Does Local Accountability Work?
Tracing "Leakages" in the Peruvian 'Vaso de leche' Program

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Abstract

The problem of "leakage" – whereby some portion of state funding is diverted or "leaks" at each stage of the journey from a central government, through intermediary authorities in cooperation with civil society organizations, to the intended beneficiaries – is examined using an innovative research tool called a Public Expenditure Tracking Survey (PETS). This paper uses PETS data to examine in some depth the leakages that occur in Peru's Vaso de Leche (glass of milk) program, designed to improve the nutrition of poor children. The greatest leakages are found not at the top of the chain (between central government and municipality) but rather near the bottom, as funding is disbursed in local communities and beneficiaries. This finding represents a potential downside to decentralization, perhaps belying the conventional wisdom that organizations closer to the people they serve will automatically be held more accountable.

Does Local Accountability Work?

Tracing "Leakages" in the Peruvian 'Vaso de leche' Program[1]

Decentralization has become a dominant mantra in many development programs throughout the world. The reasoning seems sound enough. The larger the government unit, the more remote it is from popular control, the less accountable it will become. To solve the problem, decentralization is advocated by many policy analysts as the best way of putting control (back?) into the hands of the people, where public officials will be held accountable, and where public funds have the greatest chance of responding to local needs and local conditions. Moreover, at the local level, where citizens can observe the actions of public officials at first hand, corruption can be difficult to hide and relatively easy to control. This logic goes even further: take public programs out of the hands of public officials and turn them over to local civil society organizations which, having a popular base of support, will be the most efficient, transparent and non-corrupt administrators of public services.[2]

In many developing countries in recent years, as states have shrunk under pressure from neo-liberal restructuring as well as the already noted thesis that local is better, civil society organizations have become the repository of many services that were once run by the state. The classic work by Putnam (1993), which is often cited as the key study to demonstrate the importance of cultural values in promoting democracy, is equally a landmark work about the importance of local government (in the particular case of Italy, regional government) and the role of civil society organizations in "making democracy work."

[1] We would like to acknowledge the work of Erik Wachtenheim for his important contributions to the research that led to this paper.

[2] This argument is reviewed in Campbell (2003), but also see other key studies (Litvack, Ahmad and Bird 1998; Rodden, Eskeland and Litvack 2003).

Those who promote decentralization and civil society organizations are not without their critics. Two main lines of criticism have emerged. First, local governments have fewer resources to institute controls over public spending and to carry out effective audits (López-Calix and Melo 2004). Second, civil society organizations can often be highly undemocratic, and promote the worst form of discrimination, as has been illustrated by Armony (2004) with the examples of civil society organizations promoting the rise of Nazi control in Germany as well as segregationist groups in the American South promoting lynchings of Blacks. In contemporary Guatemala, local civil society organizations have been linked to the wave of vigilante attacks that have become regular occurrences in that country (Seligson forthcoming).

One of the problems in the literature attempting to determine which side of this debate is closer to the truth is that much of it is qualitative in nature, where anecdotal illustrations of the pluses and minuses are what are deployed as evidence. On the other hand, the quantitatively based literature suffers from serious limitations of scientific control. That is, much of that work involves cross-sectional studies in which the level of centralization/decentralization is contrasted. The problem is that the controls are often too limited to rule out alternative explanations. Longitudinal studies suffer from the same problem; the macro-economic and other conditions under which the newly decentralized government or civil society organizations are operating differ in many ways from their more centralized predecessor arrangements. As a result, one cannot be sure that it is decentralization rather than some other variable that is responsible for producing the outcome.

This paper seeks to avoid the weaknesses of prior work. Rather than comparing across space or across time, with all of the inherent limitations in establishing effective control

variables, this study examines a single country, Peru, and a single time period, 2002, and focuses on a single program, the "Vaso de Leche." It draws upon a detailed study of public expenditures that enable us to trace the use of public funds from their inception in the budget process down to the consumption of the glass of milk inside households, and in so doing take note of the points in the system in which the loss of the milk occurs. We do not need to make any questionable assumptions about control variables, since we are not varying the place or the time in which the study is being conducted.

The focus of the paper is on "leakages" in the administration of public funds. "Leakage" is defined as the portion of public funds that do not reach their ultimate targeted beneficiaries, but instead is diverted for other purposes, including private gain or other potentially legitimate but clearly unintended purposes. This particular study of leakages is different from the study of corruption per se. Studies of corruption examine the bald diversion of public funds and the taking of bribes by public officials that are both clearly illegal and fraudulent in intent (Rose-Ackerman 1999; Treisman 2000; Seligson 2002). Research on leakages, instead, begins by asking the question: Why do public expenditures often not produce concomitant increases in social outcome indicators? While there are many factors that go into the answer to that question, only recently has it been appreciated that part of the explanation lies in the fact that institutional factors, as well as local organization constraints, or private gain prevent some portion of public funds from reaching their intended targets. This "leaking away" of public funds in Peru is the subject of the present investigation. We study it using the World Bank's Public Expenditure Tracking Surveys (PETS) we carried out for this research.

Work on leakages of public expenditure is to date only in its pioneering stage worldwide. Our research builds on the seminal work developed by the World Bank in Africa, more

particularly in Uganda (Reinikka and Svensson 2001; Reinikka and Svensson 2004). That research found that only 13 percent of the non-wage expenditures made by the central government were received by the local schools. The research on Peru deepens the approach followed in the Uganda study, however, mainly because it is able to trace linkages at *each* level in the chain from the first emission of public funds at the central level, down to the consumer at the level of the household. The Uganda study looked only at the national/individual leakage, and thus was unable to attribute leakages to each stage in the chain. As a result of our more comprehensive and disaggregated focus, surprising findings presented here emerge, especially because it is possible to identify and quantify the specific steps where the main leakages occur. Moreover, the Peru PETS, because it pinpoints the locus and key causal factors responsible for the leakages, gives policy makers clear direction for dealing with the problem.

