Separating financing from provision: evidence from 10 years of partnership with health cooperatives in Costa Rica

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Objective: This article examines the impact of contracting health care provision to health care cooperatives in Costa Rica.

Methodology: The article uses a panel dataset on health care outputs in traditional clinics and cooperatives in Costa Rica from 1990–99.

Results: Controlling for community socioeconomic characteristics, annual time trends and clinic complexity, the cooperatives conducted an average of 9.7–33.8% more general visits (95% confidence interval), 27.9–56.6% more dental visits, and 28.9–100% fewer specialist visits. Numbers of non-medical, emergency and first-time visits per capita were not different from the traditional public clinics. These results suggest that the cooperatives substituted generalist for specialist services and offered additional dental services, but did not turn away new patients, refuse emergency cases, or substitute nurses for doctors as care providers. Cooperatives authorized 30.4–60.5% fewer sick days (95% confidence interval), conducted 24.7–37.2% fewer lab exams, and gave out 26.7–38.3% fewer medications per visit than the traditional public clinics. Real total expenditure per capita in cooperatives was 14.7–58.9% lower than in traditional clinics.

Conclusions: The findings suggest that cooperatives might, with an appropriate regulatory framework and incentives, be able to combine advantages of public and private approaches to health care service provision. Under certain conditions, they might be able to maintain accessibility, a sense of mission and efficiency in service provision.

Key words: financing, cooperatives, Costa Rica, principal-agent theory, primary health care

Introduction

For some time now, international agencies, governments and analysts in developing and industrialized countries have advocated the separation of health care finance from provision. In theory, health care providers make more efficient allocative decisions if they are awarded more managerial freedom, and they work harder if their remunerations are tightly linked to measured outputs.

A variety of reforms, including facility autonomy and corporatization, decentralization to local authorities and privatization, are often connected with this policy idea. Examples of introducing market-like instruments into traditional public sector schemes have included general practitioner fund-holding and related reforms in the United Kingdom (Moon et al. 2002), the ability of health clinics to retain and make use of locally generated user fees under the Bamako Initiative in Africa (Gilson 1997), the corporatization of some hospitals in Malaysia (Barraclough 1999) and India (Purohit 2001), the use of non-governmental organizations (NGOs) to provide nutrition services in Bangladesh (Loevinsohn 2002), and the development of managed care organizations in Argentina and Brazil (Iriart et al. 2001).

The outright transfer of facilities to private actors, which would constitute perhaps the most direct application and best test of the theory, has been far less common. As a result, some two decades after the movement began among policy intellectuals, the evidence base for policies advocating the separation of the financing of health care from its provision remains inconclusive.

This paper contributes to that debate by analyzing a long-term experiment with the conversion of public sector clinics to privately managed cooperatives in Costa Rica. In Costa Rica, health cooperatives are autonomous legal entities, separate from the Costa Rican Social Security Institute (CCSS), which assume responsibility for the management of a single public health facility that is leased from the CCSS. Cooperatives are non-governmental organizations. They are ‘for-profit’ in the sense that they distribute retained earnings to shareholders, who are all employees; but they are ‘not-for-profit’ in the sense that significant legal agreements with the CCSS limit their activities to the provision of health care in the public’s interest, which is defined by elected officials. A unique panel dataset allows for a comparison of health outputs among the cooperatives with traditional and comparable public sector facilities.

The paper is divided into five sections, including this introduction. In the second section the theoretical arguments for separating health care financing from provision are described. The third section presents background on the Costa Rican health system, the governance of cooperatives and contractual relationships between the Costa Rican Social Security Institute and the cooperatives. The fourth section presents results, while the fifth section concludes with policy recommendations.
Health care provision and the principal-agent problem

Most health facilities in developing countries – particularly public hospitals – are financed through budget allocations that are not directly related to the amount and quality of health care services they provide. These facilities are under the nominal supervision of a health ministry, and gross violations of expected norms can lead to dismissal of hospital directors or staff and penalties in the form of reduced budgets or the withdrawal of certain privileges in subsequent years. But in practice, supervision is weak and penalties for poor performance are the exception.

