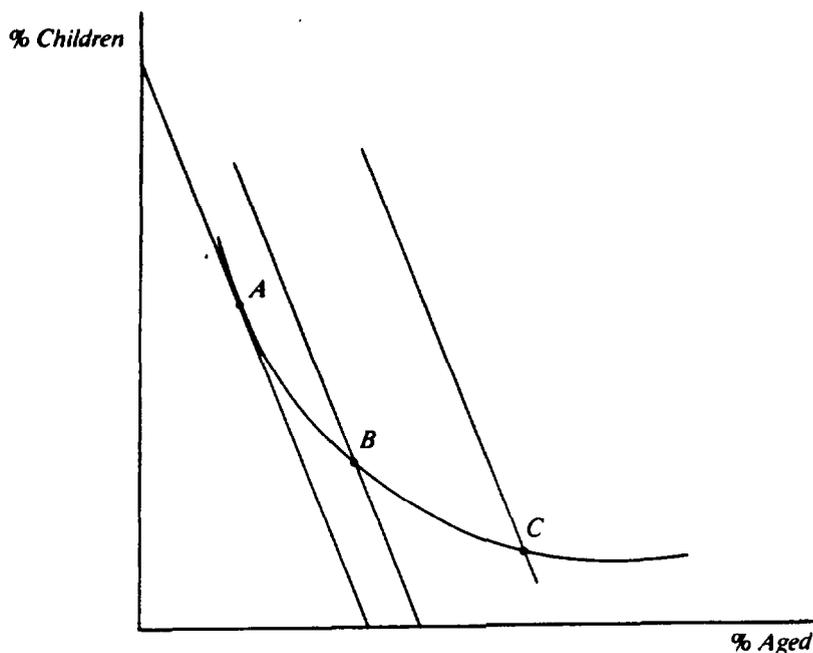
The curve is then accompanied by a line, or a set of lines, which we will call IDR (iso-dependency-ratio). All dots on such a line have the same dependency ratio, differing from each other by the balance of children and elderly in the dependency ratio, DR. Thus, in the next figure, the country in periods A and C has the same dependency ratio-- C having a larger share of elderly than at point A, and vice versa for the share of children. The population at point B has different shares of both children and elderly than at A and C, but one can see that in general the country at point B has a lower dependency rate than in A or C because it resides on a lower IDR than in the two other periods (the closer the IDR to the origin, the smaller the overall DR).



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<sup>1/</sup> The curve is described here as schematic, but its exact shape may easily be obtained empirically, either on a time trend basis for a given country (see, for example, "Social Services in Israel," The Center for Social Policy Studies (Jerusalem, June 1987), p. 49) or on an inter-country basis for a given period.

This analysis assumes that from the point of view of social expenditure burden, the only thing that matters is total DR, irrespective of its composition in terms of the two subratios. But this assumption is not realistic; an estimate of Israel's government expenditure burden found that the cost of supporting the elderly is about twice the cost of supporting the child age population. Therefore, in the following figure we draw the IDR lines, with a slope that reflects the relative cost of support for the two dependent age groups, and we find that the conclusions for the two dependent age groups, and we find that the conclusions of the above comparisons of points A, B, and C are wrong: A and C are no longer on the same IDR, so there is a difference in the expenditure implications of a move from A to C. The situation in C is much worse, in terms of the implied expenditure burden, than in A. Moreover, point B, which was believed to be more favorable than both A and C in the previous example, is now seen as having higher overall expenditure implications than in point A, because the revised IDR line that crosses point B is further out than the one that crosses point A.



A specific calculation of the expenditure implications of a change in the composition of the dependency ratio runs as follows. The social expenditure on children ( $E_k$ ) in per capita terms ( $PC_k$ ) is calculated as

$$PC_k = \frac{E_k}{\sum_{g=1}^{14} N_g}$$

where  $N_g$  is the number of people at age  $g$ . Accordingly, the social expenditure for elderly ( $E_d$ ) in per capita terms ( $PC_d$ ) is

$$PC_d = \frac{E_d}{n \sum_{g=65} N_g}$$

where  $n$  is the oldest age group in the population (say, 75+). According to the findings in the study on Israel, the average expenditure on an aged dependent is twice as much as the corresponding expenditure on a child dependent. Thus, if  $PC_k = Y$ , then  $PC_d = 2Y$  and the average expenditure per dependent in period A may be calculated as:

$$\begin{aligned} \bar{E}_A &= 2Y w + Y(1 - w), & 0 < w < 1 \\ &= 2Y w + Y - Y w \\ &= Y w + Y \end{aligned}$$

where  $w$  is the weight of aged among the dependents. In the transition from A to C,  $w$  increases by  $\Delta w$ , so that the expenditure in period C is

$$\bar{E}_C = Y(w + \Delta w) + Y$$

and the change in average expenditure per dependent between the two periods is

$$\begin{aligned} \frac{\bar{E}_C}{\bar{E}_A} &= \frac{Y(w + \Delta w) + Y}{Y w + Y} \\ &= \frac{Y w + Y + Y \Delta w}{Y w + Y} = \frac{Y(w + 1 + \Delta w)}{Y(w + 1)} \\ &= 1 + \frac{\Delta w}{1 + w} \end{aligned}$$

A more general pattern, where the ratio between  $PC_k$  and  $PC_d$  is  $\alpha$  (i.e., if  $PC_k = Y$  then  $PC_d = \alpha Y$ ) would be

$$\begin{aligned} \frac{\bar{E}_C}{\bar{E}_A} &= \frac{(\alpha - 1)Y (w + \Delta w) + Y}{(\alpha - 1) Y w + Y} \\ &= \frac{(\alpha - 1)Y w + (\alpha - 1)Y \Delta w + Y}{(\alpha - 1) Y w + Y} \end{aligned}$$

$$= 1 + \frac{(\alpha - 1) \Delta w}{1 + (\alpha - 1)w}$$

For a numerical example, suppose that the shares of children and elderly in the total population of a given country at time A are 0.35 and 0.05, respectively. The dependency ratio is then  $0.4/0.6 = 0.67$ . At time C, the share of children declines to 0.32 and that of the elderly becomes 0.08. In that case, the dependency ratio remains 0.67 as before, but  $w$  ( $5/40 = 0.125$ ) has changed during that process by  $\Delta w = 0.075$ . According to the above, even if the total dependency ratio did not increase, overall expenditure would increase by almost 7 percent:

$$1 + \frac{0.075}{1 + 0.125} = 1.067$$

This is when there is a 2:1 ratio between the average expenditure per aged dependent and the corresponding per child dependent. If the ratio is larger, say, 3:1, then according to the more general equation the overall expenditure would increase by as much as 12 percent:

$$1 + \frac{(3 - 1) 0.075}{1 + 0.125} = 1.12$$

This demonstrates the relevance of demographic dependency changes in evaluating anticipated social expenditure.

### 3. Expenditure simulation model

A simulation model that would allow for changes in the age structure would initially attempt to allocate the major social expenditures, such as in-cash transfers (for example, family allowances, disability, unemployment compensation) and in-kind or direct services (for example, education, health care) according to the age group of their principal beneficiaries or users. Thus, education would be disaggregated into primary, secondary, and higher education; health services into general hospitals, geriatrics, and so on; and income maintenance payments into old-age and survivors pensions, child allowances, disability compensation, and the like. Imputations as to the principal user groups are sometimes straightforward--as with primary

education, where expenditure can be fully imputed to the 5-13 age group. In other cases, existing indicators for the use of services by age group may be employed to impute expenditure outlays. 1/

Using this information, one may then generate estimates of the per capita cost, by age group (not per recipient), for each service. In effect, this yields an imputed per capita figure that implicitly accounts for the average participation rate in the consumption of specific government services. The per capita expenditure of age group  $g$  for service  $i$  is

$$EC_{i,g} = \frac{E_{i,g}}{N_g}$$

where  $E_{i,g}$  is the total expenditure on service  $i$  imputed to age group  $g$ , and  $N_g$  is the size of the age group  $g$  relevant for that service. The overall per capita expenditure,  $TE_i$ , on service  $i$  for the total population is then

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1/ For example, data on days of stay in government hospitals refer to the age of the hospitalized persons. These data were used to obtain an index of the intensity of hospitalization by age group, as follows:

$$I_g = \frac{H_g}{n} \div \frac{N_g}{n}$$
$$\frac{\sum_{g=1} H_g}{\sum_{g=1} N_g}$$

where  $I_g$  is an index of the intensity of hospital use for age group  $g$ ;  
 $H_g$  is the number of days of hospital stay of age  $g$ ; and  
 $N_g$  is the total number of persons of age  $g$  in the entire population.

This, of course, is equivalent to

$$I_g = \frac{H_g}{N_g} \div \frac{\sum H_g}{\sum N_g}$$

which yields the ratio between age-specific days of stay of a certain age group relative to the overall average days of stay for the entire Israeli population. The resulting index was then applied to total expenditure on hospitalization to obtain the imputed expenditure on hospitalization for each age group.

$$TE_i = \frac{1}{n} \left( \sum_{g=1}^n EC_{i,g} N_g \right)$$

Note that the age-specific per capita expenditure equals  $\pi$  times the average cost per direct user:

$$EC_{i,g} = ER_{i,g} \pi, \quad 0 < \pi < 1$$

where  $\pi$  is the participation rate of that age group in service  $i$  and  $ER_{i,g}$  is the respective per recipient expenditure.

When a participation rate rises (for example, if the rate of school enrollment increases) the total expenditure on that service will

increase by  $\left(\frac{\Delta\pi}{\pi} \cdot 100\right)$  percent. For example,

$$E_{ed_t} = E_{ed_{t-1}} \left(1 + \frac{\Delta\pi}{\pi}\right)$$

where  $E_{ed_t}$  is total expenditure on education in time  $t$ .

The per capita figures obtained for each subservice in each five-year age group were then multiplied by the size of each age cohort. Summing up these products yields a total of social expenditures for each five-year age cohort in any given year (Table 3). 1/

Applying the model to the future population structure yields a projection of the expenditure needed for a given year if the per capita volume of services received by different age groups is held constant. The impact of population changes will thus arise from shifts in the overall size of the different age groups.

These types of "projections" are useful in sectoral expenditure planning. In this study the model is used to yield an "objective" yardstick to evaluate historical budget performance, wherein the current expenditure figures are applied to the actual past population. Current (1985) per capita expenditure figures (as defined above) are applied to the size and structure of the population in 1980-85 to determine the rate of growth of expenditure over the period that would have been warranted on strictly demographic grounds. These "demographically based" estimates are then compared with actual expenditure to appraise the budget policy adopted in the context of the economic stabilization program.

