Philippine Review of Economics and Business
Volume XXXIII, No. 2, December 1996

THE IMPACT OF DEVOLUTION ON LOCAL HEALTH EXPENDITURES: ANECDOTES AND SOME ESTIMATES FROM THE PHILIPPINES

J. J. Capuno and O. Solon*

The Local Government Code of 1991 stipulates (1) the devolution of health facilities, functions and personnel from the national government to local government units, and (2) a corresponding increase in central transfers to local government units. However, interjurisdictional spillovers of local health programs and the locational bias of hospitals maintained by the national government are also the necessary consequences of decentralization. This paper presents estimates of the effects of devolved facilities, central transfers, cross-border use of facilities and the presence of retained hospitals on local health expenditure. Results show that (1) local health expenditures are positively affected by the number of devolved facilities in a given locality, (2) municipalities and cities are more responsive to block grants than provinces, and (3) poor localities or those which absorbed inordinate number of health facilities tend to free ride on their richer neighbours.

1. Introduction

The rising costs of health care and severe budget deficits have forced many countries to reexamine the viability of centrally financed and managed universal public health care systems. Various

---

* Lecturer and Associate Professor, respectively, at the School of Economics, University of the Philippines, Diliman, Quezon City, Philippines 1101. This is a revised version of the paper of the same title presented during the First Regional Conference on Health Care Financing Reforms in Asia held in ADB, Manila in May 1995 and the Fourth Convention of the East Asian Economic Association held in Bangkok, Thailand in October 1996. We would like to thank the participants in the said conferences for their comments, Alex Herrin, Mario Taguiwalo, Mike Alba and Carlos Tan for helpful discussions, Benedict Quiton for excellent research assistance and the Health Policy Development Program for institutional support. The usual disclaimer applies.

ways of securing financing for a national health care delivery system, including ways of pruning the cost of running it, have been tested in many countries.

Apart from introducing health insurance and cost recovery measures such as user charges, another popular approach to ease the burden is to devolve highly centralized health care delivery system to local government units. Many developing and transition economies, including Papua New Guinea, Colombia, Chile and Russia, have tried some form of decentralization. In the Philippines, the decentralization program was not only a structural adjustment meant to arrest the deteriorating fiscal position of the national government, but more so a political move to insulate local government from the excesses of a strong central government.

Theoretically, the transfer of powers and responsibilities from central to local governments serves to stimulate local tax effort and therefore augment existing resources for health. Furthermore, since local authorities are assumed to be more sensitive and responsive to local needs, the devolution creates an opportunity to trim down excess capacity, pattern the menu of health services provided to local conditions, and avoid costly delays in managing epidemics and disasters.

However, the decentralization program in the Philippines also poses some practical problems. Notwithstanding the transitory problems encountered during the decentralization process, this paper focuses on some of the issues intrinsic to a decentralized system. Specifically, it tries to ascertain the possible impact of spillovers on local health expenditures. Since free-riding is avoided under centralized provision, the effects of cross-border use of local facilities and the presence of national government hospitals are important policy concerns under the devolution. Furthermore, we also investigate the effectiveness of the current central transfer policy and the size of the devolved function on local health expenditures.

The rest of the paper is developed as follows. Section II presents a brief account of the decentralization of health services in the Philippines followed by a review of some of the issues emerging under the devolution in section III. The empirical framework for

estimating the determinants of local health expenditures is developed in section IV. Some estimates are presented in section V. A concluding remark ends the paper.

2. The Devolution of Health Services in the Philippines

The Local Government Code (LGC) of 1991 stipulates (1) the delegation of powers and responsibilities from the central government agencies to local government units (LGUs), and (2) an increase of the LGUs' share in the total internal revenues (e.g., income taxes, tariffs) collected by the national government. However, the amount of central transfers received by the LGU does not necessarily match the costs of devolved functions absorbed by the LGU, thus leading to some of the problems encountered under the decentralization.

The devolved functions of the Department of Health (DOH), which include personnel, facilities and current inventory of supplies, constitute more than 65 percent of the estimated total cost of devolved functions, or about 39 percent of the DOH's budget for 1992.[1] Different levels of LGUs absorbed unequal fiscal responsibilities with the devolution of functions, assets and personnel of the DOH. The provinces absorbed the bulk which comprised hospital services (e.g., curative and preventive services in primary, secondary and tertiary level services); 596 provincial, district and municipal hospitals and infirmaries; 70 Integrated Provincial Health Offices (IPHOs); District Health Offices (DHOs); all the staff of DOH hospitals, IPHOs and DHOs; and all current inventories of equipment and supplies. The municipalities were the recipients of basic health services (e.g., primary health care, EPI, maternal and child health, dental health, etc.); 2,299 rural Health Units (RHUs); 10,683 Barangay Health Stations (BHSs), municipal maternity clinics,

[1] Other national government agencies that devolved functions to LGUs are the Department of Budget and Management (DBM), Department of Social Work and Development (DSWD), Department of Environment and Natural Resources (DENR), Department of Agriculture (DA), Philippine Gamefowl Commission and National Meat Inspection Commission.

including the staff complement and all the current inventories of equipment and supplies. The cities absorbed only the City and Assistant Health Officers and some equipment and supplies. It should be noted, however, that the chartered cities were already supporting their own health systems even prior to the LGC of 1991 (World Bank, 1993).

To help finance these devolved functions, LGUs' share of the total internal revenue also increased.[2] The shares of the LGUs are based on level of government (province, municipality, city) and within each level, the size of population, land area and an equal sharing formula. The estimated costs of devolved functions were taken out of the budgets of the departments and pooled with other revenue collections of the national government. However, the shares of the LGUs from the Internal Revenue Allotment (IRA) are transferred as block grants. Although in most cases the grant is enough to cover the costs of devolved functions, there is no assurance that local health expenditures will increase under decentralization. Furthermore, it is also possible that the grant will dampen efforts to generate additional revenues at the local level. Hence, total health expenditure may not increase if the incremental IRA share only substitutes for existing local health service financing.[3]

To understand deeper the impact of decentralization in the Philippines, a comparison is made regarding the health expenditures of 173 LGUs (comprising 36 provinces, 20 cities and 117 municipalities) for the years 1991 (before devolution) and 1993 (after devolution).[4] As shown in Table 1, on the average, provinces

---

[2] The LGC of 1991 states that the share of the LGUs of the national internal revenue taxes, based on the collection of the third fiscal year prior to the current fiscal year be increased from 30 percent in the first year of the effectivity of the Code to 40 percent on the third year and thereafter.

[3] It should be noted, however, that devolved health personnel have comparatively higher salaries and are protected by civil service rules. These factors prevent LGUs from scaling down health services to a more efficient level. Furthermore, the rigidities in staffing requirements and pay scales are also found to sow disharmony among local government employees.

[4] The sampling frame is discussed in Section 4.