The most commonly suggested reform is to make clinics and hospitals residual claimants on revenues, and/or to expose hospitals to competitive markets through the establishment of renewable and competitively offered contracts for specific services. The motivation for these ideas comes from classical agency theory, which holds that time-based payments for services (salaries or budgets) do not charge agents (in this case, hospitals) for on-the-job leisure (Milgrom and Roberts 1992). As a result, the managers of public and not-for-profit organizations do not personally lose income when they hold a Friday afternoon office party, misplace a patient’s file, or otherwise slack off.

The impact of separating finance from provision will depend on, among other things, how the financier pays the provider, or, in other words, the contract between the government and the facility or hospital. Optimal contracts turn out to be complex agreements that attempt to reconcile competing objectives. Most analyses of these contracts, drawing from classical agency theory, focus on the trade-off between risk and efficiency. Given that patients do not pay the marginal cost of health care in hospitals, either because they have insurance coverage or because governments offer subsidies, and that the amount and type of health care needed when a patient arrives at a hospital are unknown, either the hospital or the payer must assume financial risk. Hospitals will refuse contracts in which they are paid a flat rate to treat all presenting patients (or they will ration care or cut quality), but contracts that reimburse hospitals for all incurred costs provide no incentives to reduce unit costs and encourage hospitals to see as many patients as possible.

The optimal solution lies in the middle. Under some conditions, transferring some but not all risk to providers, some ‘supply-side cost sharing’ or ‘partial capitation’, can improve social welfare by mitigating the excess consumption from moral hazard without eviscerating the risk-pooling function of insurance, which imposing very high co-payments or user fees would do (Pope 1989; Ellis and McGuire 1990; Ellis 1998; Newhouse 1998).

The possibility that providers might skimp on care-giving suggests that the classical agency model is not the full story. There is more going on than the transfer of risk to providers. When agents perform multiple tasks, basing rewards on just one or two of them can distort agents’ incentives, leading to perverse outcomes. Hospitals and clinics – among the most complex organizations in the modern world – undertake multiple tasks, including patient intake, emergency care, patient education, training residents and interns, epidemiological surveillance, charity and disposing of biohazards. Basing contracts on a few indicators – even fundamental ones such as patient intake, bed days provided or risk-adjusted diagnosis at entry – might compromise other objectives.

A number of theoretical models attempt to identify optimal payment methods when both efficiency and quality enter into the payer’s objective function. A general conclusion is that ‘mixed reimbursement systems are necessary to optimally balance cost and quality’ (Dranove and Satterthwaite 2000), but how much supply-side risk sharing is optimal depends on parameters such as beneficence, competition and the elasticity of demand for quality.

Another kind of argument for separating financing from provision emerges from accounts of public sector organization. Public bureaucracies, orderly and regimented hierarchies in the simple, stylized Weberian conception, are in reality often divided and politicized. The problem for some public managers is not that they lack discretion over their agencies, as the stylized account suggests, but that they are responsible to several principals with differing interests. One theoretical model demonstrates that if a manager can achieve the goal of one principal only at the expense of the goals of the others, a situation might result in which the principals find it optimal to reward the manager on the basis of performance criteria that subvert the goals of the other principals (Dixit 1997).

The arguments for medical cooperatives in particular, as opposed to other kinds of corporatization or privatization, draw on the notion that health care providers are intrinsically motivated to care for patients (Newhouse 1970; Heckman et al. 1997), and that they are more likely to provide good care, and not to skim on it, than owners who are not physicians or nurses. Empirically, health cooperatives played an important role in the development of the health care system in Cuba (Guttmacher and Danielson 1979), but more recently an experiment with physician cooperatives in São Paulo was abandoned after political controversy and alleged corruption undermined their legitimacy (Csillag 2001). Also in Brazil, the health care ‘cooperative’ Unimed has succeeded in establishing a market in São Paulo and elsewhere, but it, unlike the Costa Rican cooperatives discussed here, does not depend on the government for most of its financing and offers insurance as well as primary care (Iriart et al. 2001).

History of health cooperatives in Costa Rica

The Costa Rican Social Security Institute (CCSS), established in its current form in the 1940s, was created with the objective of offering protection in all areas of health and...
pensions to the entire Costa Rican population. It was based on principles of national solidarity and the creation of a regime of policy holders paid for by the state, whose primary objective was coverage of the very poor. Its achievements have been impressive, with the result that in the 1990s, Costa Rica presented health indicators similar to those of developed countries and established itself as a leader among Latin American countries (Table 1).

