CIDE

John Scott

WHO BENEFITS FROM SOCIAL SPENDING IN MEXICO?

Resumen

El trabajo presenta un análisis de incidencia de beneficios del gasto social en México, utilizando medidas comunes de progresividad absoluta y relativa, e introduciendo nuevas medidas basadas en normas de igualdad de oportunidades educativas y de salud. Los resultados se interpretan a travez de un análisis histórico de las asignaciones del gasto social en las últimas tres décadas, y un análisis comparativo a partir de estudios de incidencia de beneficios para otros paises de America Latina.

Abstract

The paper presents a benefit incidence analysis of social spending in Mexico, using standard measures of absolute and relative progressivity, and introducing new measures based on norms of equality of health and educational opportunities. These results are interpreted through a historical analysis of social spending allocations covering the last three decades, and a comparative analysis using recent benefit incidence estimates for other countries in the region.

Introduction *

Over the last four decades (1960-2000) social spending in Mexico grew from 1.7% to 9.2% of GNP. This has become the principal budgetary commitment of the federal government, currently absorbing 42% of total public spending and 60% of federal spending net of national debt payments and tax-revenue shares to the states. Public spending on education and health accounts for half of total spending in these sectors. Evaluating the redistributive impact of these resources is of particular interest for several reasons.

First, in the aftermath of the Mexican Revolution and up to the first electoral victory of an opposition presidential candidate in 2000, Mexico was ruled continuously, for seven decades, by a single party, the *Partido Revolucionario Institucional* (PRI). In the absence of credible democratic institutions, the governments in this period gained political legitimacy through their capacity to persevere political and economic stability, and an (exclusive) claim to the mandate of social justice emanating from the Mexican Revolution. While the first success is indisputable,[1] the success of the redistributive project is less clear. The principal policy on behalf of this promise during the first half of the PRI era was land reform, but the diminishing quality of the land and the concentration of agricultural subsidies on the biggest producers limited its redistributive impact (De Janvry 1981). Over the last three decades public social spending has been the principal redistributive instrument available to the Mexican State.

Secondly, despite important progress in education and health achievements over the last decades, Mexico's human development record is still bellow expectations by international standards. The infant mortality rate was (17%) below the average for upper-middle income countries in 1960, but by 1997 it was (16%) above this average.[2] At present, infant mortality in Mexico is comparable to China, not much lower than Vietnam, and significantly higher than Sri Lanka, despite the distance between Mexico and these countries in per capita income and public spending (table 1.1). Illiteracy and secondary enrollment rates are similarly comparable to these countries. Despite exceptional progress in the average schooling of the adult population over the last four decades, from 2.8 to 7.7 years, the latter still represents a two-year schooling deficit given Mexico's per capita income (Londoño 1996).

[1] This was interrupted by the 1983 and 1995 economic crisis, and the Zapatista uprising in 1994.

[2] This is calculated from the Barro-Lee (1994) data set and World Bank (1999).

		Mexico	Chile	Vietnam	China	Sri Lanka
Life Expectancy (years)	1998	72	75	68.5	70	73.5
Infant Mortality (%)	1998	3	1	3.4	3.1	1.6
Illiteracy (%)	1998	9	4.5	7	17	9
Secondary enrollment (% age group)	1997	66	85	55	70	76
GDP/*per capita* ($US PPP)	1999	7719	8370	1755	3291	3056
Public Health Spending/*per cap.*($US)	1990's	111	110	4	16	11
Public Education Spending/*per cap.* ($US)	1997	216	171	11	18	28
Primary Edu. Spend/student ($US PPP 1985)	1990	200	356		146	244
Gini Coefficient	1990's	53.7	56.5	36.1	40.3	34.4

Table 1.1 Human Development and Economic Resources

World Bank (1999, 2000), Barro and Lee (1994).

Thirdly, like the distribution of income, the distribution of human development in Mexico is exceptionally unequal. Income inequality has been persistently high over the second half of the century, further increasing over the last two decades (Lustig and Székely 1998). The principal cause of this trend is the increasing returns to education observed in many other countries, but aggravated in the case of Mexico by the distribution of schooling.[3] Mexico's schooling gap between de richest 20% and poorest 40% of the population (7.3 years) is the widest in Latin America, and among the widest in the world.[4] According to IADB (1998), in the early 1990's the average schooling for the poorest 10% of the adult population (2.1 years) was approximately *equivalent* to, a *half,* and a *third of* the level achieved by the corresponding poor in Honduras, Peru and Chile, respectively.. While complete primary education in Argentina, Chile and Uruguay was achieved by the poorest decile, this only occured in Mexico at the seventh decile.

An important part of the explanation for Mexico's modest and unequal human development record lies in the distribution of income, which severely limits the private access of the poorer households to health and education services, as well as to goods and assets complementary to these in the production of health and educational achievements. But the distribution of income is in turn largely explained by the prevailing distribution of assets, especially, at the lower end of the distribution, human assets like schooling. Given the distribution of private spending on health and education services, access by these populations to these services, and thus to the accumulation of human capital, depends largely on their access to publicly provided services.

Finally, despite the former points, *benefit incidence* estimates for Mexico are surprisingly scarce. There are a number of classic surveys on the sectoral and geographic allocation of social spending in Mexico, but these report only up to the

---

[3] Boullion, Legovini, Lustig (1998). For a contrast between Mexico and Taiwan and Brazil on this point see Kanbur and Lustig (1999).

[4] The comparative data for Latin America are taken from IADB (1998), Appendix Table 1.2.III, and refers to 25 year old population. Filmer and Pritchett (1998) present a broader set, where only the Indian Sub-Continent and Morocco appear be more unequal than Mexico.

2

early 1980's and lack estimates of the incidence of social spending by income groups even for that period.[5] While the lack of comprehensive benefit incidence studies for Mexico may be explained in part by informational restrictions in the past, these have been relaxed for some years thanks to the inclusion of better information on the use of public services in the recent income and expenditure household surveys.[6] By contrast, estimates of this kind have appeared over the last decade for the other mayor countries in the region, including Argentina, Brazil, Bolivia, Chile, Colombia, Costa Rica, Ecuador, and Uruguay, and for many other developing countries.[7]

The rest of the paper is structured as follows. Section 2 reviews the allocation of public spending in education, health and social security in Mexico over the last three decades and five government administrations. Section 3 describes the measures of progressivity used in this study. Section 4 describes the data and presents the principal results. Section 5 interprets the latter in comparative and historical perspectives. Section 6 concludes.

2. The Allocation of Social Spending in Mexico: 1970-2000

In first half of the 20th century social spending in Mexico gravitated between one and two percentage points of GDP, but by 1982 it absorbed 9.2% of GDP. This growth financed the creation and expanding coverage of the principal social security institutions in the 1940's and 1950's[8], and a rapid expansion of public education in the 1970's. In the aftermath of the 1983 crisis, social spending was cut back and only regained its 1982 level--as a proportion of GDP as well as in real per capita terms—by the end of the 1990's. In contrast to the earlier expansion of social spending, financed by an unsustainable growth of public spending, the more recent one has been achieved through a growing share of social spending in the public budget. The share with respect to public spending net of debt payments and statutory participations to the states was close to 30% over the 1970-1980 period, but rised to 60% over the last decade.

Education absorbed the bulk of this spending in the first half of the century. Though by 1970 health and social security had absorbed the principal share of public social spending, most of the latter was financed by its direct

[5] Wilkie (1978), Aspe and Beristáin (1984), Lustig (1989), and Maddison et al. (1992). To my knowledge, the only benefit incidence analysis available for Mexico is Lopez-Acevedo et.al. (2000), which considers only the education sector.

[6] Prior to 1992, the *Encuesta Nacional de Ingresos y Gastos de los Hogares* (ENIGH) did not differentiate between students in public and private education.

[7] See below, section 5. The first study of this kind in the region was Selowsky (1979) for Colombia. Incidence estimates for the region are reported in CEPAL (1994, 2000). World Bank (2000, p. 80) reports incidence estimates for 24 other countries.

[8] The *Instituto Mexicano del Seguro Social* (IMSS), serving formal sector workers, started operating in 1944, and the *Instituto de Seguridad Social al Servicio de los Trabajadores del Estado* (ISSSTE), serving states employees, was created in 1959.

beneficiaries through social security taxes on employers and employees.[9] General evaluations of public social spending in Mexico have often ignored these contributions, presenting a somewhat misleading account.[10] Considering federal transfers net of social security taxes, education and health have absorbed 59% and 21% of social spending, respectively, on average, over the 1970-2000 period. Together these sectors currently absorb 88% of public social spending. The incidence analysis presented below is thus reasonably representative of social spending as a whole.

