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Maestría en Economía
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Assessing Benefit-Incidence Results Using Decompositions: The Case of Health Policy in Argentina

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Documento de Trabajo Nro. 18
Febrero, 2005

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The case of Health Policy in Argentina [1]

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Abstract

This paper discusses the use of aggregate and microeconometric decompositions to compare benefit-incidence results over time and across regions. Decompositions are applied to explore changes in targeting in health policies directed to pregnant women and children under 4 in Argentina. The results suggest that although health public programs are pro-poor, incidence changes in the last 5 years have been pro-rich due to two different factors: a substantial reduction in the fertility rate of poor couples, and an increase in the use of public facilities by wealthier households, likely triggered by the economic crisis that Argentina has suffered since 1998.

Keywords: health, children, targeting, decompositions, Argentina

JEL classification: D3, I1, I38.

[1] This paper is the follow-up of a study on targeting health and nutrition policies in Argentina written by the author in FIEL for the World Bank's Thematic Group on Health, Nutrition and Population and Poverty. I am grateful to the outstanding research assistance of Julieta Trías (UNLP) and Eugenia Orlicki (FIEL). I am also grateful to seminar participants at the World Bank and Universidad Nacional de La Plata, and Davidson Gwatkin, Mónica Panadeiros, Daniel Bergna and two anonymous referees in the World Bank for useful comments and suggestions.

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1. Introduction

A benefit-incidence analysis allows an assessment of the degree of targeting of average public spending. Although incidence results of particular programs are useful on their own, more can be learnt from the comparison of results over time and across regions. This paper illustrates the usefulness of decomposition techniques to shed light on the factors behind differences in benefit-incidence results between time periods, regions or programs.

In particular, changes in the benefit-incidence results for a particular health service are decomposed into three components: (i) changes in individual and household characteristics linked to the decision to consume that health service, (ii) changes in the way decisions whether to consume the service or not are made, and (iii) changes in the public/private decision to where to consume the service. Both aggregate and microeconometric decompositions are implemented to provide estimates of these three components. Results of the decompositions are useful for the understanding of the reasons why a given health program has become less or more pro-poor over time, or why a program is less or more pro-poor in one region than in another.

The methodology is applied to the case of health policy directed to pregnant women and children under 4 in Argentina. This country has undergone dramatic changes in its economic and demographic structure in the last decade, which might have some impact on the targeting of public policies. In fact, the paper finds that although health public programs are pro-poor, incidence changes in the last 5 years have been pro-rich due to

two different factors: a substantial reduction in the fertility rate of poor couples, and an increase in the use of public facilities by wealthier households, likely triggered by the economic crisis that Argentina has suffered since 1998.

The rest of the study is organized as follows. Section 2 shows the results from a typical benefit-incidence analysis for different health services. Section 3 is the core of the paper as aggregate and microeconometric decomposition techniques are introduced, and the main results are shown and discussed. Some brief comments in section 4 close the paper.

2. Benefit-incidence results

Argentina has traditionally had good levels of health status/services indicators, at least when compared to other Latin American countries. The health system is organized around a strong participation of the public sector, which besides regulating health services, it owns and operates an extensive network of public hospitals and primary health care centers (PHCC). The public health system is universal: no requirements are needed to use most of the services in public health facilities. However, in practice expenditures are mostly targeted to low and middle-income families, as more affluent household usually opt-out of public facilities. Most public health policies are channeled through the network of public hospitals and PHCCs. In these health facilities people have access to all sorts of health services, mostly free of charge. In this study we concentrate the analysis on the following services to pregnant women and children under 4: antenatal care, attended delivery, visits to a physician, medicines and hospitalizations.

Argentina has had a disappointing economic performance over the last three decades. Figure 2.1 shows large cyclical fluctuations in the disposable mean income, without signs of an increasing trend. The vertical lines in the Figure indicate the period covered by this analysis, 1997 to 2001, a period of substantial income fall. Per capita disposable income in real terms fell 13% between 1997 and 2001 according to National Accounts estimates. Along with a stagnant economy, Argentina has suffered dramatic transformations in its income distribution.[2] Inequality and poverty have substantially increased over the last three decades, and in particular in the period 1997-2001.

Benefit-incidence analysis is aimed at evaluating the degree of targeting of average public spending in a specific program. Benefits from the program are assigned to individuals according to their answers to a household survey on the program use.[3] We first describe the data used for the analysis and then present and discuss the basic results.

The data

Benefit-incidence analyses require household surveys with data on a welfare indicator and information on the use of social programs. In the last decade Argentina has conducted two Living Standard Surveys with questions on the use of various health and nutrition services. The first survey, known as Encuesta de Desarrolo Social (EDS), was conducted in 1996/7 and includes 73,410 individuals (representing 83% of total

[2] See Gasparini (2003).
[3] See van de Walle and Nead (1995) and van de Walle (1998). More recent assessments of these techniques and their problems are in Bourguignon, Pereira da Silva and Stern, (2002) and Carneiro, Hansen and

population) living in urban areas. The second survey, Encuesta de Condiciones de Vida (ECV), with similar coverage and questionnaires, was conducted in 2001.