By the end of the 1980s, however, Costa Rica’s model of publicly provided, publicly financed health care began to exhibit problems: expenditures had escalated to nearly 9% of GDP, waiting lists of 12–18 months for treatments had become the norm, and the burden of a changing epidemiological profile underscored the need to expand coverage and improve the primary care model. In response to these concerns, Costa Rica introduced a number of reforms to increase private sector participation and to introduce market-like mechanisms in health care to enhance efficiency. A debate regarding the legalization of private health insurance began, though the process unfolded slowly: in 2002, expenditures on private medical insurance remained just 1% of private health spending.

The introduction of market-like mechanisms began with efforts in 1988 that introduced the first health care cooperatives. Each health care cooperative was founded by the employees of a primary health care clinic. They formed autonomous, legal entities that assumed responsibility for management of the facility. The facilities were leased from the CCSS to the cooperative for a yearly fee of roughly US$1, and all equipment and infrastructure was transferred to the cooperative. From this point onward, the cooperative assumed full responsibility over the maintenance of existing equipment and the purchase of new equipment (unless cooperatives could prove that damage or deterioration was due to defects in the construction or quality of materials used in the installations). The cooperatives purchased inputs, such as drugs and medical supplies, from CCSS centres, at cost plus 15% for administrative and shipping expenses, or, if necessary, directly from the market. The services provided were the same as those in public clinics, and the catchment population continued to be the population living within the geographic area served by the cooperative. The cooperatives received a yearly capitation fee based on the estimated number of members in the geographical area. Furthermore, no additional services were provided or fees charged by the cooperatives, as the aim of the new model was to maintain an identical package of services with a change in management responsibility. The cooperatives were, however, allowed to charge non-insured individuals seeking care on equal terms with the CCSS clinics. In practice, however, almost no user charges have been collected at the primary care level.

Several groups had strongly opposed the introduction of cooperatives because they suspected that it was effectively a privatization, which was seen as a renunciation by the state of its responsibility for the provision of free or low cost health services. At that time, privatization was perceived as political suicide (though in 2000, CCSS contracts with purely private clinics were established for the first time), and the creation of cooperatives, rather than privatization, was in fact a kind of compromise.

In 1988 a self-managing cooperative, COOPESALUD R.L., was awarded the administration of services and placed in charge of the management of the Pavas Clinic of the CCSS. Over time, three other traditional clinics, also in urban areas, were converted to health cooperatives. Under the framework of Law 4179, which governed cooperative associations in Costa Rica, cooperative management was selected by an administrative council, which was itself elected every 2 years by the general assembly of all cooperative members. Legally, all workers in the cooperatives became shareholders, and periodically shareholders received earnings generated by the cooperative. All workers were also partners in the sense that part of their salary was regularly deducted to augment the company’s social capital. The cooperatives operated under private law, without public encumbrances related to contracting, firing and management of personal and resources. The cooperatives enjoyed income tax exemptions and considerable political support. The cooperatives had full autonomy to manage the capitated payments they received from the CCSS, but were obliged to present annual financial statements to the CCSS for external audit purposes.

Table 1. Country health indicators

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Mortality per 1000 live births</th>
<th>Life expectancy (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>&lt;1 year</td>
<td>&lt;5 years</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>1998</td>
<td>12.6</td>
<td>14.8</td>
</tr>
<tr>
<td>Mexico</td>
<td>1997</td>
<td>31.0</td>
<td>38.0</td>
</tr>
<tr>
<td>Chile</td>
<td>1997</td>
<td>11.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Argentina</td>
<td>1997</td>
<td>22.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Brazil</td>
<td>1997</td>
<td>34.0</td>
<td>44.0</td>
</tr>
<tr>
<td>Jamaica</td>
<td>1997</td>
<td>12.0</td>
<td>14.0</td>
</tr>
<tr>
<td>USA</td>
<td>1997</td>
<td>7.0</td>
<td>10.0</td>
</tr>
<tr>
<td>UK</td>
<td>1997</td>
<td>6.0</td>
<td>7.0</td>
</tr>
</tbody>
</table>

separating financing from provision

profits generated by the business were either reinvested in
ew equipment or infrastructure, or distributed to coopera-
tive members.