Table 2.1 Social Spending 1971-2000

Years	President	% GDP	% Public Spending*	Education	Health & Social Security
				% of social spending net (gross) of social security taxes	
1971-1976	Echeverría	6.7	31.2	36 (57)	52 (24)
1977-1982	López-Portillo	8.5	32.9	40 (58)	43 (19)
1983-1988	De la Madrid	6.6	30.1	42 (62)	44 (16)
1989-1994	Salinas	7.7	45.2	42 (62)	45 (20)
1995-2000	Zedillo	8.8	55.8	43 (57)	44 (25)

Salinas (1994), Zedillo (1999), SHCP (2000). *net of debt payments and state participations.

Education

During the second half of the 20th century the public education system in Mexico expanded from 3 to 18.5 million students in basic (primary and lower secondary) education, and from less than 70 thousand to 3.6 million students in higher (upper secondary and tertiary education (table 2.2). In the case of basic education this expansion in enrollment stagnated in the early 1980s, and primary education enrollment indeed dropped by almost a million students during that decade, and has remained close to that level in the 1990s. The latter trend is explained by demographic trends, the high coverage rate achieved in basic education by 1980, and the 1983 crisis, which in addition to a sharp cut in public spending led to increased dropout rates as poorer households could not afford to continue investing in human capital even for this early age. On the other hand, lower secondary school enrollment expanded by a million over the same decade. In the case of higher education, the principal expansion has been achieved over the last three decades, at an average rate of a million a decade.

---

[9] Following the gradual introduction of a social security reform in 1997, the share of general taxation in social security financing is increasing from 5% to 40% (SHCP 1999).

[10] For example, Lustig (1989, p. 105) noted that "...the two biggest institutions of social security (IMSS and ISSSTE) absorb about 90% of the allocated [health] budget...As a result...spending per capita by the secretaría de salud [attending uninsured population] is equivalent to about 5% of that corresponding to IMSS".

Table 2.2 Public Education Enrollment

Year	Enrollment (thousand students)				Coverage (% of age group)	
	Primary	Lower Secondary	Upper Secondary	Tertiary	Basic (5-14)	Higher (15-24)
1950	2,997	70	37	30	45%	1%
1960	5,730	272	129	83	62%	3%
1970	8,802	890	288	215	69%	6%
1980	13,952	2,510	867	896	85%	13%
1990	13,516	3,852	1,592	1,013	83%	15%
2000	13,668	4,864	2,253	1,364	83%	19%

INEGI (1994), Zedillo (2000), INEGI (2001).

Table 2.3 present the evolution of federal spending on education in 1970-2000, considering spending shares and spending per student at each level. Note the low level of spending per primary student in the 1970-1990 period. In the 1970's this occurred in the context of a rapidly growing educational budget, benefiting mostly students in higher education. In the aftermath of the 1968 student revolt, the share of public education spending allocated to higher education increased from 20% to 42% over the decade. Conversely, the share of educational resources allocated to basic education declined from 80% to 58%. This happened just as enrollment in public basic education was growing by 70%, from 9.7 to 16.5 million students (table 2.2). The impact on spending per student in basic education was aggravated during the 1983-1988 administration, when a disproportionate share of the budgetary cuts was absorbed by this educational level and spending on basic education dropped to its lowest level in the period.

Table 2.3 Federal Education Spending (pesos of 2000)

	1971-1976	1977-1982	1983-1988	1989-1994	1995-2000
% GDP	2.41	3.42	2.73	3.23	3.76
Per capita	907	1593	1157	1429	1855
Budget Shares (%)					
Primary	48	42	33	40	38
Lower Secondary	19	19	19	21	20
Upper Secondary	13	16	20	17	17
Tertiary	20	23	28	23	25
Spending per student (thousand pesos)					
Primary	1.4	2.3	1.1	3.3	5.3
Lower Secondary	4.3	5.9	2.5	6.1	8.2
Upper Secondary	7.3	12.5	6.7	11.2	12.5
Tertiary	16.0	21.8	13.4	24.7	30.7
Primary (% GDP/cap.)	4.1	5.6	3.5	8.5	12
Tertiary/Primary (x)	11.9	9.7	12	7.5	5.8

Aspe and Beristain (1984), Salinas (1994), Zedillo (2000), SHCP (2000).

To put these spending levels in perspective, consider some international comparisons. According to the widely used Barro-Lee (1996) data set on schooling years and schooling quality, over the 1960-1990 period Mexico's

spending per student in primary school lagged behind all regions in the world except Sub-Saharan Africa and South Asia (table 2.4). As a proportion of GDP per capita, spending per primary school student in Mexico over this period was less then 50% the average for any region, and a third of the average for developing countries as a whole. Mexico reports the third lowest value for this variable among middle income countries, with the OECD countries spending on average almost 10 times more per student in primary education. The latter group also spent 2.3 times more per student in tertiary education than at the primary level,[11] in contrast to more than 10 times in Mexico in the 1970s and 1980s, and 5.3 times at present.

Table 2.4
Public Spending Per Student in Primary Education ($US PPP 1985)

	1960-1990	% GDP/capita	school hours per year
Mexico	**175**	**4**	**780**
Latin America and Caribbean	256	9.1	952
Middle East and North Africa	404	13.4	944
Sub-Saharan Africa	143	16.6	1026
East Asia and Pacific	295	9.3	1097
South Asia	101	9.1	981
Centrally Planned Economies	774	24.3	845
Developing Countries	251	12.7	977
OECD	1656	15.7	974

Barro-Lee 1996 Data Set.

Health and Social Security

Over the last 50 years the population covered by the principal social security institutions--IMSS and ISSSTE--has grown from 1 to 55 million.[12] This expansion has barely been able to keep up with population growth: the number of uninsured has remained stable at close to 40 million between 1979 and 1990, increasing to 44 million over the last decade. Spending by these institutions has absorbed on average, over the last three decades, 87% of public health and social security spending. Spending levels per beneficiary in the insured vs. the uninsured populations has been reduced continually over this period from a peak of 17.6 times in favor of the insured in 1971-1976, to 5.5 times in 1995-2000 (table 2.5)[13]. Considering federal spending net of social security taxes, spending

[11] National Center for Education Statistics (1998).

[12] We shall not consider here two other social security services covering workers affiliated to the national oil company and the armed forces, covering a population of some 1.4 million.

[13] Coverage and spending per beneficiary is defined here in relation to the rightholders to these services, or *potential* rather than actual users. In the case of the social security institutions we have used official estimates of affiliated workers and their families. For the *Secretaría de Salud y Asistencia* (SSA), serving the uninsured population, we have estimated the coverage simply as the complement of the insured population in the total population. This ignores a further source of inequality within the

on the uninsured has absorbed 44% of federal transfers to health and social security, and government transfers to the insured have still been on average 1.8 times higher than to the poorer, uninsured population. In contrast to the case of education, this ratio was reduced during the 1970's and 1980's, but has been increasing again over the last decade.[14]

Table 2.5 Federal Health and Social Security Spending (pesos of 2000)

	1971-1976	1977-1982	1983-1988	1989-1994	1995-2000
	Government Administrations				
% GDP	3.45	3.62	2.86	3.45	3.85
Per capita	1,293	1,683	1,207	1,520	1,908
	Coverage (% of total population)				
IMSS	23.9	32.9	39.8	42.5	41.8
ISSSTE	4.5	7.3	8.4	9.7	10.1
	Budget Shares (Net of SS Tax)				
SSA	44.4	44.6	52.1	43.4	36.4
IMSS & ISSSTE	55.6	55.4	47.9	56.6	63.6
	Per beneficiary				
SSA	238	381	300	359	516
IMSS	3,340	3,050	1,992	2,308	2,562
ISSSTE	7,011	6,136	3,141	2,870	3,128
Insured/Uninsured	**17.6**	**9.6**	**7.4**	**6.9**	**5.5**
(Net of SS Tax)	**(3.3)**	**(1.9)**	**(1.0)**	**(1.3)**	**(1.8)**

Salinas (1994), Zedillo (2000), SHCP (2000).

3. Progressive Relative to What?

Benefit incidence analysis estimates the distribution of the monetary transfers implicit in social spending, ordering the population by income or consumption. The size of these transfers is obtained from the budgetary cost of social services. Their distribution among households, as a function of income, is typically estimated from the *use* of services reported in national income and expenditure surveys. This method has three well-known limitations (van de Walle 1998): a) it fails to take into account behavioral and general equilibrium effects, b) costs may not reflect benefits (benefits may not be comparable, and when they are cost-effectiveness may vary widely across programs), and c) it may give misleading guidance for reform (it provides no information on the *causes* of spending inequality nor of the *marginal* impact of alternative reforms). Here we shall be concerned with a more fundamental--if less widely noted-- limitation, underlying the latter two.

uninsured population, arising from unequal access to SSA facilities. In the incidence analysis for health reported below we use survey information on the reported *use* of the different health institutions.