We structure this paper in two parts. In Section 1, we deal with the efficiency shortcomings of the main financial transfers from the central to local governments in Peru. This includes assessing the following aspects: poverty targeting; volatility of financial flows as a reflection of their predictability; and transparency of the criteria that determine transfers and their actual delivery. In Section 2, we narrow our focus to the *Vaso de Leche* program, which is the core of our analysis. After describing our methodology, we describe the transfer process and then estimate the level of leakages during each of the five steps featuring the transfer process from the top (central government) to the bottom (direct beneficiaries within households). We conclude with some recommendations specific to the *Vaso de Leche* program and then provide some broader conclusions.

To anticipate our findings: leakages in Peru are significant and far more pervasive and extensive at the *bottom* of the chain rather than at the top. From the entire amount of public

funds intended for the *Vaso de Leche* program, barely 29 percent get to their intended beneficiaries. The rest of resources get leaked away. The results challenge the predominant view that organizations that are closer to the people they serve are inherently better in service delivery.

Our research shows that we should not assume that the relationship between accountability and development is always linear and positive, especially when asymmetric information, poor transparency or low management capacity occurs at different levels. Citizens can so dominate development programs at the local level that they may divert resources from their original purpose, without being held accountable or sanctioned for doing so, since the principal agents—the official authorities, central or municipal in this case—do not know about it, and may vitiate, even non-voluntarily, their effects. We find that citizens placed in direct control of a development program with severe design and implementation problems may, like the official authorities they are supplanting, distort its goal or become rent-seekers benefiting not the collectivity, but their own interests, even though following their own rules is presumed to benefit their own community. The evidence amassed in this study enables us not only to directly estimate diversions (referred to here as "leakage") of public resources for private gain or for a distorted purpose at each level of the public assistance "food chain," but we also find that the lower we go "down the chair," the greater the diversion.

Conventional wisdom takes precisely the opposite position; assume that the local and non-governmental "agent" is more accountable than the national and public "principal." What we have is a classical setting of asymmetric information (and influence) between successive stages of a so-called principal-agent problem. Depending on the level, the principal might be the official authorities, and the agents might be the committees; or, in a given community, the

principal might be the committee and the agents might be the beneficiary households. In both cases, the agents may behave in such a way that they divert resources from the principal's original intentions, since they have little knowledge of the original transfer received by the principal, and are neither accountable, nor sanctioned because of the diversion of resources. Thus, agents lack information about the exact amounts and management of resources by the principal and, conversely, the principal lacks the capacity to assess and held them accountable for such diversion.

Section 1: Funding Transfers from Central to Local Government:

Leakage Problems

In Peru, public resources are distributed by two mechanisms: those that are centrally allocated and administered through branch offices of the central government, and those that are transferred to local governments (municipalities). The education budget is an example of the former while the *Vaso de Leche* (glass of milk) program is an example of the latter. In both cases, there is a considerably long chain of intermediaries between the original central government budgeting office and the intended recipient. The findings presented here focus on the latter mechanism: public resources that are transferred to local governments (municipalities).

It is difficult to overstate the importance of central government revenue transfers to municipal governments. For the districts outside of Lima, transfers represent, on average, 72 percent of municipalities' total income. Among the districts of the poorest stratum, they can represent in excess of 90 percent of municipalities' total income. The central government's main transfers include the *Fondo de Compensación Municipal* (FONCOMUN) and *Vaso de Leche* (VdL) for all municipalities, and *Canon Minero and Canon/Sobrecanón Petrolero* for provinces

and districts in regions where mining and petroleum products are extracted or the mining and petroleum company headquarters are located.

In 2001, these four major central government transfers totaled 1.9 billion Soles (roughly $560 million). The largest of the four transfers is the FONCOMUN), which accounts for 1.4 of the 1.9 billion Soles in 2001 (in some districts it represented upwards of 90 percent of total income).

The second largest central government transfer is the *Vaso de Leche* transfer, which totaled $97 million in 2001. By law, approximately seven percent of public social spending in Peru is dedicated to nutrition programs. Much of this effort involves the *Vaso de Leche* program. These funds form part of the overall transfers of central government resources to local governments, 100 percent of which in turn are supposed to be delivered to local milk committees and from there onto households and individuals. This transfer, unlike the others, is earmarked specifically for use in the purchase of VdL products. This program is very important: the municipalities in our survey (described below) reported a total of 645,346 beneficiaries; or, expanding this to the national population, equals 3,693,406 (2,207,209 being children between the ages 0 to 6) which would suggest coverage of 92 percent for children between the ages of birth to 6.

How meaningful are these transfers to the individual Peruvian? On a per capita basis, FONCOMUN transfers—the largest of the programs—average $8.57 in Lima per year and $18.61 per year in the rest of the country (see Table 1). In a country in which the GNP per capita (PPP terms) was in the neighborhood of $2,080 at the time of our study, the largest of the transfers (FONCOMUN) amounts to no more than four tenths of a percentage of GNP per capita. A similar comment applies to the canons. Yet, these calculations understate the effects since the

funds are designated for the poor—not the entire population—and therefore the poor are to receive (at least in theory) a higher share of them on a per-capita basis. Moreover, the incomes of the poor average less than that national GNP per capita, which, after all, is the mean of all income. Indeed, in any Latin American country, where income distributions are almost always highly skewed, the income of the poor is only a small proportion of that of the national average. Finally, the cash value of those funds is not the only factor to consider as the transfer provides, in theory at least, key nutritional supplements for children, whose nutritional status during childhood could impact their future health, intelligence, and productivity. Unfortunately, the anti-poverty funds face a number of problems in their administration. We briefly mention those below.