In return, the cooperatives were required to follow the guide-
lines and policy objectives set by the CCSS and the Ministry
of Health. The contracts signed with the CCSS obliged coop-
eratives to provide the following services: general and
specialized medicine, emergency care, minor surgery, dental
care, pharmaceuticals, laboratory and radiology services,
biopsies, laboratory smear tests, social work services, services
related to rights and benefits verification, transportation for
patients, and support services. The cooperatives were also
required to evaluate their own performance; in addition,
independent, external auditors appointed by the CCSS moni-
tored the cooperatives.

The CCSS employed three different payment schemes over
this period: payment per capita, then historical budgets and
finally payment based on management contracts. Although
prospective per capita payments (based on estimated popu-
lations in each clinic’s catchment area) in theory transferred
financial risk to the clinics, in reality they differed little from
historical budgets; in both cases clinics were able to reduce
services as expenditures approached budget ceilings.

Management contracts involved more active involvement on
the part of CCSS officials in the annual plans of the clinics,
and the establishment of targets for production and coverage.
The most significant change in provider payments occurred
only in the cooperatives, which retained all earnings and
assumed all losses from their operations.

Four evaluations of cooperatives in Costa Rica have been
conducted. Herrero Villalta Asociados (1992) compared
costs between two cooperatives and five selected traditional
CCSS clinics in 1991, and found that the variances in expen-
ditures and treatments were higher in the traditional clinics.
Their findings, though suggestive, were based on 1 year of
cross-sectional data and a non-random sample. Durán et al.
(1995) compared expenditures between four cooperatives
and four comparator clinics from 1990–94, and found that
cooperatives had higher levels of expenditures. The non-
random selection of the comparison clinics, as well as the use
of incomplete budget data, might have biased that analysis.
Picado (1999) and Rodriguez (1999) both compared expen-
ditures from 1992–98 between three cooperatives and four
traditional CCSS clinics, and found higher but declining
relative expenditures in the cooperatives. Again, sampling
issues were problematic in these studies. The analysis in the
present paper compared cooperatives with the universe of
CCSS clinics at the same level of complexity, and controls for
several potential community-level covariates.

Data

Data were available on all type III and type IV clinics in
Costa Rica, but clinics for which data were available only for
very short periods of time (2 or 3 years) were excluded, as
were those that were only recently set up. As a result, 23
observations were dropped, leaving the database with 24 type
III and type IV clinics, three of which are cooperatives. The
main source of information was the annual statistical bulletin
of the CCSS. The data on infant and general population
mortality were taken from specific studies by the Estado de
la Nación, developed by the United Nations Development
Program, and an infant mortality study by the General
Department of Statistics and Census. The population data,
including the demographic structure of the catchment areas,
were compiled from projects carried out since the 1984
census by the Demographic Analysis sections of the Depart-
ment of Actuarial and Economic Planning of the CCSS.

Methods

The main objective of the empirical analysis was to deter-
mine whether health services provided in cooperative clinics
in Costa Rica differed from those provided in the traditional
public clinics over the same period. To accomplish this, we
first examined long-term trends and descriptive statistics, and
then modelled health service performance indicators using
the general form:

\[ Y_{it} = \text{Coop}_{it} + \text{X}_{it} + \text{Z}_{it} + e_{it} \]

where \( Y \) is a vector of health service performance indicators
in clinic \( i \) at time \( t \), Coop is a binary variable indicating
whether or not a clinic is a cooperative, \( X \) is a vector of clinic
and community characteristics, \( Z \) is a set of annual indicator
variables, and \( e \) is a randomly distributed error term. Panel
data sets like this one typically encounter two problems when
estimated using ordinary least squares: auto-correlation
because performance indicators in adjacent years (and there-
fore the error terms on adjacent observations) are correlated
with each other; and heteroskedasticity, or unequal variance
in the errors. To address these problems, we used year
dummies (the \( Z \) term above) to correct for autocorrelation
and Huber-corrected standard errors to generate estimates
robust to heteroskedasticity. It was not possible to use a fixed
effect model to correct for heteroskedasticity because two of
the three clinics were cooperatives for all years in the sample,
and the third was a cooperative for seven of the 10 years;
consequently, clinic fixed effects would absorb almost all of
the variation in the variable of interest, Coop.

A generalized estimating equations (GEE) model without
year dummies might have been more efficient than the
approach adopted, but since the correlation structure of the
data was unknown, it might also have yielded substantially
biased estimates. The reported results are therefore based on
OLS estimates with year dummies and Huber-corrected
standard errors. To reiterate, in the results reported below,
the key parameter of interest is the coefficient on the Coop
variable.

