WPS2080

POLICY RESEARCH WORKING PAPER   2080

Monitoring Targeting Performance When Decentralized Allocations to the Poor Are Unobserved

Martin Ravallion

Program funding and design choices by the central government can greatly affect the targeting performance of decentralized social programs. The allocation to a province should depend on how successful it is at reaching the poor with the extra resources, rather than how poor it is. New measurement tools can help monitor performance with limited data.

Summary findings

National antipoverty programs often rely heavily on provincial governments. The center targets poor provinces in the hope that they will reach their own poor. Without successful intraprovincial targeting, however, even dramatic redistribution from rich to poor provinces can have little impact on poverty nationally.

However, data for assessing performance at provincial level are often far from ideal. Can a centralized government monitor the performance of decentralized social programs in reaching the poor when their benefit incidence is unobserved?

Ravallion shows that the poverty map and the corresponding spending allocation across geographic areas allow one to identify the latent differences in mean allocations to the poor versus the nonpoor. The national measure of targeting performance is also subgroup-decomposable.

Ravallion uses an application to an antipoverty program in Argentina (Trabajar II) to assess performance in reaching the poor and to measure the relative contributions to the program's performance — before and after reforms — of the center's provincial reallocation and decentralized targeting.

Funding and program design changes led to large gains for the poor, although with diverse performance across provinces.

Program funding and design choices by the central government can greatly affect the targeting performance of decentralized social programs. The allocation to a province should depend on how successful it is at reaching the poor with the extra resources, rather than how poor it is.

Design choices should provide incentives for provincial governments to target resources to the poor. Finding feasible ways to monitor their performance and adjust central government's efforts accordingly are then crucial to better outcomes for poor people.

Produced by the Policy Research Dissemination Center

Monitoring Targeting Performance when Decentralized

Allocations to the Poor are Unobserved

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1.   Introduction

National anti-poverty programs often rely heavily on provincial governments. The center

targets poor provinces, in the hope that they will reach their own poor. It is known, however,

that without successful intra-provincial targeting efforts, even dramatic redistributions from rich

provinces to poor ones can have little impact on poverty nationally.[2] Outcomes will depend on

the behavior of provincial governments.[3] One can expect provinces to differ in relevant ways.

Some will care more about the poor than others, or face different constraints in their efforts to

reach the poor. Indeed, having a high incidence of poverty can result in worse targeting

performance (Ravallion, 1999). While the decentralization of targeting decisions can allow local

information to be exploited, some provinces will be better able to secure such gains than others.

Central monitoring of provincial performance, and use of the information to encourage

better performance, can thus be crucial to success in reaching the poor. However, the data at

hand can be very limited, either because no household surveys were done, or they did not ask the

right questions at the right times, or because the surveys are not representative at provincial level.

So benefit incidence between the poor and non-poor will often be unobserved (by either the

center or the provinces). This can severely constrain contracts with the provinces for assuring

maximum impact on poverty nationally. A poorly-informed center might also be inclined to

assume the worst; imperfect information about outcomes can then lead to under-funding of anti-

poverty programs.

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[2]   For evidence see Ravallion (1993) (for Indonesia) and Datt and Ravallion (1993) (for India).
[3]   This point is well recognized; "Since the central authorities do not control the local authorities, the effects of federal programmes need not be those intended; and the central authorities must take the reactions of the communities into account" (Atkinson and Stiglitz, 1980, p.551). For discussions of this

This paper proposes a measure of targeting performance for situations in which benefit incidence is unobserved. It is usually feasible to track spending across local government areas within provinces. Poverty indicators for those areas might then be based on large sample surveys or census data. [4] However, the poverty data do not include program participation. The proposed measure of targeting performance is the regression coefficient of spending on the poverty rate across areas within a government's boundaries. Conditions are identified under which this regression coefficient reveals benefit incidence. The paper also shows that the overall (national) measure of targeting performance can be exactly decomposed into between-province and within-province components. This allows policy makers to assess the contribution of the center's provincial allocation — versus intra-provincial targeting — to overall performance.

The following section defines the measures of targeting performance and the conditions under which they correctly reveal benefit incidence. Section 3 puts these tools to work in monitoring a World Bank financed anti-poverty project in Argentina. Section 4 concludes.

2.   Measuring Targeting Performance without an Incidence Survey

Consider a government that has a budget for a social program. This budget is to be allocated between the poor and non-poor within the government's boundaries. Those boundaries embrace a set of finer geographic areas; these might be provinces, if we are monitoring the central government, or municipalities if we are monitoring a provincial government. The government decides how much should go to each of the poor and non-poor within its

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and related issues concerning fiscal federalism see Brown and Oates (1987), Wildasin (1991), Bird et al., (1995), Inman and Rubinfeld (1997) and Keen and Marchand (1997).