[14] In addition to the phased implementation of the 1997 IMSS reform, this has been due to the resumption of federal subsidies to ISSSTE in 1993, which had been eliminated in 1984.

Benefit incidence analysis assumes implicitly that the principal function of public social spending is the redistribution of (total) income or consumption. This is in direct contrast to a more venerable tradition in economics—based on the "second theorem of welfare economics"—which regards efficiency and market failure-correction as the principal objective of public policy. For example, a mayor survey of the economics of the welfare state by Barr (1992) was explicitly motivated to reclaim the subject as "part of mainstream economics" by eschewing redistributive objectives.[15] But even if we take a more favorable view of the concepts and measures developed by economists and philosophers over the last decades to address problems of distributive justice, and are interested in evaluating the redistributive impact of the welfare state, we may still not be interested primarily in its (direct) impact on *income or consumption* inequality. Here we will propose measures which address what would appear to be a more relevant objective of social spending: reducing inequalities in *educational and health opportunities* (and thus, eventually, in *pre*-transfer income).

The most common measure of progressivity used in the benefit incidence literature is the *concentration coefficient* (or *quasi-Gini*), C, which is simply the Gini coefficient derived from Lorenz (concentration) curves defined in the space of (shares of) social spending, ordering the population by (pre-transfer) income or consumption, as in the case of the original Lorenz curves. C is defined in the interval (-1, 1), where negative and positive values represent, respectively, progressive and regressive allocations. This is a measure of *absolute* progressivity, and as such does not measure the redistributive impact of social spending on income distribution.

The most popular measure of relative progressivity is *Kakwani's coefficient*, K (Kakwani 1977, Vélez 1995), which is simply the difference between the concentration coefficient and the pre-transfer Gini coefficient, G:[16]

$$K = C - G \tag{1}$$

Kakwani (1977) has shown that the redistributive impact of social spending—the difference between the pre- and post-transfer Gini (G^{Post})—corresponds to:

---

[15] "This is an essay about incentive structures and information. Their joint effect is to give the welfare state an efficiency function which is largely separated from redistributive aims. The welfare state is not a subject apart, but part of mainstream economics..." (Barr 1992, p. 742). Consistent with this project, the survey devotes only a couple of pages (from 62) to dismiss distributive concepts and merit goods as vague, in contrast to the "analytically precise definitions" of the efficiency objective (p. 747).

[16] In geometric terms, C, like G, represents twice the area between the concentration curve and the diagonal, while K represents twice the are between the Lorenz curve of the original distribution and the concentration curve, and is thus defined in the (-2, 1) interval, with negative values corresponding to progressive (equalizing) transfers, and positive values to regressive (concentrating) transfers, relative to the original distribution of income.

$$\Delta G = G^{Post} - G = K \frac{\gamma}{(1+\gamma)}, \qquad (2)$$

where γ is the average transfer rate--the total transfer budget divided by total private income or spending. The distributive impact of a transfer is thus directly proportional to its relative degree of progressivity and its magnitude relative to private income.

Note, however, a paradoxical implication of measuring progressivity relative to the prevailing income distribution: if we compare two countries with identical targeting *efforts*, absolutely measured, but characterized by different pre-transfer distributions, the government in the more unequal country will emerge as the more successful redistributor. This follows from measuring the degree of progressivity as the deviation from proportionality to income, postulated by Kakwani as an explicit normative condition.[17] To avoid this we can define measures of progressivity in reference to the distance to an explicit norm of distributive justice in this realm, rather than perfect neutrality. We propose two such measures.

The first takes as the relevant ideal the distribution of public spending on health and education which, given the distribution of private spending in health and education, would generate *equality of resources* in these domains. The concentration coefficient corresponding to this distribution may be obtained as:[18]

$$C_{ER} = -\frac{G_S}{\pi}, \qquad (3)$$

where G_S is the (quasi) Gini coefficient of pre-transfer spending on education or health, and π is the average rate of public to private spending on these goods.

Using the actual distribution of pre-transfer spending in these sectors in the latter formula would not lead to an accurate estimation of C_{ER}. First, if public social spending crowds out private social spending, generating an equal distribution of post-transfer spending would require a smaller fiscal effort than the actual level of private social spending suggests. Secondly, there is a *distributive* crowding out effect: increasing the progressivity of public spending leads to more regressive private spending, if the poor decrease while the rich

---

[17] Axiom 12.2, Kakwani (1977).

[18] Reinterpreting equation (2), we obtain the impact on the distribution of total (public and private) social spending as:

$$\Delta G_S = G_S^{Post} - G_S = K_S \frac{\pi}{(1+\pi)}$$

(4),

where G_S^{Post} is the concentration coefficient for total social spending and $K_S = C - G_S$. The concentration coefficient C_{ER} of public social spending which would lead to an equal distribution of total social spending is derived by setting $G_S^{Post} = 0$. G_S may be approximated in practice by G.

increases private social spending to keep their respective budgetary shares on these goods constant. Finally, some spending in the education and health sectors by upper income groups may be "luxury" spending, superflous in relation to health and educational outcomes. For the latter two reasons, a more relevant measure of the distribution of the private access to these outcomes would be the distribution of pre-transfer spending *capacity* on health and education services, measured by G.

The second measure assumes a more ambitious ideal, recognizing that even equality of total resources for health and education may fall short of equality of opportunity if needs differ. Needs may differ between income groups, despite equality in health and educational resources, because of inequalities in other resources complementary to these in the production of health and education such as the capacity
to buy food, the stock of health and educational capital already accumulated, demographic structure, and environmental factors. In this case, a more relevant norm would be equality of resources *per need*.

For the case of health, Wegstaff et al. (1989) have proposed an "illness concentration curve", plotting the cumulative distribution of the population ordered by income against the cumulative distribution of illness. More generally, we may postulate educational and health needs concentration curves, summarized by a concentration coefficient C_N. When theses curves coincide with total social spending concentration curves, we would have proportionality of spending with needs in these dimensions, or equality of resources per need. The required distribution of public social spending would have a concentration coefficient corresponding to:[19]

$$C_{ERN} = C_{ER} + C_N(1 + \frac{1}{\pi}).$$ (5)

Given that observed needs inequalities are partly due to the inequality of post-transfer spending in education and health, this formula would again overestimate the progressivity of public spending required for equality of resources per need. C_N should thus represent the inequality in needs which would persist under equality of resources.

4. Benefit Incidence

Data Limitations

We use two principal sources of data. Public spending information is obtained from official reports on executed federal spending. All public spending data in this paper refer to federal spending, defined here to include decentralized spending in health and education financed by specific federal funds allocated to

---

[19] This is obtained by setting $C_N = G_N^{Post}$ in equation 3.

these sectors, [20] as well as direct spending by the federal government in the states, and excluding local social spending finaced by general tax revenue shares. Information on the allocation of local social spending of the latter kind is not generally available. Federal spending, in this definition, represents the bulk of public spending in Mexico: close to 95% in health, and 85% in education.[21]

The data on household use of services as a function of income is obtained from the national household income and expenditure survey, *Encuesta Nacional de Ingreso y Gasto de los Hogares* (ENIGH) for 1996. In the case of education, this source reports enrollment in public school and level of education attained. From the latter and the age of those attending public education we infer the educational level currently attended.[22]

In the case of health, the survey reports both if someone is rightholder to any of the two social security institutions, and the *use* of health services in any of these as well as in the *Secretaría de Salud* (SSA). For the social security institutions we have used the first kind of information to estimate the incidence of their non-health component (pensions, etc.), and the second to estimate the incidence of their health services. As noted above, we consider here public spending *net of social security taxes*. In the case of IMSS we have used the reformed 1997 law to obtain a better approximation of the current state of affairs. This law includes a more progressive social security tax schedule but increases substantially the participation of general taxes in the financing of social security.

Unlike the case of education, we lack information on *types* of health services consumed. Given that the use of these services by the rural poor represents principally low-cost primary services, while the use by more affluent urban populations is more intensive in high-cost tertiary services, the following analysis overestimates the progressivity of health spending.

We also lack information on the *quality* of services accessible to different income groups in both sectors, even at the same level of attention. There is ample evidence that higher income groups in Mexico have access to better health and

---

[20] These funds are classified in the Federal Budget as *aportaciones (Ramo 33)*. Given

Mexico's high degree of fiscal centralization, apart from some minor local taxes, all

spending by local governments is financed from federal revenue. The latter funds are

distinct from both federal spending in the states and the state's spending financed

through general tax revenue in that the services financed   are locally administered, but

the federation retains an important degree of allocative and regulatory control.

[21] Zedillo (2000) and Funsalud (1998). In the case of education there are important variations across states in the weight of (general tax-financed) local spending.

[22] Primary, 6-12; Lower-secondary, 12-15; Upper-secondary, 15-18; Tertiary, 18 or more.

education services, predominantly located in urban areas.[23] Given this further source of overestimation of the progressivity of social spending, the estimates presented below must be interpreted as an upper bound.