Table 1 - Average Total Cost of Devolved Functions by Type and Class of LGU 1993 (Million Pesos)

LGU	No.	Cost of Devolved Health Functions (CDHF)			Total Cost of Devolved Functions (CODEF)	Share of CDHF to Total CODEF
		PS	MOOE	Total		
OVERALL AVE.	173	4.75	3.39	8.14	10.83	56.18
PROVINCE	36	20.32	13.59	33.9	41.64	81.49
Class 1	17	22.66	15.79	38.45	47.68	80.64
Class 2	6	15.34	8.36	23.70	29.93	79.18
Class 3	5	24.33	13.97	35.30	42.96	82.17
Class 4	4	19.36	13.60	32.96	39.31	83.85
Class 5	4	17.32	11.55	28.87	33.89	85.19
CITIES	20	1.07	2.11	3.18	6.11	52.05
MUNICIPALITIES	117	0.66	0.52	1.18	2.30	49.21
Class 2	3	1.13	0.09	2.22	3.36	66.07
Class 3	16	1.07	1.00	2.07	5.53	58.64
Class 4	29	0.82	0.68	1.50	2.78	53.96
Class 5	37	0.58	0.43	1.01	2.13	47.42
Class 6	32	0.37	0.20	0.57	1.39	41.01

Sources of raw data: DBM, COA, DOH-LGAMS, UPecon-HPDP LGU Survey.

absorbed the bulk of devolved functions, amounting to about 41.04 million pesos on the one hand while the cities and municipalities, on the other hand, absorbed on the average only about 6.11 million pesos and 2.30 million pesos, respectively. Of these totals, health accounted an average of 33.9 million pesos for the provinces, compared to only about 3.18 million pesos and 2.3 million pesos for the cities and municipalities, respectively. Salaries and wages of health personnel constitute the greater portion of the cost of devolved health functions (CDHF) for all the LGUs. The devolved health functions for the provinces, cities and municipalities account for about 81.5 percent, 52 percent and 49 percent respectively of the total cost of devolved functions (CODEF). These figures suggest the heavy fiscal bias of decentralized health services in the Philippines against the provinces.

The fiscal status of the sample LGUs is shown in Table 2. The overall average increment in the shares of the Internal Revenue Allotment (IRA) was about 44 million pesos in 1993. It is an increase of nearly 30 million pesos over the 1991 overall average. The cities got the biggest chunk, representing more than a 100 million peso increment from 1991 to 1993. Compared to the cities, provinces had lower IRA shares in 1993. However, the increase from 1991 was about 31 million pesos less than the increment received by the cities. The municipalities' share in 1993 grew only by about 5.7 million pesos from their 1991 share.

The disparity in financial standing between the cities, on the one hand, and provinces and municipalities, on the other, is even made more glaring by the fact that the tax revenues of the cities are nearly 5 times as much as that of the provinces and more than 20 times that of the municipalities in 1993. Cities also have higher total expenditures. However, the increase in total expenditures of the cities in 1993 was only about 4 million pesos more than their 1991 total expenditure. Provinces spent about 27 million pesos more in 1993 than in 1991. This could be explained by the fact that the provinces absorbed the bulk of devolved health functions. In terms of local health expenditures, provinces in general increased their outlays for health services by 23.5 million pesos in 1993, as compared to their outlays for health services in 1991. Municipalities also increased their health expenditures by nearly a million pesos. However, the cities even decreased their health expendi-

Table 2 - Internal Revenue Allotment, Tax Revenues, Total Expenditures and Health Expenditures by Type and Class of LGU: 1991 and 1993 (Average, Million Pesos)

Local Government Unit	Internal Revenue Allotment		Tax Revenues		Total Expenditures		Health Expenditures	
	1993	'93-'91	1993	'93-'91	1993	'93-'91	1993	'93-'91
OVERALL AVE.	43.81	29.7	10.6	4.53	43.14	9.33	6.91	5.15
PROVINCE	103.47	68.55	11.25	6.15	103.15	26.98	25.55	23.51
Class 1	142.64	94.62	10.76	5.7	93.26	(2.61)	25.67	23.07
Class 2	87.95	58.15	15.06	9.26	103.8	50.21	27.04	25.98
Class 3	61.45	40.72	11.52	5.41	136.65	83.89	25.36	23.25
Class 4	64.86	40.97	3.36	(0.56)	93.17	22.35	18.73	17.05
Class 5	52.94	42.68	15.09	11.25	103.95	52.16	29.88	28.55
CITIES	142.62	100.58	57.86	23.9	123.83	3.9	8.64	(2.53)
MUNICIPALITIES	8.7	5.74	2.27	0.71	11.05	4.91	0.95	0.9
Class 2	17.09	10.13	10.29	3.05	36.32	11.34	2.95	2.53
Class 3	13.8	8.46	5.79	1.44	19.43	7.44	1.59	1.48
Class 4	11.13	7.11	2.26	0.98	13.71	6.08	1.21	1.12
Class 5	7.57	5.22	1.48	0.58	8.58	4.15	0.8	0.79
Class 6	4.62	3.32	0.36	0.06	5.13	2.93	0.42	0.41

Sources of raw data: DBM, COA, DOH-LGAMS, UPecon-HPDP LGU Survey.

tures. The share of health for the provinces jumped from 2.7 percent in 1991 to about 25 percent in 1993. Comparable figures for the municipalities are 0.9 percent in 1991 and 8.6 percent in 1993. The figures for the cities show a decline of 2.34 percentage points from 1991 to 1993. Although the provincial and municipal outlays for health services have spiraled during decentralization, the rise was still within their augmented budgets. The total cost of devolved health functions, as a percentage of their increase in IRA shares, was only about 55 percent for the provinces and 20 percent for the municipalities (Table 3).

Table 3 - Percentage Share of Health Expenditures to Total Expenditures and IRA by Type and Class of LGU: 1991 and 1993

LGU	Percent Share of Health Expenditures to Total Expenditures			Internal Revenue Allotment
	1991	1993	'93-'91	('93-'91)
OVERALL AVE.	5.20	16.01	10.81	25.25
PROVINCE	2.67	24.77	22.10	55.35
Class 1	2.71	27.53	24.81	40.64
Class 2	1.98	26.05	24.07	40.76
Class 3	3.36	18.56	15.20	86.69
Class 4	2.37	20.10	17.73	80.45
Class 5	2.57	28.74	26.18	67.64
CITIES	9.31	6.98	(2.34)	3.16
MUNICIPALITIES	0.87	8.64	7.77	19.93
Class 2	1.68	8.12	6.44	21.92
Class 3	0.92	8.18	7.27	24.47
Class 4	1.18	8.83	7.65	21.10
Class 5	0.23	9.32	9.10	19.35
Class 6	0.45	8.19	7.73	17.17

Sources of raw data: DBM, COA, DOH-LGAMS, UPecon-HPDP LGU Survey.