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1/ For most uses these age cohorts were aggregated into three broader age groups: children (0-14); working age (15-64); and aged (65+).

Table 3. Israel: Breakdown of Social Expenditure by Major Services and Age Groups, 1985

	Total	Children (0-14)	Young and Adults (15-64)	Aged (65 and over)
<u>(Breakdown by service, in percent)</u>				
Total	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
Income maintenance	44	34	36	73
Education	30	50	33	--
Health	21	11	25	25
Other services	5	5	6	2
<u>(Breakdown by age, in percent)</u>				
Total	<u>100</u>	<u>30</u>	<u>46</u>	<u>24</u>
Income maintenance	100	23	37	40
Education	100	50	50	--
Health	100	16	55	29
Other services	100	32	58	10

Source: Center for Social Policy Studies, Israel's Social Services, 1986-87 (Jerusalem, 1987), p. 62.

### III. Social Expenditure, 1980-87: Expected and Actual

#### 1. Expenditure estimates in real terms

Holding age-specific, service-specific expenditure constant at the 1985 level, and taking account of real expenditure increases required for demographic reasons, total social expenditure should have increased by 8 percent between 1980 and 1984, by 10 percent by 1985, and by 13 percent by 1987 (Table 4).

These results may be compared with the amounts actually spent in recent years. In 1984, before the new economic policy was implemented, real expenditure reached an index of 114 (1980 = 100), thus exceeding the demographically "justified" figure (108) by 6 percent. The next year, 1985, was the year during which a major budget cut was implemented. The level of real expenditure declined to 106, which is an 8 percent decline over the preceding year. In subsequent years, however, social expenditure regained its previous levels, rising to 116 in 1986 and to 121 in 1987.

What explains these fluctuations? One major factor to consider is the deflator used to estimate "real" outlays. The expenditure estimates above have been deflated by the consumer price index (CPI), which provides a measure of the change in the real opportunity cost to private consumers of the resources required to finance public expenditure. An alternative deflator might have been the increase in the cost of production of social services, taking account of the change in the cost of the various inputs to the production process. The main inputs in the production process for many public services are labor and materials and supplies (for example, petrol, textbooks, pharmaceuticals, etc.). A government-consumption price (GCP) index may thus be employed to deflate expenditures on education, health, and other direct services. This index combines changes in the average wage per employee in the public sector with price changes for goods purchased by the government sector.

Expenditure figures deflated by the GCP index yield estimates of the volume of services provided to the public. Transfer payments to families and individuals are still deflated by the CPI, a yardstick that reflects the cost of goods purchased by the recipients of transfer payments, thus providing an estimate of the volume of service effectively provided.

Using this alternative set of deflators yields a completely different picture of trends in actual real government expenditures on social services (Table 4), suggesting an actual real expenditure index in 1984 of 106 (1980 = 100), much less than the alternative estimate of "real" outlays using the CPI index alone, which showed an increase to 114 in 1984. Thus, much of the higher increase in real expenditure implied by the earlier estimate appears to have reflected the rising real wages of public sector employees, and only part of the increase facilitated an increase in the volume of services. Using the "cost of production" deflator, the real volume of services increased only 6 percent, less than

Table 4. Israel: Projected and Actual Total  
Social Expenditures, 1984-87

(Index: 1980 = 100)

	1984	1985	1986	1987
Projected	108	110	111	113
Actual (CPI)	114	106	116	121
Actual (CPI + GCP)	106	109	112	118

Source: Author's calculations. Explanation of calculation  
procedure and notation--see text.

the 8 percent warranted by demographic developments. Alternatively, in 1980-84, due to wage increases in the public sector, a real budget increase of 14 percent (1984 over 1980) was needed in order to increase the real volume of services by only 6 percent.

In 1985 the trend was reversed. As part of the new economic policy, a drastic wage cut was executed, inducing a 7 percent decline in real expenditures (using the CPI index); but this time the reduced budget provided a 3 percent increase in the volume of social services, bringing the volume index of expenditures almost to the "demographically projected" level.

Since the Government and labor unions agreed that this wage cut was to be temporary, this development was reversed in 1986. Restoring the average real wage called for an increase of the real budget (using the CPI index) by almost 10 percent, but corresponding to an increased volume of services of less than 3 percent. Preliminary figures for 1987 indicate that this trend continues and at an even stronger pace--the level of actual expenditure is estimated to rise by about 4-5 percent (depending on the deflator), significantly in excess of the increase in the demographically warranted expenditures (less than 2 percent).

## 2. Services in-kind and in-cash

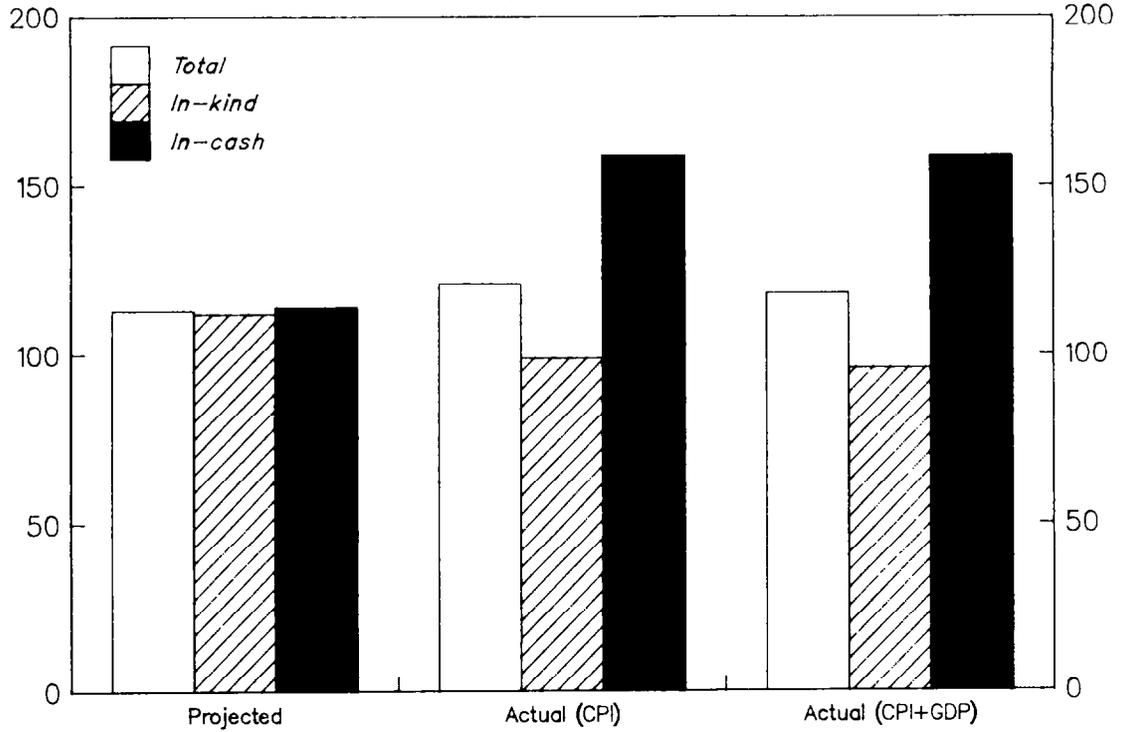
The above analysis relates to aggregate government social expenditure. The picture of social expenditure developments becomes more complicated when these totals are disaggregated into the different social service and transfer programs. The major differences are revealed when a distinction is made between income-maintenance payments (in-cash) and direct (or in-kind) services. As Chart 1 and Table 5 indicate, demographic factors should have led to a 10 percent increase in income-maintenance expenditures between 1980 and 1985, whereas real expenditure rose by approximately 30 percent over the period. This trend continued without interruption in 1986 and 1987.

The opposite is true for direct expenditures providing services in-kind. By 1984, such social services increased in real terms by 11 percent over the 1980 expenditure, but only because of real wage increases; the volume of services appears to have largely remained unchanged. Moreover, per capita outlays appear to have declined, as reflected in the increase in real projected expenditures needed as a result of demographic changes. This divergence between the growth in the demographically required need for expenditure and the real decline in total outlays was characteristic of the period 1984-87.

## 3. Budget cuts and cost containment

An evaluation of the performance of budget policy during the period of budget restraint requires an evaluation of the movement of actual outlays relative to the amount that would be required if account is taken of changes in the population--its overall size as well as its age

CHART 1  
PROJECTED AND ACTUAL SOCIAL EXPENDITURE: TOTAL,  
IN-CASH, AND IN-KIND, 1987  
(1980=100)



Sources: Israel, Central Bureau of Statistics, Statistical Abstract of Israel (various years) and Statistical Bulletins (various issues); Ministry of Finance, The Accountant General, Annual Reports; and Ministry of Finance, Bureau of the Budget, Budget Law 1987/88.



Table 5. Israel: Projected and Actual Income-Maintenance  
and Direct Services Expenditure, 1984-87

(Index: 1980 = 100)

	1984	1985	1986	1987
Income maintenance				
Projected	108	110	112	114
Actual (CPI)	121	130	145	159
Direct services				
Projected	107	109	111	112
Actual (CPI)	111	93	100	99
Actual (CPI + GCP)	99	97	95	96

Source: Author's calculations. Explanation of calculation  
procedure and notation--see text.

structure. The underlying assumption is that budget planning, while aiming at various fiscal policy goals, should consider the changing need for services.

An illustration of such a perspective may be found in Table 6, which contrasts actual and demographically projected outlays. <sup>1/</sup> At an aggregate level actual and projected social expenditures were relatively in balance in 1984, implying that even before the new economic policy was adopted, the relative budget was restrained. For direct services the situation was less favorable: actual outlays lagged behind demographically warranted outlays by 8 percent in 1984. This relative imbalance deteriorated further by 1986, bringing actual expenditure to 14 percent below that projected by demographic needs.

This decline was primarily due to budget restraint in the education sector, where the relative level declined from 96 percent of the demographically projected amount in 1984 to 84 percent in 1986 (although expected to rise to 87 percent in 1987). In contrast, in the health sector, the level was quite steady at 88-89 percent in 1984-86, although with a decline to 83 percent expected in 1987.

Social transfers tell a different story. Already by 1984 the growth of actual payments had exceeded the demographically projected amount by 12 percent. This relativity index rose to 110 in 1985 and increased substantially in 1986 and 1987 to 130 and 140, respectively. This development contributed to a major change in the mix of in-kind and in-cash social services outlays; the in-cash share grew from a third in 1979 to almost half of the total by 1987.