Limitations

There are three important and related caveats regarding the
findings. First, as always, it is possible that cooperative status
is not what drives the relationships described below, but
rather some unobserved variable with which cooperative
status is correlated. In fact, being a cooperative involves a
number of different characteristics related to the distribution
of residual profits and internal governance: it is possible that unobserved characteristics of Costa Rican cooperatives are driving the results and not cooperative status per se. In that case, policies should focus on those characteristics, rather than on converting clinics to cooperatives. Identifying the specific traits of cooperatives that are important for driving the results requires more data regarding internal financing and governance than was available for this analysis.

Secondly, the unobserved variables driving the results might be related to the organizational culture that led some clinics to convert to cooperative status in the first place. Again, further research could identify instrumental variables for cooperative status and clarify whether cooperative status or some other underlying variable is responsible for the findings below.

Thirdly, it is possible that population differences, rather than organizational characteristics, explain the observed differences between cooperatives and traditional clinics. To mitigate this problem, the model below uses lagged mortality rates to control for the general socio-economic level of the population in the district. (It was not possible to obtain consumption or income data that corresponded to clinic catchment areas.) Of course, if individuals are crossing districts and catchment areas in significant numbers, the issue of population treated remains problematic. It is true that the Pavas clinic was established in an area of high migration, generally increasing the catchment population faster than the general population; however, the annual population adjustments corrected for the magnitude of these population changes, if not for changes in the composition of the populations.

Results

The graphs in Figure 1 show trend lines over the decade for cooperatives and traditional CCSS clinics. The figure shows that general medical visits (CMG) per capita started at the same level in cooperatives and other clinics, and declined in cooperatives but increased in traditional clinics over the course of the decade. Specialist visits (CEM) per capita also started at about the same level and declined in both cooperatives and traditional clinics. Cooperatives gradually increased their rate of emergency visits per capita over the decade to the point that they equalled those in traditional clinics. Total laboratory procedures (TEL) and total medications provided (TMD) started at lower levels in cooperatives than in traditional clinics and remained lower at the end of the decade (though they did increase in the cooperatives). Real expenditures per capita exhibited significant annual fluctuations, but they both started and ended the decade lower in cooperatives than in traditional clinics.

Table 2 presents the same data as Figure 1, but in numerical form. Generally, examining time trends suggests that cooperatives provided fewer general medical visits, laboratory exams and drugs than the traditional clinics, but systematic patterns were not evident for the other variables. Table 3 shows that population mortality rates appeared somewhat higher in the areas around the cooperatives than in the CCSS clinics, and that infant mortality rates appeared comparable between the two groups. A t-test, however, found that the average annual infant and general mortality rates were statistically indistinguishable in the catchment areas of cooperatives and traditional clinics. Similarly, the demographic structure of the populations in cooperative catchment areas was broadly comparable to that in the catchment areas of the traditional clinics.

Table 4 presents estimation results for the determinants of visits per capita, where catchment areas are used to calculate the estimated population served for each clinic, general mortality and infant mortality (both lagged 1 year) control for the socioeconomic level of the community served, and indicator variables for the existence of a management contract and for type III clinics control for clinic characteristics. All estimations included annual indicator variables to control for average trends at the national level. Lagged infant mortality rates were negatively related to most types of service utilization, confirming the widely observed phenomenon that services are available and utilized more in communities with higher social indicators. The variable for management contract, a dummy variable indicating the existence of a formal input- and output-based contract between the CCSS and a clinic, was significant in none of the six estimations, but the coefficient on the cooperative indicator variable was significantly different from zero in three of them, at p < 0.01.

The estimations show that the cooperatives conducted an average of 9.7–33.8% more general visits (95% confidence interval), 27.9–56.6% more dental visits, and 28.9–100% fewer specialist visits. Numbers of non-medical, emergency and first-time visits per capita were not different from the traditional public clinics. These results suggest that the cooperatives substituted generalist for specialist services and offered additional dental services, but did not turn away new patients, refuse emergency cases, or substitute nurses for doctors as care providers. The findings are consistent with an interpretation in which cooperatives reduce costs by reducing specialist referrals, but in which professional norms and government oversight keep them from cutting some of the most essential services.