These figures underscore the inequities caused by decentralization. Cities, which are far richer than the provinces and municipalities, got the biggest share of the IRA and the least of the devolved functions. Notwithstanding these biases in the decentralization policy, the prevailing incentive structure embedded in a decentralized setting also bears on the decision of LGUs to allocate resources on health services.

3. Local Interactions and Local Health Expenditures

Decentralization causes more than the mere transfer of powers and responsibilities to LGUs. Since local decisions have impact on neighboring jurisdictions, decentralization also alters the incentive structure faced by LGUs in interacting with one another. Factors such as spillover effects (e.g., cross-border use of local facilities) and the spatial bias of retained hospitals (i.e., facilities such as regional hospitals which are still under the DOH after the devolution) also influence the provision of the local health services.

Cross-border use of local facilities

Some local health services such as immunization confer beneficial spillovers (in the form of lower morbidity risks) on other localities, prompting the latter to spend less on similar health services. Most LGUs also do not take into account the possible hazardous effects of local activities on other jurisdictions (e.g., dumping of waste on rivers). The deleterious effect of free-riding, which is inherent in a decentralized regime, is most evident in the cross-border use of devolved facilities.

Prior to the devolution, cross-border use was not a problem. Except those of the cities, all government health facilities were the responsibility of the Department of Health before the devolution. Hospitals were built based on catchment areas, although patients were free to seek medical treatment in any government hospital or clinic at minimal costs.

However, the cross-border use of local facilities becomes a problem of LGUs under the present regime where access to free medical services remains open to local residents and nonresidents alike. Only a part of tax paid by local residents is returned to them in terms of health services since they effectively subsidize nonresident users. Furthermore, LGUs of origin of the cross-border users face less pressure to maintain health facilities in their localities. The extent of free-riding can be substantial and the emerging "solutions" are not easily replicated.

The control of cross-border use is not easy because of the difficulty in identifying nonresident and the infrequency or the urgency of the medical needs (such as in emergencies). Furthermore, people were accustomed to seeking medical treatment in any government health center prior to decentralization and health workers find it unethical to deny medical attention on the basis of residence.

The municipal government of Sison, Surigao del Norte is contemplating an ID system or a policy of "free-treatment but no free drugs" for nonresidents. Under this scheme, only local residents would be issued IDs which would entitle them to medical treatment, supplies and medicine in municipal health clinics. All other users are limited to free treatment only.

Cross-border use is allowed in practice by the devolved health workers. Although it leads to shortage of medical supplies available to local residents, some form of a coping mechanism is evolving. The municipal health officers (MHOs) of San Enrique, Valladolid and Pontevedra (all of Negros Occidental) have an informal health resource-sharing arrangement. The MHO of any one of the municipalities can borrow any drug or medicine in short stock from any of the other two who has available supply. The drug or medicine is returned once reserves are replenished. This is an informal arrangement worked out by health workers without the knowledge of the mayors of these towns.

Other local chief executives welcome cross-border users. Although the health services provided may be free of charge, they generate greater commerce and therefore higher tax revenue for the locality. Although commodity taxes are inferior to user fees in

controlling cross-border use, they seem to be the more practical option under the circumstances.

The negative effect of cross-border use on local health spending can be minimized by resource or cost-sharing arrangements among municipalities. Instead of subsidizing LGUs that attract disproportionate number of nonresident users, the national government can also facilitate cost-sharing schemes among LGUs. In facilitating a wider set of agreements, the national government can capitalize on existing mutual help practices in the locality.[5] However, the best way to reduce the adverse consequences of cross-border use is to charge access fees to nonresident users. This can be waived in meritorious cases such as emergencies and for indigent patients.

Presence of DOH-retained hospitals

A number of government health facilities were not devolved to LGUs and continue to be under the control of the DOH. These include regional hospitals (whose catchment area is a group of provinces) and medical centers (whose catchment area is the whole country). The location bias of these retained health facilities inadvertently favors some localities more than others. The net effect is a subsidy leading to a lower health budget in the locality. This is also the case when a provincial hospital is located in a chartered city.

There are some illustrative cases of the spatial bias of retained facilities. The regional hospital located in Naga City treats patients who mostly come from the city. Although the city has its own hospital, most of its patients are referred to the regional hospital. The cities of Cebu, Tagbilaran, Bacolod, Cotabato and Davao all have DOH-retained health facilities.

---

[5] Likelihood of cooperation is observed to be greater among adjacent LGUs that are immediately threatened by disease outbreaks or by recurrent risks (e.g., typhoons). Since LGUs cannot choose to locate elsewhere and monitoring each other's activities is easy, shirking is deterred. In Maguindanao, for example, the outbreak of a highly communicable skin disease was checked by the joint efforts of local health workers from different LGUs.

Although the location of DOH-retained facilities in big cities makes them more accessible to more people, it also favors city residents more than others within the catchment area. For reasons of equity, it may be necessary to find ways to equalize access costs to these facilities. One possibility is to charge user fees partially based on place of residence. By charging city residents higher than those living in remote towns, the latter's transportation costs can be subsidized with the extra revenues.

4. Empirical Framework

Several empirical studies on local fiscal choices cast the problem in a demand framework (see Inman (1979)).[6] According to this framework, the government acts "as if" it maximizes the utility (defined over public services and income net of taxes (or transfers)) of a representative individual subject to a budget constraint. Local tax revenues are set equal to total expenditures on public goods. Consequently, demand functions for local public services are derived from the optimization problem. However, it is also known that local expenditure competition could lead to inoptimal level of public services (Wildasin, 1986). Specifically, public services that emit beneficial spillovers such as health services tend to be underprovided. In a recent paper, Case, Rosen and Hines (1993) attempted to estimate the impact of a state's neighbors on its own per capita expenditures. They found positive and significant budget spillover effects among the states in the U.S. Following the framework in Case, Rosen and Hines (1993), we specify an econometric model of local government health expenditure of the following form

$$E_{it} = X_{it}\beta + \alpha E_{jt} + \gamma E_{it}^{N} + u_{it},$$

---

[6] The representative individual assumption is based on the premise that the local population is composed of identical individuals. Other researchers invoke the median voter model to relax the homogeneity assumption. For a review of the results based on the demand and other frameworks for determining local fiscal choices, see Inman (1979).

where E_{it} is the ith LGU's own per capita health expenditures, X_{it} refers to its own characteristics, E_{jt} is the per capita health expenditure of its jth neighbor, E_{it}^{N} is the health expenditure of the national government within or near the locality, β, α and γ are parameters, t is year and u_{it} is a random error.