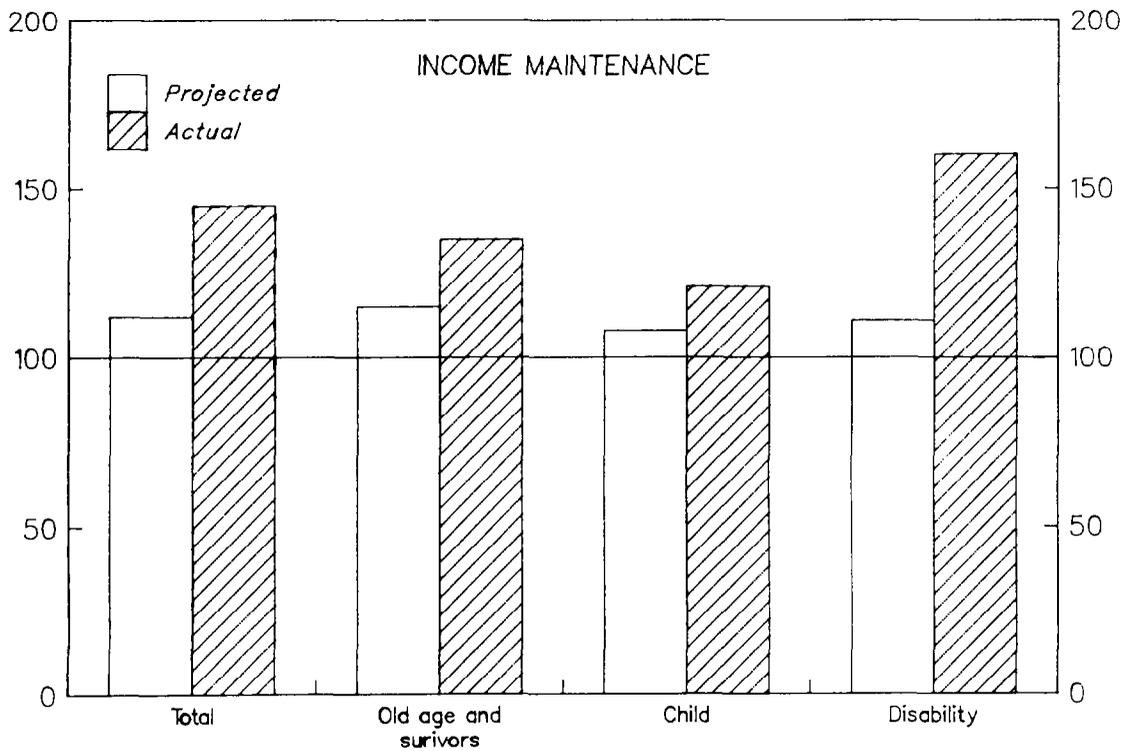
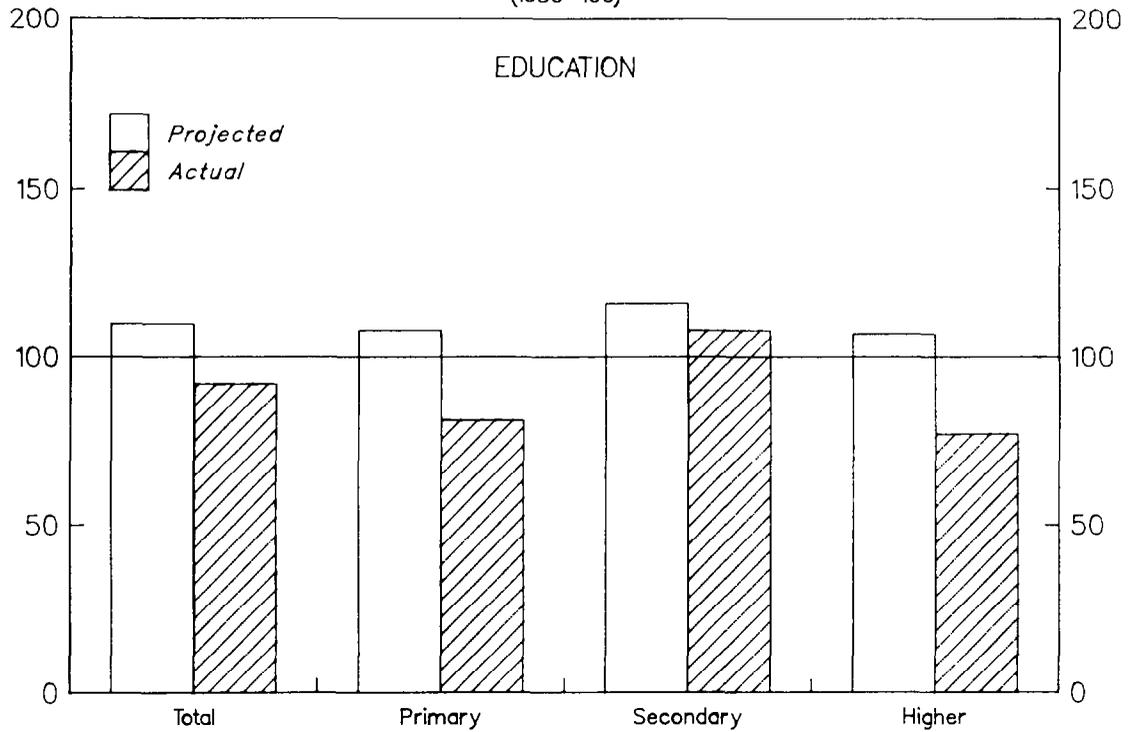
The development of outlays on income maintenance and education bear closer examination. For the latter, the deepest decline occurred in the primary school budget, which fell to 81 percent of demographically projected expenditure in 1985 and then to 75 percent in 1986 and 1987 (see Table 7 and Charts 2 and 3). Higher education was also hit badly, though less than primary education; actual expenditure increased between 1980 and 1987 by 21 percent less than that "warranted" by the changing age structure of the population. Secondary education (including both junior and senior high schools) suffered almost no relative cutback; its relative level declined temporarily in 1985-86, but rose again to almost 100 percent of that demographically warranted.

Among transfer payments, child allowances registered the least growth, with a decline in 1984, some increase in 1985, and a rapid growth in 1986. Old age and survivors' pensions increased moderately and continuously over the period, reaching 123 percent of the demographically projected amount in 1986. The fastest growing transfer related to

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<sup>1/</sup> The figures in the table were achieved by dividing the actual index figures of Tables 4 and 5 by the projected ones (the quotients are standardized so that the denominator equals 100).

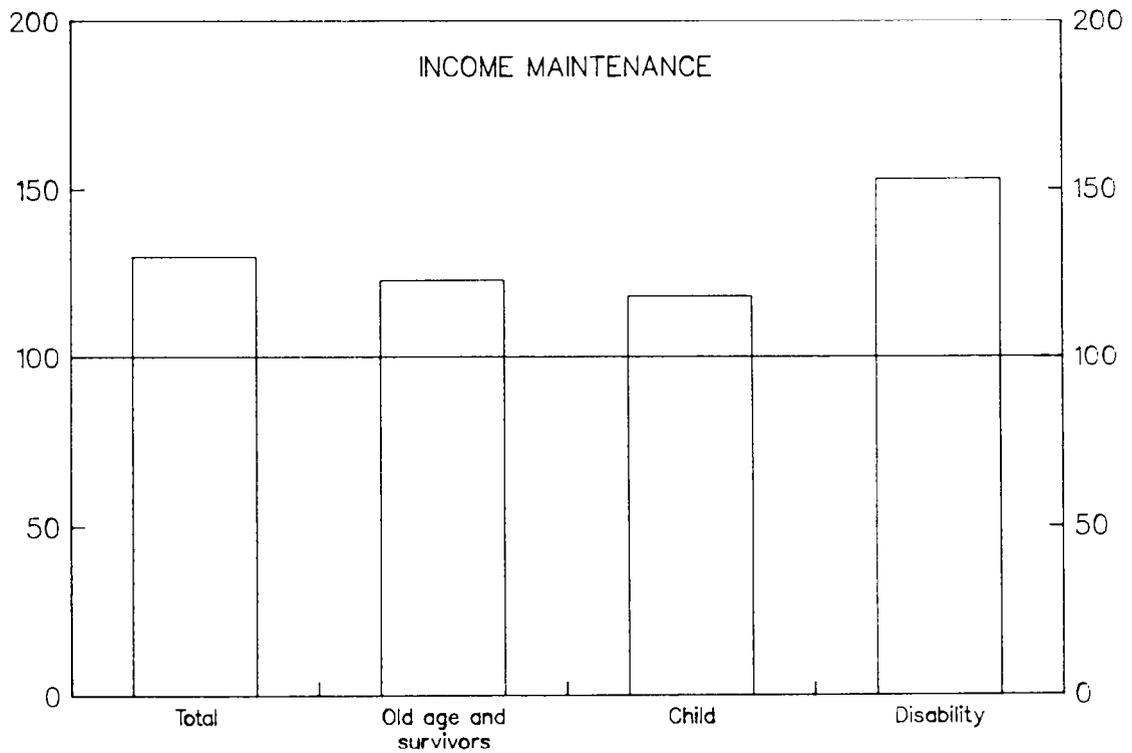
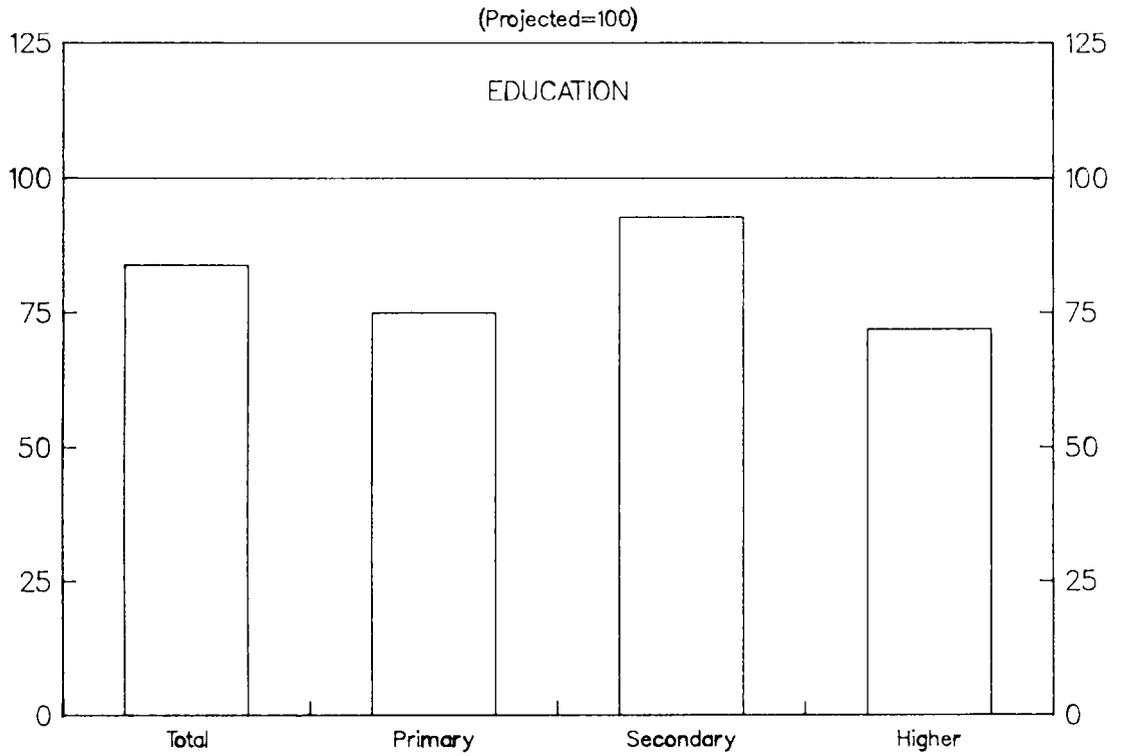
CHART 2  
PROJECTED AND ACTUAL EXPENDITURE:  
EDUCATION AND INCOME MAINTENANCE, 1986  
(1980=100)



Source: Table 7.