To estimate the size of public transfers in relation to private spending, and thus the redistributive impact of these transfers, we have adjusted pre-transfer spending data in ENIGH for underreporting using aggregate private consumption reported in the national accounts following standard practice in poverty studies based on the latter survey.[24] Unless otherwise stated, the results reported below refer to adjusted data.

To obtain C_{FRN}, we have estimated basic education and health needs distributions (table 5A, in the Annex). In the case of education we have used the ENIGH to obtain, for each child aged 6-15, the schooling lag to the level which should have been attained at her age up to complete basic education (9 years of schooling), assuming they started primary school at age 6. We report the percentage participation of each decile in the total basic education gap (totaling almost 17 million years in 1996). In the case of health, we have estimated the participation in the total number of infant deaths in 1998 (45,434) from municipal-level reports, using a municipal-level welfare index to construct deciles.[25]

Finally, we order the population according to two alternative criteria: *total household income* (thy) and *per capita household income* (pchy). In the first case we order households according to their income, grouping them to conform *population* deciles. In the second case we impute to each household member its per capita income, and group the population directly on the basis of this income. Unless otherwise stated, the results reported below refer to the first type of ordering. In section 5 we use *household* deciles (ordered by total household income) for better comparability with benefit incidence studies for other countries.

4.2 Results

Graphs 4.1 and 4.2 present concentration curves of public spending and needs in the education and health sectors. Graphs 4.3 and 4.4 illustrate the redistributive impact on total social spending. Table 4.1 presents the corresponding measures of absolute (C) and relative (K) progressivity, the share of public spending benefiting the poorest 40%, and the redistributive impact of public spending on the Gini coefficient for overall spending (ΔG), on the distribution of total health and education spending (ΔG_S) and on overall and social spending of the

[23] For example, decentralized federal spending (*aportaciones*) per student in basic education varied in 2000 from 18.4 (Baja California Sur) to 3.4 (Coahuila) thousand pesos. Similarly, federal subsidies to public universities varied (in 1999) from 54 thousand pesos (in Mexico City) to 9.6 thousand pesos (in Oaxaca).

[24] See Lustig and Székely (1998), and Székely et.al. (2000).

[25] This is a multi-dimensional index developed by Conapo (1993) using information on basic housing infrastructure, access to electricity and water, and income from the *Population and Housing Census* of 1990. There is unfortunately as yet no household-level survey available for Mexico including adequate income or consumption data as well as objective health-status measures.

poorest 40%. We also include an index of *redistributive efficiency* (RE), measuring the percentage contribution of a transfer to ΔG divided by its share of public social spending.

Graph 4.1
Public Spending on Education
— Pre-school   — Primary
Lower Soc   — Upper Sec
— Tertiary   — Basic Educ Gap (6-15)

Graph 4.2
Distribution of Public Health Spending
— SSA   — IMSS (1997 Law)
— ISSSTE   Inf Mort

Graph 4.3
Education Spending and Basic Education Needs
— Basic Educ Gap (6-16)   Private
— Public   — Total

Graph 4.4
Health Spending and Infant Mortality
— Private   — Public   — Total   — Inf Mort
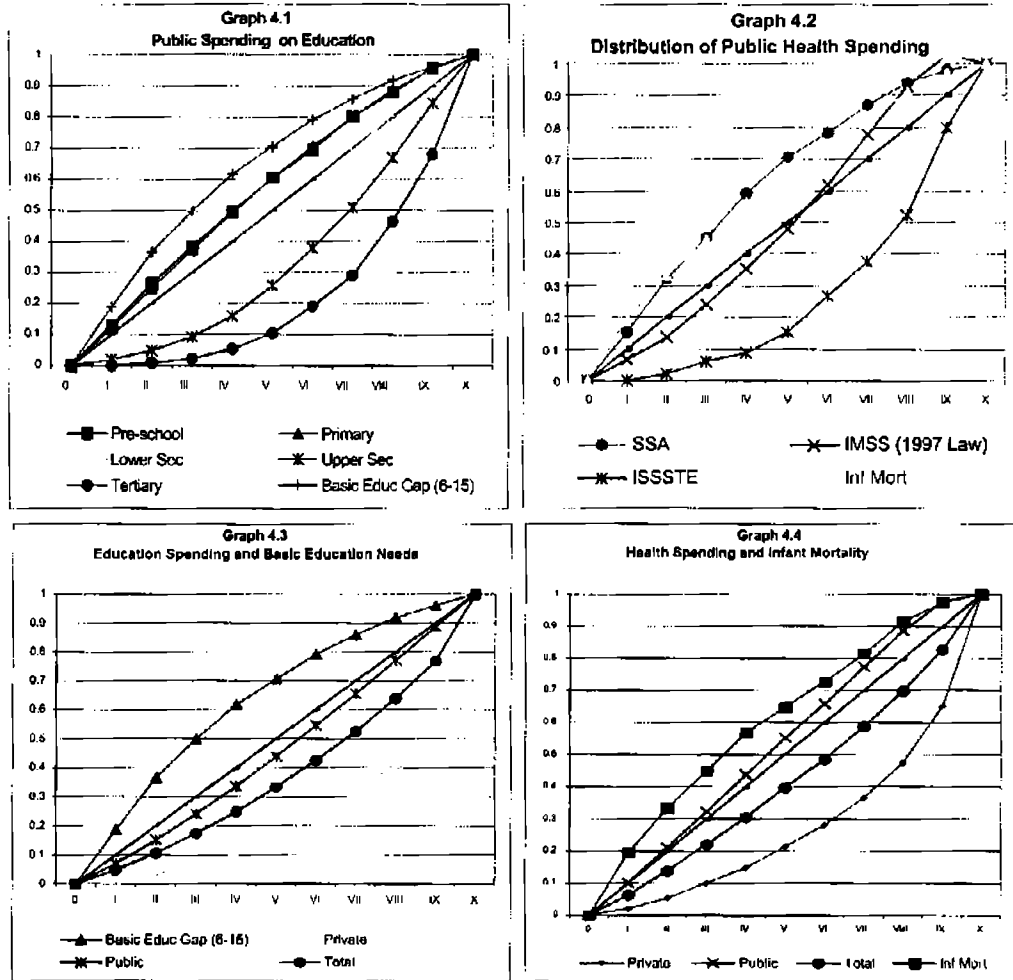
Public social spending as a whole is mildly regressive, as is public spending on education, while public spending on health and social security is close to neutral. Only three of the eight programs considered here are progressive in absolute terms ($C<0$): pre-school and primary education, and health services for the uninsured population. More surprisingly, spending on tertiary education and social security for state workers is regressive even relative to private spending ($K>0$), thus contributing to increase, rather than reduce, inequality in Mexico.

The impact of social spending on the Gini coefficient seems rather modest in the adjusted estimate, though this is quite sensitive to the underlying assumptions: it would be more than double in unadjusted terms, using the per capita ordering. The redistributive impact of social spending is more impressive in terms of other indicators. These transfers represent at least 18% of total spending for the poorest 40%, and 72% of spending in education and health.

Public social spending has a very significant impact on the distribution of total spending on health and education, reducing its inequality by at least 20 points if compared to pre-transfer social spending, and 12.6 point if compared to pre transefer social spending *capacity* (G) (table A1).

Table 4.1 Measures of Progressivity and Redistributive Impact

	C	K	% Share Poorest 40%	ΔG	ΔG_s	% Spending Poorest 40%		RE
						Total	Social	
Education	**8.2**	**-34.9**	**33.7**	**-1.91**	**-15.5**	**13.5**	**76.5**	**0.94**
Pre-school	-14.2	-57.3	49.5	-0.19	-1.5	1.3		1.55
Primary	-13.7	-56.8	49.2	-1.38	-10.4	9.0		1.53
Lower Second	10.1	-33.0	29.3	-0.35	-2.9	2.1		0.89
Upper Second	30.5	-12.6	16	-0.09	-1.0	0.8		0.34
Tertiary	53.7	10.7	5.4	0.10	0.2	0.3		-0.29
Health and SS	**-2.3**	**-45.4**	**36.7**	**-0.65**	**-5.0**	**4.1**	**60.1**	**1.22**
SSA	-25.8	-68.8	59	-0.41	-3.0	2.7		1.86
IMSS NL	6.7	-36.4	29.6	-0.24	-1.9	1.3		0.98
ISSSTE	45.2	2.1	8.4	0.00	-0.1	0.1		-0.06
Total (thy, adj.)	**6.0**	**-37.1**	**34.8**	**-2.56**	**-20.5**	**17.6**	**72.2**	
Thy, unadjusted	"	"	"	*-4.10*	*-26.3*	*29.5*		
Pchy, adjusted	*1.4*	*-47.9*	*38.4*	*-3.31*	*-22.7*	*26.2*		
Pchy, unadjusted	"	"	"	*-5.29*	*-29.2*	*43.9*		

Calculated from Tables A1-A3. Population ordered by total houshold income (thy), and private spending adjusted to National Accounts, except where noted (pchy: population ordered by per capita household income).