Table 1 Per Capita Transfers to Municipalities in 2001
(in U.S. dollars)

	FONCOMUN	Canon Minero	Canon/Sobrecanon-Petrolero	Vaso de Leche
PERU	**15.35**	**1.20**	**12.51**	**3.73**
Lima	8.57	0.09	NA	3.99
Urban	8.33	0.09	NA	4.00
Rural	25.24	0.19	NA	3.33
No. of observations	177	171	NA	177
Rest of Peru	18.61	1.89	12.51	3.60
Less poor	14.38	1.55	10.97	2.96
Poor	18.94	2.07	11.16	3.54
More poor	22.54	1.99	19.47	4.35
Urban	15.46	1.54	10.22	3.14
Rural	22.73	2.25	17.37	4.21
Small	31.97	1.84	48.15	4.37
Medium	20.05	1.77	19.40	4.13
Large	16.28	1.92	10.62	3.39
More accessible	17.33	1.81	9.81	3.39
Less accessible	23.72	2.15	20.90	4.47
Non-prov. capital	16.98	1.48	11.95	3.73
Provincial capital	21.60	2.69	13.09	3.41
No. of observations	1641	1296	142	1641

Source: World Bank

Poverty fund administration is affected adversely by one of the most serious long-term problems faced by local governments in Latin America, which is the consistent inconsistency in the reliability of central government transfers. In many countries, such transfers result in almost

constant arrears. While volatility[3] is not directly a leakage-related issue, it does make planning difficult, but more directly it produces suffering when milk and other foodstuffs are not delivered on time. In Peru, the new financial management system that is now in place, volatility has been minimized, but not eliminated. Our study found that in the worst case, volatility for the *Vaso de Leche* transfer, outside of Lima, can exceed 15%.

Overall, the municipal officials included in our survey (described below) claim to have a reasonable understanding of the various transfer programs, while in fact they do not. For example, the survey found that 90 percent of the municipalities in the Lima area and 79 percent in the rest of the country claimed to know the allocation criteria used for the FONCOMUN program. Yet, the survey also found that when questioned, only 11 percent of the municipal officials in Lima—who had earlier in the interview claimed to have knowledge of the criteria—actually did. In the rest of Peru, surprisingly, the knowledge was higher among those who claimed to know, as 67 percent actually did. As for the amount of transfers expected from FONCOMUN, the knowledge base is more reasonable as only 5 percent in Lima and 15 percent in the rest of Peru claimed not to know. In poor and rural areas outside Lima, however, this percentage of uncertainty increased to nearly one-third. In the case of *Canon/Sobrecanon Petrolero* transfers, there is considerable uncertainty as to the expected amounts, with the majority outside of Lima not knowing. Knowledge of the date of arrival of the transfers was another matter. In Lima, 40 percent of the municipalities did not know, and in the rest of Peru the results were only marginally better (33 percent did not know). Similar percentages are found for FONCOMUN and *canon minero* (Table 2).

[3] Volatility is calculated as the standard deviation of the annual percentage changes in the transfer amounts.

Table 2 Municipalities that do not know the arrival day of the transfer
(in percent)

	Foncomun	Canon Minero	Canon / Sobrecanon Petrolero
Lima	**40**		
Urban	42	NA	NA
Rural	38	NA	NA
No. Observations	*20*	*NA.*	*NA*
Rest of Peru	**33**	**35**	**40**
Not Poor	27	29	2
Poor	49	63	94
Extreme Poor	38	30	40
Urban	61	87	35
Rural	28	28	47
Small	30	30	38
Medium	39	36	31
Large	45	62	44
More accessible	18	21	15
Less Accessible	66	66	64
Non-Provincial capital	34	33	41
Provincial capital	28	50	29
No. Observations	*99*	*74*	*32*

Source: Survey among municipalities

Section 2: Leakages in the Vaso de Leche Program

Data

This section focuses directly on the central question of this paper, namely that of leakages public funds in Peru. The approach taken to the measurement of leakages in this study is to employ survey instruments at each level in the process of transference of government funds from the central authority down to the household. Measuring leakages in transfers to subnational governments, local organizations, and program beneficiaries is not an easy task, however, since

it involves two central problems. First, none of the parties affected by the leak have an interest in having it revealed. Second, leakages can occur at so many levels that tracing them all requires a complex methodology. Those are the two challenges that this report faced and, to a considerable degree, overcame.

The core of our methodology was to collect data at each stage in the transference of public funds from the top of the chain, the Central Government (CG), to the bottom of the chain, the beneficiary. In order to gather data on each of these levels, the study carried out in Peru involved an extensive amount of fieldwork based on a series of questionnaires.

The project began with a pilot study in Lima, Peru. The objectives of the pilot included an assessment of the duration of the fieldwork and a test of its effectiveness for the purposes of the study (for example, to explore whether the information collected in the fieldwork would be sufficient to rigorously estimate leakages). The pilot consisted of 20 districts of the department of Lima (out of a total of 177 districts). Each district included a survey for the municipality; a survey of between three to five *Vaso de Leche* (VdL) mother's committees within each municipality[4]; and a survey of a sample of beneficiary households[5] (4 per VdL committee).