[4]   The poverty map might be constructed from the census by extrapolating from a smaller living standards survey following the method of Hentschel et al. (1998).

jurisdiction. However, what we observe as data are not these allocations, but only the total expenditures across each of the geographic areas which lie within the government's boundaries, and the poverty rates across those areas, i.e., the geographic poverty profile.

To fill in the missing data we will have to make some assumptions. The government's (unobserved) optimal allocation to a household can be assumed to depend on that household's level of welfare. That may in turn depend on where the household lives, but I assume that the poverty rate in the area where it lives does not matter to a household's allocation independently of its own level of welfare.[5] In other words, there is no "poor-area bias" in that a poor person living in a poor local-government area expects to get the same amount from the program as an equally poor person living in a rich area of the same province. The same holds for the non-poor. This assumption can be thought of as a form of horizontal equity within provinces.

The following observations can be made about this assumption:

(i) While "poor-area bias" is ruled out, that does not mean that the government ignores the differences in poverty incidence between areas when making its disbursements. Indeed, that may well be the key information it uses. However, it is assumed that the government is not biased by those differences in making its allocations. A poorer area will still receive more from a government that is targeting the poor, but simply because there are more poor people in that area.

(ii) It is an assumption about the behavior of the level of government that actually decided how the program's resources should be allocated between the poor and non-poor. Suppose that each province in a federal system allocates its budget between the poor and non-

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[5]   Notice that I say " independent" which is a stronger assumption than "uncorrelated" . Strictly, the method below requires that the deviations from the mean are uncorrelated with either the incidence of poverty or its squared values. That is implied by independence.

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poor. It is assumed that there is no "poor-area bias" <u>within</u> any given province. However, there may well be such a bias between equally poor people living in different provinces, depending on the inter-provincial differences in behavior, and the center's budget allocation. Horizontal inequity between provinces is still possible. I will return to this point.

(iii) The assumption rules out effects of the program on migration within provinces. If there is no difference in expected allocations for otherwise identical households then they will have no incentive to move. Migration effects may however be of concern between provinces. In the case of the Argentinean program to be studied later, its size and temporary nature make it unlikely that it affects residential locations, so one can abstract from this complicating factor in the analysis. However, this may be less plausible in other applications. Larger redistributive interventions at province level could result in migration and (hence) fiscal externalities; this raises a rather different set of issues for central government policy (Wildasin, 1991).

Let us first consider how to measure the targeting performance of each province, under the assumption of horizontal equity in expectation. The central government allocates a total budget of G per capita across M provinces such that G_j per capita is received by province j. After that, each province decides how much should go to the poor versus the non-poor. The chosen allocation by province j is G_j^n per capita for the non-poor and G_j^p for the poor. Province j comprises M_j local government areas, which I call "departments". The per capita allocations to department i $(=1,.., M_j)$ within province j can be written as:

$$G_{ij}^n = G_j^n + \varepsilon_{ij}^n \tag{1}$$

$$G_{ij}^p = G_j^p + \varepsilon_{ij}^p \tag{2}$$

for the non-poor and poor respectively, where the ε's are the departmental deviations from the province means.

Total disbursements to the poor and non-poor must exhaust the budget. This creates an accounting identity linking total program expenditure per capita to the poverty rate in a department. Let G_{ij} denote spending in the i'th department of the j'th province, and let the corresponding poverty rate be H_{ij} — the "headcount index", given by the proportion of the population that is poor (for which the overall poverty rate in the province is H_j). Then:

$$G_{ij} = H_{ij}G_{ij}^{p} + (1 - H_{ij})G_{ij}^{n} \tag{3}$$

Using equations (1) and (2) we can re-write (3) in the form of a simple linear regression:

$$G_{ij} - G_j = T_j(H_{ij} - H_j) + v_{ij} \tag{4}$$

where

$$v_{ij} = \varepsilon_{ij}^{n} + (\varepsilon_{ij}^{p} - \varepsilon_{ij}^{n})H_{ij} \tag{5}$$

and $T_j = G_j^{p} - G_j^{n}$ is the absolute difference in the average allocation to the non-poor versus the poor in that province. If T_j is negative then the program favors the non-poor in absolute terms; if T_j is positive, then the program favors the poor, and the higher the targeting differential, the more provincial spending favors the poor. I will call T_j the "targeting differential".

How can the targeting differential be estimated? Under the horizontal equity assumption, the error term given by (5) will have zero mean for any given province and be uncorrelated with H_{ij} (since the ε's are zero-mean errors within any given province and are uncorrelated with both H_{ij} and its squared value). Thus H_{ij} is exogenous in (4) and so one can estimate T_j from an OLS regression of G_{ij} on H_{ij} across all departments within a given province. Equation (5) indicates

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that the error term will not be homoskedastic although this can be dealt with in estimating the standard error of the targeting differential.