Public education at the primary level accounts for more than half the redistributive impact of social spending. The maximum redistributive impact per peso spent, however, is achieved by the SSA health services for the uninsured population, followed by preschool and primary education. The minimum impact, apart from the two concentrating programs, is achieved in upper secondary education, which absorbs 10% of social spending but accounts for only 3.5% of the reduction in the Gini coefficient. Note that while the concentrating effect of tertiary spending is marginal, it is sufficient to wipe out the latter reduction. Thus, spending on non-basic education as a whole, absorbing 30% of public spending in education, is redistributively inert.

The important impact of public spending on the distribution of post-transfer social spending, despite its absolute regressivity, is explained by the large share of public spending, accounting for between 45% (adjusted) and 58% (unadjusted) spending in these sectors, and by the high pre-transfer income and consumption inequality observed in Mexico. It is important therefore to consider the size of the remaining inequalities relative to equality of health and educational opportunities, as well as what *could* have been achieved with a more progressive allocation of social spending (section 5).

To evaluate the redistributive impact of public spending relative to the latter ideal, note that even public spending on primary education falls well short of the level of progressivity required to achieve proportionality between public spending and needs, though the distribution of SSA spending appears to be more

14

congruent with basic health needs (graphs 4.1, 4.2). Total post-transfer spending in health and education is well bellow the diagonal, and quite distant from the needs concentration curves (graphs 4.3, 4.4). Table 4.2 presents the concentration coefficients of public social spending required to achieve equality of resources and equality of resources per need.

Table 4.2

	C_{ER}	C_{ERN}
Education	-52.9	-110
Health and SS	-93.1	-158

Calculated from tables A1 and A5.

On present budgetary commitments, achieving equality of resources in education through public spending would require a radical reform in the allocation of educational spending, and even more so in the case of health, despite its more progressive allocation, because of its lower public participation. Even a Rawlsian allocation rule effectively targeting public social spending to the poorest would be insufficient for equality of resources relative to needs in the absence of a significant increase in public spending.[26]

5. Interpretation

The previous results suggest that the important expansion of social services in Mexico over the latter half of the 20th century (section 2) failed to target the populations which needed them most. This failure could originate in two kinds of misallocation. The first, which has generally been emphasized as the principal cause of regressive spending in developing countries in the benefit incidence literature, is a bias in favor of tertiary services mostly accessible to middle- and higher-income groups—and the corresponding neglect of basic education and health services, generally favoring the poor. The obvious policy recommendation—redirecting social spending towards the latter services—has been a central element in the two-pronged anti-poverty strategy defended by the World Bank over the last decade.[27] This coincided, as we have seen, with a decisive, if belated, increase in spending per beneficiary in primary education and health services for the uninsured population in Mexico the 1990's. But the targeting failure may also originate in misallocations of resources within basic levels of attention. A simple historical and comparative analysis suggests that a misalocation between levels of attention was a mayor problem in the past, but it is the latter which is the principal issue today.

To appreciate the historical point we have simulated the progressivity and redistributive impact of social spending which would have resulted with the 1996 distribution of the use of these services, but the per beneficiary spending levels in

---

[26] It is important to remember that this estimate of C_{ERN} represents an upper bound as it fails to take into account the reduction in the value of C_N which would occur under equality of post-transfer social spending.

[27] World Bank (1990). See also Anand and Ravallion (1993).

each program observed in the last three decades (table 5.1). Given the restricted coverage of these services in the past, this obviously underestimates the degree of regressivity of spending in these years, but it suggests the evolution of the distributive impact of social spending due to changing allocative priorities.[28]

Table 5.1 Incidence of Social Spending 1970-2000

Years	ΔG	% Private Consumption	Share of Poorest 40%	Concentration Coefficient		
				Total	Education	Health and SS
1971-1976	-1.5	5.77	27.1	16.3	19.8	-3.2
1977-1982	-2.2	7.35	31.3	10.3	15.4	-1.6
1983-1988	-1.8	5.10	33.9	6.7	16.1	-22.1
1989-1994	-1.8	5.19	34.8	6.1	12.2	-21.4
1995-2000	-2.7	7.56	35.1	5.2	8.6	-5.4

Tables 2.2, 2.5, A1-A3. Population ordered by total houshold income (thy).

These allocations imply a clear progress in the equity of social spending over the period. In the 1980's this is mainly driven by health spending, as government transfers to social security reached their lowest levels in the period. In the 1990's this was largely due to the noted increase in spending on basic services, though the redistributive effect of this emphasis has been moderated by the resumption of federal transfers to social security. While the simulated concentration coefficient of social spending is reduced by more than 10 points over the three decades, from 15.7 to 4.4, and the share of social spending accruing to the poorest 40% increased by 8 percentage points, there is only modest progress in the redistributive impact of social spending, which gains little more than an additional point of reduction in the Gini between the first and last administrations of the period. Note, furthermore, that a large part of this gain is explained simply by the increase in public social spending (compare the 1977-1982 and the 1995-2000 administrations).

In the case of education, the latter observation and the high coverage of basic education achieved two decades ago (see above, table 2.2) suggests a limited scope for further gains in equity to be obtained through spending reallocations from higher to lower levels of attention. In the case of health services there is more scope for reallocations towards services accessible to the poor (SSA), as for the expansion in the coverage of social security towards poor populations in the rural and urban informal sectors, and the more effective strategy would aim to increase basic health coverage of an *integrated* national health and social security system.

To demonstrate the relevance of the distribution of spending *within* rather than *between* levels of attention, consider the Mexican case in comparative perspective. Note first that the observation of absolute regressivity of social spending is more typical than exceptional in the benefit incidence literature for

[28] Unfortunately, as noted above, national income and expenditure surveys prior to the 1990's do not include the information on use of public services necessary for a historical incidence analysis.

developing countries. We will restrict our analysis here to public education spending, as these services involve fewer problems of comparability across countries.[29] We also use household rather population orderings (by total household income) here to increase comparability with the studies for other countries (see table A4).

Out of 21 countries reported in World Bank (2000, p.80) for the 1990's, only in two cases is the participation of the poorest quintile more, and that of the richest less, than 20%. The case of Mexico is more exceptional, however, if compared with other Latin American countries (graph 5.1, table 5.3).

Graph 5.1: Distribution of Public Education Spending
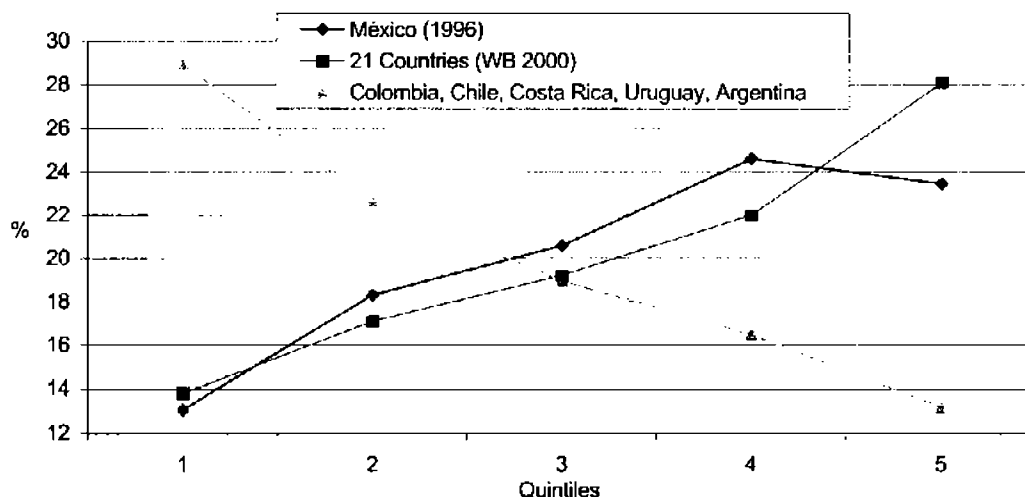
The tables below suggest that the latter contrast is not primarily explained by overspending on higher education in Mexico, but by the modest share of public education spending received by the poor *at all levels*. As the last column in table 5.3 shows, the redistributive impact of Mexico's present educational budget and inter-sectoral allocations would be significantly increased with the equity of spending achieved by these countries at each level. But it is in basic education that the most important potential gains are concentrated. Of the 14 percentage point spending increment for the poorest quintile if Mexico had the average targeting efficiency of these countries, 95% would be due to basic education.

[29] Benefit incidence estimates in health often include only health services for the uninsured population, and when they include social security this is often gross of social security taxes. Also, some studies use data on the value of services consumed while others, like the present one, lack this information.