Based on the experience of the Lima sample, and with guidance from the National Institute of Statistics and Information (INEI), a national sample selection methodology was agreed upon. We stratified the sample into Lima/Callao, as it is the capital of the country, and other major regions of the country. In that stratification the departments selected were: Ancash, Arequipa, Cajamarca, Cusco, Loreto, and Piura. We then substratified those departments into their municipalities, and selected a total of 100 municipalities in which the surveys were carried

[4] For the pilot the following rule was established: 3 *Vaso de Leche* committees if there were less than 30 committees total, 4 if the number of committees were between 30 and 70, and 5 if there were more than 70 committees.

[5] When the pilot was carried out, the project had not yet formally included surveys to household beneficiaries. A tentative instrument was tested on households to evaluate the importance and viability of including beneficiaries. Therefore, the pilot survey was shorter than and different from the survey applied to beneficiaries during the final fieldwork.

out. The sample is self-weighting, making it easy to work with when complex multivariate programs are employed.

Our method of stratifying the municipalities was focused on poverty since the VdL program was meant to deal directly with poverty. In order to carry out this stratification, we developed a database consisting of the entire universe of districts in Peru, excluding Lima and Callao (total of 1,651 districts). The Ministry of Economy and Finance's (MEF's) continuous index of poverty, FGT2,[6] was used to calculate poverty population deciles. The deciles were arranged into three groups such that group 1 consisted of deciles 1 to 3, group 2 of deciles 4 to 7, and group 3 of deciles 8 to 10. These three groups approximate the categories of "not poor," "poor," and "extreme poor," and were used to stratify the districts of our subpopulation into three strata. The three strata represent 14 percent, 41 percent, and 45 percent of the districts in Peru (excluding Lima and Callao), respectively. In order for the sample to be self-weighted 14, 41, and 45 municipalities (for a total of 100) were chosen from each stratum respectively (from the subpopulation of six departments). The selection for each stratum was done using Probability Proportional to Size (PPS)[7] relative to district population. Once the above procedure was carried out, individual municipalities were selected according to PPS criteria, using a complete listing of all districts selected that were ordered within the stratums by geographic order to allow a systematic selection that ensured geographic heterogeneity.

Within each municipality, the field teams obtained from the local government a roster of all of the *Vaso de Leche* committees that at the time of the survey were beneficiaries, and a systematic sampling was used to select four of those from each municipality, unless there were

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[6] $FGT_2 = \frac{1}{N}\sum_{i=1}^{Q}\left(\frac{PL - EXPpc_i}{PL}\right)^2$ where PL = poverty line, EXPpc = per capita household expenditures, Q = number of poor, and N = population

[7] PPS is a method used in sample selection whereby the probability that a given element enters the sample is proportional to some quantity (in our particular case, the district's total population).

fewer than four in a given municipality, in which case all committees were selected. The only restriction was that if travel time to a given committee would have required more than 24 hours, a substitute was used. This means that the sample slightly underrepresented remote areas within the neighborhoods of the selected committees; the field team selected four households from the beneficiary lists that are maintained by each committee. Recalls were not made, but the next household on the list was used as a substitute when blanks were encountered.

The survey was conducted February 3–17, 2002. Within each municipality we interviewed the mayor, obtained municipal-level data from him or her, and also obtained the municipal roster of committees participating in the *Vaso de Leche* program. We met with at least one committee member and interviewed that individual with our survey instrument, and in that interview we obtained a current list of individual beneficiary households. We used that list to systematically select four households in each committee catchment area, using a survey instrument intended for households.

In sum, the study employed data from surveys in a sample of 120 municipalities out of the 1,828 municipalities in Peru. It is in tracing the flow of funds in the *Vaso de Leche* program that the survey research attempts to make its most innovative contribution. Using survey data at the level of the municipality, at the level of the local milk distribution committees, and, finally, at the level of the beneficiary household, it was possible to trace the flow and leakage of central funds from the top of the chain to the last link at the bottom. The methodology is very complex, not only because it involves multi-level comparisons, but because the input itself is transformed from cash to commodities as the funds move from the top to the bottom, and as "the commodity itself" actually becomes commodities, since the program is not limited to milk or milk products alone, despite its name. The product is then transformed at the household level, as the food

products are mixed with other foods before being served. Yet, despite this complexity, it has been possible to determine the relative magnitude of leakages at each level.

The *Vaso de Leche* program targets children six years old or younger, as well as pregnant and nursing mothers. The transfer criteria from the central government to the municipality are based on per-capita poverty formulas. At the municipal level, the local government is required, via special committees set up for the purpose, to use 100 percent of the funds for milk products, which must be overwhelmingly produced nationally. These committees are nearly ubiquitous, with 98 percent of the urban municipalities and 95 percent of the rural municipalities having them, according to the survey. The products are purchased via competitive bidding, which is supposed to help insure employment of the lowest price criterion. However, the study found that while bidding was predominant, 19 percent of the products purchased were done through other mechanisms, and some excessively high prices were also found.

As mentioned before, despite its name, the program called the "glass of milk" in fact includes milk, milk products, or milk substitutes, and other products such as oatmeal, quinoa, and other grains. This shift from milk to other products produces the unfortunate effect of reducing both the protein and calcium intake of the beneficiaries since milk and milk products contain the highest levels of these nutrients in comparison to grains. The fieldwork determined that only 15 percent of all municipalities distribute milk alone, with the vast majority "diluting" the milk with the distribution of cereal, a combination of milk and cereal, or distributing cereal only. Once these products are purchased, they are transferred to the next level down in the chain: to the local committees or clubs comprised of mothers, which are neighborhood or village-based volunteer groups. These local groups are then required to distribute the "milk" on some sort of regular cycle (daily, weekly, monthly, bimonthly) depending on local

circumstances, based on the legal criteria mentioned above, as well as locally determined criteria for need. Within the recipient household, the "milk" is required to be fed to the children and mothers for whom it was designated. As we shall see, much of the above is more theoretical than real, as the fieldwork for this project determined.