Both surveys include questions on housing, some assets, demographics, labor variables, health status and services, and education. The EDS and ECV were sponsored by The World Bank and have questionnaires similar to those in other countries.[4] However, they are not part of the Living Standard Measurement Surveys (LSMS) program and they do not include questions on expenditures as the LSMS surveys do.[5]

Welfare indicators

A crucial stage in a benefit-incidence analysis is sorting households by a welfare indicator. Among the variables usually included in a household survey household consumption adjusted for demographics is the best proxy for individual welfare (Deaton and Zaidi, 2002). Unfortunately, most household surveys in Argentina, including the EDS and the ECV, do not have household-expenditures questions. This paper uses household income adjusted for demographics, or *equivalized* household income, as the individual welfare indicator. Equivalized household income y for each individual is defined as

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Heckman (2002). For benefit-incidence analysis in Argentina see Flood *et al*. (1993), Harriague and Gasparini (1999), Gasparini *et al*. (2000) and DGSC (2002).

[4] See http://www.siempro.gov.ar/Encuesta%20de%20desarrollo%20social/encuesta%202001/encuesta.htm for more information on the surveys.

[5] They are usually labeled as *quasi-LSMS*s.

$$y = \frac{Y}{\left(A + \alpha_1 K_1 + \alpha_2 K_2\right)^{\theta}}$$

where Y is total household income, A is the number of adults in the household, K_1 the number of children under 5, and K_2 the number of children aged 6 to 14. Parameters αs allow for different weights for adults and kids, while θ regulates the degree of household economies of scale. Following Deaton and Zaidi (2002) and given the characteristics of the Argentinean economy, we take intermediate values of the αs (α_1=0.5 and α_2=0.75), and a rather high value of θ (0.9) as the benchmark case. Per capita household income can also be viewed as a particular case of equivalized income with no differential weights (all αs equal to 1) and no economies of scale (θ=1).

In Table 2.1 individuals with consistent answers and positive reported household income are grouped in quintiles. The table shows mean income of each quintile for the distribution of per capita household income and equivalized household income. Argentina underwent a recession between 1998 and 2002, which shows up in Table 2.1: incomes fell along the distribution.

The use of health services and nutrition programs

This study is focused on health programs targeted to pregnant women and children under 4. Table 2.2 shows the share of children by quintiles of the distribution of equivalized household income. By construction quintiles have 20% of total population. Instead, since

the number of children per household is decreasing in income, the share of children is not uniform along the income distribution. For instance, the share of children under 4 was 30.1 in the bottom quintile and 12.1 in the top quintile in 1997. This fact will have a fundamental consequence on the distributional incidence of public programs directed to children. Even a universal program to all children will be pro-poor, given the negative correlation between the number of children and household income. This relationship became less strong between 1997 and 2001, as a consequence of a fall in the fertility of low-income families relative to the rest,[6] implying, other things equal, a potential reduction in the targeting of social policies.

The public sector finances public health facilities. These resources allow public hospitals and centers to provide health services free of charge or at subsidized prices. Who are the beneficiaries of this subsidy? A usual assumption is that the users of the service and their families are the beneficiaries of the public program. By using a public health service free of charge a family saves the cost of buying that service, which is assumed to be equal to the average cost of public provision.[7]

Table 2.3 shows benefit-incidence results for five health services: antenatal care, attended deliveries, visits to doctors, free medicines and hospitalizations. More details on each of these services and results for other services can be obtained from a companion paper (Gasparini and Panadeiros, 2004). Subsidies to antenatal care in public facilities are

[6] Marchionni and Gasparini (2003) report a similar trend for the Greater Buenos Aires area using information from the Encuesta Permanente de Hogares.

highly pro-poor. In 1997 more than 46% of total beneficiaries of this program belonged to the first quintile of the income distribution. The share of beneficiaries from the top quintile was 2%. The degree of targeting of the public subsidy to antenatal care decreased between 1997 and 2001. Similar results are obtained for the rest of the health services.

Table 2.4 shows the concentration index (CI) of each service, a measure of the extent to which a particular variable is distributed unequally across the income strata (see Lambert, 1993). Negative numbers reflect pro-poor programs. The higher the CI in absolute value the more pro-poor the program.

Concentration indices are computed from household survey data. Surveys are just a sample of the population. Even with a stable population the computed value of an index may change if we take two different samples. Hence, it is important to compute the statistical significance of the changes in a given statistic, like the CI. This practice is a rigorous way of assessing whether the recorded change in the statistic is large enough to be reasonably confident on the fact that the statistic also changed in the population. Although benefit-incidence results are typically subject to the problem of sample variability, they are never complemented with a statistic-significance analysis. In this paper confidence intervals are computed using bootstrapping techniques.[8] Table 2.4 shows the limits of the 95% confidence interval below the value of each CI estimate.

[7] Notice that the factors used in the production of the service are not considered beneficiaries of the public provision: it is assumed that doctors and nurses could find a similar job in the private sector if the public sector decided not to provide health services.

All health programs considered are pro-poor. The free delivery of medicines seems to be the most pro-poor program. Between 1997 and 2001 there has been a decrease in the degree of targeting in all health services. This fall is illustrated in Figure 2.2 where all the concentration curves for the health programs in 2001 are below the corresponding curves for 1997. The next section explores these changes with the help of decompositions.