Table 5 presents estimation results for the determinants of the number of sick days and maternal disability days authorized per visit, the number of lab exams and medications provided per visit, and real expenditures per capita. Cooperatives authorized 30.4–60.5% fewer sick days (95% confidence interval), conducted 24.7–37.2% fewer lab exams, and gave out 26.7–38.3% fewer medications per visit than the traditional public clinics. (Medications are given for free in traditional public clinics.) Real total expenditure per capita in cooperatives, reflecting the average expenditure by the clinic to treat all patients, refused emergency cases, or substitute nurses for doctors as care providers. The findings are consistent with an interpretation in which cooperatives reduce costs by reducing specialist referrals, but in which professional norms and government oversight keep them from cutting some of the most essential services.

The results suggest that cooperatives achieved cost savings
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by reducing the technological intensity of health care services provided. The data at hand do not permit a judgment on how many of the additional medications and lab services provided in traditional clinics were unnecessary. The data do suggest, again, that residual claimant status provided effective incentives for the cooperatives to rationalize care in ways that reduced costs.

Conclusions and policy implications

Using a panel data set on clinic-level outputs, this paper has compared the performance of health cooperatives in Costa Rica with traditional publicly managed clinics in the social security system. Controlling for catchment area characteristics, time trends, clinic complexity and active CCSS management contracts, cooperatives conducted significantly more generalist visits per capita and significantly fewer specialist visits per capita than traditional clinics. This suggests that the cooperatives responded to financial incentives by shifting to a less costly mode of health care delivery. At the same time, the per capita rate of emergency visits and first-time patients seen did not differ from that in the traditional clinics. This provides prima facie evidence that the cooperatives were not dramatically skimping on care, nor were they discouraging new patients, in order to reduce costs. Another source of efficiency was in lab tests and medications. The cooperatives conducted about 0.4 fewer lab tests and dispatched almost one less medication per patient attended.

Figure 1. Services provided per capita in cooperatives and Type III and IV Clinics

Source: Authors’ calculations based on constructed database of CCSS statistics.
Table 2. Comparison of average service provision rates per capita between cooperatives and CCSS type III and IV clinics: selected service categories

<table>
<thead>
<tr>
<th>Year</th>
<th>GP visits per capita</th>
<th>Specialist visits per capita</th>
<th>Emergency visits per capita</th>
<th>Lab exams per visit</th>
<th>Medicines per visit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coops</td>
<td>Traditional CCSS clinic (Type III &amp; IV)</td>
<td>Coops</td>
<td>Traditional CCSS clinic (Type III &amp; IV)</td>
<td>Coops</td>
</tr>
<tr>
<td>1990</td>
<td>1.45</td>
<td>1.41</td>
<td>0.57</td>
<td>0.54</td>
<td>0.39</td>
</tr>
<tr>
<td>1991</td>
<td>1.86</td>
<td>1.37</td>
<td>0.65</td>
<td>0.54</td>
<td>0.39</td>
</tr>
<tr>
<td>1992</td>
<td>1.96</td>
<td>1.35</td>
<td>0.53</td>
<td>0.56</td>
<td>0.44</td>
</tr>
<tr>
<td>1993</td>
<td>1.89</td>
<td>1.26</td>
<td>0.55</td>
<td>0.52</td>
<td>0.44</td>
</tr>
<tr>
<td>1994</td>
<td>1.78</td>
<td>1.30</td>
<td>0.53</td>
<td>0.53</td>
<td>0.36</td>
</tr>
<tr>
<td>1995</td>
<td>1.77</td>
<td>1.33</td>
<td>0.45</td>
<td>0.55</td>
<td>0.39</td>
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<tr>
<td>1996</td>
<td>1.78</td>
<td>1.24</td>
<td>0.42</td>
<td>0.57</td>
<td>0.41</td>
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<tr>
<td>1997</td>
<td>1.82</td>
<td>1.28</td>
<td>0.44</td>
<td>0.54</td>
<td>0.41</td>
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<tr>
<td>1998</td>
<td>1.84</td>
<td>1.25</td>
<td>0.48</td>
<td>0.48</td>
<td>0.43</td>
</tr>
<tr>
<td>1999</td>
<td>1.84</td>
<td>1.02</td>
<td>0.48</td>
<td>0.52</td>
<td>0.47</td>
</tr>
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</table>