Leakages in the *Vaso de Leche* Program occur at many levels, but measurement of these leakages is an extremely complex task. We explain our methodology in detail in Appendix A. Perhaps the major complexity emerges from the law itself. According to the law, the foods must be distributed to beneficiaries in prepared form. This could mean, for example, mixing of powered milk into a cereal or other cooked product. It would be virtually impossible for any study to then measure with exactitude how a given amount of milk input arrives in the stomach of the beneficiary. But, more importantly, from a practical point of view, distribution committees often cannot reasonably prepare the food since the beneficiaries are pre-school children whose parents cannot transport them on a daily basis to a central distribution point. Consider the mother who is nursing two pre-schoolers, and whose partner works outside the home. She cannot reasonably be expected to visit a central kitchen each day to feed her children. Moreover, and more important according to our findings, the overhead costs of preparing the food, including distance, time, materials and spoilage for unconsumed food, deter many committees from attempting to follow the law. As a result, 60 percent of the committees in the sample do not prepare the food and distribute it unprepared. For the purposes of the study, however, this is a plus, since it allows us to more precisely measure the distribution, since we can more easily count cans of milk, pounds of cereal, etc. Yet, it brings an additional challenge in that many of these products are marketed in units that are not easily divisible. For example, if a household is entitled to 1.5 cans of milk based on the number of children, the committee could

not reasonably be expected to open a can and divide it and pour the remainder into a glass for another beneficiary family. The result is that individual families will receive more or less than their exact ration of milk and other products, a factor which makes calculation of leakages at the household level even more complex.

"Milk" Leakage Stage 1: Central Government to Municipality

While we had expected the largest leakages at this level, in fact we found virtually none. The leakage here represents 0.06 percent in Lima and 0.02 in the rest of Peru, all of which could be determined by rounding and recording errors. Thus, at the top level, where one often assumes the greatest level of corruption (and therefore the greatest leakage) the leakage is virtually non-existent.

"Milk" Leakage Stage 2: Unaccounted for Conversion of Transfer to Products

Once the transfer reaches the municipality, the funds are converted to products to be given to the local committees. From the municipal level onwards, the transfer of resources for the VdL program becomes in-kind transfers such that no subsequent stages of execution receive money but rather receive the transfer in-kind. Our field work team was instructed to get prices and quantities of VdL product purchases made by the municipality in December 2001 and to verify this information via signed contracts, purchase orders, or receipts. The quantities were in most cases obtained from the municipality's distribution roster (*padrón municipal*), which includes the amounts allocated and distributed to each mothers committee within the municipality's jurisdiction. This leak was defined as the percentage of the amount transferred to the municipality from the Central Government for the month of December 2001 that is

unaccounted for by the total expenses of the municipality for that month (in terms of products purchased for the VdL program).[8]

Private gains are not the only possible reason of these leaks. One explanation for the leakages at this stage could be a diversion of VdL funds to cover the program's operating expenses (personnel, bookkeeping materials, transportation costs, and warehousing costs). Although prohibited by law, this kind of leak is not a result of a corrupt act. Indeed, the leakages at this stage are found more significant in small, rural, and less accessible districts. In many cases, it was found that in small rural districts there are severe budget as well as personnel limitations that make the operating costs of the program very high. Moreover, given the large and organized network of *Vaso de Leche* mothers representing a unified and powerful faction of the constituency that exerts considerable pressure on mayors, it is no surprise that there may exist many cases in which the municipality supplements the CG transfer with municipal resources. Indeed, we find that oftentimes, leak #2 turns out to be negative (the municipality spent more in December 2001 than was allocated to it by the MEF), although operationally leakages were truncated at zero.

[8] Leakages found at this stage were also quite small. In Lima, it appears to have amounted to 3.03 percent of the totals transfer, whereas in the rest of Peru it amounted to 0.63 percent. We say "appears" because of the larger urban districts surveyed in the province of Lima—which all have populations exceeding 200,000—most refused to provide our team with any price information or price-related documentation. This refusal supports the qualitative information collected by our team at later stages of the execution path, that suggest there is considerable misuse of funds at the municipal level within these districts. We were, however, able to document a number of worst-case offenders. We found one municipality in Lima in which this leak was 18 percent of the transfers and another where it was 15 percent, again, keeping in mind that most larger municipalities refused to cooperate with us on obtaining this data. In the rest of Peru, we found 4 municipalities out of 76 surveyed in which the leakage at this stage was over 10 percent, with one reaching 15.5 percent. Thus, although the national averages are low, these isolated cases in which the leakage at this point exceeds 10 percent of the total transfer amount are serious. Without taking into consideration any of the leakages at subsequent transfer stages, the beneficiaries—mainly children aged 0 to 6—already are receiving less than 90 cents on the dollar. About one-tenth of all municipalities surveyed were found out to have leaks higher than 5 percent. In addition to this, one would have to consider the possibility of overpricing reflected in two facts: the high price variability found amongst districts for purchasing similar products, and the premium paid when comparing those prices to leading retail supermarket prices, even when adjusting them for quality and transportation costs. For instance, (i) the price of generic *Enriquecido Lácteo*, a milk substitute, distributed in 32 out of 100 districts visited, varies from NS/.1-15 per kilogram; (ii) and the price of cans of milk are in some cases outside Lime, twice the price as in a Lima supermarket!