3. Characterizing changes in targeting

Benefit-incidence results come from aggregating individual decisions on the consumption of publicly provided services. A household will consume a given service if (i) at least one of its members is eligible for that service, (ii) she (or her parents) decides to consume the service, and (iii) she decides to do it in the public sector. Accordingly, differences in targeting of a given program over time or across regions are the result of differences in the three stages described above. It is relevant to identify to what extent the change in the degree of targeting for a given program is the result of changes in the socio-demographic structure of the population, or the result of changes in the household decisions on the consumption of the service (whether to consume the service or not, and where to do it). In this section this question is tackled using aggregate and microeconometric decompositions.

[8] For the use of bootstrapping techniques for distributional analysis, see Mills and Zandvakili (1997) and Sosa Escudero and Gasparini (2000) for the case of Argentina.

Aggregate decompositions

Suppose we group total population in quintiles h=1,…,5 according to their equivalized household income. The proportion of total users of a given health service j in a public facility that belong to quintile h in time t is denoted as b_{hjt}. These proportions are the inputs of any benefit-incidence measure. If b_{hjt} is decreasing in income, it is said that the public program j is "pro-poor". The value b_{hjt} can be written as

$$b_{hjt} = q_{hjt} . a_{hjt} . p_{hjt}$$

where q_{hjt} is the proportion of people who qualify for service j who belong to quintile h, a_{hjt} is the rate of use of service j in quintile h relative to the population mean, while p_{hjt} is the share of users in the public sector in h relative to the population mean. Differences among quintiles in the value of b are driven by differences in q, a, and p.

Let us illustrate this decomposition with the case of antenatal care by medically trained persons. Obviously, only pregnant women qualify for this service. If pregnant women are not uniformly distributed along the income distribution, the value of q will differ across quintiles. In most countries fertility rates are decreasing in income, which implies a value of q decreasing in income for health services related to pregnant women and children. All other things constant this pattern will imply a pro-poor bias for any health service directed to that population.

The relative use of a given service (summarized by *a*) is the second determinant of the incidence results. Keeping all the other things constant, if in contrast to pregnant women from rich households, most women from poor households decide not to see a medically-trained person for antenatal care, the value of *a* will be increasing in income. Finally, the choice public/private is the third crucial determinant of the incidence results. If poor pregnant women choose a public facility more often than rich women, the value of *p* will be decreasing in income.

Differences in the pattern of the *b*s, and then in the incidence results over time and across regions depend on differences in the right-hand-side factors of the previous equations. We use this simple decomposition to get a preliminary characterization of differences in incidence results over time and across regions in Argentina.

Table 3.1 shows the results of the decomposition of incidence results by quintiles for different health programs. The first three panels in each table reproduce results for *q*, *a*, and *p*. The distribution of potential users, the participation decision and the choice public/private determine the incidence results of the fourth panel. The differences in incidence by quintile are reported in row 5.

There is a clear reduction in the degree of targeting of the public program of antenatal care. While in 1997 46.5% of total beneficiaries of that program belonged to the bottom quintile of the equivalized income distribution, in 2001 that share fell to 43.3. This drop of 3.2 points has its complement in the gains of 1.6 for the quintile 3, 1 for quintile 4 and 0.6 for

the top quintile. Where does this reduction in targeting come from? The last panel helps us to characterize the incidence changes by showing decomposition results. The line labeled *potential users* shows incidence results if we change the distribution of pregnant women (first panel) between 1997 and 2001 but we keep fixed the participation rates and the public/private decisions at the values of a given year. Since the values of *a* and *p* can be fixed at two alternative years, in the Table we report the average over the 4 possible simulations.

The distribution of pregnant women became less pro-poor between 1997 and 2001, implying a 1.4 drop in the incidence on the bottom quintile. This means that everything constant, the demographic changes would explain a sizeable part of the decrease in the degree of targeting of the subsidy to antenatal care in public hospitals and primary health centers. Poor women are now more likely to be seen by medically trained persons. This increase in participation (combined with the changes for the rest of the distribution) implies an increase in incidence on the bottom quintile of 0.9 points. The last effect, labeled *public provision*, seems the most relevant one: although the use of public hospitals increased for poor people it increased proportionally more for the rest of the population. This effect implies a sizeable drop in the degree of targeting in the bottom quintile.

Table 3.1 also shows results for attended deliveries. Participation rates are assumed to be unchanged since no information is available for 2001. The reduction in the degree of targeting on the bottom quintile between 1997 and 2001 is again the consequence of a reduction in the relative fertility rate of poor women, and a relative increase in the use of

public facilities by non-poor women. In contrast with the case of antenatal care, the first effect seems to be the dominant one. Similar results are obtained for the case of public subsidies to medicines. The incidence of public hospital admissions increased a bit for the bottom quintile, and decreased a lot for the second one, leading to a fall in the overall degree of targeting as measured by the concentration index. This fall for the second quintile is explained by a relative reduction in fertility, a large drop in the share of hospitalized children, and a less pronounced increased in the use of public facilities, compared to other quintiles of the distribution.