Source: Authors’ calculations based on constructed database of CCSS statistics.
### Table 3. Comparison of general and infant mortality rates between cooperatives and CCSS traditional type III and IV clinics

<table>
<thead>
<tr>
<th>Year</th>
<th>General mortality rates</th>
<th>Infant mortality rates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coops</td>
<td>Traditional CCSS clinic (type III &amp; IV)</td>
</tr>
<tr>
<td>1990</td>
<td>4.32</td>
<td>3.95</td>
</tr>
<tr>
<td>1991</td>
<td>4.33</td>
<td>3.94</td>
</tr>
<tr>
<td>1993</td>
<td>4.47</td>
<td>4.08</td>
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<tr>
<td>1994</td>
<td>4.58</td>
<td>4.19</td>
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<tr>
<td>1995</td>
<td>4.75</td>
<td>4.44</td>
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<tr>
<td>1996</td>
<td>4.70</td>
<td>4.33</td>
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<td>1997</td>
<td>4.75</td>
<td>3.93</td>
</tr>
<tr>
<td>1999</td>
<td>4.85</td>
<td>3.85</td>
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</table>

*Source: Authors’ calculations based on constructed database of CCSS statistics.*

### Table 4. Determinants of visits per capita: comparison between cooperatives and type III and IV clinics, Costa Rica, 1990–1999

<table>
<thead>
<tr>
<th></th>
<th>Type III</th>
<th>Cooperative</th>
<th>Management contract</th>
<th>Lagged mortality</th>
<th>Lagged infant mortality</th>
<th>Observations</th>
<th>R-squared</th>
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<td></td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Type III</td>
<td>-0.277</td>
<td>-0.313</td>
<td>(2.47)**</td>
<td>-0.109</td>
<td>(0.76)</td>
<td>198</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>(7.22)**</td>
<td>(3.59)**</td>
<td>(0.45)</td>
<td>(0.88)</td>
<td>(0.02)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.73)**</td>
<td>(5.88)**</td>
<td>(4.06)**</td>
<td>(2.86)**</td>
<td>(2.73)**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4.65)**</td>
<td>(0.02)</td>
<td>(0.40)</td>
<td>(2.04)**</td>
<td>(1.14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.38)**</td>
<td>(1.03)</td>
<td>(1.00)</td>
<td>(2.04)**</td>
<td>(1.88)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4.54)**</td>
<td>(0.94)</td>
<td>(0.09)</td>
<td>(2.04)**</td>
<td>(1.88)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.36</td>
<td>0.45</td>
<td>0.20</td>
<td>0.23</td>
<td>0.18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Robust t-statistics in parentheses. All estimations include annual indicator variables and a constant.
*significant at 5%; **significant at 1%.

*Source: Authors’ calculations based on constructed database of CCSS statistics.*

### Table 5. Determinants of services provided per visit and real per capita expenditure: comparison between cooperatives and type III and IV clinics, Costa Rica, 1990–1999

<table>
<thead>
<tr>
<th></th>
<th>Sick days</th>
<th>Maternity leave</th>
<th>Laboratory tests</th>
<th>Medications</th>
<th>Real per capita expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type III</td>
<td>-0.131</td>
<td>-0.056</td>
<td>-0.024</td>
<td>0.575</td>
<td>-6820.934</td>
</tr>
<tr>
<td></td>
<td>(6.12)**</td>
<td>(6.05)**</td>
<td>(0.45)</td>
<td>(5.87)**</td>
<td>(7.42)**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(9.86)**</td>
<td>(0.22)</td>
<td>(0.73)</td>
<td>(0.19)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(11.02)**</td>
<td>(0.73)</td>
<td>(0.73)</td>
<td>(0.19)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(11.02)**</td>
<td>(0.73)</td>
<td>(0.73)</td>
<td>(0.19)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3.28)**</td>
<td>(0.73)</td>
<td>(0.73)</td>
<td>(0.19)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.30</td>
<td>0.31</td>
<td>0.27</td>
<td>0.45</td>
<td>0.29</td>
</tr>
</tbody>
</table>

Robust t-statistics in parentheses. All estimations include annual indicator variables and a constant.
*significant at 5%; **significant at 1%.

*Source: Authors’ calculations based on constructed database of CCSS statistics.*
than the traditional clinics. These measures combined resulted in lower expenditures per capita: an average of 3000 Costa Rican colones (¢), in nominal terms, less per capita than the traditional clinics.