"Milk" Leakage #3: Transfer from the Municipality to the Local Committees

Leakages found at this stage were more significant. In Lima, they averaged over 10 percent, but were far lower—only 2.6 percent—in the rest of Peru (Table 3). However, it is obvious from the results that the poorer, more remote areas have far higher leakages at this level. Every municipality has an allocation formula, based almost entirely on the size of the target population, that each *Vaso de Leche* committee services. Thus, criteria of *relative* poverty do *not* play a role here, but only the number of poor people. The roster of beneficiaries is centralized at the municipal level and provides detailed information on the quantities distributed to each Committee within the district. This leak was defined as the percentage of the amount listed in the municipal roster not accounted for by the *Vaso de Leche* committee and estimated using municipal and committee data computed at the committee level.

Table 3 Leak #3: Municipality to Local Committees

	Leak 3
Lima	**10.06%**
Urban	6.83%
Rural	18.77%
No Observations	37
Rest of Peru	**2.59%**
Less Poor	0.54%
Poor	5.67%
More Poor	5.22%
Urban	1.26%
Rural	4.52%
Small	2.83%
Medium	4.23%
Large	2.25%
More Accessible	2.31%
Less Accessible	3.70%
Non-Provincial capital	3.10%
Provincial capital	1.97%
No. Observations	*320*

A clearer picture of the magnitude of the leakage problem that occurs in the transfer from local government to civil society is obtained by examining the worst offenders. The national averages hide some very important information (Table 4). There are 27 districts/*Vaso de Leche* committee pairs (about a tenth of the total surveyed) with leakages in excess of 20 percent and 10 pairs that exceed 40 percent. In the case of such top-ranked worst offenders, the beneficiaries receive 36 cents of every dollar without taking into consideration all the leakages in prior segments of the chain of distribution![9] A possible explanation of these very high leakages is that

[9] It is important to note that this leakage was computed at the committee level with 320 observations. Many committees had a zero leakage and therefore their average is lower than that of the worst offenders.

in some cases municipalities may make changes to the allocations to every committee, keeping one product already assigned for later distribution, but such informal arrangements significantly diminish transparency of the program and should be prohibited.

Table 4 Worst Offenders, Leak #3 (pairs of Municipality– local committee)

Worst Offenders	
Rank	**Leak #2**
Lima	
1	84.5%
2	57.4%
3	48.2%
4	44.8%
5	43.8%
6	24.4%
Rest of Peru	
1	63.7%
2	55.1%
3	53.2%
4	49.6%
5	47.4%
6	47.2%
7	41.7%
8	40.1%
9	40.0%
10	40.0%
11	38.9%
12	34.8%
13	34.0%
14	34.0%
15	31.8%
16	29.4%
17	28.6%
18	27.8%
19	27.2%
20	26.7%
21	25.4%
22	24.3%
23	23.5%
24	23.0%
25	22.6%
26	22.3%
27	20.7%

"Milk" Leakage # 4: Committee to Beneficiary/Household

Direct beneficiaries are those effectively used to define the amount of the rations to be distributed by the committee. Estimation of this leakage was done by calculating the monetary

value of each product (using municipal price figures) and adding these up.[10] This allowed a comparison of the monetary value of the amount of all the products received by the *Vaso de Leche* committee per direct beneficiary with the monetary value of the amount received by the individual households per beneficiary (excluding the committees that distribute prepared products). The first variable was obtained from the quantities declared by the mothers' committee representative in the VdL committee survey (in the four committees surveyed in each municipality). The second variable would be obtained from the quantities declared by the direct beneficiaries' household representative in the beneficiary's household survey (in the four households surveyed for each VdL committee).

The leakage at this level is quite high. On average, over a quarter of the product is lost at this stage in Peru outside of the Lima area (Table 5). Leaks are markedly more serious in urban districts (34 percent), in provincial capitals (40 percent) and in large districts (29 percent).

[10] This complication appears because the committee representatives do not follow the criteria established by the program regulation. Instead, they make decisions at their discretion as to how to proceed regarding the distribution of the product. In most cases, the committee representatives have been democratically elected and mostly rely on the approval of the population of their communities. So, our methodology originally contemplated the comparison of per-direct beneficiary rations at the household level with the total per-direct beneficiary rations at the committee level, but this was complicated due to the fact that multiple products get distributed to beneficiaries and the only way to aggregate them was to use a common measurable indicator. To further complicate matters, in the cases of distribution of "prepared" products, there was no way to gauge whether the servings-per-container directive was followed and therefore there was no way to measure the amount of raw product a household was actually receiving, so we eliminated from the sample the cases in which the product was not distributed in raw form.