Analogously to these province-specific targeting differentials, one can estimate the center's inter-provincial targeting differential, T^P, by regressing the program allocation across provinces G_j (j=1,..,M) on the provincial poverty measures H_j (j=1,..,M). This is a natural measure of how much the center's allocation matches the provincial poverty map.

However, T^P cannot be interpreted the same way as the provincial targeting differentials unless one makes a stronger assumption. Analogously to the province-specific targeting differentials discussed above, horizontal equity between provinces is sufficient for the OLS estimate of T^P to consistently estimate the difference between the mean allocations to the poor and non-poor over the whole country. However, absence of poor area bias within each province, clearly does not imply that equally poor people in different provinces will receive the same amount in expectation. Differences between provinces in their distributional objectives, and in the constraints they face (including the amount received from the center), could readily produce horizontal inequality in the treatment of equally poor people in different provinces. To some extent, the center will be able to get around these differences through its spending allocations across provinces and other administrative efforts made by the center to try to assure that provincial behavior is in line with the center's objectives. However, since the center does not actually decide who gets how much under the program, we cannot be confident that horizontal equity at the national level will emerge.

One can construct a test, by using equation (4) to measure the extent of horizontal inequality between the expected program allocations to departments with the same poverty

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measure but in different provinces. Let H^* denote a fixed reference value of H_{ij}. The expected allocation to a department with poverty rate H^* is then:

$$G_j^* = G_j + T_j(H^* - H_j) \qquad (6)$$

In turn, we know that:

$$G_j^* = H^* G_j^p + (1 - H^*) G_j^n \qquad (7)$$

Under inter-provincial horizontal equity, both G_j^p and G_j^n will be uncorrelated with H_j. Although we do not observe either G_j^p or G_j^n, it can be seen from (7) that G_j^* is a fixed-weight combination of the two. So a testable implication of inter-provincial horizontal equity is that G_j^* is uncorrelated with H_j. I will test this implication.

One can also estimate a national, inter-departmental, targeting differential, T^D, by regressing the values of G_{ij} on H_{ij} across all departments, irrespective of their province. Again this cannot be given the same interpretation as the provincial targeting differentials unless there is also horizontal equity across provinces. However, the estimate of T^D still gives a useful summary statistic of overall performance in targeting poor areas, reflecting both the center's targeting of provinces and the (potentially diverse) performance of provinces in targeting the poor. Indeed, the OLS estimate of the national poor-area targeting differential, T^D, can be decomposed exactly into between province and within province components as follows:

$$\hat{T}^D = \underset{\text{between}}{S^P \hat{T}^P} + \underset{\text{within}}{\sum S_j \hat{T}_j} \qquad (8)$$
$$\underset{\text{provinces}}{\text{between}} \quad \underset{\text{provinces}}{\text{within}}$$

where S^P is the between-province share of the total (inter-departmental) variance in poverty rates, and the S_j's are the province-specific shares. The formulae for the targeting differentials

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and their weights in (7) are given in Table 1; proving that the decomposition holds is

straightforward (for details see Ravallion, 1998, Appendix).

Table 1: Decomposition of the National Poor-Area Targeting Differential

Decomposition:
$$\hat{T}^D = S^P \hat{T}^P + \sum S_j \hat{T}_j$$

Targeting differentials (regression coefficients of public spending on the poverty rates across geographic areas)	Weights (shares of the geographic variance in poverty)
Inter-departmental $$\hat{T}^D \equiv \frac{\sum\sum (G_{ij} - G)(H_{ij} - H)^2}{\sum\sum (H_{ij} - H)^2}$$	-1
Inter-provincial $$\hat{T}^P \equiv \frac{\sum M_j (G_j - G)(H_j - H)}{\sum M_j (H_j - H)^2}$$	$$S^P \equiv \frac{\sum M_j (H_j - H)^2}{\sum\sum (H_{ij} - H)^2}$$
Intra-provincial $$\hat{T}_j \equiv \frac{\sum_{i=1}^{M_j}(G_{ij} - G_i)(H_{ij} - H_j)}{\sum_{i=1}^{M_j}(H_{ij} - H_j)^2}$$	$$S_j \equiv \frac{\sum_{i=1}^{M_j}(H_{ij} - H_j)^2}{\sum\sum (H_{ij} - H_j)^2}$$

Note: G_{ij} is program expenditure per capita in the ith department of the jth province. The mean for that province is G_j and the national mean is G. Province j contains M_j departments. H_{ij} is the poverty rate (the "headcount index") in the i'th department of province j, with province mean H_j and the national mean is H. Indexing of the summations is only given when there is any ambiguity.