Table 5.2 *Allocation of Public Education Spending by Level (1996)*

	Spending Shares			Spending per student/GNP/cap		
	Primaria	Secondary	Tertiary	Primaria	Secondary	Tertiary
Chile	60.4	18.9	16.4	11	11	24
Mexico	**50.3**	**32.5**	**17.2**	**12**	**20**	**54**
Argentina	45.7	34.8	19.5	8	5	10
Colombia	40.5	31.5	19.2	9	5	29
Costa Rica	40.2	24.3	28.3	13	6	8
Uruguay	32.6	29.0	19.6	8	24	25

Unesco (2000).

Table 5.3 *Public Education Benefits for Poorest 20%*

	Share of public spending (%)			Simulated Redistributive Impact in Mexico* (% private spending)			
	Primary	Secondary	Tertiary	Primary	Secondary	Teriary	Total
Uruguay (1989)	52	30	5	20.1	11.2	1.0	32.3
Chile (1990)	36	24	23	14.0	8.9	4.6	27.5
Argentina (1991)	43	29	8	15.6	9.6	1.6	26.8
Colombia (1992)	39	21	5	15.3	7.6	1.0	24.0
Costa Rica (1992)	34	16	1.6	13.1	5.9	0.3	19.4
Average	**41**	**24**	**8.5**	**15.6**	**8.6**	**1.7**	**26.0**
Mexico (1996)	**22**	**8**	**1**	**8.6**	**3.2**	**0.2**	**12.0**

Mexico: table A4; Colombia: Vélez (1995); Argentina: CEPAL (2000); Uruguay, Costa Rica, and Chile: World Bank (1993, 1997a, 1997b). *Applying the benefit shares within each level of the other countries to Mexico's public education budget and its allocation by schooling level.

The comparative analysis also allows us to evaluate the realism of the ideal norms we have postulated above. The extreme degree of progressivity in public social spending required for equality of health and education resources (table 4.2) can be explained by the particular pattern of income inequality observed in Mexico, and Latin America more generally. As Barros et.al. (1999) note, a substantial part of this inequality is due to the richest decile, with the Gini for Mexico on the remaining nine deciles falling from 0.54 to 0.35—a value lower than the Gini for the correspondingly truncated distribution in the U.S.A. One implication of this pattern is that equality of health and educational resources would require reducing the share of public social spending received by the richest decile form 10% to –19%—approximately equivalent to a 50% *tax* on private spending on health and education at the income bracket corresponding to this decile—with the revenue optimally targeted to the other deciles (table A4). A (somewhat) more realistic ideal in these circumstances would be to aim for the exclusion of the top decile from public social spending, with equality of health and educational resources *up to the ninth decile*. Though the richest 10% would still enjoy a much larger share of post-transfer social spending (19%, against 9% for each of the other deciles), this would certainly ensure equality of basic health and educational opportunities, and would be achievable with a distribution of public social spending comparable to that of Chile (table 5.4).

Table 5.4 Constrained
Equality of Resources

Quintile	Mexico Ideal	Chile (1990)
I	32	36
II	28	28
III	23	20
IV	15	12
V	2	4

Mexico, table A4;
Chile, World Bank (1997a)

6. Conclusion

Following the most comprehensive review of the distribution of public social spending in Mexico up to the early 1980's, Aspe and Beristáin (1984) drew a bleak conclusion (p. 323):

The greatest significance of this study is a negative one: the educational and health policies have not been corrective and have not diminished the disparity in income, but have, on the contrary, confirmed and reaffirmed these conditions.

Fortunately, this is not a conclusion that can be derived from the data presented by these authors--lacking a benefit incidence analysis--and appears to be based on a confusion between absolute and relative regressivity. Though the sectoral and regional allocation of social spending in the past--the only kind of evidence which was available to the latter study--does suggest a highly regressive distribution, even in the case of the most regressive administration over the last three decades (1971-1977) this could hardly have been *more* regressive than the distribution of income at the time (a Gini of the order of 0.5). Unfortunately, our own conclusion, twenty years on, and with the benefit of better information, cannot be more optimistic.

While social spending has not directly worsened income distribution in Mexico, it appears to have been remarkably ineffective at improving it. We have seen that Mexico presents one of the most inequitable distributions of human capital in the region, which in the face of increasing returns to education has been a mayor factor in the increasing income inequality observed over the last two decades. But in analogy to Aspe and Beristáin, our previous analysis lacks critical information required to link the distribution of social spending with the prevailing inequality in human capital. For according to this analysis, social spending contributes to reduce inequality in health and educational resources by at least 20 points. This implies, for example, that post-transfer inequality in health spending in Mexico turns out to be similar to Vietnam, which has a much more equal pre-transfer income distribution (.36) but a weak public health sector

19

(20% of total health spending, regressively distributed) (see table 1.1 above, and table 6.1).

Table 6.1 Distribution of Health Spending

		Mexico	Vietnam
Health Spending/	Public	172	13
capita ($US PPP)	Private	249	52
γ		0.45	0.20
G		0.47	0.36
C		0.02	0.16
K		-0.45	-0.20
ΔG_S		-14.3	-3.2
G_S^{Post}		0.33	0.33
C_N (Infant Mortality)		-22.5	-0.9

See section 2 for definitions. Health spending levels from WHO (2000); G from World Bank (2000), C calculated from the quintile distribution presented in the latter (p.80); C_N from Wegstaff (1999) for Vietnam, table A5 below, for Mexico; other indicators derived from the above.

With a similar degree of inequality in post-transfer health spending as Vietnam (0.33), 6.5 times more economic resources per capita devoted to health (in PPP terms), and 4.4 times more economic resources per capita overall (11.8 times in non-PPP $US), why are Mexico's average health indicators only moderately better than Vietnam's, and their distribution (infant mortality) significantly worse? This contrast may be due to several reasons: a) the impact on health of the distribution of *non-health* resources, b) the overall efficiency of the health system, c) the distribution of (quality-adjusted) health *benefits*, c) the accumulated stock of human capital, d) the demographic and epidemiological transition-stage, e) environmental differences, etc. This comparison illustrates the limits of benefit incidence analysis, even extended as suggested here, in evaluating the ultimate redistributive success of social spending—not its immediate impact on income distribution as implicit monetary transfers, but its long-term impact on the distribution of health and educational opportunities (and through these, on *pre-transfer* income inequality).

References

Anand, S. and Ravallion, M. Human Development in Poor Countries: on the Role of Private Incomes and Public Services. *Journal of Economic Perspectives.* 7, 1994, 133-150.

Aspe, P. and Beristáin, J. Distribution of Educative and Health Services. Chapter 10 of Aspe, P. and Sigmund, P. (eds.) *The Political Economy of Income Distribution in Mexico.* Homes and Meier Publ. USA. 1984.

Barr, N. Economic Theory and the Welfare State: A Survey and Interpretation. *Journal of Economic Literature,* 30, 1984, 741-803

Barro, R. and Lee, J. Data Set, *www.worldbank.org/research/growth, 1994.*

Barro, R. and Lee, J. International Measures of Schooling Years and Schooling Quality. *http://www.worldbank.org/research/growth/ddbarle2.htm, 1996.*

Barros, R. Paes de, S. Duryea and M. Székely. What's Behind the Latin American Inequality? Office of the Chief Economist, Inter American Development Bank, Mimeo, 1999.

Boullon, C., A. Legovini, y N. Lustig. Rising Inequality in Mexico: Returns to Household

Characteristics and the "Chiapas" Effect". Mimeo, Poverty and Inequality Advisory Unit, Banco Interamericano de Desarrollo, 1998.

CEPAL, *Equidad, Desarrollo y Ciudadania.* Comisión Económica para América Latina, ONU, 2000.

Conapo, *Indicadores socioeconómicos e índice de marginación Municipal 1990,* Consejo Nacional de Población, México, 1993.

De Janvry, Alain, The Role of Land Reform in Economic Development: Policies and Politics, *American Journal of Agricultural Economics.* 63(2), 1981, 384-92.

Filmer, D. and Pritchett, L. The Effect of Household Wealth on Educational Attainment Around the World: Demographic and Health Survey Evidence, World Bank WP, 1998.

Funsalud, Cuentas Nacionales de Salud en México. Fundación Mexicana Para La Salud, 1998.

IADB, *Facing Up to Inequality in Latin America, Economic and Social Progress in Latin America, 1998-1999 Report,* John Hopkins and Inter-American Development Bank, 1998.

INEGI, *Estadísticas Históricas de México,* Instituto Nacional de Geografía y Estadística, México, 1994.

INEGI, *Encuesta de Ingresos y Gastos de los Hogares 1996,* Instituto Nacional de Geografía y Estadística, México, 1998.