Table 5. Leak 4: Vaso de Leche Program
(At household level)

	Leak 4
Total	**26.70%**
Not Poor	26.67%
Poor	19.21%
Extreme Poor	32.19%
Urban	34.53%
Rural	25.01%
Small	24.41%
Medium	22.83%
Large	29.63%
More Accessible	25.71%
Less Accessible	28.32%
Non-Provincial capital	22.72%
Provincial capital	40.31%
No. Observations	*488*

Leak #5: Within the household (dilution of the ration)

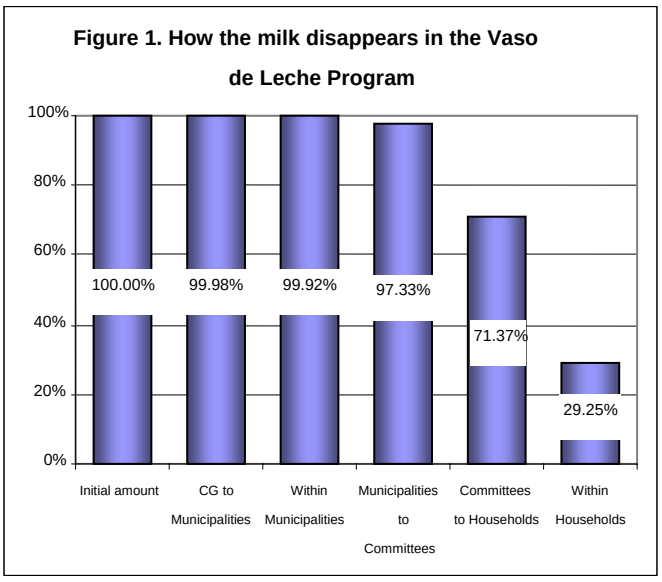
This leakage was estimated using household-level data based on a customized survey at that level. As a final stage of the research effort, the fieldwork team visited four households per committee in order to quantify the amounts of the in-kind Vaso de Leche transfers that actually reach the intended direct beneficiaries. The leak attributed to "beneficiary dilution" is defined at the household level as one minus the percentage of household members who consume *Vaso de Leche* products, who are official direct beneficiaries (Table 6).

Table 6. Leak #5
(At the beneficiary household level)

	Leak 5
Total	**58.89%**
Not Poor	59.93%
Poor	57.89%
Extreme Poor	59.15%
Urban	59.26%
Rural	58.70%
Small	59.01%
Medium	61.46%
Large	57.90%
More accessible	60.75%
Less accessible	56.11%
Non-Provincial capital	58.69%
Provincial capital	59.32%
No. Observations	*985*

Source: Household survey

Results make clear that, upon reaching the households, there is considerable dilution. On average, target beneficiaries receive only 41 percent of the ration that arrives at the household (not taking into account all the losses associated with earlier leakages)! This dilution effect occurs because in most cases the beneficiaries do not receive their rations directly from the committee, but because the children receive the rations filtered through their mothers (and in some cases the father), who pick up the total rations allocated to her/his household for later distribution.



In sum, the survey reveals that targeted beneficiaries get on average 29 cents of each dollar initially transferred by the Central Government (See Figure 1). The survey surprisingly indicates the leak is much higher in the bottom (VdL committees and households-leaks 4-5) levels rather than in the top (CG and municipalities-leaks 1-3) levels of the ladder. This finding challenges the predominant view that local private organizations are more accountable in managing resources than official organizations. Leaks clearly affect the poorest, urban and provincial municipalities more than others, but their level appear similar among districts of different sizes and distances to the province (Table 7).

Table 7. Vaso de Leche Leakages: Summary Table

	Leak 1	Leak 2	Leak 3	Leak 4	Leak 5	Combined
	0.02%	**0.63%**	**2.59%**	**26.70%**	**58.89%**	**70.84%**
Not Poor	0.00%	0.13%	0.54%	26.67%	59.93%	70.81%
Poor	0.00%	1.36%	5.67%	19.21%	57.89%	68.34%
Extreme Poor	0.12%	1.30%	5.22%	32.91%	59.15%	74.39%
Urban	0.00%	0.42%	1.26%	34.53%	59.26%	73.77%
Rural	0.05%	0.85%	4.52%	25.01%	58.70%	70.70%
Small	0.11%	0.05%	2.83%	24.41%	59.01%	69.94%
Medium	0.00%	0.59%	4.23%	22.83%	61.46%	71.68%
Large	0.00%	0.84%	2.25%	29.63%	57.90%	71.29%
Accessible	0.00%	0.54%	2.31%	25.71%	60.75%	71.67%
Remote	0.09%	0.82%	3.70%	28.32%	56.11%	69.98%
Municipal	0.04%	0.87%	3.10%	22.72%	58.69%	69.35%
Provincial capital	0.00%	0.21%	1.97%	40.31%	59.32%	76.25%
No. Observations	*95*	*76*	*320*	*488*	*985*	

Conclusions

A major lesson to learn from the VdL experience is that a social program, with a presumed high degree of participation of community leaders grouped in a committee, can be inefficient and unaccountable to both its agents (constituent beneficiaries) and to its principal (municipal authorities), thereby largely missing the original goal of the program. Suggested actions can be grouped as follows:

In the short term, suggested priority actions should focus on amending regulations to enforce accountability to the municipalities and committees: (i) review VdL regulations, particularly regarding products to be distributed and the form of distribution, so as to make the list of selected milk derivatives shorter and more homogeneous, and thus raise chances of

improving the nutritional impact of the program; (ii) establish a proper registry of *Vaso de Leche* beneficiaries, if possible supported by SIAF (Integrated Financial Management System); (iii) undertake information campaigns and training sessions to VdL committees and individual beneficiaries, to raise their awareness of new information available and the rules; and (iv) undertake surprise audits of worst offenders (municipalities and committees) in the near term, so as to eliminate excessive overpricing and major deviations. The implementation of the above actions requires a significant overhaul of the system, and should be accompanied by the design of a new comprehensive framework for food supplementary programs in Peru (discussed next).