CHART 3  
RELATIVE DEVELOPMENT OF ACTUAL AND PROJECTED EXPENDITURE:  
EDUCATION AND INCOME MAINTENANCE, 1986



Source: Table 7.



Table 6. Israel: Relative Development of Actual  
Real versus Projected Expenditure, 1984-87

(Index: Projected = 100)

	1984	1985	1986	1987
Total	<u>99</u>	<u>99</u>	<u>101</u>	<u>104</u>
Income maintenance	112	118	130	140
Direct services	92	89	86	85
Education	96	90	84	87
Health	89	89	88	83

Sources: Author's calculations, as explained in text.

Table 7. Israel: Development of Actual Relative to Projected Expenditure on Education and Income Maintenance, 1984-87

(Index: Projected Expenditure = 100)

	1984	1985	1986	1987
Education				
Primary	92	81	75	75
Secondary	97	94	93	99
Higher	86	86	72	79
Income maintenance				
Old age and survivors	115	118	123	131
Child allowance	94	104	118	123
Disability	133	141	153	165

Source: Author's calculations as explained in text.

general disability state insurance for civilians (as opposed to the military). This branch of national insurance was reformed and made comprehensive in the late 1970s. It was supposed to grow rather rapidly initially and then to subsequently stabilize. Its continued fast growth might cause concern about the financial viability of this insurance scheme.

#### IV. Significance of Budget Restraint in Terms of Service Outputs

##### 1. General

The above discussion indicates that two complementary estimates of real outlays may be useful, albeit for different analytical purposes. Estimates based on the CPI provide a proper tool for evaluating budget management within a stabilization program that seeks to reduce lower aggregate demand to curb inflation. This approach suggests that for the two-year period of the new economic regime, budget restraint was indeed achieved. The budget increased by only 2 percent in 1986 relative to 1984; this involved an interim steep decline in 1985, which was achieved by a drastic "implicit" wage cut. <sup>1/</sup>

The alternative measurement, based on a proper mix of two price indices--for consumer prices and government consumption prices--is more appropriate for evaluating the real volume of services provided by the government. This estimate shows a 6 percent real increase in 1986 compared to 1984. Half of the increase was required, however, to cover the increasing needs arising from the growth in population and the changing age structure. Moreover, if we look at the 1980-86 period as a whole, demographic considerations would seem to have required the full expenditure increase.

It seems, therefore, that cost containment measures were effective in preventing the continuation, or renewal, of the rapid expansion of public social expenditure. As shown above, a breakdown of total expenditures reveals, however, that in direct services, such as education and health, the volume of services declined in the 1980s. Compared with the increasing need for services, implied by demographic changes, the decline was quite significant--about 15 percent.

One should note that the estimates, even the "volume estimate," reflect only the magnitude of inputs. Evaluation of the implications of these developments for the well-being of the population is a problematic

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<sup>1/</sup> The term "implicit" refers to the fact that it was not performed as a direct nominal cut. It was implemented by devaluing the shekel and increasing the prices of subsidized necessities--both factors raising the consumer price index--while the price linkage of nominal wages was temporarily removed. While formally there was a wage freeze, effectively there was a considerable real wage cut.

issue, both conceptually and empirically, since it requires more information on output. Some light may be shed on this issue by utilizing more input information as well as some output indicators in the principal social sectors.

## 2. Education

The analysis in this study has focused wholly on government expenditures, neglecting changes in private sector outlays. Using a broader measure, such as the total share of gross national product allocated to a particular social service sector, may, for instance, expose a shift in the financing of services from the public to the private sector as the government's involvement was reduced.

In the 1970s, Israel witnessed, like most western countries, a rapid expansion of all social services, including education. The share of GNP devoted to the education sector increased less than other services, but still the share rose from 7.4 percent in 1970 to 8.6 percent in 1979. Since the share of the school-age population in the total population did not increase significantly, one might deduce that the increasing share of education in GNP reflected a rising cost per recipient; but this is not the case, since at the same time there was a rise in enrollment rates. <sup>1/</sup>

The share of education in GNP rose further in the 1980s (after some decrease between 1977 and 1980), but preliminary estimates for 1985 and 1986 indicate a clear reduction--to 7.6 percent and 7.8 percent, respectively. <sup>2/</sup> This might partially be a result of the decline in the government's share in financing national expenditure on education, which fell from 75 percent in 1979-82 to 69 percent in 1983 (no later estimates are yet available, but it is conceivable that the trend has continued).

Even though there are not sufficient data to ensure proper measurement of the intensity of the educational process, it may be noted that average work-units <sup>3/</sup> per class went down slightly in 1986 compared with 1980 (1.6 and 1.7, respectively). In the earlier decade the opposite occurred, when the ratio went up from 1.4 to 1.7.

As to the output side, namely, the educational level of the population, one indicator reflects the impact of the rapid increase in the coverage of the education system. Table 8 shows that in 1980-86 there was a significant decline in the percentage of those lacking any

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<sup>1/</sup> In terms of the analysis of Section II.3, a change in  $\pi$  is responsible for the fact that per recipient cost did not change like the per capita cost. (The latter necessarily increased during that period since the total share of GNP increased while the share in population did not.)

<sup>2/</sup> Measurements in the 1980s switch to GDP instead of GNP. The relevance of this shift is negligible.

<sup>3/</sup> This is a measure that standardizes teacher employment to full-time equivalence units.

Table 8. Israel: Levels of Education, 1970-86

	Total	Years of Schooling				Median
		0	1-8	9-12	13+	
1970	100	12	39	37	12	8.8
1980	100	8	27	45	19	10.7
1986	100	7	22	48	23	11.4
1986 by age <u>1/</u>						
18-24	100	--	4	73	23	12.2
25-34	100	1	10	52	38	12.4
35-44	100	2	17	44	37	12.1
45-54	100	8	29	37	26	11.0
55-64	100	11	39	32	17	9.0
65+	100	15	41	29	15	8.2

Source: Israel, Central Bureau of Statistics, Statistical Abstract of Israel, 1987, p. 572.

1/ For Jewish population only.

education or with no more than a primary education (29 percent in 1986 versus 35 percent in 1980). The offsetting increase was evenly split between high school and university education. The median years of schooling increased from 8.8 in 1970 to 10.7 in 1980, and to 11.4 in 1986. These results may be refined by referring to intercohort comparisons that eliminate any distortions caused by intergenerational differences. 1/

This presentation may be supplemented by looking directly at data on school enrollment. The rate of school attendance in the 6-13 age group indicates almost universal coverage even before 1970 (the present rate is 975 per thousand among the Jewish population, and 949 for non-Jews). Enrollment in the 14-17 age group improved sharply since 1970, rising from 668 to 880 per thousand in 1985. Enrollment remains significantly lower among the non-Jewish population (621 per thousand), but the increase has been much faster--111 percent (the 1970 rate was 294 per thousand).

Part of this change reflects the increase in educational expenditures in the 1980s. For the Jewish population enrollment rates in the 14-17 age group improved by 10 percent (from 795 in 1980) and among the non-Jews the increase in the last five years was 13 percent. Hence, the demographically "warranted" projected expenditure is in fact even higher than was suggested above in Table 7. In terms of Section II.3,  $\pi$  increased by some 11 percent. 2/ The originally projected level of expenditure on high school education in 1985 was 114 (worksheet not included in the above tables). Adjusting it for the change in  $\pi$  raises the level to 127; thus, the relative development in 1985 is not 94 (as shown in Table 7) but 85. This implies that, contrary to the statement in Section III.3, secondary education also suffered a real cut, almost as much as the cutbacks sustained by the primary and the tertiary elements of the educational system.

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1/ Take, for example, the 1986 data on education for age groups 15-24 and 25-34. This is, of course, equivalent to referring to age cohorts 15-24 in two periods: 1976 and 1986. Table 8 shows that the uneducated in 1986 comprised 11 percent of the 25-34 age group and only 4 percent of the younger 15-24 age. This is, as explained, equivalent to saying that in the 15-24 age cohort of 1976 the uneducated share was almost three times larger than the same age cohort in 1986. The complementary figures are 96 percent of the population having more than primary education in the 1986 cohort, compared with only 89 percent in the 1976 cohort.

2/ This is calculated by:

$$\left( \frac{\Delta \pi_j W_j}{\pi} + \frac{\Delta \pi_{nj} W_{nj}}{\pi_{nj}} \right) \frac{1}{W_j + W_{nj}} = 0.11$$

where  $W_j$  and  $W_{nj}$  are the respective weights of the Jewish and non-Jewish in total enrollment.

Developments in the higher education sector are even more complicated to appraise. Enrollment rates are ratios between the number of students and the number of people in the relevant age groups. Whereas for primary or secondary schools the denominator is reasonably well-defined, for university education the denominator is defined quite artificially. However, as long as the same age range is maintained for all years, the discrepancy involved is relatively self-contained. Data on participation rates in universities show an increase from 6.3 percent (20-29 age group) in 1970 to 7.2 and 7.6 percent, respectively, in 1975 and 1985. The general trend is, then, an upward one.