Notice that for the decomposition to be exact, the estimate of T^P must be weighted by the

number of departments in each province (Table 1). The weighting is readily done by multiplying

all variables (including the intercept) by the square root of the number of departments prior to

running the regression of the G_j's on the H_j's across provinces.

Suppose we also want to compare two programs. In addition to the poverty rates being exogenous, suppose that they are also fixed, with the same values for both programs. For example, they are poverty rates measured before either program was introduced (as in the empirical application below). Then S^P and the S_j's are also fixed. So one can also decompose the changes in T^D straightforwardly as:

$$\Delta T^D = S^P \Delta T^P + \sum S_j \Delta T_j \qquad (9)$$

where Δ denotes the difference between the two programs.

We will next see how these measures might help in assessing targeting performance before and after reform and expansion to an anti-poverty program in Argentina.

3. Application to Argentina's Trabajar Programs

3.1 The Programs

With financial and technical support from the World Bank, the Government of Argentina introduced the Trabajar II program in May 1997. This was a temporary employment program in response to a sharp increase in unemployment. There was also evidence that this was hurting the poor. For example, while the average unemployment rate reached 17% in 1996 in Greater Buenos Aires, it was 40% amongst the poorest income decile. Trabajar II replaced a smaller prior program, Trabajar I. In addition to a greater overall budget, a number of features of Trabajar I were changed. The poverty focus was strengthened, putting greater emphasis on reaching poor areas. Poverty measures were included in the center's budget allocation rules and in the selection criteria for sub-projects. The poverty focus was also made clearer to provincial administrators.

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Trabajar II aimed to reduce poverty in two ways. Firstly, it tried to develop badly needed community infrastructure and services in poor areas. The subprojects were proposed by local governmental and non-governmental organizations that had to cover the non-wage costs. The projects had to be technically viable, and were chosen on a competitive basis according to a points system set by the center. Points were given according to: the poverty rate for the municipality in which the proposed project was located (using a census-based measure described in the next section), the type of project proposed, willingness to work for a wage below the maximum, and how much the area had already received from the program. The participating workers could not be receiving unemployment benefits or be participating in any other employment or training program. It is unlikely that a temporary program such as this would affect residential location.

Secondly, by providing short-term work at relatively low wages on these community projects, the program aimed to self-select unemployed workers from poor families. The wage rate on the program was set at a level that would be unlikely to attract non-poor workers, even when unemployed, or attract poor workers out of regular jobs. A subsequent assessment of where participating workers came from in the national distribution of income found that 80% were from the poorest 20% of families nationally, and that 50% came from the poorest decile (Jalan and Ravallion, 1999).

The reforms resulted in sizable changes in the center's budget allocation across provinces. Figure 1 plots spending per capita under Trabajar II (May-October 1997) against that under Trabajar I for 22 provinces. While there is a positive correlation (of 0.58, significant at the 5% level), there were some large changes in the provincial allocation. Later we will see how effective these were in improving the program's ability to reach poor areas.

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Figure 1: Changes in Program Spending Across Provinces

Trabajar 1 spending per capita ($/person)
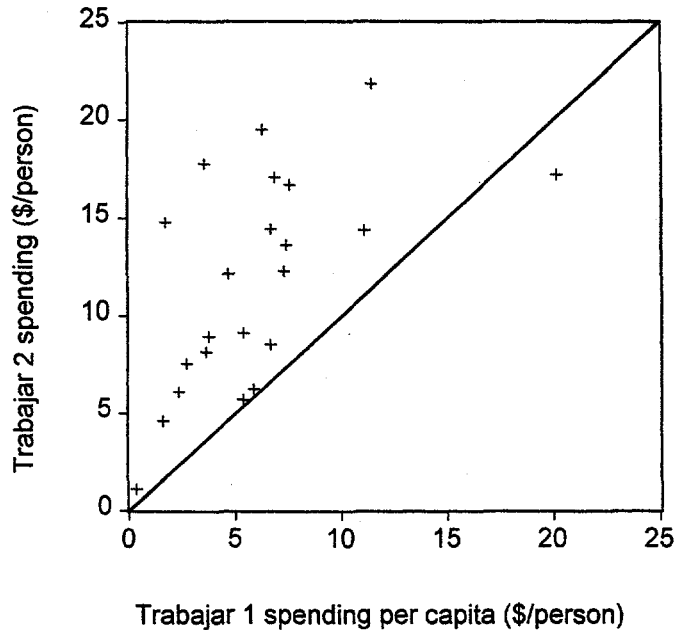
The benefits to the poor from this program will depend in part on the ability of local

communities (at subprovincial level) to propose and cofinance viable projects. Better off areas

will undoubtedly have a comparative advantage in this respect and so be the first to gain. Poorer

provinces tend to be more severely constrained in cofinancing projects. (There is a correlation of

-0.73 between the share of total sub-project costs that was cofinanced and the provincial poverty

rate, using the measure described below). Thus the germ of a possible problem in reaching poor

areas lies at the heart of the program's design, whereby the center only provides the labor share

of the cost of sub-projects, leaving the cofinancing up to local areas. To some extent the design

features of Trabajar II, including preferential treatment of project proposals from poor areas, will

have helped get around this problem.