INEGI, *Cuentas Nacionales,* Instituto Nacional de Geografía y Estadística, México, 2000.

INEGI, *Censo de Población y Vivienda 2000,* Tabulados, Instituto Nacional de Geografía y Estadística, México, 2001.

Kanbur, R. and Lustig, N., *Why is Inequality Back on the Agenda?,* Dep. of Agricultural, Resource, and Managerial Economics WP 99-14, Cornell University, 1999.

Kakwani, Measurement of Tax Progressivity: an International Comparison, *Economic Journal*, 87, 1977, 71-80.

Londoño, J.L., *Poverty, Inequality and Human Capital Formation in Latin America, 1950-2025*. World Bank, 1996.

Lustig, N. Magnitud e impacto del gasto público en el desarrollo social de México, *Investigación Económica* 187, 1989.

Lustig, N. and Székely, M, *Economic Trends, Poverty and Inequality in Mexico*, POV-103, IADB, 1998.

Maddison et al., *The Political Economy of Poverty, Equity and Growth: Brazil and Mexico*, World Bank, 1992.

National Center for Education Statistics, US Department of Education, *Digest of Education Statistics*, 1998.

SHCP, *Proyecto de Presupuesto de Egresos de la Federación 1997. Exposición de Motivos e Iniciativa de Decreto*, Secretaría de Egresos de la Federación, Poder Ejecutivo Federal, 1998.

SHCP, *Proyecto de Presupuesto de Egresos de la Federación 2001. Exposición de Motivos e Iniciativa de Decreto*, Secretaria de Egresos de la Federación, Poder Ejecutivo Federal, 2000.

Salinas, C., *Sexto Informe de Gobierno. Anexo Estadístico*, 1994.

Sclowsky, M., *Who Benefits from Government Expenditure? A Case Study of Colombia*, Oxford University Press-World Bank, 1979.

Székely, M., Lustig, N., Cumpa, M. and Mejía, J.A. Do we *Know how Much Poverty There is?* Inter-American Development Bank, Research Department WP 437. 2000.

Unesco, *World Education Report 2000.*

Van de Walle, D., Assessing the Welfare Impacts of Public Spending, *World Development*, 26(3), 1998, 365-379.

Vélez, C.E., *Gasto Social y Desigualdad: Logros y Extravíos*, Depto. Nacional de Planeación, Mision Social, Colombia, 1996.

Wagstaff, A., van Doorslaer, E., Paci, P., Equity in the Finance and Delivery of Health Care: Some Tentative Cross-Country Comparisons, *Oxford Review of Economic Policy* 5, 1989, 89-112.

Wagstaff, A., *Inequalities in Child Mortality in the Developing World: How Large are They? How Can they be Reduced?*, World Bank mimeo., 1999.

Wilkie, J., *La Revolución Mexicana: Gasto Federal y Cambio Social*, Fondo de Cultura Económica, 1978.

World Bank, *World Development Report 1999/2000*. Oxford University Press, 1999

World Bank, *World Development Report 2000/2001*. Oxford University Press, 2000.

World Bank, *Chile: Poverty and Income Distribution in a High-Growth Economy, 1987-1995*, World Bank, 1997a.

World Bank, *Costa Rica: Identifying the Social Needs of the Poor. An Update*. World Bank, 1997b.

World Bank, *Uruguay Poverty Assessment: Public Social Expenditures and Their Impact on the Income Distribution*, World Bank, 1993.

Zedillo, E., *Sexto Informe de Gobierno. Anexo Estadístico*, 2000.

ANNEX

Table A1. Distribution and incidence of social spending, 1996;
Population deciles ordered by total household income (thy); Adjusted to National Accounts (except italics)

	Total (Thousand million pesos of 2000)	I	II	III	IV	V	VI	VII	VIII	IX	X	G, C
Distribution (% Shares)												
Total Post-Transfer	3,099	2.8	3.8	4.6	5.4	6.6	7.6	9.2	10.9	14.6	34.5	40.5
Unadjusted	*1,935*	*3.0*	*4.0*	*4.8*	*5.6*	*6.7*	*7.7*	*9.3*	*10.9*	*14.5*	*33.4*	*38.9*
Total Pre-Transfer*	2882 (1721)	2.5	3.5	4.3	5	6.3	7.3	9.1	10.8	14.9	36.4	43.1
Social Post-Transfer	473	4.0	5.1	6.0	6.7	7.8	8.5	9.5	11.5	14.1	26.9	30.5
Unadjusted	*376*	*4.8*	*5.9*	*6.7*	*7.4*	*8.4*	*9.0*	*9.9*	*11.6*	*13.4*	*22.9*	*24.7*
Social Pre-Transfer*	256 (153)	1.2	2.3	3.3	4.1	5.5	6.6	8.1	11.3	16.4	41.1	51.0
Social Public	**214**	**7.3**	**8.5**	**9.2**	**9.8**	**10.5**	**10.7**	**11.1**	**11.8**	**11.3**	**9.9**	**6.0**
Education Post-Transf*	342	4	5.1	6	6.8	7.9	8.7	9.5	11.5	13.4	27.2	30.3
Education Pre-Transf	172 (103)	1.1	2.1	3.1	4.1	5.5	6.7	8.1	11.3	15.2	42.8	52.0
Public Education	**170**	**7**	**8.2**	**9**	**9.5**	**10.2**	**10.7**	**10.9**	**11.7**	**11.6**	**11.3**	**8.2**
Pre-school	11	12.8	13.5	12	11.2	10.9	9.3	10.4	7.9	7.8	4.2	-14.2
Primary	75	12	12.8	12.4	12	11.2	10.2	9.4	8.6	6.9	4.5	-13.7
Lower Second	33	3.3	5.7	9.9	10.4	12.7	13.1	13.8	11.8	10.9	8.3	10.1
Upper Second	22	1.8	3.1	4.4	6.7	9.7	12.2	13.1	15.9	17.7	15.5	30.5
Tertiary	29	0	0.9	1.3	3.2	5	8.7	9.9	17.5	21.4	32.1	53.7
Health Post-Transfer*	128	3.8	5	5.9	6.3	7.4	7.7	9.2	11.5	15.5	25.5	31.4
Health Pre-Transfer	83 (50)	1.5	2.6	3.9	3.9	5.5	6.3	8.2	11.5	18.9	37.6	49.2
Public Health and SS	**44**	**7.9**	**9.2**	**9.3**	**10.3**	**10.6**	**10.1**	**11.1**	**11.4**	**9.5**	**3.9**	**-2.3**
SSA	19	15	16.9	13.2	13.9	11.8	7.5	8.6	7.2	3.8	2.1	-25.8
IMSS (1997 Law)	20	4.6	5.6	8.7	10.7	12.5	13.7	15	15.7	11.9	1.7	6.7
ISSSTE	5	0.2	1.5	3.7	3	6.1	11.1	11.3	16.3	25.7	21.2	45.2
Incidence (% Private Spending)												
Public Social Spending		**21.9**	**18.1**	**15.9**	**14.5**	**12.4**	**10.9**	**9**	**8.1**	**5.6**	**2**	
Education		**16.7**	**13.8**	**12.3**	**11.1**	**9.6**	**8.6**	**7**	**6.4**	**4.6**	**1.8**	
Pre-school		1.9	1.4	1.0	0.8	0.6	0.5	0.4	0.3	0.2	0.0	
Primary		12.7	9.5	7.6	6.2	4.7	3.6	2.7	2.1	1.2	0.3	
Lower Second		1.5	1.9	2.6	2.4	2.3	2.1	1.7	1.3	0.8	0.3	
Upper Second		0.6	0.7	0.8	1.0	1.2	1.3	1.1	1.1	0.9	0.3	
Tertiary		0.0	0.3	0.3	0.6	0.8	1.2	1.1	1.6	1.4	0.9	
Health and SS		**5.2**	**4.3**	**3.6**	**3.4**	**2.8**	**2.3**	**2**	**1.7**	**1**	**0.2**	
SSA		3.9	3.1	2.0	1.8	1.2	0.7	0.6	0.4	0.2	0.0	
IMSS (1997 Law)		1.3	1.1	1.4	1.5	1.4	1.3	1.2	1.0	0.6	0.0	
ISSSTE		0.0	0.1	0.2	0.1	0.2	0.3	0.2	0.3	0.3	0.1	

Own elaboration using INEGI (1998), INEGI (2000), Zedillo (2000), SHCP (1997).