### 3. Health

Government expenditure on health increased by a rate less than warranted by demographic changes (see Table 6). National expenditure figures imply that this was only partially offset by shifting financing to the private and the nonprofit sectors. The share of total GNP devoted to health increased from 7.1 percent in 1980 to 7.2 in 1981, to 7.3 percent in 1982-83, and further to 7.5 percent in 1984, before falling to 7.1 percent in 1985 (see Table 9). If the temporary increase to 7.5 percent in 1978-79 is ignored, the rising trend noticed through 1984 has lasted since the early 1970s, when the rate increased from 5.2 percent in 1971 to 6.9 percent in 1977 (figures not in the table). Reversing the trend in 1985 restored the absolute level of the share of health expenditure in GDP to a rate that prevailed in 1980. If this rate is still in force (there are no estimates for later than 1985), then the Israeli economy will have succeeded in containing health services costs, a common target of almost all western economies.

During the 1980s, there was a clear shift in the financing of health services from the government to the private sector. Financing by the government (including local authorities) decreased from 59 percent of total national expenditure on health in 1980 to 53 percent in 1983-85 (with a temporary reduction to 51 percent in 1984). Note, however, that national accounts had, in the past, included nonprofit organizations in the private sector. They have only recently been revised so that nonprofit organizations will be considered public sector if the government covers more than half their expenditures. Adjusted statistics for this revision are not yet updated backwards, so that the above estimates for private sector financing may be overestimates. This, however, would affect the absolute values rather than the time path.

The overall picture is, thus, that after a long period of sustained growth there has recently been a reduction in the share of GNP allocated to health and medical care. Real government expenditure on these services decreased, as indicated both by the government expenditure data discussed earlier and by the decreasing share of total national health expenditures financed by the government.

Table 9. Israel: National Expenditure on Health, 1980-85

(In percent)

	Share of GNP	Current as Per- cent of Total Consumption (Private plus Public)	Investment (As Percent of Total Expenditure)	Government Operated <u>1/</u>	Government Financed (As percent of Total)
1980	7.1	9.0	5.9	27	59
1981	7.2	8.9	6.2	26	59
1982	7.2	8.6	6.7	25	58
1983	7.3	8.7	6.7	23	53
1984	7.5	9.4	6.5	22	51
1985	7.1	8.5	5.5	21	53

Source: Israel, Central Bureau of Statistics, Supplement to Monthly Bulletin of Statistics, No. 4 (1987).

1/ Including local authorities.

Other indicators, such as hospitalization days, may be used to measure the change over time in real inputs and outputs. The time series of total hospitalization days is as follows:

Total Hospitalization Days, 1970-1986

(In thousands)

1970	7,244
1975	7,989
1980	9,030
1983	8,810
1985	9,049
1986	8,746

Source: Central Bureau of Statistics,  
Statistical Abstract of Israel, 1987, p. 655.

It shows quite clearly that after a rapid increase in the 1970s, there was a slowdown (with some fluctuations) in the 1980s, particularly if one considers the growth of population during the period. The significance of these trends is unclear. It may reflect a tightening of cost controls and staff responsiveness to budget constraints, but it may also indicate a decreasing need for hospital services, or a preference for outpatient treatment (which is, of course, less costly). It is not easy to determine the relative contribution of each of these factors. Some evidence exists to indicate that all are relevant.

For example, the data on hospitalization days per 1,000 population, broken down by hospital wards, <sup>1/</sup> suggests that total rates did decline during the 1980s (2,259 in 1979; 2,172 in 1980; 2,214 in 1982, and 2,034 in 1986). At the same time the rate of one segment--long-term care hospitalization--increased very rapidly from 400 (per 1,000 population) in 1980 to 560 in 1986. This is a result of the aging process (the elderly are a vast majority of long-term care patients), which has exerted increasing pressure on limited hospital resources, thereby reducing the availability of other beds.

Direct evidence on the change in the underlying demand for medical services is hardly available or even definable. Indirect evidence may be found in data on longevity or life expectancy. Some data were already presented in Section II.1 pointing to a rapid increase of life expectancy. A complementary measure would be the rate of infant mortality, which declined from 23.2 per 1,000 live births (males) in the

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<sup>1/</sup> The choice of per capita figures is just a matter of availability of data. Aggregate data would have allowed us to calculate age-specific ratios.

early 1970s to 16.3 in 1980-82 and 12.8 in 1985--a 20 percent improvement over 3-5 years. (The corresponding data for females are: 19.0, 13.9, and 10.9.)

Thus, we might have observed changing needs or at least a changing use of health services. According to the notation in Section II.3, a declining  $\pi$  is observed, which can be a combined result of "tightening the belt" in these services, changes in professional approach, and perhaps a beginning of a trend toward more reliance on less expensive outpatient treatment. On the other hand, since for most of the 1980s there was an increase in expenditure, while at the same time hospitalization days declined, it is conceivable that hospitalization became more expensive, possibly as a result of modernized capital-intensive procedures. This is supported by the greater-than-average increase in intensive-care hospitalization days.

#### 4. Income maintenance

Income maintenance is by far the largest component of social expenditure in Israel, consisting of a wide variety of transfer payments. Some provide a social safety net for populations at risk; others offer coverage of a more universal character.

The largest component of the social security network is the old-age and survivors' pensions. In most years it has accounted for almost half of total income-maintenance expenditures. The real value of pensions increased from NIS 0.8 billion in 1980 to NIS 1.1 billion in 1986, with a further NIS 0.1 billion increase anticipated for 1987. This reflects an annual growth rate of 6-7 percent. In the same period, the number of recipients increased by only 2.5 percent. The number of recipients in 1986 was 17 percent larger than in 1980, whereas the total amount transferred to them was 42 percent higher. This implies that outlays per recipient increased on average by more than 20 percent.

An important factor in determining the level of the pension is the supplementary income component paid to low-income pensioners (principally to those whose social security pension is their only regular income). The supplement almost doubles the basic pension payment, and in the 1980s there was a significant decline in the percentage of pensioners who received it--from 45 percent of all pensioners in 1980 to 36 percent in 1986. This by itself should have decreased the average pension by 6 percent (in 1986 compared to 1980). Thus, if we expected an increase of 17 percent of old-age pension expenditure (because of the 17 percent increase in the number of recipients), the adjusted expectation would lead to only a 10 percent increase.

Part of the difference between the "expected" and the actual is due to changes in average wages to which the pension is indexed. In the wage-cut period, however, there was a need to change the indexation arrangements, that is, a shift to CPI, in order to prevent a decline in the purchasing power of the basic pension. Once the wage-cut was over,

the original indexation to wages was restored. The increase of these expenditures can be noticed not only in terms of purchasing power but also in relation to other incomes in the economy, such as average wages. The basic rate for a couple of pensioners was raised from 20.4 percent of the "average wage per employee post" in 1980 to 22.3 percent in 1986 (with an interim increase to 23.0 percent in 1985). The first quarter of 1987 showed another increase to 23.6 percent (probably the highest in two decades).

The second component of income maintenance--the child allowance--is of considerable importance since its level is affected by the fact that it plays, to some extent, the role of promoting horizontal equity, which in other countries is typically realized through the income tax system. <sup>1/</sup> Child allowances account for a quarter of all benefits, much less than in the mid-1970s, when it comprised 43 percent of total benefits. Much of the decline has been associated with its stability in absolute terms; the absolute level in 1985 was similar to that of 1978 (NIS 580 million); in between the total fluctuated around 550 (±30). This stability, in part, reflects demographic factors but also the impact of policy changes, including the abolition of certain allowances (first child, then two children in small families, and other changes like these). Moreover, some parts of the child allowance became taxable, ignoring its original role (at least part of it) as a fiscal tool for increasing horizontal equity.

General disability benefits, in their present framework, started to develop in the second half of the 1970s. These benefits grew rapidly from less than NIS 50 million in 1975 to NIS 190 million in 1980. It was believed that due to maturation of the program a halt would be observed after 1980. This, however, did not happen, as the absolute level still increased annually by almost 10 percent, and even its share in total benefits increased from 11 to 13 percent. This trend, combined with the demographic projections, may still increase the share of disability benefits.

#### V. Future Trends and Policy Implications

The main purpose of this study was to evaluate the budget cuts implemented in 1985 and their impact on social services. Since expenditure developments throughout the 1980s occurred in an environment of a triple-digit inflation (and at its final stage, moving toward quadruple digits!), special attention was paid to converting nominal outlays into real-term magnitudes. Two alternative--while complementary--estimates suggested that there was a moderate increase in the real volume of services.

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<sup>1/</sup> Israel had also used the more conventional method until the mid-1970s, when tax reform led to a substitution of direct child allowances under social security for personal exemptions for children.

This result, however, is not sufficient to evaluate performance, since it deals with changes in aggregate consumption, ignoring possible changes in the need for services. An important factor in determining the need for social services is demographic change. As observed, the total population increased by 8.8 percent over the first half of the 1980s. Not all age groups attained this rate of increase. Notably, the age group 0-14 increased by only half the rate of the aged (6.4 percent as against 11.7 percent for the 1980-85 period). To account for the change in population, social expenditure would have had to grow by 9.5 percent over this period, based on a simulation model that applies 1985 per capita outlays to the size of each age group in 1980 and 1985. Since the actual volume of services increased by only 8.7 percent, the overall social expenditure was indeed restrained. This restraint may be perceived as a change in the long-term trend of ever-growing public outlays relative to the growth in population. That trend led to an increasing share of social expenditure in GDP, probably contributing to a structural change in government finance that eventually created a large-scale government deficit. The budget restraint, however, did not equally apply to all services, as income maintenance programs grew more rapidly than dictated by demographic change. The opposite occurred in direct services, where the increasing volume of services provided lagged some 15 percent behind increasing needs--again, based upon the 1985 per capita expenditures.

This finding might be meaningless unless it were established that the 1980 level was the proper one and that a deviation from it represents moving away from some desirable target. Information compiled for this study, however, does not allow such a judgment. Still, as discussed in Section IV, there are indications that, from a quantitative perspective, the education system did increase its input, and the number and percentage of educated people was on the rise, which is, no doubt, a desirable development. The fact that this was achieved at a lower cost than in the past (in terms of per capita expenditure, which, as noted above, decreased by some 15 percent) may be a result of increased productivity. But it is conceivable that in the process some deterioration in quality might have occurred.

Organizational forces generally tend to expand the system even when no increase in the potential user population takes place. This was probably restrained over the past half decade, mainly through budget control. But if this process goes on, there is a risk of "freezing" the composition of the work force and avoiding the entrance of new, and possibly more modernly trained, social service providers. There is a limit to how much a move like this is desired, beyond which the cost in quality exceeds the economies in expenditure.