The project management was decentralized at provincial level with budget constraints

and the overall rules (notably the points system) set by the center. Interviews with numerous staff

of the program offices at both national and provincial levels suggested that the efforts of provincial managers to get good projects from poor municipalities within their province were likely to be crucial in determining the targeting differential. Active involvement of the provincial office appears to have helped greatly in generating project proposals from poor areas, and assuring that they are technically viable. The provincial office can then help in securing funding for the non-wage costs from other (national and provincial) programs. It was clear from these interviews that in some provinces the local managers are professional technocrats who aim to implement the program's objectives in an efficient way. In other provinces, however, they are more swayed by national or local politics in deciding which areas should get most attention.

3.2 Targeting Differentials Before and After Program Reform and Expansion

The methods proposed in section 2 can help assess how well Trabajar II performed in reaching the poor, and whether there was an improvement over Trabajar I. The empirical work reported below draws on data for Trabajar I and the first six months of Trabajar II, May 1997-October 1997. The work was done as part of the project's concurrent monitoring and evaluation, and the results were rapidly available to the project's management team; the following analysis was being reviewed with the government's project team in the Ministry of Labor on a Bank supervision mission in November 1997. The quality of the information system for project monitoring set up by Ministry's project office made such rapid feedback possible.

The analysis requires project-monitoring data on disbursements by local government area and a poverty map for the same areas. The geographic level below the province in Argentina is the "department", of which there are 510 nationally. A poverty measure is available at department level, namely the proportion of households with "unmet basic needs" (*UBN*), based

on the 1991 census. This is a composite index of residential crowding, sanitation facilities, housing quality, education attainments (of adults), school enrollments (of children), employment and dependency. Since it is based on the census, the index covers the whole population, and so is representative at department level. (By contrast, none of the household surveys for Argentina are representative at that level, or even for all provinces.) The *UBN* index is the main poverty data used by provincial offices in setting priorities for Trabajar sub-projects; maps of the index by department are often displayed in provincial Trabajar offices. The index is somewhat out of date, although this has the advantage that one can safely treat it as exogenous to the program. Also the composition and weighting of the component indicators is not beyond question.

Let us first look at how the budget allocation between provinces changed with the program's reform and expansion. Under Trabajar I, the regression of spending per capita on the poverty rate gives an estimated inter-provincial targeting differential (T^P) of $25 per person, which is significantly different from zero at the 5% level (t-ratio=2.12).[6] (Recall that, under the inter-provincial horizontal equity assumption discussed in section 2, the OLS estimate of T^P is a consistent estimate of the difference in average allocations to the poor and non-poor nationally. Later we will see whether the data are consistent with the inter-provincial horizontal equity assumption.) The targeting differential rose appreciably in Trabajar II, for which the estimated T^P is $74 per person, which is highly significant (t-ratio=4.85).[7] The implied allocation to the non-poor was not significantly different from zero for either program (t-tests of 0.19 and 1.21 for

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[6]   As expected, the residuals in estimating this and the other targeting differentials indicated heteroskedasticity. All of the t-ratios reported below are based on White standard errors, corrected for any general type of heteroskedasticity present in the data.

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Trabajar I and II respectively). Thus the program expansion and reforms resulted in almost a three-fold increase in the implicit allocation to poor households.

Since the reforms included considerable effort at assuring that the program's extra disbursements were targeted to poor provinces, this improvement in the inter-provincial targeting differential is not too surprising. However, the allocation between provinces is far easier for the center to control than is the allocation <u>within</u> provinces, which we turn to next.

Let us now ignore the provinces, and look at the allocation across all 510 departments. The national targeting differential (T^D) for Trabajar I is $41 and is significantly different from zero (t-ratio=4.29). Under Trabajar II, the estimate of T^D rose to $80 (t=10.33).