Data and estimation issues

The data comprise a sample of 173 LGUs (36 provinces, 20 cities and 117 municipalities) for the years 1991 and 1993. The sample provinces are selected on the basis of their geographical location (i.e., from the island groups of Luzon, Visayas, and Mindanao), socioeconomic profile (income class), and presence of DOH-retained facilities. From each of the provinces, a city or municipality is sampled, one for each of the six income classes. Second class and lower class municipalities are further chosen on the basis of their proximity to the city or a highest-class municipality sampled in the province.

The data impose some limitations on the estimation exercises. Although the Local Government Code was passed in 1991, the actual implementation started in 1992. Therefore, the data for 1993 might still reflect the transitory adjustments made by the LGUs during the process of decentralization. Since our data on health expenditures are limited to our samples (which do not include all the neighbors of the reference LGU), we use the number of devolved hospitals in the province (in the case of municipality) or region (in the case of province) as proxy variables for the health expenditures of the neighbors of the reference LGU. Since population is already factored into the computation of the IRA, the level value of IRA shares (rather than per capita IRA) is used in the regression. Furthermore, only IRA was used as an income variable since it accounts for about 60 percent of local revenues on the average. Only in the case of the city are local tax (non-IRA) revenues a substantial part of income.

A number of measurement issues are also encountered. First, some of the explanatory variables used may be correlated. DOH-retained hospitals are usually located in regional centers and major cities. To isolate the effect of the presence of DOH-retained hospi-

tals on local health expenditures, an interaction variable is introduced in the regression models (e.g., IRADHOSP defined as the amount of IRA share times the number of DOH-retained hospitals in the province). Second, the number of hospitals in the province may also be positively correlated with the number of hospitals in the region. This is specially true of regions with high socioeconomic status. Again, an interaction variable (DEV HOSP PROV x DEV HOSP REGION) is introduced to isolate the effect of devolved hospitals in other provinces on the health expenditures of a given locality. Lastly, there are no better indicators of the socioeconomic status of the LGUs available aside from IRA and the class of LGU. To come up with better results, the two variables are used alternately in the regressions.

The estimation for the provinces' health expenditures is limited to 1993 for two reasons. First, as pointed out in section II, provinces absorbed the bulk of the fiscal burden of the decentralization. The health expenditures of the provinces also spiraled by about 23.5 million pesos on the average from 1991 to 1993. Given this structural shift, the analysis for the provinces is focused on their 1993 performance. Second, an initial attempt at panel data estimation was unsuccessful. Since the number of public hospitals in a jurisdiction hardly changed between 1991 and 1993, the change in "ownership" from national to local governments makes some of the regressors linearly dependent.

Ascertaining the determinants of municipal health expenditures poses a number of estimation issues as well. First, the municipalities, unlike the provinces, did not receive any hospital with the devolution. However, the ownership and management of hospitals located within their respective vicinities changed. F-tests (or Chow tests) are used to verify whether the expenditure behavior of municipalities changed under devolution. Second, the sample of municipalites actually includes chartered cities. To control for the possibility of differences in spending behavior of cities and municipalities, a city dummy variable is included in the estimation exercises. Third, some cities had their own hospitals even before the devolution. A city hospital variable is also used to test the impact of the presence of city hospital on local health spending before and after devolution. Lastly, it is likewise possible that the negative effect of the number of provincial hospitals on municipal health

expenditures may be dampened by the positive correlation between the class of the province and the number of hospitals. To control for this, an interaction term (CLASS x GOV HOSP PROV) is also introduced in some of the regressions.

5. Some Estimates

Some estimates of the impact of the presence of DOH-retained facilities and cross-border use of facilities are discussed in this section.[7] In our regression exercises, local health expenditure is specified in levels, shares or net of cost of devolved health functions. It is hypothesized that health expenditures increase with local income (IRA share or CLASS) and the number of devolved health facilities absorbed by the locality, and fall with the presence of DOH-retained facilities or number of devolved facilities in other localities.

Determinants of provincial health expenditures

The descriptive statistics of the regression variables used in determining the factors that influence provincial health expenditures are shown in Table 4.

Tables 5a and 5b show that both IRA and CLASS have negative impact on per capita health expenditures. Although disbursements tend to increase with income, the results are not surprising. LGUs which have bigger populations are likely to be richer than average. Since the IRA formula factors in the size of the local population, these LGUs also have bigger IRA shares in general. Therefore, the inverse relationship with per capita health expenditures can be expected. There is weak evidence on the dampening effect of the presence of DOH-retained hospitals (DOH HOSP) on the local health outlays. Also, there are indications that the number of devolved hospitals in the province (DEV HOSP LOCAL)

[7] The spillover effects of local health programs such as immunization on other localities cannot be tested with currently available data.

Table 4 - Provincial-Level Regression Variables: Means and Standard Deviations

Variable	Mean	Std. Dev.
PER CAP HEALTH EXP	21.96624	29.76754
SH OF HEALTH EXP	13.38218	14.26173
NET HEALTH EXP	-3.16739D+06	1.05226D+07
BLOCK GRANT (IRA)	6.91982D+07	5.22497D+07
CLASS (=1.LE.3)	0.78378	0.41447
PROV CLASS	2.24324	1.41238
DEV HOSP (LOCAL)	3.06757	3.83685
DOH HOSP	3.74324	4.30056
DEV HOSP (REGION)	15.05405	18.72724
DEV HOSP (LOC x REG)	95.21622	137.90877
DNHEXP (=1 NHEXP .GE.0	0.48649	0.50323
No. of observation = 36		

Sources of raw data: DBM, COA, DOH-LGAMS, UPecon-HPDP LGU Survey.

Table 5a - Determinants of Health Expenditures Per Capita (Province, 1993; OLS Estimates)

Variable	Model 1	Model 2	Model 3
CONSTANT	53.3281 (3.64899)**	36.9390 (2.15612)**	29.4140 (1.51775)
CLASS (=1 IF .LE. 3)	-34.2570 (-2.96079)**	-34.7136 (-3.08804)**	
BLOCK GRANT (IRA)			-.153825E-06 (-1.44123)
DOH HOSP	-8.719272 (-.997799)	-10.6268 (-1.24142)	-13.9268 (-1.46665)
DEV HOSP (REGION)	.429142 (1.38412)	1.06987 (2.22446)**	.923328 (1.72489)*
DEV HOSP (LOCAL)	.827518 (.567445)	4.51968 (1.74922)*	4.10739 (1.43567)
DEV HOSP LOC x REGION)		-.129060 (-1.70857)*	-.106768 (-1.26501)
F-stat (zero slopes)	4.09503	4.05635	2.16912
R-squared	0.338571	0.395496	0.259181
No. of Observations	36	36	36

** and * mean significant at the 5 and 10 percent levels, respectively.

Table 5b - Determinants of Health Expenditures Per Capita (Province, 1993; OLS Estimates)