Aggregate decompositions can also be applied to study differences in incidence results across regions. Table 3.2 shows results for deliveries and visits to doctors in 1997.[9] Differences between two regions in incidence results are the consequence of differences in the distribution of potential users, the participation rates and the choice of public facilities. The Table shows the decomposition of differences between the North and GBA. Similar results can be obtained for any other two regions from the information of the Table. There is a substantial difference in the degree of targeting of the public subsidy to deliveries in public hospitals between the North and GBA. Most of that difference comes from a much more concentrated distribution of children under 4 in the bottom quintile of the *national* income distribution in the North than in GBA. While 19.5% of children under 4 in GBA belong to the bottom quintile of the national distribution of equivalized household income, that share rises to 44.1% in the North. 23.8 out of the 28.5 points of the incidence

[9] We consider 4 regions: the North, the Center, the South, and the Greater Buenos Aires (GBA). The North is the poorest region of the country. GBA is a large metropolitan region with 1/3 of total population. The South (Patagonia) is the least populated and richest region, with the lowest indices of inequality and poverty.

difference for the bottom quintile between the two regions are explained by this population effect. If all women chose public hospitals to have their babies, a subsidy to deliveries in public facilities would be more pro-poor in the North, since the population in that region is considerable poorer than in the GBA. In the North even without much effort for a better targeting, public programs are usually more pro-poor.

In addition to the population effect, the difference in targeting in favor of the North is accounted by a less intensive use of public facilities by the rich in the North compared to the GBA. Similar results apply to visits to doctors in 1997 and to all health services in 2001 (see Table 3.3).

Microeconometric decompositions (microsimulations)

Although certainly informative the aggregate decompositions are rough approximations of the effect on the benefit-incidence results of changes in the structure of the population, the decision of consuming a given health service, and the public/private choice. A more sophisticated analysis can be performed with the help of microeconometric (or microsimulation) decomposition techniques.[10] Suppose we are interested in analyzing changes between *t* and *t´* in the concentration index (CI) for the program of visits to doctors in public facilities. The idea behind this methodology is to simulate for each individual the counterfactual decision of whether to visit a doctor in a public hospital or not in time *t* if certain factors were those of time *t´* instead of those observed in time *t*. We consider three set of factors that can be alternatively changed between *t* and *t´*: (i) the

characteristics of each individual (and her family), (ii) the way these characteristics are linked to the decision of visiting a doctor, and (iii) the way these characteristics are linked to the choice of attending a public facility instead of a private one.

To implement this methodology we estimate econometric models of the decision of visiting a doctor, and the conditional decision of attending a public facility as functions of various individual and household characteristics. Changes in the concentration index are decomposed into three effects. The *population effect* is obtained by simulating the health decisions in time t if the individual and household characteristics were those of time $t´$; the *participation effect* comes from simulating each individual's health decisions in time t if the parameters that govern the decision to visit a doctor were those of time $t´$, while the *public provision effect* is computed by assuming that the parameters governing the public/private decision were those of time $t´$.

To explain the methodology analytically, suppose there are there are N individuals indexed with i=1, …,N. Each individual i is defined by a vector of individual observable characteristics X_i and a vector of individual unobservable characteristics U_i. Individual characteristics include age, gender, education as well as household characteristics as income and location.

People who qualify for a given health service j can use a private or a public provider. Let b_{ijt} be a binary variable that identifies people who get the service j in the public sector at

[10] For the use of microsimulation techniques to distributional problems see Bourguignon *et al*. (2003).

time *t* (beneficiaries of public expenditures in the program *j*). As before, this variable can be expressed as

$$b_{ijt} = q_{ijt}.a_{ijt}.p_{ijt}$$

where now *q* is equal to 1 if the individual qualifies for the service and 0 otherwise, *a* is equal to 1 if the individual decides to use the health service and 0 otherwise, and *p* is 1 if the individual uses a public provider. Variable *q* is deterministic:

$$q_{ijt} = Q(X_{it}, \alpha_{jt})$$

Given observable characteristics X_i an individual qualifies or not for the service (*e.g.* being pregnant qualifies for antenatal care). The vector of parameters α determines the rule of access to a given service.

Variables *a* and *p* instead are random variables as they depend on unobservable factors.

$$a_{ijt} = A(X_{it}, U_{it}, \beta_{jt})$$

$$p_{ijt} = P(X_{it}, U_{it}, \gamma_{jt})$$

Combining the previous equations

$$b_{ijt} = B(X_{it}, U_{it}, \alpha_{jt}, \beta_{jt}, \gamma_{jt})$$

A measure of distributional incidence of public expenditures in service *j* is a combination of the distribution of *b* and of certain characteristics *Y* of the vector *X* (*e.g.* household income)

$$I_{jt} = I(\{b_{ijt}\}, \{Y_{it}\})$$

where Y $\in$X. Hence,

$$I_{jt} = F(\{X_{it}\}, \{U_{it}\}, \alpha_{jt}, \beta_{jt}, \gamma_{jt})$$

A similar equation can be derived for other time period *t1*

$$I_{jt1} = F(\{X_{it1}\}, \{U_{it1}\}, \alpha_{jt1}, \beta_{jt1}, \gamma_{jt1})$$

We define three effects in which the change in *I* between *t* and *t1* can be decomposed:

Participation effect

$$PA_j = F(\{X_{it1}\}, \{U_{it1}\}, \alpha_{jt1}, \beta_{jt1}, \gamma_{jt1}) - F(\{X_{it1}\}, \{U_{it1}\}, \alpha_{jt1}, \beta_{jt}, \gamma_{jt1})$$

This effect captures the change in incidence resulting from a change in the parameters governing the decision of consuming a given service (β).