How much of this improvement in the inter-departmental targeting differential was due to the improved performance in targeting poor provinces? The between-provinces component accounts for 28% of the total sum of squared deviations from the mean *UBN* index. Clearly then, reaching poor provinces alone cannot assure that poor departments will be reached. Using the decomposition in Table 1, one finds that 17% (=0.28x25/41) of the interdepartmental targeting differential of Trabajar I was attributable to the allocation between provinces; the rest was due to targeting within provinces. Under Trabajar II, the share due to the center's targeting of provinces rose to 26% (=0.28x74/80). There was an increase in the contribution of the center's efforts to target poor provinces to overall performance in reaching poor departments, though even so the bulk of the national interdepartmental targeting differential was due to intra-provincial targeting.

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[7]   These regressions are weighted by the number of departments (Table 1). The unweighted estimates of T^P were $15 (t=1.86) for Trabajar I and $60 (t=7.51) for Trabajar II.

Turning to the changes over time, we have seen that ΔT^D =$39, ΔT^P =$50, while

S^P =0.28. Thus (using equation 9) one finds that $14 (36%) of the improvement in targeting

performance across all departments can be attributed to the center's success at better targeting

poor provinces. The remaining 64% was through better targeting within provinces.

Since the absolute level of spending is higher under Trabajar II, the poor will also be

better off than under Trabajar I even without the improved targeting. Consider, for example, a

department in which 42% of the population have unmet basic needs — one standard deviation

above the national mean over all departments. Under Trabajar I, this department would expect

to receive $16 per person, over one year. Under Trabajar II, the same department would have

received $32 per person, over five months, a gain of about $16 per person over Trabajar I. While

there was a large absolute gain in the implicit allocation under Trabajar II, a share of this gain

was attributable to the higher total outlays on the program by the center. With the Trabajar II

mean allocation, but no improvement in targeting performance (i.e., assuming that the targeting

differential for Trabajar II was the same as that for Trabajar I), one would have expected a

department with 42% unmet basic needs to have received $26. So about $6 of the gain is due to

improved targeting, and $10 due to higher average outlay. ($10 being the difference between the

overall mean spending under Trabajar II of $20 and that under Trabajar I of $10.) To give a

second example, at a *UBN* rate of 58% (two standard deviations above the mean, and the poorest

5% of departments) the gain is about $23, of which $13 is due to the improved targeting. The

higher the department's poverty rate, the higher its gain from expansion and reform of the

program, and the higher the share due to the improved targeting.

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Figure 2: Targeting Differentials Before and After
Program Reform and Expansion
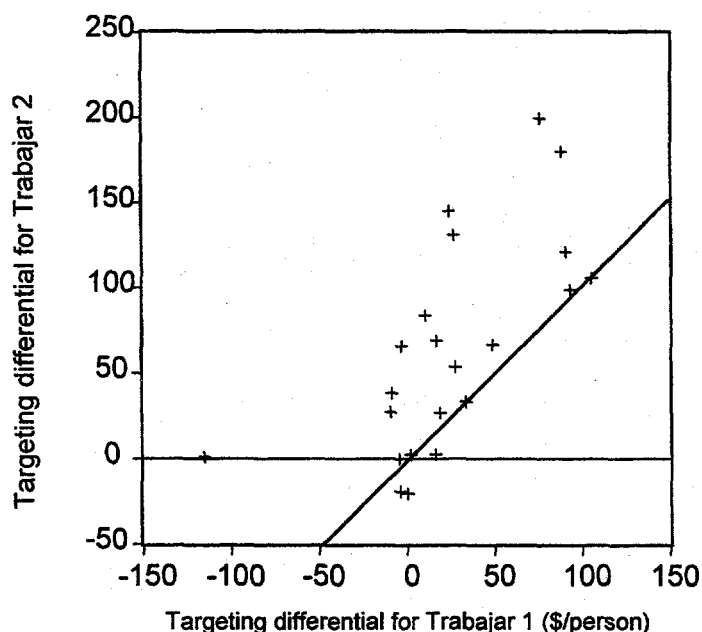
We have seen that although the allocation across provinces improved under Trabajar II, it remains that two thirds of the gain in overall performance came from better targeting within provinces. The provinces differed greatly in their success at reaching their poor. To assess changes in the intra-province spending, Figure 2 plots the differentials for Trabajar II against those for Trabajar I.[8] Twelve provinces had targeting differentials not significantly different from zero under Trabajar I. Only one province had a targeting differential which was significantly less than zero, although the differential there was still small (-0.09).

The number of provinces that were targeting their poor rose slightly with the expansion and redesign of the program under Trabajar II (Figure 2). While the targeting differential was significantly positive for nine provinces in Trabajar I, this rose to 11 provinces under Trabajar II. There were noticeable improvements in performance for 12 provinces; nine of these were

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8   Detailed results by province can be found in Ravallion (1998).

provinces which had a significantly positive targeting differential in Trabajar I. There was also

considerable re-ranking. For example, the province with the highest targeting differential in

Trabajar I did not improve its performance in Trabajar II, and was overtaken by five provinces.