One consideration that should be borne in mind is the anticipated demographic trend. A full discussion of future needs, as represented by

demographic projections, is reported in a previous work. <sup>1/</sup> According to that report, total social government expenditure will need to grow by 22 percent through the end of the century to compensate for population growth and the changing age structure. Educational outlays will need to grow by only 16 percent, due to stagnation in the size of the 0-14 age group (all social services directed to children will need to grow by only 6 percent between 1985 and 2000). Health expenditure requirements will be higher than for all other services, rising by 28 percent. The additional requirement for income maintenance will be similar to the increase in overall social expenditure (24 percent).

These projections reflect mechanical calculations of demographic forces and obviously do not purport to be projections of actual expenditure. The results should be considered only as general guidelines for policy. One major constraint over the short term is that macroeconomic policy requires continued restraint for as long as suppressed inflationary pressures threaten the still shaky stabilization process. The crucial target of renewing economic growth has not been achieved so far, not to mention a reduction in balance of trade deficits or in foreign debt levels. From this point of view a legitimate goal could be holding constant the share of GDP allocated to social expenditure. This would enable some real absolute volume increases even in the short run.

The share of government social services to GDP was fluctuating close to 17 percent in the 1980s (Table 10). One source of relative steadiness has been the stagnation of the economy, accompanied by a slowing growth in social services. Real GDP increased by the following annual rates:

Real Growth of GDP, 1980-86

(In percent)

1981	3.8
1982	0.4
1983	2.7
1984	1.8
1985	2.8
1986	2.2

Source: Israel, Central Bureau of Statistics, Statistical Abstract of Israel, 1987 (various years).

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<sup>1/</sup> See Yaakov Kop and others, "Government Expenditure--Structure, Target Populations and Forecast of Needs," The Center for Social Policy Studies (Jerusalem, 1987).

Table 10. Israel: Share of Government Social Expenditure in GDP, 1980-86

	All Social Expenditure	Income Maintenance	Education	Health
1980	17.9	5.5	5.3	3.6
1981	17.9	5.9	5.2	3.6
1982	18.1	5.9	5.7	3.6
1983	16.8	5.7	5.1	3.4
1984	15.8	5.6	5.1	3.3
1985	16.6	6.8	4.6	3.2
1986	17.0	7.2	4.6	3.4

Sources: Author's calculations based on the following sources: Israel, Central Bureau of Statistics, Statistical Abstract of Israel (various years) and Statistical Bulletins (various issues); Ministry of Finance, The Accountant General, Annual Reports; and Ministry of Finance, Bureau of the Budget, Budget Law 1987/88.

In most of these years the growing domestic product hardly sufficed to compensate for population growth. Differences between the various services are revealed in the share of GDP. Income maintenance programs increased, mainly in the last two years, from 5.5 percent of GDP to 7.2 percent. The contrary is true for the education system, while health services are quite constant. Comparison with the results of Heller, Hemming, and Kohnert <sup>1/</sup> for the seven major industrial countries indicates that in education the Israeli rate in 1980 (5.3 percent) was lower than in Canada (8.1 percent), the United States (6.6 percent), and Japan (6.3 percent); it was similar to that of the United Kingdom and higher than in France, Germany, and Italy. Since the share of children in Israel's population is larger than in other western countries, this comparison suggests that Israel may lag behind the others in terms of GDP per recipient.

In health services the gap is wider, possibly reflecting structural and organizational aspects of the Israeli medical care system. Most of the Israeli population is covered by a comprehensive health plan (sick-funds) through the major labor unions, financed through taxation of employers and employees. In many ways it is comparable to a national health service, such as the United Kingdom's. It is publicly owned and administered, though not a government service. If the cost of the sick-funds is added to government outlays on health, the share of total health expenditure in GDP would approach that of the United Kingdom and Japan, and possibly Italy. Note, however, that here the demographic structure leads to the opposite of what was observed with respect to the education services: the share of the elderly, who are intensive consumers of health services, is smaller than in European countries, though not much less than in the United States and Canada.

In the long run, there is room for increasing government expenditure on social services, without reaching excessive levels such as those that have caused industrial countries to examine cost containment measures and reduced government involvement. An increase in government social expenditures should take place on a more targeted basis, taking into account both demographic changes and the adequacy of existing programs.

In education there is still room for increasing the enrollment rates in secondary education, mainly among the non-Jewish population. New trends of cost sharing to finance extended services (such as complementary courses not financed by the government in primary schools) may contribute to cost containment, but they do so at the risk of decreasing equity and diminishing the quality of schools in the periphery, in small towns, and in economically underdeveloped areas. Also, it must be remembered that the projected stagnation of the student population is a country average; many places will demonstrate considerable growth. Addressing the geographical dispersion of the population will involve unavoidable additional costs.

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<sup>1/</sup> Op. cit.

In health services the major policy issues revolve around the need to continue modernizing the system while containing the growth of costs arising from the development of intensive care units, computerized axial tomography (C.A.T.) scanners, and other advanced technologies in hospitals. While these advances place medical treatment in Israel at the forefront of the profession, their introduction is very costly. Some economies may be achieved by regulating the number of units in an area, and avoiding duplication and underuse. In any case, if Israel wants to continue to enjoy the advantages of high technology and to maintain advanced medical research facilities, it should allow for further modernization and expansion of its medical system. This could, of course, be achieved by increasing privatization, but there is a potential trade-off between reduced government expenditure and increased inequalities. Also, the increase should be accompanied by better incentives to use resources efficiently. Here, lessons might be learned from countries that have already introduced such policies and mechanisms. 1/

One source of potential increase in medical expenditure will arise from the aging of the population. The rapid increase in the elderly population has stopped, and their share in total population will remain as is for the next two to three decades. However, in the next five years there will be an increase in the share of the population over age 75, who are major consumers of health services.

Concerning income maintenance, the increase of old-age and survivor pensions occurred not only in absolute terms but also as a share of total output, rising from 2.5 percent of GDP in 1980 to 2.7 percent in 1983, and to 3.2 percent in 1986--a 30 percent increase. Though the absolute level remains lower than in the industrial countries, two points should be considered. First, the share of the elderly in the Israeli population is considerably lower than in other countries. Second, the National Insurance Institute pensions are only part of more comprehensive pension arrangements. The complementary pensions are to a large extent budgetary pensions of the public sector, labor union pension funds, and private pension funds. It is believed that the share of complementary pensions is larger than in other industrial countries and is becoming increasingly important, as reflected by the declining ratio of old-age pension beneficiaries who are entitled to supplementary allowance (which is paid to those whose social security benefits are, in effect, their sole income).

It was necessary to change the indexation arrangement several times during the economic adjustment period. This may indicate the need to give greater thought to long-range arrangements, so that benefits are less vulnerable to changes in economic conditions. With regard to the level of benefits, it may be necessary to go beyond the existing simple dichotomy between income supplement receivers and nonreceivers and introduce more graduation so as to make the program progressive. It is

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1/ Heller, Hemming, and Kohnert, op. cit., pp. 42-45.

worth noting that when wages were cut in 1985, all old-age pension receivers were favorably treated, without regard to their economic status. Thus, low wage earners suffered a wage cut, while pensioners were immune, even if their incomes were relatively high.

Regarding child allowances, the 1975 tax reform removed most of the child exemptions from the tax system and transferred them to the social security system. Over the years various elements of the child allowance were canceled or became taxable. For example, the allowance for the first child in families of up to three children was abolished if the head of the family earned more than 80 percent (later 90 percent) of the average income. Second and third child allowances were taxed according to a somewhat vague means test. All the cancellations took place without compensating measures in the tax system. As a result, an important tool for horizontal equity was essentially abandoned without serious public or professional debate. Subsequent developments may call for a reform of all social security programs. In such a case, attention will probably be drawn to these policy issues.

One of the lessons that might be learned from the Israeli experience is the strategy of budget cuts. As shown in this paper, if measured properly--taking into account demographic structure--the direct services were cut, on an age-adjusted per capita basis, by some 15 percent. Such a reduction would be quite difficult to introduce formally or explicitly. The implicit strategy applied a mere restraint, for some two to three years, with real erosion in services arising from the growth in the size of beneficiary groups. Holding total expenditure constant for two to three years, while the specific age group continued to grow, eroded the per recipient or per capita expenditure to a desired level. This strategy proved attainable, even though it took more time than an alternative shock-like strategy which would have had little, if any, chance of being implemented.

## VI. Application of Methodology to Latin America

The population in Latin American countries is projected to grow substantially in coming decades <sup>1/</sup> in a process that will have considerable implications for government expenditure on social services. The discussion in this chapter covers six major countries in the region, each with more than 15 million inhabitants--Argentina, Brazil, Colombia, Mexico, Peru, and Venezuela. Their combined population in 1985 was 310 million--about three quarters of the total Latin American

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<sup>1/</sup> The projections referred to are those presented in a World Bank report. See K. C. Zachariah and My T. Vu, Latin American and Caribbean Region Population Projections, 1987-88, The World Bank, PHN Technical Note 87-19d, November 1987.

population. The aggregate for these six countries is forecast to be 410 million in the year 2000, a 33 percent increase in the remaining years of this century.

In order to evaluate the demands such population growth will place on government expenditure, the model presented in this study was used. A focal point in the study is the operation of demographic factors in determining social expenditure. Since the age structure of the population is crucial in evaluating the prospective path of social services expenditure, this effect may be missed if reference is made merely to total population growth. A growing population might sometimes need fewer social services if growth is offset by a declining dependency ratio. Thus, the dependency ratio technique developed in Section II.2 was applied.

#### 1. Demographic projection for six countries

The total population of the six major countries in Latin America is expected to increase by 33 percent between 1985 and 2000. The largest increase is to be found in Mexico, where there will be an almost 40 percent increase in 15 years--the 1985 population of 79 million is expected to reach 110 million in 2000 (see Chart 4). Argentina has the lowest rate of increase, increasing by 20 percent--half the Mexican rate.