Public-provision effect

$$PP_j = F(\{X_{it1}\},\{U_{it1}\},\alpha_{jt1},\beta_{jt},\gamma_{jt1}) - F(\{X_{it1}\},\{U_{it1}\},\alpha_{jt1},\beta_{jt},\gamma_{jt})$$

This effect measures the change in incidence as the consequence of changes in the parameters governing the public/private decision.

Population effect

$$PO_j = F(\{X_{it1}\},\{U_{it1}\},\alpha_{jt},\beta_{jt},\gamma_{jt}) - F(\{X_{it}\},\{U_{it}\},\alpha_{jt},\beta_{jt},\gamma_{jt})$$

This effect measures changes in incidence resulting from changes in the distribution of observable and unobservable characteristics of the population.

Assuming α does not change, the change in *I* can be expressed as

$$\Delta I_j = PA_j + PP_j + PO_j$$

A similar procedure can be applied to analyze regional differences in the benefit-incidence results, by considering *t* as a regional rather than a time index.

Some of the functions and parameters in the decomposition are either know or assumed, and some should be estimated. We observe the function and parameters that determine potential users (Q and α) and vector X. We assume a form for A and P, and propose a benefit-incidence index I. We estimate parameters β and γ and the vector of unobservables U.

Table 3.4 reports the results of performing the decompositions. The first row shows the change in the absolute value of the concentration index between 1997 and 2001 for each health service, while the last three rows show the values of each of the effects. The concentration index for the program of antenatal care in public facilities went down 4.8 points between 1997 and 2002, implying lower targeting. If only the way individual decisions on pregnancy controls are taken had changed between 1997 and 2001, the CI would have increased 0.4 points, which represents a negligible change. The effect of the changing public/private decisions between 1997 and 2001 contributed with 1.7 points in the overall fall of the CI. The most significant factor in this fall was the change in the population characteristics. Even with all parameters kept constant, the change in characteristics would have contributed to the reduction in the CI with 3.5 points. The reduction in the number of children in poor families is likely the main factor behind this result.

The large relevance of the population effect is also present for attended deliveries, medicines and hospitalizations. The public provision effect is negative, except for

attended deliveries, likely reflecting an increasing number of middle and high-income groups attending public hospitals as the result of the economic crisis. The participation effect is negligible in all cases, except for hospitalizations, which is a sign of the increase in hospitalizations for children from the poorest quintile.

4. Concluding remarks

This paper illustrates the use of decompositions techniques to contribute to the understanding of benefit-incidence results of health services. The paper analyzes the degree of targeting of health policies directed to pregnant women and children under 4 in Argentina, using information from two Living Standards Measurement Surveys (1997 and 2001). By performing a benefit-incidence analysis I find that health public programs are pro-poor. However, the results of aggregate and microeconometric decompositions suggest that incidence changes in the last 5 years have been pro-rich, due to two different factors: a substantial reduction in the fertility rate of poor couples, and an increase in the use of public facilities by wealthier households, likely triggered by the economic crisis that Argentina has suffered since 1998.

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Table 2.1

Mean incomes by quintile
Distribution of equivalized household income

	Per capita income		Equivalized income	
	1997	2001	1997	2001
	(i)	(ii)	(iii)	(iv)
1	54.6	38.1	75.4	52.7
2	120.9	93.0	159.6	121.9
3	196.9	156.9	248.8	198.4
4	321.1	263.9	393.6	322.1
5	853.9	704.6	1000.1	823.9
Mean	309.5	251.3	375.6	303.8

Source: authors´ calculations based on the EDS and ECV.

Table 2.2
Children by quintiles
Distribution of equivalized household income

	Children under 2 years-old		Children under 4 years-old	
	1997	2001	1997	2001
	(i)	(ii)	(i)	(ii)
1	29.7	27.6	30.1	27.8
2	24.6	21.7	24.5	21.6
3	19.1	20.1	18.4	20.4
4	13.6	15.6	14.8	15.6
5	13.0	15.1	12.1	14.6
Total	100.0	100.0	100.0	100.0

Source: authors´ calculations based on the EDS and ECV.

Table 2.3
Benefit-incidence results
Distribution of equivalized household income

	1	2	3	4	5	Total
1. Antenatal care						
1997	46.5	26.8	17.7	7.0	2.0	100.0
2001	43.3	26.8	19.3	8.0	2.5	100.0
Change	-3.2	0.0	1.6	1.0	0.6	0.0
2. Attended deliveries						
1997	44.5	27.7	17.9	7.1	2.7	100.0
2001	41.9	27.0	18.4	9.5	3.2	100.0
Change	-2.6	-0.8	0.5	2.4	0.4	0.0
3. Visits to a doctor						
1997	45.1	29.6	15.6	6.9	2.8	100.0
2001	43.2	27.5	19.1	6.7	3.4	100.0
Change	-1.9	-2.1	3.6	-0.1	0.6	0.0
4. Medicines						
1997	51.6	26.1	14.8	6.1	1.4	100.0
2001	49.4	21.7	16.3	8.7	3.9	100.0
Change	-2.2	-4.4	1.4	2.6	2.5	0.0
5. Hospitalizations						
1997	42.5	35.0	15.1	5.9	1.5	100.0
2001	44.5	17.5	27.1	9.1	1.8	100.0
Change	2.0	-17.5	12.0	3.2	0.3	0.0

Source: authors´ calculations based on the EDS and ECV.