Table A2.Distribution and incidence of social spending, 1996;
Population deciles ordered by per capita household income (pchy); Adjusted to National Accounts

	I	II	III	IV	V	VI	VII	VIII	IX	X	G, C
				Distribution (% Shares)							
Total Post-Transfer	2.1	3.1	3.9	4.9	5.8	7	8.4	10.6	15.8	38.3	46
Total Pre-Transfer	1.6	2.7	3.5	4.5	5.5	6.7	8.3	10.6	16.2	40.5	49.3
Social Post-Transfer	4.7	5.5	6.3	7	7.7	8.3	8.8	10.9	14.2	26.6	28.7
Social Pre-Transfer	1.1	2.5	3.2	4.2	5.5	6.3	7.8	11.2	17.1	41.4	51.5
Social Public	8.9	9.2	9.9	10.4	10.4	10.6	10.4	10.6	10.8	8.9	1.4
Education Post-Transf*	5.2	5.9	6.4	7.1	7.7	8.5	9	10.6	13.3	26.2	26.8
Education Pre-Transf	1.2	2.7	3.4	4.3	5.7	6.8	8	10.8	15.3	42	50.4
Public Education	**9.1**	**9.3**	**9.6**	**10**	**9.9**	**10.2**	**10.1**	**10.4**	**11.2**	**10.2**	**2.8**
Pre-school	14.9	13.3	10.8	13.4	11	8.6	9.7	8.8	6.7	2.7	-18
Primary	16.2	14.4	12.9	12.1	10.8	9.7	8.3	7	5.5	3	-22.3
Lower Second	4.5	7.7	11.3	11.6	11.9	12.9	12	13	9.5	5.6	3.2
Upper Second	1.2	3.5	4.5	7.4	9.4	14.7	13.5	13.4	19.7	12.7	28.5
Tertiary	0.1	0.6	2.3	3.6	4.9	5.6	10.2	14.8	22.8	35.1	55.3
Health Post-Transfer*	3.3	4.5	5.8	6.8	7.5	7.8	8.3	11.7	16.7	27.5	33.8
Health Pre-Transfer	1	2.1	2.9	4.1	5	5.5	6.7	12.1	20.6	40.1	53.6
Public Health and SS	7.8	9	11.3	12	12.4	12.2	11.4	11.1	9.2	3.6	-3.9
SSA	13.1	14.6	17.7	14.3	12.9	10.1	6.8	5.3	3.8	1.5	-26.7
IMSS (1997 Law)	5	5.8	7.7	11.7	13.2	14.9	14.9	14.9	11.1	0.8	4.7
ISSSTE	0	2.1	2.6	5.3	7.3	9.3	13.8	16.9	20.9	21.9	42.8
				Incidence (% of Private Spending)							
Public Social Spending	**40.8**	**25.5**	**21.1**	**17.3**	**14**	**11.8**	**9.3**	**7.4**	**4.9**	**1.6**	
Public Education	9.1	9.3	9.6	10	9.9	10.2	10.1	10.4	11.2	10.2	
Pre-school	33.4	20.3	16.1	13.2	10.5	9	7.2	5.8	4.1	1.5	
Primary	3.4	1.8	1.1	1.1	0.7	0.5	0.4	0.3	0.1	0	
Lower Second	26.2	14	9.6	7.1	5.1	3.8	2.6	1.7	0.9	0.2	
Upper Second	3.2	3.3	3.7	3	2.5	2.2	1.7	1.4	0.7	0.2	
Tertiary	0.6	1	1	1.3	1.3	1.7	1.3	1	0.9	0.2	
Public Health and SS	**7.4**	**5.2**	**5**	**4.1**	**3.4**	**2.8**	**2.1**	**1.6**	**0.9**	**0.1**	
SSA	5.2	3.5	3.3	2.1	1.5	1	0.5	0.3	0.2	0	
IMSS (1997 Law)	2.2	1.5	1.6	1.8	1.7	1.6	1.3	1	0.5	0	
ISSSTE	0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.1	

Own elaboration using INEGI (1998), INEGI (2000), Zedillo (2000), SHCP (1997).

24

Table A3. Incidence of social spending, 1996; Unadjusted

		Education						Health and Social Security			
		Total	Preschool	Primary	Lowere Secondary	Upper Secondary	Tertiary	Total	SSA	IMSS (1997 Law)	ISSSTE
					Thy						
I	36.7	27.9	3.2	21.2	2.6	0.9	0.0	8.8	6.5	2.2	0.0
II	30.3	23.0	2.4	16.0	3.2	1.1	0.4	7.3	5.2	1.9	0.1
III	26.6	20.6	1.7	12.7	4.4	1.3	0.5	6.0	3.3	2.4	0.3
IV	24.2	18.6	1.4	10.5	4.0	1.7	1.1	5.7	3.0	2.5	0.2
V	20.8	16.1	1.1	7.8	3.9	2.0	1.3	4.7	2.0	2.4	0.3
VI	18.3	14.5	0.8	6.1	3.4	2.1	2.0	3.8	1.1	2.2	0.5
VII	15.1	11.8	0.7	4.5	2.9	1.9	1.8	3.4	1.0	2.0	0.4
VIII	13.6	10.7	0.4	3.5	2.1	1.9	2.7	2.9	0.7	1.7	0.5
IX	9.5	7.7	0.3	2.0	1.4	1.5	2.4	1.8	0.3	0.9	0.5
X	3.4	3.1	0.1	0.5	0.4	0.5	1.5	0.3	0.1	0.1	0.2
					Pchy						
I	68.4	56.0	5.6	43.9	5.4	0.9	0.1	12.4	8.7	3.7	0.0
II	42.7	34.1	3.0	23.5	5.5	1.7	0.4	8.6	5.9	2.5	0.2
III	35.3	27.0	1.9	16.1	6.2	1.7	1.1	8.3	5.5	2.6	0.2
IV	29.0	22.1	1.8	11.8	5.0	2.1	1.4	6.9	3.5	3.1	0.4
V	23.4	17.6	1.2	8.6	4.2	2.2	1.5	5.8	2.5	2.8	0.4
VI	19.7	15.1	0.8	6.3	3.7	2.8	1.4	4.7	1.6	2.6	0.4
VII	15.6	12.1	0.7	4.4	2.8	2.1	2.1	3.5	0.9	2.1	0.5
VIII	12.4	9.7	0.5	2.9	2.4	1.8	2.3	2.7	0.5	1.7	0.5
IX	8.3	6.8	0.3	1.5	1.1	1.6	2.4	1.5	0.3	0.8	0.4
X	2.7	2.5	0.0	0.3	0.3	0.4	1.5	0.2	0.0	0.0	0.2
%ΔG	-5.29	-4.08	-0.36	-2.78	-0.79	-0.24	0.09	-1.22	-0.73	-0.47	-0.02
RE		0.97	1.41	1.50	0.96	0.43	-0.13	1.11	1.59	0.93	0.14
%ΔGS	-29.18	-22.50	-1.98	-15.10	-4.34	-1.38	0.31	-6.68	-3.95	-2.60	-0.13
CER	-36.82	-30.60						-60.7			
CERN	-101.5	-97.9						-108.6			

Own elaboration using INEGI (1998), Tables A1-2, A5.

Table A4 Distribution and incidence of education spending, 1996
Household deciles ordered by total income

	Household deciles									
	I	II	III	IV	V	VI	VII	VIII	IX	X
Distribution of Public Spending (% shares)										
Total	5.5	7.5	8.6	9.7	9.9	10.7	12.3	12.3	12.5	10.9
Primary	10.0	11.7	12.5	12.7	11.0	10.4	10.8	9.1	7.3	4.5
Secondary	2.2	4.3	6.4	9.4	10.8	12.5	14.5	14.5	14.2	11.0
Tertiary	0.0	0.9	1.4	3.0	5.5	8.8	12.2	16.8	23.3	28.2
Incidence (% total private spending)										
Total Public	7.1	7.5	8.8	8.9	10.1	11.1	11.7	12.1	12.6	10.1
Total Private	1.5	2.7	3.6	4.7	5.8	7.2	8.9	11.5	16.0	38.1
Total	4.3	5.0	6.2	6.8	7.9	9.1	10.3	11.8	14.3	24.3
Ideal Distribution (% shares)										
Equal Resources	18.7	17.5	16.5	15.4	14.3	12.9	11.1	8.5	3.9	-18.7
Equality Deciles I-IX	16.6	15.4	14.4	13.3	12.2	10.8	9.0	6.4	1.8	0.0

Own elaboration using INEGI (1998), INEGI (2000), Zedillo (2000), SHCP (1997).

Table A5. Distribution of education &
health needs (% shares)

	Basic education schooling gap		Infant Deaths
	6-12 years	13-15 years	
I	21.7	16.2	19.6
II	19.3	16.7	13.8
III	14.7	12	11.4
IV	12.3	11.5	12.0
V	7.8	9.7	7.9
VI	8.1	9	8.1
VII	5	8.2	8.7
VIII	5.3	6.5	10.1
IX	3.1	5.2	6.0
X	2.8	4.9	2.5
C_N	-35.27	-22.05	-22.48

Own elaboration using INEGI (1998), CONAPO (1993)
and Infant mortality data by municipio for 1998.