Variable	Model 4	Model 5	Model 6	Model 7
CONSTANT	52.5129 (3.39673)**	28.9780 (1.51064)	48.8967 (2.82411)**	31.0508 (1.29849)
CLASS (=1 .LE. 3)	-34.6347 (-290582)**	-36.7622 (-3.20263)**		
BLOCK GRANT (IRA)			-.186890E-06 (-1.69687)*	-.157704E-06 (-1.39400)
DOH HOSP	-3.89553 (-0.143519)	13.7610 (0.498995)	-28.8405 (-1.00958)	-17.4060 (-.572582)
DEV HOSP (REGION)	.426885 (1.35494)	1.20549 (2.39397)**	0.402630 (1.18488)	.901492 (1.57244)
DEV HOSP (LOCAL)	1.00913 (.570817)	6.30276 (1.95660)*	0.627451 (0.327792)	3.86083 (1.08648)
DEV HOSP (LOC x REGION)		-0.158715 (-1.93238)*		-0.101975 (-1.07883)
IRADHOSP (IRA x DOH HOSP)	-.351354E-07 (-0.188067)	-.180825E-06 (-0.930571)	.128164E-06 (.630848)	.269499E-07 (.120694)
F-stat (zero slopes)	3.18434	3.15000	1.86047	1.75257
R-squared	0.339325	0.412456	0.230814	0.259541
No. of observations	36	36	36	36

** and * mean significant at the 5 and 10 percent levels, respectively.

increase the level of per capita health expenditures. This represents the pressure faced by LGUs to maintain at least the old level of DOH spending in the locality. Although it is hypothesized that the number of devolved hospitals in the rest of the region (DEV HOSP REGION) should decrease local health expenditures (because of cross-border use), there is, however, a positive effect observed. This variable seems to capture regional socioeconomic status. Inclusion of an interaction variable (DEV HOSP LOCAL x DEV HOSP REGION) in the model reveals the possible effect of cross-border use (see Model 2 and Model 5). The results seem to suggest that incremental local health expenditures tend to decrease the more devolved hospitals there are in the rest of the region (to which the province belongs). Although, DOH-retained hospitals are usually located in bigger LGUs, the effect of the interaction term (IRA x DOH HOSP) on per capita health expenditure is found to be nil (see Model 4 to Model 7).

The results of regressing the share of health expenditures against the same set of explanatory variables as in Tables 5a and 5b reveal more or less the same story (see Tables 6a and 6b) as in the previous exercise. At least in one case, a DOH-retained hospital in the province is found to reduce the share of health expenditures by as much as 7 percentage points (Model 3). This confirms the spatial bias of DOH-retained hospitals.

An important policy concern is to know which LGUs are likely to spend less than the cost of devolved functions and by how much less. However, those LGUs that spend less than the cost of devolved functions may reflect either their inability to maintain hospitals because of fiscal constraints or preference for smaller capacity. An LGU may choose smaller capacity because it free rides on other localities or it has excess capacity to begin with. In this study, net health expenditure is defined as total health expenditure less the cost of devolved health functions. Tables 7a and 7b contain the results of regressing net health expenditures against the same set of regressors as the ones used previously. Models 1a and 1b, which are estimated using ordinary least squares methods, answer the question by how much LGUs underspend relative to the cost of devolved health functions. Models 2a and 2b are useful in predicting what type of LGUs are likely to incur deficits. The results on the effect of devolved hospitals in the province (DEV HOSP LO-

Table 6a - Determinants of Share of Health Expenditure to Total Expenditures (Province, 1993); OLS Estimates)

Variable	Model 1	Model 2	Model 3
CONSTANT	20.1731 (3.07291)**	19.2004 (2.38695)**	17.0404 (2.04033)**
CLASS (=1 IF .LE. 3)	-5.40960 (-1.04084)	-5.43670 (-1.03006)	
BLOCK GRANT (IRA)			-.107238E-07 (-.233148)
DOH HOSP	-6.25870 (-1.59436)	-6.37197 (-1.58518)	-7.21239 (-1.76251)*
DEV HOSP (REGION)	.075123 (.539397)	.113151 (.501065)	.097644 (.423280)
DEV HOSP (LOCAL)	1.29199 (1.97226)*	1.51112 (1.24561)	1.40681 (1.14103)
DEV HOSP (LOC x REGION)		.765971E-02 (-.215973)	-.562368E-02 (-.154614)
F-stat (zero slopes)	2.25514	1.75969	1.50977
R-Squared	0.219903	0.221075	0.195825
No. of Observation	36	36	36

** and * mean significant at the 5 and 10 percent levels, respectively.

Table 7a - Determinants of Net Health Expenditures (Province, 1993)

Variable	Model 1a (OLS Estimates)	Model 2a (Probit= 1 NHEXP . GE. 0)
CONSTANT	-.144810E+08 (-2.28869)**	-1.55429 (-1.44825)
BLOCK GRANT (IRA)	.064661 (1.48925)	1.04095E-07 (1.34684)
DEV HOSP (REGION)	113832. (.831889)	.018630 (.899810)
DEV HOSP (LOCAL)	-.104555E+07 (-1.51950)	-.311705 (-2.16179)**
DOH HOSP	.742708E+07 (1.93347)*	1.35993 (2.06629)**
F-stat (zero slopes)	2.06276	
Percent correct predictions		0.891892
R-squared	0.204990	0.502663
No. of observations	36	36

** and * mean significant at the 5 and 10 percent levels, respectively.

Table 7b - Determinants of Net Health Expenditures (Province, 1993; OLS Estimates)

Variable	Model 1b (OLS Estimates)	Model 2b (Probit=1 NHEXP GE 0)
CONSTANT	-.127494E+08 (-1.80793)*	-0.730673 (-0.590654)
BLOCK GRANT (IRA)	0.059221 (1.32016)	0.707530E-08 (0.760472)
DOH HOSP	0.104322E+07 (0.089661)	-0.694822 (-0.399663)
DEV HOSP (REGION)	117332 (0.847758)	0.018336 (0.849549)
DEV HOSP (LOCAL)	-0.125081E+07 (-1.60435)	-0.401017 (-2.38404)
IRADHOSP (IRA X DOH HOSP)	0.048160 (0.582014)	0.164520E-07 (1.28694)
F-stat (zero-slopes)	1.68386	
Percent correct predictions		0.945946
R-squared	0.213583	0.573211
No. of observations	36	36

** and * mean significant at the 5 and 10 percent levels, respectively.

CAL) are worth emphasizing. Provinces with a greater number of devolved hospitals tend to have negative net health expenditures. This could indicate the possibility that provinces have absorbed facilities too big for their needs and are getting rid of excess capacity. Note the positive relationship between the number of DOH hospitals and net health expenditures. The locations of DOH hospitals, which are usually regional centers or big cities, may be positively correlated with the province's fiscal status. This positive correlation may have dampened the negative effect of the presence of DOH-retained hospitals on local health expenditures. The inclusion of the interaction term (IRA x DOH HOSP) reverses the sign of the coefficient of DOH-retained hospitals (DOH HOSP). However, the true effect may not be significantly different from zero (Models 1b and 2b).