The findings presented suggest that the cooperative model in Costa Rica is promising and deserves further exploration. More detailed analyses, based on evidence from internal evaluations, surveys of patients and patient outcome indicators should be used to assess whether cooperatives were achieving the cost-savings without compromising the quality of care provided. The prima facie evidence presented here suggests that they might be doing just that. If so, opportunities exist for the CCSS to reduce costs, or increase quality, at the margin by gradually modifying contracts with cooperatives.

The findings presented here have several policy implications for health care provision in developing countries. First, with appropriate incentives and regulatory framework, non-profit organizations in general, and cooperatives in particular, might be able to combine the advantages of public and private approaches to health care service provision. Under certain conditions, they might be able to maintain accessibility, a sense of mission and efficiency in service provision. Secondly, Costa Rica’s experiment with cooperatives put in place management contracts, audits and performance evaluations to study the effects of the policy innovation. In experiments like this one, these regulations need to provide useful information for enforcement of provisions, but at the same time not be so burdensome as to compromise the autonomy of the service providers. Thirdly, conclusive findings on separating financing from provision require quality of care measures. Although the information system in Costa Rica made a study of outputs feasible, further examinations will require data on morbidity, consumer satisfaction, treatment compliance and other indicators of quality.

Endnotes

1 Type III and Type IV indicate levels of medical complexity in Costa Rican facilities. Type III and Type IV clinics include family medicine and limited specialty care such as paediatrics and obstetrics. Two of the cooperatives were Type IV and one was Type III. The facilities with which the cooperatives are compared are the universe of traditional CCSS Type III and Type IV clinics.

2 Emergency visits include emergency services provided to CCSS members either during normal working hours or by emergency services after normal working hours. These are provided in the primary care setting of the cooperative clinic.

3 Using both t-tests and F-tests, we could not reject the hypotheses that cooperatives and traditional clinics had the same infant mortality rates and the same general mortality rates. The cooperatives had a slightly lower share of children under the age of ten (20.0% versus 22.2%, a slightly higher share of women of childbearing age (23.9% versus 23.5%), and a slightly higher share of people over the age of 60 (8.5% versus 7.5%) in their catchment areas than the traditional clinics. These differences in demographic structure were all statistically significant; but since the cooperatives had more women of childbearing age and more older people, one would expect, in the absence of any organizational differences, higher health care expenditures in the cooperatives. In fact, as the analysis shows, the opposite was the case.

References


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Biographies

Varun Gauri is an Economist in the Development Research Group (Public Services Team). Mr Gauri’s current research interests include equity in immunization outcomes, the response to AIDS in South Africa and Brazil, the construction and impact of social and economic rights, and the governance of NGOs in developing countries. He has worked on and led a variety of operational tasks in the World Bank and the International Finance Corporation, including operational evaluations, investments in privately owned hospitals in Latin America, a social sector adjustment loan to Brazil, several health care projects in Brazil, and a study of the decentralization of health care in Nigeria. Mr Gauri has previously taught courses in health policy, bioethics, and education policy in the United States and Chile. He received his Ph.D in Public Policy from Princeton University in 1996.

James Cercone is an economist and president of Sanigest Internacional, a healthcare management and consulting company. Mr Cercone has over 14 years experience in the health sector, with particular emphasis in Latin America and Transition countries. During this period, he has worked in nearly 40 countries writing and developing solutions in the following areas: the impact of corruption in the health sector, purchasing strategies, provider payment mechanisms, performance improvement, economic analysis of health projects, monitoring and evaluation, development of HIV/AIDS strategies and management of health care services. Mr Cercone has worked extensively on the design, implementation and evaluation of projects for the World Bank, Interamerican Development Bank, ILO and other development organizations.

Rodrigo Briceño is an Economist. He has worked since 2000 as a Health Economics Consultant for Sanigest Internacional, a health consulting and management firm that specializes in health economics around the world. Mr Briceño has collaborated as an analyst in the health care reform process of several countries in Central America and Eastern Europe. He has performed numerous economic analyses of HIV/AIDS/TB projects, he has participated in projects of reorganization of hospital networks and he has evaluated health policies in Latin-American countries like Nicaragua. Mr Briceño received a Master in Economics of Development in 2002 at the National University in Costa Rica where he teaches statistics in the School of Economics.

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