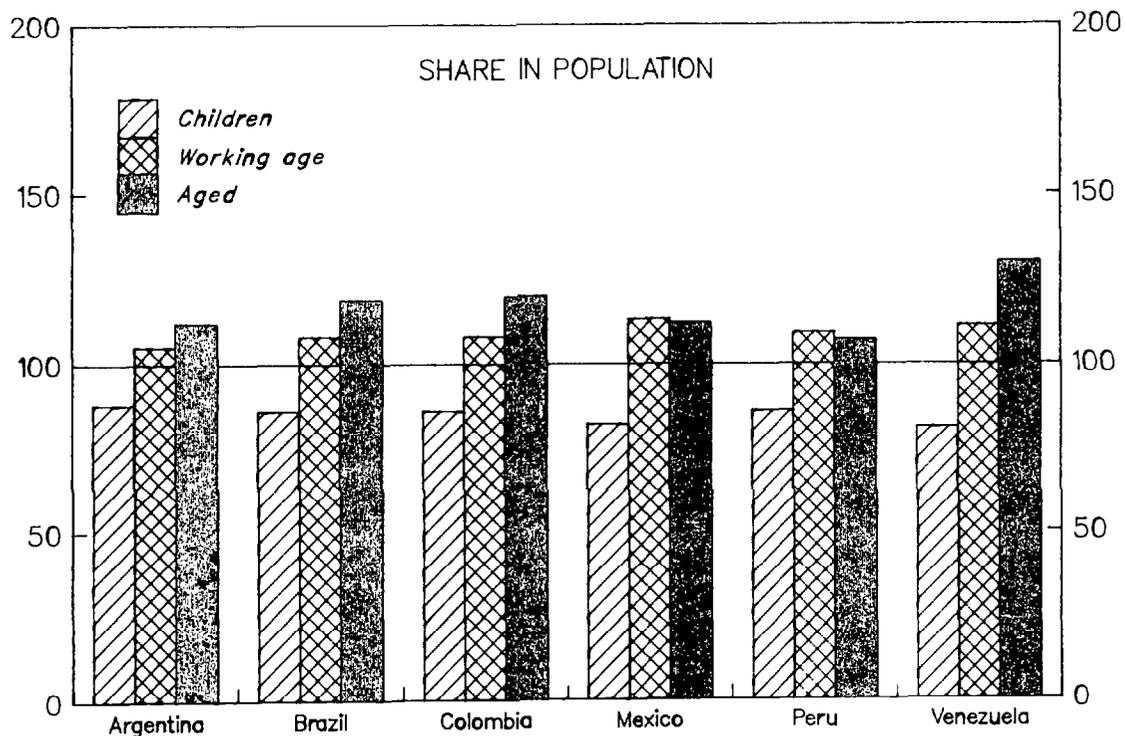
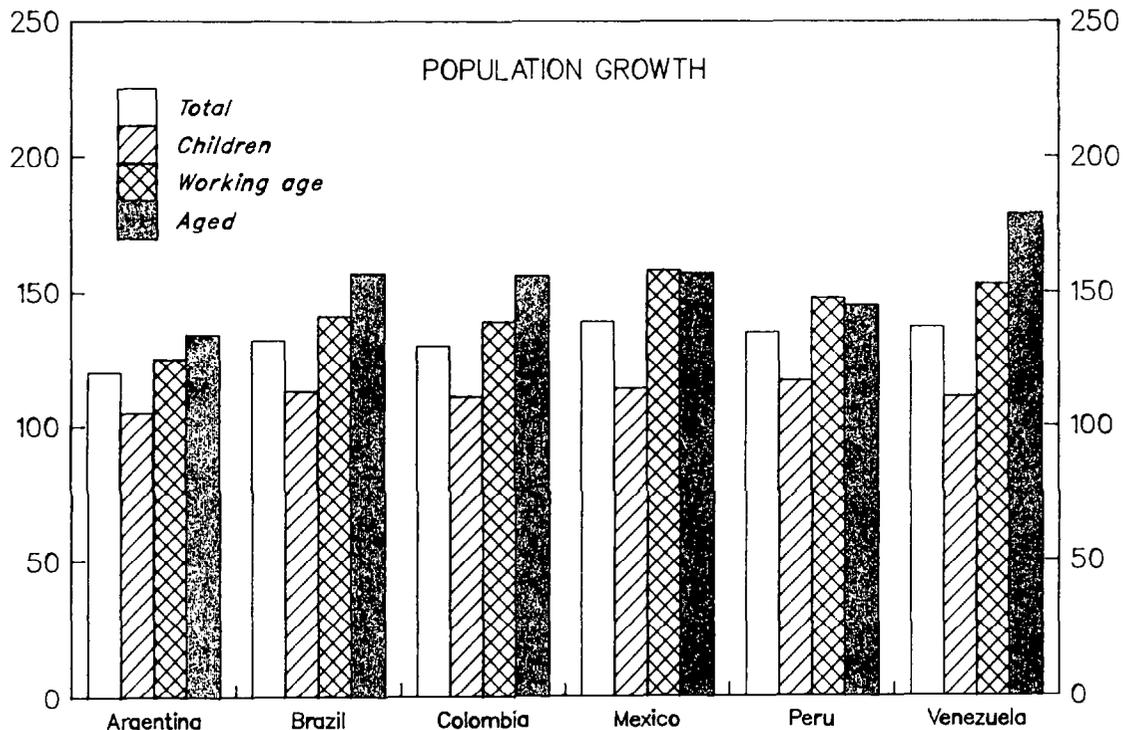
What is striking in Chart 4 is the fact that the slowest increase for all countries will be recorded for children (aged 0-14). This is particularly noticeable in Argentina, where the size of this age group will increase through the end of the century by only 5 percent, from 9.5 million to 10 million.

The aging process is reflected in the fact that the tallest bar in Chart 4 is that of the 65+ age group. The highest rate is found in Venezuela, where the number of elderly will increase by some 80 percent, as against 34 percent in Argentina.

The differential growth rates of the various age groups will result in a change in the relative shares of the different age groups in the population in each country. The second part of Chart 4 shows that the share of children will decline considerably.

Bringing the above findings into the framework of this study calls for a calculation of the dependency ratio and its change over the projection period. Chart 5 shows that the overall and the child dependency ratios are declining. The change is felt most strongly in Venezuela, and least so in Argentina. Combining the above findings, the lower part of Chart 5 shows the resulting dependency ratios in the year 2000, compared to 1985.

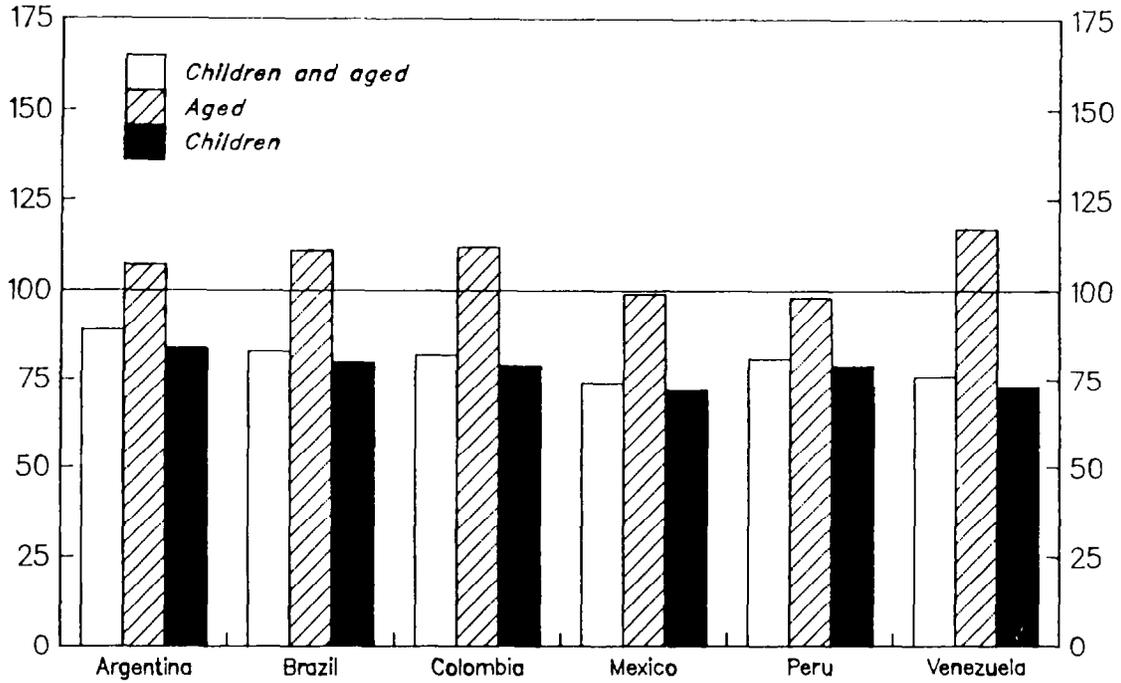
Chart 4. Latin America:  
POPULATION CHANGES BY THE YEAR 2000  
(1985=100)



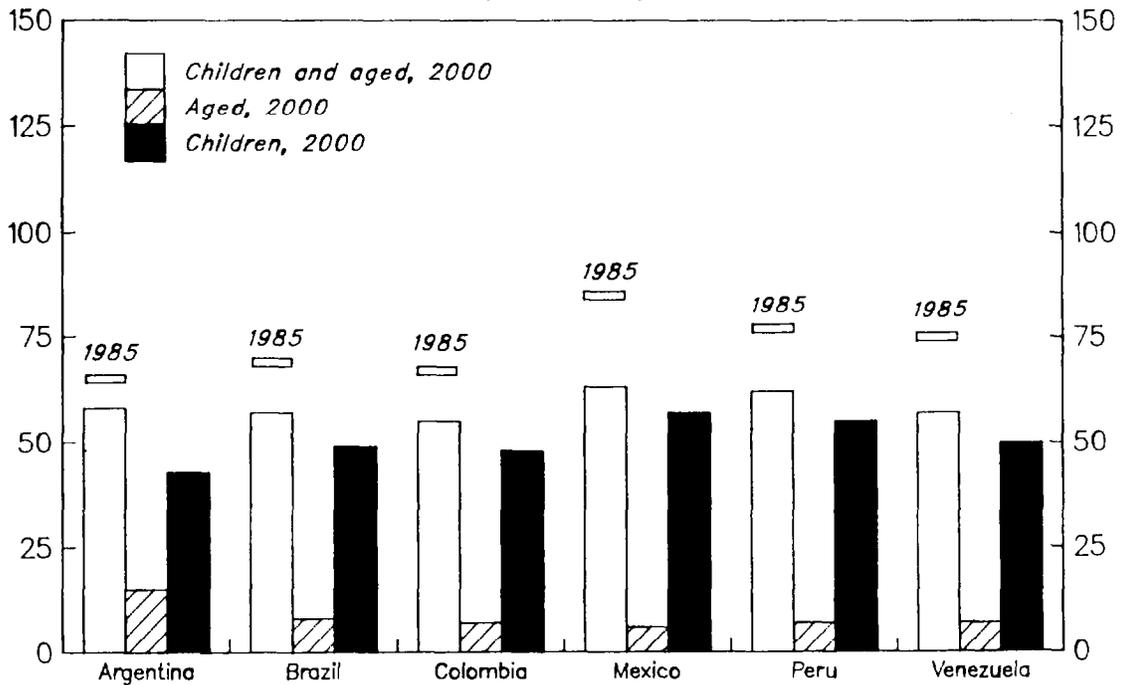
Source: Author's calculations, based on K.C. Zachariah and My T. Wu, Latin American and Caribbean Region Population Projections, 1987-88, World Bank PHN Technical Note 87-19d (November 1987).