Determinants of municipal health expenditures

The descriptive statistics of the municipal-level regression variables used in this section are shown in Table 8.

Although health expenditures of municipalities are found to be positively correlated with IRA, the increase in IRA in 1993 may have reduced the local allocation for health (Tables 9a and 9b). It would also seem that the number of provincial hospitals in the locality tends to raise municipal health outlays. However, this effect is neutralized by the introduction of the city dummy. Compared to the municipalities, the cities are also found to have reduced their outlays for health services in 1993. Although city hospitals are found to be significant indicators of city health expenditures, the estimated coefficients more or less remained the same before and after the devolution (see Models 2 and 4) and they seem to also have invariant impact on health expenditures in 1993. The number of provincial or DOH-retained hospitals in other localities is also found to have a positive effect on the regressand. However, the inclusion of the interaction term (CLASS x GOV HOSP PROV) indicates the possibility of a negative net effect of government hospitals on the health budgets of municipalities. This reveals that free-riding becomes desirable only to those municipalities whose neighbors belong to higher class provinces. The F-tests (or Chow tests) on the stability of regression coefficients, except for the case

Table 8 - Municipal-Level Regression Variables: Means and Standard Deviations

Variable	Mean	Std. Dev.
HEALTH EXP.	1922220.80210	5991387.32405
NET HEALTH EXP.	1173819.47648	5684984.67630
SH. OF HEALTH EXP.	4.91861	5.03434
DUMCITY (= 1 CITY)	0.15000	0.35771
CITY HOSP	0.042857	0.20290
BLOCK GRANT (IRA)	1.88774D+07	5.18094D+07
GOV HOSP (LOCAL)	0.40357	0.50587
GOV HOSP (PROV)	7.30000	3.64697
CLASS x GOV HOSP (PROV)	6.300	4.59343
D1 (=1 x CONSTANT 1993)	0.50000	0.50090
D2(=1 x IRAT 1993)	1.44369D+07	5.05505D+07
D3(=1 x GHOSP LOC 1993)	0.20000	0.40956
D4(=1 x GHOSP P 1993)	3.65000	4.47442
D5(=1 x DUMCITY 1993)	0.075000	0.26386
D6(=1 x CHOSP 1993)	0.021429	0.14507

No. of Observations = 137

Table 9a - Determinants of Health Expenditures (Municipalities, 1991 and 1993; OLS Estimates)

Variable	Model 1	Model 2
CONSTANT	-.266421E+07 (-2.84558)**	-.213222E+07 (-2.41745)**
D1(=1x CONSTANT 1993)	712927. (.539986)	404259. (.325632)
BLOCK GRANT (IRA)	.149975 (8.00855)**	.085675 (3.94164)**
D2 (=1x IRAT 1993)	-.099270 (-5.04241)**	-.035797 (-1.55792)
GOV HOSP (LOCAL)	.231780E+07 (2.87750)**	600184 (.725147)
D3 (=1x GHOSP LOCAL 1993)	-.167731E+07 (-1.45713)	65838.0 (.056700)
GOV HOSP (PROV)	288960. (2.69979)**	241015. (2.39060)**
D4 (=1x GHOSP PROV 1993)	33596.1 (.221992)	43810.2 (.307398)
DUMCITY (=1 CITY)		.564473E+07 (3.60662)**
D5 (=1x DUMCITY 1993)		-.716662E+07 (-3.15035)**
CITY HOSP		.563907E+07 (2.69989)**
D6 (=1x CITY HOSP 1993)		.122263E+07 (.413199)
F-stat (zero slopes)	28.9707	24.9633
Chow (all coefficients)	8.978334	5.311707
Chow (intercept)	0.2915854	0.1060364
Chow (all slopes)	6.748554	6.288685
R-squared	0.427121	0.506078
No. of observations	137	137

** and * mean significant at the 5 and 10 percent levels, respectively.

Table 9b - Determinants of Health Expenditures (Municipalities, 1991 and 1993; OLS Estimates)

Variable	Model 3	Model 4
CONSTANT	-0.2933590E+07	-0.249131E+07
	(-2.93338)**	(-2.64766)**
D1 (=1 x CONSTANT 1993)	0.113759E+07	957638
	(0.806327)	(0.722982)
BLOCK GRANT (IRA)	.0150497	0.085251
	(8.01367)**	(3.91842)**
D2 (=1 x IRA 1993)	-0.099921	-0.035300
	(-5.06085)**	(-0.53480)
GOV HOSP (LOCAL)	0.234747E+07	609952
	(2.90471)**	(0.736322)
D3 (=1 x GOV HOSP LOCAL 1993)	-0.171861E+07	54986.3
	(-1.48854)	(0.047315)
GOV HOSP (PROVINCE)	4445458	448653
	(1.95833)*	(2.09892)**
D4 (=1 x GOV HOSP PROV 1993)	-211986	-276987
	(-0.659282)	(-0.916498)
DUMCITY (=1 CITY)		0.580250E+07
	(3.68910)**	
D5 (=1 x CITY 1993)		-0.741462E+07
	(-3.24334)**	
CITY HOSP		0.552836E+07
	(2.64173)	
D6 (=1 x CITY HOSP 1993)		0.139489E+07
	(0.470489)	
CLASS x GOV HOSP PROV	-140865	-186634
	(-0.780194)	(-1.10186)

Table 9b (continued)

Variable	Model 3	Model 4
D7 (=1 x CLASS x GOV HOSP PROV 1993	221139	288376
	(0.866059)	(1.20392)
F-stat (zero slopes)	22.5235	21.2104
Chow (all coefficients)	7.309276	4.731861
Chow (intercept)	0.6501639	0.5227026
Chow (all slopes)	8.721063	5.467798
R-squared	0.428827	0.508986
No. of Observation	137	137

** and * mean significant at the 5 and 10 percent levels, respectively.

of the intercept, fail to reject the hypothesis of structural break between 1991 and 1993. Hence, it is likely that the devolution has induced a different spending behavior on the part of the cities and municipalities.

As determinants of the share of health to total expenditures, IRA and the number of provincial hospitals (GOV HOSP LOCAL) in the locality do fairly well. However, it is probably truer in the case of the cities than of the municipalities. The inclusion of city dummy and number of city hospitals in Model 1 of Table 10a and in Model 2 of Table 10b takes away the explanatory power of IRA and government hospitals in the locality. Cities have higher shares of health expenditures. However, it is likely that cities reduced by as much as 10 percentage points their shares of health expenditures in 1993. It is found that an additional city hospital could increase the share by nearly 4 percentage points. The effects of the interaction variable and the number of provincial hospitals elsewhere in the province do not have any significant effect on the share of health. The hypothesis of structural break cannot also be rejected in this case.