Table 2.4
Concentration indices

Health services	1997	2001
Antenatal care	-46.9	-42.9
	(-48.4, -45.8)	(-44.5,-41.1)
Attended delivery	-45.3	-41.4
	(-46.4, -43.8)	(-43.0,-39.1)
Visits to a doctor	-44.0	
	(-44.9, -43.1)	
Medicines	-51.0	-38.7
	(-53.5, -48.4)	(-41.7,-36.6)
Hospitalizations	-46.6	-37.2
	(-49.9, -44.3)	(-43.3,-33.1)

Source: authors´ calculations based on the EDS and ECV.
Note: 95% confidence intervals below concentration index estimates.
Intervals computed by bootstrap with 200 replications.

Table 3.1
Aggregate decomposition of incidence results
Health services, 1997 and 2001

Antenatal care

	1	2	3	4	5	Total
1. Potential users						
1997	29.7	24.6	19.1	13.6	13.0	100.0
2001	27.6	21.7	20.1	15.6	15.1	100.0
2. Participation						
1997	94.8	96.3	99.5	99.4	98.4	97.1
2001	97.6	96.5	97.6	98.5	99.2	97.7
3. Public provision						
1997	81.6	56.0	46.0	25.7	7.6	51.6
2001	85.6	68.1	52.4	27.7	9.0	54.9
4. Incidence						
1997	46.5	26.8	17.7	7.0	2.0	100.0
2001	43.3	26.8	19.3	8.0	2.5	100.0
5. Difference	-3.2	0.0	1.6	1.0	0.6	
6. Effects						
Potential users	-1.4	-2.1	1.7	1.4	0.4	
Participation	0.9	-0.2	-0.5	-0.1	0.0	
Public provision	-2.7	2.4	0.4	-0.2	0.1	

Attended deliveries

	1	2	3	4	5	Total
1. Potential users						
1997	29.7	24.6	19.1	13.6	13.0	100.0
2001	27.6	21.7	20.1	15.6	15.1	100.0
2. Participation						
1997	98.3	99.4	99.9	100.0	100.0	99.3
2001	98.3	99.4	99.9	100.0	100.0	99.3
3. Public provision						
1997	79.5	59.4	49.1	27.3	10.9	53.4
2001	83.4	67.5	49.5	33.0	11.3	55.0
4. Incidence						
1997	44.5	27.7	17.9	7.1	2.7	100.0
2001	41.9	27.0	18.4	9.5	3.2	100.0
5. Difference	-2.6	-0.8	0.5	2.4	0.4	
6. Effects						
Potential users	-1.5	-2.2	1.7	1.5	0.6	
Participation	0.0	0.0	0.0	0.0	0.0	
Public provision	-1.1	1.5	-1.2	1.0	-0.1	

Medicines

	1	2	3	4	5	Total
1. Potential users						
1997	30.1	24.5	18.4	14.8	12.1	100.0
2001	27.8	21.6	20.4	15.6	14.6	100.0
2. Participation						
1997	24.2	25.6	26.6	28.5	26.2	25.9
2001	51.6	52.0	57.8	54.8	63.1	55.5
3. Public provision						
1997	49.7	29.2	21.4	10.1	3.1	27.2
2001	64.8	36.4	25.9	19.1	8.0	32.3
4. Incidence						
1997	51.6	26.1	14.8	6.1	1.4	100.0
2001	49.4	21.7	16.3	8.7	3.9	100.0
5. Difference	-2.2	-4.4	1.4	2.6	2.5	
6. Effects						
Potential users	-1.7	-1.9	2.3	0.7	0.6	
Participation	0.6	-0.9	0.6	-0.6	0.3	
Public provision	-1.1	-1.6	-1.5	2.6	1.6	

Hospitalizations

	1	2	3	4	5	Total
1. Potential users						
1997	30.1	24.5	18.4	14.8	12.1	100.0
2001	27.8	21.6	20.4	15.6	14.6	100.0
2. Participation						
1997	8.8	10.6	6.9	7.1	7.0	8.4
2001	9.6	6.8	10.9	9.1	4.5	8.4
3. Public provision						
1997	84.3	70.5	62.1	29.1	9.2	63.1
2001	91.9	66.0	67.3	35.1	15.0	65.4
4. Incidence						
1997	42.5	35.0	15.1	5.9	1.5	100.0
2001	44.5	17.5	27.1	9.1	1.8	100.0
5. Difference	2.0	-17.5	12.0	3.2	0.3	
6. Effects						
Potential users	-1.8	-2.2	3.0	0.6	0.4	
Participation	2.7	-12.2	8.7	1.6	-0.8	
Public provision	1.1	-3.2	0.4	0.9	0.7	

Source: authors´ calculations based on the EDS and ECV.