The survey findings do send up an important warning signal: leakages in Peru are significant and far more pervasive and extensive at the bottom of the chain than at the top. From the entire amount of public funds intended for the *Vaso de Leche* program, barely 29 percent get to their intended beneficiaries. This does not mean that 71 cents from each dollar are fully lost in corruption costs. The rest of resources get rather leaked away through a combination of administrative costs, ineligible products and beneficiaries, and other modalities. Results also challenge the predominant view of the last decade that organizations that are closer to the people they serve are inherently better in service delivery. Such approach has justified bottom-up programs, with a specific and strong emphasis on NGOs and local participation. The core of the theorizing and research was that local organizations could overcome one of the central weaknesses of official institutions in developing countries, namely, their lack of accountability. Citizens who could directly observe, talk to, and even argue with those providing them key services would be able to hold those individuals and institutions accountable for their actions. In contrast, remote, faceless central governments are seen as beyond citizen reach, and thus dominated by self-serving, rent-seeking elites. Our research shows that we should not assume

that the relationship between accountability and development is always linear and positive, especially when asymmetric information, poor transparency or low management capacity occurs at different levels, i.e. beneficiaries—intermediate or final—have limited access to know how many resources they should receive from authorities and what procedures they should employ with. In this scenario, citizens so dominate development programs at the local level that they may divert resources from their original purpose, without being held accountable or sanctioned for doing so, since the principal agents—the official authorities, central or municipal in this case—do not know about it, and may vitiate, even non-voluntarily, their effects. We find that citizens placed in direct control of a development program may, like the official authorities they are supplanting, distort its goal or become rent-seekers benefiting not the collectivity, but their own interests, even though following their own rules is presumed to benefit their own community. The evidence amassed in this study enables us not only to directly compare diversions (referred to here as "leakage") of public resources for private gain or for a distorted purpose at each level of the public assistance "food chain," but we also find that the lower we go "down the chair," the *greater* the diversion.

What we have is a classical setting of asymmetric information (and influence) between successive stages of a so-called principal-agent problem. Depending on the level, the principal might be the official authorities, and the agents might be the committees; or, in a given community, the principal might be the committee and the agents might be the beneficiary households. In both cases, the agents may behave in such a way that they divert resources from the principal's original intentions, since they have little knowledge of the original transfer received by the principal, and are neither accountable, nor sanctioned because of the diversion of resources. Thus, agents lack information about the exact amounts and management of resources

by the principal and, conversely, the principal lacks the capacity to assess and held them accountable for such diversion.

Appendix A: Technical Definitions of Leakages in the Vaso de Leche Program

Leak 1. From the Central Government to the Municipalities. Leak 1 is defined as the percentage of the transfer reported by the MEF that is unaccounted for by the municipality. We compare the amount the MEF reports as outgoing with the amount the municipality reports to have received. This leakage is estimated with municipal-level data of December 2001.

$$\text{Leak}^1 = 1 - \left[\frac{\text{Amt. Municipality Reported}}{\text{Amt. MEF Reported}} \right]$$

Leak 2. Within Municipality. Leak 2 is defined as the percentage of the amount transferred to the municipality "i" from the CG for the month of December 2001 that is unaccounted for by the total expenses of the municipality for that month (in terms of products purchased for the VdL program). Leak 2 is zero if the municipality spends the entirety of the resources available in December 2001 under the VdL program on products to be distributed by the program. This leakage is estimated based on municipal-level data.

$$\text{Leak}^2_{\text{MUN}} = 1 - \left[\frac{\sum_i \left(\text{Quantity}_i \times \text{Price}_i \right)}{\text{Transfer Amount}_{\text{MUN}}} \right]$$

Leak 3. From Municipality to VdL Committees. Leak 3 is defined as the percentage of the amount listed in the municipality not accounted for by the VdL committee. This leakage is estimated using municipal and committee data and is computed at the committee level. This leakage indicates how much is lost in this segment of distribution, but does not allow one to attribute it to one of the two parties involved at this stage. In other words, we estimate the leakage from the municipality to the individual VdL committees, but do not know if the leakage is a result of misappropriation or inefficiencies of the municipality, the Advisory Committee, or both.

$$\text{Leak}^3_{\text{COM}} = 1 - \left[\frac{\text{Amount Received}_{\text{COM}}}{\text{Amount listed in Municipal Roster}_{\text{COM}}} \right]$$

Leak 4: From VdL Committees to Beneficiaries/Households. Leak 4 is the loss due to the difference between what VdL committees receive according to beneficiaries registered and what they actually distribute to households. The estimation of the leakage at this level is done by calculating the monetary value of each of the products (using municipal price figures) and adding

these up. This allows a comparison of the monetary value of the amount of all the products received by the VdL committee per beneficiary with the monetary value of the amount received by the individual households per beneficiary (excluding the committees that distribute prepared products). The first variable is obtained from the quantities declared by the mothers' committee representative in the VdL committee survey (in the four committees surveyed in each municipality). The second variable is obtained from the quantities declared by the beneficiaries' household representative in a beneficiary household survey (on four households surveyed for each VdL committee).

$$\text{Leak}^{4} = 1 - \left[\frac{\left(\frac{\sum_{i} (\text{Quantity}_{i} \times \text{Price}_{i})}{\text{Beneficiary}} \right)_{\text{HH}}}{\left(\frac{\sum_{i} (\text{Quantity}_{i} \times \text{Price}_{i})}{\text{Beneficiary}} \right)_{\text{COM}}} \right]$$

Leak 5: Inside the Household. Leak 5 is attributed to beneficiary dilution at the household level. It is defined as one minus the percentage of household members who consume *Vaso de Leche* products, who are direct beneficiaries. This leakage is estimated using household-level data.

$$\text{Leak}5_{\text{HH}} = 1 - \left[\frac{\text{Beneficiaries}_{\text{HH}}}{\text{Consumers}_{\text{HH}}} \right]$$

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