Table 10a - Determinants of Share of Health Expenditures to Total Expenditures (Municipalities, 1991 and 1993; OLS Estimates)

Variable	Model 1	Model 2
CONSTANT	-.371906 (-.508944)	.100874 (.150981)
D1 (=1x CONSTANT 1993)	7.78253 (7.55253)**	7.26673 (7.72720)**
BLOCK GRANT (IRA)	.624149E-07 (4.27029)**	-.485689E-08 (.294983)
D2 (=1x IRAT 1993)	-.773177E-07 (-5.03190)**	.870585E-09 (.050017)
GOV HOSP (LOCAL)	1.88519 (2.99866)**	.090558 (.144439)
D3 (=1x GHOSP LOCAL 1993)	-1.75788 (-1.95663)*	.644996 (.733293)
GOV HOSP (PROV)	.103773 (1.24226)	.064893 (.849718)
D4 (1x GHOSP PROV 1993)	.046703 (.395394)	.084689 (.784455)
DUMCITY (=1 CITY)		6.50680 (5.48833)**
D5 (=1x DUMCITY 1993)		-10.1549 (-5.89300)**
CITY HOSP		3.80687 (2.40614)**
D6 (=1x CITY HOSP 1993)		-2.91405 (-1.30010)
F-stat (zero slopes)	39.7581	36.3303
Chow (all coefficients)	66.89308	62.47538
Chow (intercept)	57.04066	59.70963
Chow (all slopes)	7.393347	15.86364
R-squared	0.505730	0.598582
No. of observations	137	137

** and * mean significant at the 5 and 10 percent levels, respectively.

Table 10b - Determinants of Share of Health Expenditures to Total Expenditures (Municipalities, 1991 and 1993; OLS Estimates)

Variable	Model 3	Model 4
CONSTANT	-0.244907 (-0.313672)	0.122918 (0.172134)
D1 (=1 x CONSTANT 1993)	7.40756 (6.73050)**	7.05691 (7.02033)**
BLOCK GRANT (IRA)	0.621711E-07 (4.24366)**	-0.483087E-08 (-0.292586)
D2 (=1 x IRA 1993)	-0.768649E-07 (-4.99049)	0.773166E-00 (0.044297)
GOV HOSP (LOCAL)	1.87132 (2.96823)**	0.089958 (0.143097)
D3 (=1 x GOV HOSP LOCAL 1993)	-1.72516 (-1.91540)*	0.646643 (0.733211)
GOV HOSP (PROVINCE)	0.030621 (0.172562)	0.52146 (0.321458)
D4 (=1 x GOV HOSP PROV 1993)	0.264263 (1.05353)	0.206807 (0.901685)
DUMCITY (=1 CITY)	(5.44306)**	6.49711
D5 (=1 x CITY 1993)	(-5.79739)**	-10.0580
CITY HOSP	(2.40133)	3.81366
D6 (=1 x CITY HOSP 1993)	(-1.32462)	-2.98034
CLASS x GOV HOSP PROV	0.065846 (0.467489)	0.011457 (0.089132)
D7 (=1 x CLASS x GOV HOSP PROV 1993)	-0.195970 (-0.983825)	-0.109794 (-0.603996)
F-stat (zero slopes)	30.9366	30.6253
Chow (all coefficient)	53.52482	53.32119
Chow (intercept)	45.29962	49.28508
Chow (all slopes)	9.604091	13.20114
R-squared	0.507685	0.599475
No. of Observation	137	137

** and * mean significant at the 5 and 10 percent levels, respectively.

As shown in Tables 11a, 11b and 12, net health expenditures are found to be positively correlated with IRA, city dummy, city hospital and number of provincial hospitals within and outside the locality (but still within the province). However, the IRA dummy (D2) and city dummy (D5) seem to indicate that the correlation, although still positive, might have been lower in 1993. As in the previous tables, the inclusion of the interaction term dilutes the positive effect of the presence of provincial hospitals on the regressand. What is particularly disturbing is the positive and significant effect of the number of government hospitals in the rest of the province on the regressand. Perhaps it includes other effects that are not captured by the interaction variable used. Consistent with previous results of the Chow test, the devolution has induced changes in the behavior of the LGUs.

6. Concluding Remarks

Based on the estimates presented above, several things can be said about the impact of devolution on local health expenditures. In the case of the province on the one hand, there is weak evidence regarding the disincentive effect of the presence of DOH-retained hospitals on local health spending.[8] Also, the negative effect of devolved hospitals in other provinces on local spending is likely to be true for provinces which have absorbed many hospitals. This seems to indicate that provinces which absorbed a disproportionate number of hospitals are likely the ones to be the place of residence of cross-border users. That is, inequities in the devolution of the function of the central government tend to generate inefficiencies at the local level. Lastly, increases in IRA shares seem to dampen local health spending. This suggests that categorical grants, rather than open grants, are the better way of promoting health service delivery under the devolution.

In the case of municipalities on the other hand, there seems to be a complete structural break in the responses of municipalities to changes in the ownership and management of government hospi-

[8] Perhaps the presence or the number of retained facilities in the locality is a poor measure of the spatial bias of DOH programs under the devolution. Total expenditures of DOH-retained hospitals may be a better instrument.

Table 11a - Determinants of Net Health Expenditures (Municipalities: 1991 and 1993; OLS Estimates)

Variable	Model 1	Model 2
CONSTANT	-.2664421E+07 (-2.76818)**	.213222E+07 (2.40640)**
D1 (=1 x CONSTANT 1993)	-376817. (-.277647)	-549948. (.440960)
BLOCK GRANT (IRA)	.149975 (7.79073)**	.085675 (3.92362)**
D2 (1x IRAT 1993)	-.129461 (-6.39708)**	.077148 (3.34218)**
GOV HOSP (LOCAL)	.231780E+07 (2.79923)**	600184. (.721831)
D3 (1x GOV HOSP LOCAL 1993)	-.108559E+07 (-.917438)	65519.2 (.056167)
GOV HOSP (PROV)	288960. (2.62636)**	241015. (2.37967)**
D4 (=1x GOV HOSP PROV 1993)	64825.2 (.416694)	60226.8 (.420654)
DUMCITY (=1 CITY)	(3.59013)**	.564473E+07
D5 (=1xDUMCITY 1993)	(1.83137)	-.418525E+07
CITY HOSP	(2.68754)**	.563907E+07
D6 (=1xCITY HOSP 1993)	(1.07419)	.319307E+07
F-stat (zero slopes)	18.9338	19.6418
Chow (all coefficients)	14.29969	6.064923
Chow (intercept)	0.7708770E-01	0.1944454
Chow (all slopes)	9.609770	6.330409
R-squared	0.327626	0.446350
No. of Observation	137	137