Table 3.2
Aggregate regional decomposition of incidence results, 1997

Deliveries

	1	2	3	4	5	Total
1. Potential users						
North	44.1	26.4	14.6	10.0	4.8	100.0
Center	32.1	23.2	19.7	13.7	11.3	100.0
South	27.5	20.3	22.7	15.6	13.9	100.0
GBA	19.5	25.4	20.6	15.2	19.3	100.0
Argentina	29.7	24.6	19.1	13.6	13.0	100.0
2. Participation						
North	94.5	98.0	98.0	99.7	97.9	96.6
Center	95.7	99.2	100.0	99.5	99.9	98.3
South	98.2	99.0	98.3	100.0	99.6	98.9
GBA	93.4	92.6	100.0	99.0	97.6	96.1
Argentina	94.8	96.3	99.5	99.4	98.4	97.1
3. Public provision						
North	83.2	58.4	39.3	15.2	7.1	59.3
Center	77.0	42.7	40.2	16.6	0.8	45.0
South	81.5	65.3	52.8	40.7	23.0	57.3
GBA	86.2	65.5	52.8	35.4	9.2	52.2
Argentina	81.6	56.0	46.0	25.7	7.5	51.6
4. Incidence						
North	60.6	26.4	9.8	2.7	0.6	100.0
Center	54.1	22.4	18.1	5.2	0.2	100.0
South	39.0	23.3	20.9	11.2	5.6	100.0
GBA	32.0	31.4	22.2	10.8	3.5	100.0
Argentina	46.5	26.8	17.7	7.0	1.9	100.0

Comparison North vs. GBA

	1	2	3	4	5	Total
Actual incidence						
GBA	32.0	31.4	22.2	10.8	3.5	100.0
North	60.6	26.4	9.8	2.7	0.6	100.0
Difference	-28.5	5.0	12.4	8.2	2.9	
Effects						
Population	-23.8	7.3	9.7	4.1	2.7	
Participation	0.4	-1.1	0.6	0.1	0.0	
Public provision	-5.0	-1.2	2.1	4.0	0.2	

Visits to a doctor

	1	2	3	4	5	Total
1. Potential users						
North	44.6	26.3	13.7	10.6	4.8	100.0
Center	31.5	23.1	19.8	14.6	11.1	100.0
South	28.1	18.5	22.7	16.9	13.8	100.0
GBA	20.6	25.7	19.1	17.2	17.4	100.0
Argentina	30.1	24.5	18.4	14.8	12.2	100.0
2. Participation						
North	27.6	27.2	34.5	44.6	33.2	30.5
Center	31.9	36.7	37.0	32.8	33.2	34.3
South	23.9	27.7	29.4	28.1	29.5	27.4
GBA	33.4	34.5	26.2	34.9	37.3	33.3
Argentina	30.5	33.3	31.9	35.2	35.2	32.7
3. Public provision						
North	76.7	57.5	32.6	12.8	1.4	51.6
Center	75.1	45.7	35.0	12.8	4.2	43.0
South	80.0	65.9	58.0	16.5	9.0	50.4
GBA	81.0	65.1	54.9	30.5	15.0	50.8
Argentina	77.4	56.5	42.4	20.5	10.3	48.0
4. Incidence						
North	60.0	26.2	9.8	3.9	0.1	100.0
Center	51.2	26.3	17.4	4.1	1.0	100.0
South	39.0	24.6	28.1	5.7	2.7	100.0
GBA	33.0	34.1	16.2	10.9	5.8	100.0
Argentina	45.2	29.3	15.8	6.8	2.8	100.0

Comparison North vs. GBA

	1	2	3	4	5	Total
Actual incidence						
GBA	33.0	34.1	16.2	10.9	5.8	100.0
North	60.0	26.2	9.8	3.9	0.1	100.0
Difference	-26.9	7.9	6.4	7.0	5.7	
Effects						
Population	-22.8	7.4	7.7	5.2	2.5	
Participation	3.5	3.9	-5.0	-2.5	0.1	
Public provision	-7.5	-3.5	3.6	4.4	3.0	

Source: authors´ calculations based on the EDS.

Table 3.3
Aggregate regional decomposition of incidence results
Comparison North vs. GBA
Health services, 2001

Antenatal care

	1	2	3	4	5	Total
1. Actual incidence						
GBA	31.8	26.0	27.0	10.8	4.4	100.0
North	60.9	25.4	8.9	4.3	0.5	100.0
2. Difference	-29.1	0.6	18.0	6.5	4.0	
3. Effects						
Population	-19.5	-0.9	11.3	6.6	2.5	
Participation	1.1	-1.4	-0.4	0.5	0.1	
Public provision	-10.8	2.9	7.1	-0.6	1.3	

Deliveries

	1	2	3	4	5	Total
1. Actual incidence						
GBA	42.0	21.2	25.5	8.0	3.2	100.0
North	63.8	25.4	7.0	3.4	0.3	100.0
2. Difference	-21.8	-4.2	18.5	4.6	2.9	
3. Effects						
Population	-19.2	1.0	10.9	5.4	1.8	
Participation	0.3	-0.9	0.6	0.1	0.0	
Public provision	-3.0	-4.3	7.0	-0.8	1.0	