Chart 5. Latin America:  
CHANGE IN DEPENDENCY RATIO BY THE YEAR 2000  
(1985=100)



EVENTUAL DEPENDENCY RATIO  
(2000 vs. 1985)



Source: Author's calculations, based on K.C. Zachariah and My T. Wu, Latin American and Caribbean Region Population Projections, 1987-88, World Bank PHN Technical Note 87-19d (November 1987).



Several conclusions may be drawn. First, all dependency ratios will be much lower than in 1985, which means that the financial burden of supporting dependent age groups on the working age population will decline. For example, in 1985 each 100 adults in the working age group had to support 85 children and elderly; in the year 2000 they will support only 63 dependents. Second, the variability in dependency ratios across countries will become less. Third, the declining dependency ratio is mainly associated with child dependency; elderly dependency is on the rise, even though its level will remain low relative to industrial countries (only Argentina has a double-digit elderly dependency ratio among the Latin American countries).

The next section will estimate the specific government expenditure burden implied by the changing demographic structure, but before that, it is worthwhile having a closer look at each country separately. We shall trace the developments in two countries, as an example.

Argentina's population totaled 31 million in 1985. By the 1990s the population will rise to 33 million and to 37 million by the end of the decade. A moderate slowdown is expected thereafter. During this period the child population will remain fairly stable, with the principal growth of the population in the working age group, 15-64. There will be an increase in the relative size of the over-65 age group, but its absolute size will be fairly small. This will lead to a continuous decline in the dependency ratio, reducing the average financial burden on the working age population that is associated with government social expenditure. Yet, the increasing share of the working age group will probably have an impact on the labor market stemming from an increased labor supply. With the huge size of foreign debt, it is doubtful that capital formation will match the growth in the labor force, hence a fall in productivity of labor may be experienced.

The corresponding data on Brazil present a faster growth of total population, mainly of the working age group. The dependency ratio declines as a result, and the share of the working age group increases to 64 percent of the entire population in 2000 (compared to 59 percent in 1985).

Applying the model of Section II.2 yields (Table 11) that for Argentina the dependency ratio factor remains neutral through 1990, and only in the year 2000 is there a decline in expenditure (8 percent) due to the change in the level and age composition of the dependency ratio. In Brazil, the decline is noticed earlier--4 percent in 1990, and as much as 14 percent by the year 2000.

## 2. Expenditure simulation--an illustration

Applying the expenditure simulation methodology of Section II.3 to Latin America would necessitate a large amount of data in addition to the demographic data dealt with in the previous section. A full breakdown of government expenditures in these countries would be

Table 11. Argentina and Brazil: Determinants of  
Social Services by Dependency Ratio, 1990-2010

(Index: 1985 = 100)

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	1990	1995	2000	2005	2010
<hr/>					
Argentina					
Simple dependency ratio	100	97	89	85	82
Adjusted to young/old mix	100	99	92	89	86
Brazil					
Simple dependency ratio	96	90	83	75	71
Adjusted to young/old mix	96	91	86	79	76

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Sources: Author's calculations as explained in Section 1 of this chapter.

required, as well as a set of indicators yielding age-specific incidence coefficients. Gathering all this information is beyond the scope of this study. However, a partial and simplified application may illustrate how the model can be used elsewhere and provide a preliminary appraisal of the need for services in these six countries.

Argentina will be used as the example, calculating absolute magnitudes of expenditure for the next two and a half decades. The age-specific coefficients thus derived may be applied to the other five countries.

Expenditure figures are drawn from the 1986 Government Finance Statistics Yearbook. 1/ The main social expenditure figures published are for education, health, and social security. Disaggregated sectoral data are only available for the education sector, whose sub-items are: schools, universities, and other. Expenditures on schools were imputed to the 5-14 age group and to three fifths of the 15-19 age group (as a proxy for the 15-17 age cohorts). The imputation was done linearly, so it does not take into consideration the fact that primary education per student is less expensive than secondary. This, however, is offset by the fact that secondary school enrollment is smaller than primary. Total university expenditures were applied in the same way to the 20-24 age group and to two fifths of the 15-19 age group. Outlays on "other" education (a rather small one) were arbitrarily allotted as follows: half to preschool and half to the 0-24 age group, proportionately to their specific expenditures.

Total social government expenditures in 1984 amounted to ₳ 435 million, of which ₳ 84 million were spent on education, ₳ 16 million on health, and ₳ 335 million on social security. A projection of these expenditures, based on demographic forecasts, is provided in Table 12. It seems that through the end of the century the increase needed in all services will be similar. Within another decade, however, a differential pattern will develop whereby the average expenditure needed will increase by 35 percent, an average that embodies a much smaller increase in education (24 percent) and higher rates in health (40 percent) and social security (38 percent).

Decomposition of expenditure by age group reveals larger variation in the growth of demand due to demographic change. The increase over 1985 levels needed to care for children will stabilize at 6 percent in

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1/ International Monetary Fund, Government Finance Statistics (GFS) Yearbook, Vol. X (1986). The GFS data cover the year 1984, whereas the demographic series start from the year 1985. Since the results are presented in the form of periodic change rates rather than in absolute dollar terms, the time difference may not change the basic trends significantly.

Table 12. Argentina: Demographically Projected Increase  
in Expenditure on Social Services, 1990-2010

(Index: 1985 = 100)

	1990	1995	2000	2005	2010
	<u>By services</u>				
Total	<u>108.4</u>	<u>116.4</u>	<u>123.4</u>	<u>129.4</u>	<u>135.1</u>
Education	<u>109.8</u>	<u>118.3</u>	<u>123.7</u>	<u>125.0</u>	<u>123.5</u>
Health	<u>106.9</u>	<u>114.3</u>	<u>122.8</u>	<u>131.7</u>	<u>139.9</u>
Social security	<u>108.2</u>	<u>116.0</u>	<u>123.3</u>	<u>130.4</u>	<u>137.8</u>
	<u>By age group</u>				
Total	<u>108.4</u>	<u>116.4</u>	<u>123.4</u>	<u>129.4</u>	<u>135.1</u>
0-14	<u>107.7</u>	<u>109.0</u>	<u>106.9</u>	<u>106.4</u>	<u>106.4</u>
15-64	<u>107.0</u>	<u>116.2</u>	<u>126.5</u>	<u>134.9</u>	<u>141.5</u>
65+	<u>111.1</u>	<u>123.4</u>	<u>134.2</u>	<u>142.9</u>	<u>152.8</u>

Sources: Author's calculations, as explained in text.

the year 2010. At the same time, the needs of the elderly will increase by 34 percent by the year 2000, and by 53 percent if the projection is extended to the year 2010.

A closer look at the data exposes more dynamic trends. As mentioned earlier, use of ILO data made it possible to refine the social security component. <sup>1/</sup> As an exercise, the 1980 distribution of social security payments by three subprograms was applied to the 1984 GFS aggregate expenditure figure. According to this, 58.1 percent of all payments were allotted to pensions; 24.1 percent to sickness and maternity; and 17.8 percent to family allowances. The first component is imputed by assuming that pension recipients include all over age 65, and half of the 60-64 age group. Sickness and maternity outlays were imputed to the 15-60 age group; family allowances were allocated to the 0-14 age group. These imputations are designed to achieve a more detailed illustrative picture.

The figures thus obtained yield social security outlays per capita for the aged of \$ 40.8; for the working age population, \$ 6.3; and for children, \$ 7.8. Applying these coefficients to the forecast population in the six countries yields a demographic-based forecast of social security outlays. The findings can be summarized as follows:

In two countries (Venezuela and Mexico), demographic pressure on the demand for services will increase by 40-42 percent over the period 1985-2000. Three countries (Brazil, Colombia, and Peru) will face an increase of 33-39 percent. In one country (Argentina) the increase will be limited to 23 percent.

To emphasize the dependency component of social expenditure, per capita expenditure of the 15-60 age group is treated as a norm and subtracted from per capita expenditure on children and the elderly. This yielded a "per child dependency cost" of \$ 1.5; for the aged this figure was \$ 34.5. A re-run of the simulation for these coefficients showed that the "per child dependency cost" will increase by almost 50 percent in Venezuela; by 41-44 percent in Brazil, Colombia, and Mexico; by 37 percent in Peru; and by 30 percent in Argentina.

### 3. Summary of Latin America simulation

The demographic structure of the six major Latin American countries is changing in the coming decades, creating greater demand for social services due to the rapid aging that will take place in most countries. This is part of a demographic transition that, as described in Section VI.1, involves a significant decrease in the child dependency

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<sup>1/</sup> See International Labour Organization (ILO), The Cost of Social Security (Geneva, 1985); and G.A. Mackenzie, Social Security Issues in Developing Countries: The Latin American Experience, International Monetary Fund (Washington, 1988).

ratio, not offset by a corresponding increase in the elderly dependency ratio. As illustrated by the slope of the relative cost line in the above model, however, the differential cost of each of the two subdependency ratios adds another factor in determining the expenditure implications of the demographic transition. According to that, even though the increase of the aged dependency ratio is more than offset by the declining child dependency ratio, there will be an overall increase in the dependency expenditure (and in the total social expenditure). Thus, in most of the countries surveyed, even though there is a decline of some 20 percent in the overall dependency ratio, the need for social services may increase more than the rate of population growth. For example, in Mexico the dependency ratio will decline by 26 percent in the period 1985-2000 but, due to a major change in the child/aged mix of this ratio, the net effect could be an increase in the social expenditure (which might exceed the total population growth by several percentage points).

These results are based on pure demographic change. For a comprehensive evaluation more information is needed inter alia on the institutional structure of social services, the adequacy of the present quantity and quality of services, rates of enrollment, and the ratio of health services coverage. Economic constraints are clearly relevant, 1/ and would need to be considered in designing fiscal policy with regard to the social services. A comprehensive policy evaluation of this kind for the six Latin American countries surveyed here may benefit from employing our expenditure simulation to estimate the demographically induced demand pressures for social services that might be anticipated in the future.

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1/ It is of interest to refer here to Israel's experience, which achieved an effective real budget cut by merely holding constant the expenditure for several years, when the population pressure still increased.