** and * mean significant at the 5 and 10 percent levels, respectively.

Table 11b - Determinants of Net Health Expenditures (Municipalities, 1991 and 1993; OLS Estimates)

Variable	Model 1	Model 2
CONSTANT	-0.270068E+07 (-2.70928)**	-0.249131E+07 (-263545)**
D1 (=1 x CONSTANT 1993)	-376380 (-0.276824)	1589.05 (0.119414E-02)
BLOCK GRANT (IRA)	0.150045 (7.77785)**	0.085251 (3.90035)**
D2 (=1 x IRAT 1993)	-0.129501 (-6.38692)**	-0.076651 (-3.31738)**
GOV HOSP (LOCAL)	0.232179E++07 (2.79744)**	609952 (0.732926)
D3 (=1 x GOV HOSP LOCAL 1993)	-0.108684E+07 -0.916810	54677.8 (0.046833)
GOV HOSP (PROV)	309968 (1.69631)*	448653 (2.08924)**
D4 (=1 x GOV HOSP PROV 1993)	64802.4 (0.415796)	-259498 (-0.854670)
DUMCITY (=1 CITY)	(3.67209)**	0.580250E+07
D5 (=1 x DUMCITY 1993)	(-1.929990)*	-0.443240E+07
CITY HOSP	(2.62955)**	0.552836E+07
D6 (=1 x CITY HOSP 1993)	(1.12967)	0.336474E+07
CLASS x GOV HOSP PROV	-18909.8 (0.144143)	-186634 (-1.09678)
D7 (=1 X GLASS X GOV HOSP PROV 1993)		287412 (1.19436)
F-stat (zero slopes)	16.5100	16.7119
Chow (all coefficients)	11.36065	5.38664
Chow (intercept)	0.8570813	0.1426971E-05
Chow (all slopes)	12.19748	5.497120
R-squared	0.327677	0.449565
No. of Observation	137	137

** and * mean significant at the 5 and 10 percent levels, respectively.

Table 12 - Determinants of Net Health Expenditures (Municipality, 1993; Probit Estimates)

Variables	Model 1	Model 2	Model 3	Model 4
CONSTANT	-.479041 (-1.75211)*	-.426695 (-1.51522)	-.247906 (-.849381)	-.192775 (-.634908)
BLOCK GRANT (IRA)	.128589E-08 (.790281)	-.235510E-08 (-.948207)	.112844E-08 (.686051)	-.215374E-08 (-.887915)
GOV HOSP (LOCAL)	.234061 (.998882)	.028795 (.112799)	.220006 (.922717)	.019161 (.073319)
GOV HOSP (PROV)	-.022656 (-.702648)	-.028669 (-.849598)	-.177472 (-2.20711)**	-.179020 (-2.15708)**
DUMCITY (=1 CITY)		1.01413 (2.04848)**		.917530 (1.84046)*
CITY HOSP		.414623 (.653057)		.527967 (.809506)
CLASS x GOV HOSP PROV		.139816 (2.09447)**	.134206 (1.98189)**	
PERCENT CORRECT PREDICTIONS	0.678571	0.728571	0.671429	0.728571
R-squared	0.184058E-01	0.721016E-01	0.465046E-01	0.94614E-01
No. of observations	137	137	137	137

** and * mean significant at the 5 and 10 percent levels, respectively.

tals as evidenced by the Chow tests performed on the regression coefficients. Again, the evidence on hypothesized negative locational bias of government hospitals on local health spending is weak. Also, the (weak) evidence suggests that municipalities in the more affluent provinces tend to attract cross-border users from the less affluent areas. IRA shares seem to have a significant positive effect on the health expenditures of municipalities and cities.

Cities in general are found to spend more on health than municipalities on the margin. However, the differential is observed to increase at a decreasing rate in 1993. City hospitals are also good determinants of health expenditures. Since the cities did not absorb any hospital from the central government, devolution did not induce any significant change in the effect of city hospitals on health outlays.

The findings suggest possible policy reforms. A matching grant system may be more effective in securing higher health expenditures from the provinces than from the municipalities. This calls for strengthening of the Comprehensive Health Care Agreement (CHCA), which is forged between the LGUs and the DOH. Since the CHCA is a form of matching grant, provinces are locked into promoting DOH programs. However, an open grant (e.g., IRA) to municipalities seems to be more appropriate. Since health expenditures increase with IRA, the open grant avoids the rigidities of the CHCA.

The CHCA can also be designed to facilitate cost-sharing among LGUs. The maintenance of local facilities frequented by cross-border users and control of interjurisdictional spillovers should be the joint responsibility of the affected LGUs. The CHCA can be reformulated to include a variable part that is a counterpart funding from the DOH for every peso raised through cost sharing among municipalities. It can also be an opportunity for the DOH to contract, negotiate, enforce and make good its commitments to announced health programs.

With respect to retained hospitals, there seems to be a need to strengthen networking with local hospitals. To avoid crowding out local health expenditures, retained hospitals should focus more on complementary services or service differentiation. The viability

and desirability of using different schedules of user charges based on proximity to the retained facility to insure equal access must also be explored. Furthermore, by taking note of the pattern of cross-border use, retained hospitals located in urban or regional centers can also help in decongesting local facilities in these areas.

To make the results more conclusive, better data are needed. A more recent set of panel data for the same LGUs will enable us to eliminate transitory adjustments and take advantage of panel data estimation techniques which seem more appropriate for this type of study. Also, better measures of hospital and non-hospital health expenditures, income class, population, health status indicators, patient loads (by residence), tax and expenditure variables and consistent regional-level price indices will help minimize correlation among the regressors.

References

Campos-Outcalt, D. et al. (1994), *Decentralization of Health Services in Western Highlands Province, Papua New Guinea.* World Bank. Mimeo.

Case, A. C., H. S. Rosen and J. R. Hines (1993), "Budget Spillovers and Fiscal Policy Interdependence," *Journal of Public Economics,* 52, 285-307.

Devolution Factbook (1994), UPecon-Health Policy Development Program. Mimeo.

Inman, R. P. (1979), The Fiscal Performance of Local Governments: An Interpretative Review, in P. Mieszkowski and M. Straszheim, eds., *Current Issues in Urban Economics*, John Hopkins, Baltimore, 270-321.

Taguiwalo, M. et al. (1994), *Managing Health Care Under the Devolution: Problems, Issues and Prospects.* UPecon-Health Policy Development Program. Mimeo.

Wildasin, D. (1986), *Urban Public Finance.* London: Harwood Academic Publishers.

Winkler, D. (1993), *The Design and Administration of Intergovernmental Transfers.* World Bank.

World Bank, (1993), *Philippine Devolution and Health Services: Managing Risks and Opportunities.*

World Bank, (1994), *Colombia: Toward Increased Efficiency and Equity in the Health Sector. Can Decentralization Help?*