3.3   *Horizontal Inequality Between Poor Areas in Different Provinces*

As discussed in section 2, one may well find horizontal inequalities between provinces in

how much a poor department with given poverty incidence receives from the program. The

extent of such horizontal inequality provides an indication of how much the federal system

constrains the center from achieving its desired transfers to the poor nationally. It also provides a

test of the assumptions underlying my interpretation of the inter-provincial targeting differential.

Figure 3: Horizontal Inequalities Between Equally Poor Areas in Different Provinces

Province ranked by poverty index; 22=poorest
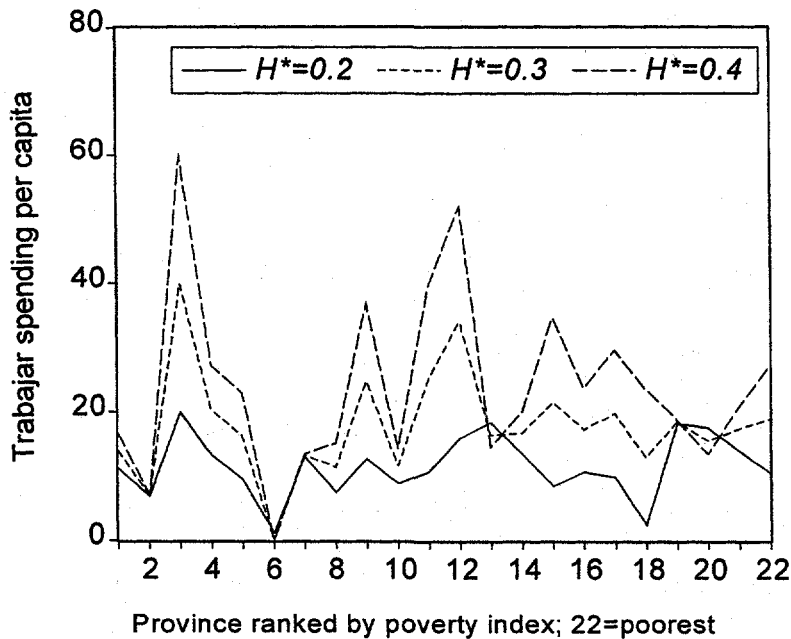
Consider a reference poor area with poverty rate H^*, fixed across all provinces. Figure 3 plots the expected value of the program spending, G^* as implied by equation (6), for all provinces ranked by their *UBN* index. I give the results for three values of H^*, namely 20%, 30% and 40%.[9] Following the discussion in section 2, the correlation between G^* and the actual poverty rate is a testable implication of the inter-provincial horizontal equity assumption underlying my interpretation of the inter-provincial targeting differential T^P.

Four observations can be made from Figure 3:

(i) There is considerable horizontal inequality, as indicated by the large differences in the allocations to departments with the same poverty measure in different provinces. For example, a department in which 40% of the people have unmet basic needs (about the fifth poorest percentile in the distribution of poverty rates across departments) can expect to receive anything from zero to five times the national mean allocation, depending on what province it belongs.

(ii) The absolute magnitude of the differences tends to be larger the poorer the reference area one considers; the standard deviations (coefficients of variation) are 4.8 (42%), 8.4 (47%), and 14.0 (58%) for H^*s of 20%, 30% and 40% respectively.

(iii) In almost all provinces, the higher the value of H^* the higher the program allocation. This is unsurprising, given that we have found that most provinces are targeting their poor.

(iv) There is no correlation between G^* and how poor the province is; the correlation coefficients between expected Trabajar II spending per capita in the reference poor area and the province mean *UBN* are 0.11, 0.01 and -0.03 for H^*s of 20%, 30% and 40% respectively.

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[9]   The (unweighted) mean *UBN* is 22.5% with standard deviation of 7.7%. I also tried H^*s of 15% and 50%; these followed the same patterns described below, but are omitted to simplify the figure.

So, although we find considerable horizontal inequity, it is uncorrelated with provincial poverty rates; the data in Figure 3 are consistent with horizontal equity in expectation between equally poor departments found in provinces with different overall poverty rates. This offers support for my interpretation of the inter-provincial targeting differential as the expected difference between the amount going to the poor versus the non-poor nationally.

3.4   Postscript

The bulk of the analysis above was done after the first six months of the project's implementation, so that results could feed back into the project. Efforts were then made to improve targeting performance in the lagging provinces. This was mainly done through discussions and training seminars organized by the central project office with the aim of strengthening provincial efforts at helping poor municipalities put up successful sub-projects.