Visits to doctors

	1	2	3	4	5	Total
1. Actual incidence						
GBA	33.5	30.0	20.4	10.4	5.7	100.0
North	57.8	25.8	10.7	4.5	1.2	100.0
2. Difference	-24.4	4.2	9.8	5.9	4.5	
3. Effects						
Population	-22.7	1.8	9.8	6.8	4.3	
Participation	0.8	3.9	-3.7	-1.1	0.2	
Public provision	-2.4	-1.4	3.8	0.2	-0.1	

Medicines

	1	2	3	4	5	Total
1. Actual incidence						
GBA	37.0	13.8	18.5	22.9	7.9	100.0
North	64.2	25.0	5.2	4.7	0.9	100.0
2. Difference	-27.2	-11.2	13.3	18.2	7.0	
3. Effects						
Population	-24.8	2.0	6.9	11.3	4.6	
Participation	-8.1	5.0	2.0	0.0	1.2	
Public provision	6.0	-18.4	4.3	7.0	1.0	

Hospitalizations

	1	2	3	4	5	Total
1. Actual incidence						
GBA	38.2	8.5	40.8	12.4	0.0	100.0
North	65.9	21.6	6.5	5.4	0.6	100.0
2. Difference	-27.7	-13.1	34.3	7.1	-0.6	
3. Effects						
Population	-24.9	1.8	13.0	9.4	0.7	
Participation	-1.8	-5.7	5.5	2.5	-0.6	
Public provision	-1.0	-9.4	15.8	-4.3	-1.1	

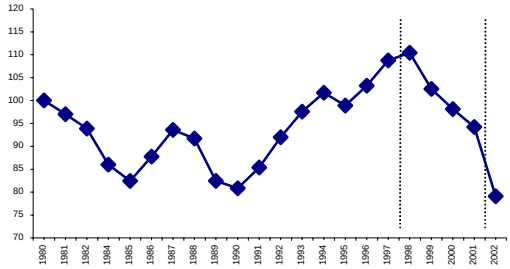
Source: authors´ calculations based on the ECV.

Table 3.4
Microeconometric decompositions (Microsimulations)
Change in the absolute value of the concentration index 1997-2001

	Antenatal care (i)	Attended deliveries (ii)	Medicines (iii)	Hospitalizations (iv)
Difference	-4.8	-5.2	-11.6	-7.2
Participation	0.4	0.0	-0.8	2.1
Public provision	-1.7	0.6	-3.6	-5.7
Population	-3.5	-5.8	-7.2	-3.6

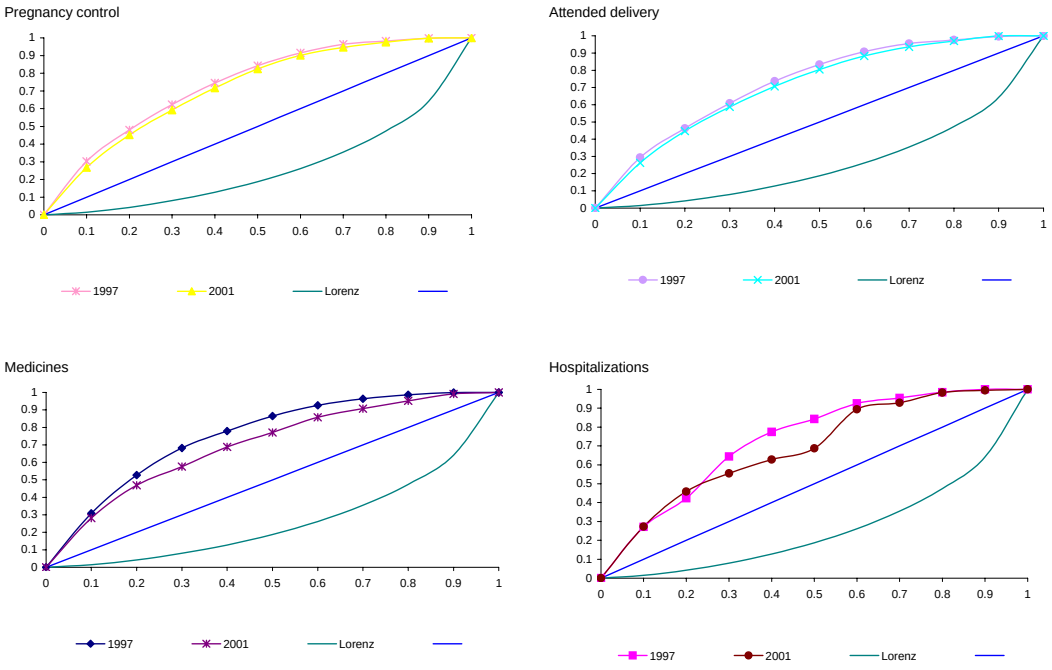
Source: authors´ calculations based on the ECV.

Figure 2.1
Mean disposable income
Argentina, 1980-2002
1980=100



Source: CEDLAS (2003).

Figure 2.2
Concentration curves
Antenatal care, attended delive ry, medicines and hospitalizations, 1997 and 2001



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