The data are now available to measure the targeting differential for Trabajar II as a whole (May 1997 to virtual project completion in July 1998). They follow a similar pattern to the data for the first six months analyzed above, although with some signs of improvement. The targeting differential for Trabajar II was found to be positive in 19 of the 22 provinces, and it had improved when compared to Trabajar I in all except three provinces. The differential was significantly positive (at the 5% level) in 13 provinces, and not significantly different from zero in the rest. The national inter-departmental targeting differential for Trabajar II was $110 which is highly significant (t-statistic=10.91, n=503).

To help judge the extent of the poor-area targeting in Trabajar II, consider the poorest department in Argentina, namely Figueroa (in Santiago Del Estero province) where the incidence of unmet basic needs is 75.5%. Figueroa received $86.80 per capita from Trabajar II. The least

poor department was Chacabuco (in Chaco) where the incidence of unmet basic needs is 3.3%, and $4.91 per person was received from the program.[10] Recall that the overall targeting differential under Trabajar I was $41 (t=4.29). Thus, under Trabajar I, the poorest department (with an incidence of unmet basic needs of 75.5%) would expect to receive $29.60 per person more than the least poor province (in which 3.3% of the population have unmet basic needs). Under Trabajar II, the poorest department would expect to receive $79.40 more per person than the least poor department – a gain of almost $50 per person. So the changes to the program greatly improved the extent to which it reaches poor areas.

4.   Conclusions

Geographically decentralized social programs can have diverse outcomes for the poor, depending on the objectives and constraints facing provincial governments. It is well recognized in principle that this diversity in performance has important implications for the central government's funding allocations and program design choices. Yet the center is often poorly informed about provincial performance in reaching the poor. This lack of data on benefit incidence can severely limit the options for designing contracts that will improve performance, and it can also entail that poverty programs end up being under-funded.

This paper has proposed a measure of performance that can be estimated in certain circumstances, even when the incidence of social spending is unobserved. The measure requires data on the allocations of total spending by geographic area and a matching poverty map. One

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[10]   These are the actual expenditures, though the predicted values from the targeting differential are very similar because these two departments turn out to be very close to the regression line. The difference in the Trabajar allocation to Figueroa versus Chacabuco expressed as a ratio to the difference in poverty rates is $113, which is very close to the targeting differential (estimated over all departments) of $110.

then regresses public spending on the poverty rates across areas. The interpretation of this regression coefficient assumes that there is "horizontal equity" within provinces — meaning that equally poor people in the same province receive the same amount in expectation, irrespective of the incidence of poverty in the local areas in which they live. This is a defensible assumption at provincial level (or whatever level the programs' allocations are decided). It is less likely to hold between provinces, although the method delivers a test for this case.

Under this horizontal equity assumption, the regression coefficient consistently estimates a "targeting differential" given by the difference between the program's average allocations to the poor and non-poor. The paper has also shown how the national targeting differential across all local government areas can be decomposed to allow an assessment of the contribution of the center's targeting of provinces versus the efforts of the provinces themselves.

The paper has applied these methods to monitoring the performance of the "Trabajar II" program in Argentina. A substantial reallocation of program resources across Argentina's provinces occurred when Trabajar I was replaced by Trabajar II, entailing higher total spending and program design changes which gave stronger incentives to reach the poor. The revised inter-provincial budget allocation under Trabajar II was more heavily influenced by differences in provincial poverty indicators. The real wage rate for the work made available under the project was maintained at a low level (a somewhat lower real value than the earlier program). A high weight was given to proposals from poor areas in a points system for ex-ante assessment of the competing sub-projects. And efforts were made to strengthen the capability of provincial offices for helping poor areas mount projects, and to assure that provincial project managers were in tune with the programs' overall goals.

These changes resulted in a marked improvement in the program's success at reaching poor provinces. Performance in reaching the poor within provinces also improved in the majority of provinces. Overall performance in reaching poor areas (irrespective of their province) improved nationally. For example, the difference between the program's disbursement to the poorest area nationally versus the least poor increased by 170%.

On decomposing the national targeting differential one finds that only about one third of the gain in the program's ability to reach poor areas was due to its greater ability to reach poor provinces. The rest was due to better targeting of the poor within provinces. Performance was also diverse across provinces, with substantial gains in some provinces but not others. Differences in provincial targeting performance were reflected in considerable horizontal inequality between equally poor areas in different provinces, although this horizontal inequality was uncorrelated with how poor the provinces are — supporting the interpretation given to the inter-provincial targeting differential.

These results suggest that program funding and design choices by the center can matter greatly to the targeting performance of decentralized social programs. The allocation to a province should depend on how successful it is at reaching the poor with the extra resources — rather than how poor it is per se. Design choices should provide incentives for pro-poor targeting by provincial governments. Feasible ways of monitoring their performance, and adjusting the center's efforts accordingly, can then be crucial to better outcomes for the poor.

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