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## Perks and public provisions: Effects of yardstick competition on local government fiscal behavior in the Philippines

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by

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# **Perks and public provisions: Effects of yardstick competition on local government fiscal behavior in the Philippines \***

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## **Abstract**

Using a panel dataset from cities and municipalities in the Philippines in 2001, 2004 and 2007, we investigate whether yardstick competition – measured here as the average spending and revenues of surrounding jurisdictions in the same province – influence local government fiscal decisions. For local governments with incumbents facing effective term limits, the effects the yardstick variables are generally nil. For those with incumbents who are eligible for another term, the average total expenditures of surrounding jurisdictions seem to influence the LGU to re-allocate its budget for social and economic services that directly benefit the constituents towards overhead outlays that benefit more the office holders. Local revenue mobilization is stimulated by greater revenue mobilization and dampened by higher average spending in other localities. Central fiscal transfers increase outlays for overheads and for social and economic services. These suggests that while the particular yardstick variables use here may have induced reactions from local governments, the resulting changes in fiscal decisions may not have necessarily improved the constituents' welfare. What seems necessary is comparison on those public provisions that promote welfare rather than just total expenditures or revenues per se.

*Key words:* Local government spending, yardstick competition, Philippines

*JEL Codes:* H72, I18, H4

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## 1. INTRODUCTION

To paraphrase Keefer and Khemani (2003, 2004), why are the poor, who often constitute the majority of voters in developing countries, still not adequately served by their local governments despite decentralization? Many reasons have been advanced for the failure of decentralization, including mismatches in the devolution of functions and fiscal resources, poor local capacity to deliver services or absorb the additional resources, and weaknesses in electoral and accountability institutions (see, for example, Bird and Vaillancourt, 1998; Bardhan and Mookherjee, 2006; Bardhan, 2002). As Keefer and Khemani argued, the latter reasons render incredible the campaign promises of politicians, who then take advantage of the voters' inadequate knowledge or information about the quality or cost of public services to appropriate rents in office or dispense favors to clients or targeted groups. Yet, while voters are not fully informed, they rationally seek or absorb any new information in choosing their political leaders. Whether through the usual mass media or the public dissemination of satisfaction surveys, the improved access to information has induced improvements in public service delivery (e.g., Paul, 1998; Reinikka and Svensson, 2003; Ravindra, 2004; Deininger and Mpuga, 2005). Arguably, one readily available information to the local voters with which to assess the performance of their leader is that of surrounding jurisdictions where the conditions are more or less the same.

Since Besley and Case (1995b), evidence of the effect yardstick competition on local government decisions have been found in other countries (Revelli and Tovmo, 2007; Rincke, 2009; Allers and Elhorst, 2005). While the general results point to the positive impact of relative performance assessment of surrounding local governments, Revelli (2005) also raised the possibility that previous findings are unable to identify the effects of yardstick

competition from other forms of local government interactions. For examples, local revenues may adjust to changes in the taxes in other localities not because local voters compel their leaders to do so, but because investors or entrepreneurs select the more favorable investment site.

Here, we investigate whether yardstick competition has influenced local government fiscal behaviors in the Philippines in the years 2001, 2004 and 2007. The issue is especially pertinent in the Philippines given the wide divergence in regional growth and local government performance in the last twenty years of decentralization (Manasan and Chatterjee, 2003; Manasan, 2007; Silva, 2005; Llanto, 2012). Despite the devolution of more expenditure functions and greater shares in the internal tax revenues as mandated under the Local Government Code of 1991, many local governments are still found wanting in their delivery of basic services (Azfar et. al, 2000). While several notable jurisdictions are found innovative (Galing Pook Foundation, 2006), the general observation is that the innovations are slow to spread, with the multitude of localities lagging behind (Capuno, 2007). While the weaknesses in the design and implementation of the decentralization program led to some adjustment problems in the earlier years of decentralization, the persistently uneven performance of local governments is now ascribed to weaknesses in governance institutions. Some have argued that the decentralization further entrenched the local political elites in their control of local governments in the country (Lacaba, 1995; Hutchcroft and Rocamora, 2003; Querubin, 2011). Most notably, the political clans -- family members who successively or simultaneously occupy local elective offices - continue to dominate despite the mandatory establishment of several local consultative bodies, shorter term limits for elected officials, and the institutionalization of a system of recall that enable the constituents

to remove from office any official in whom they have lost confidence. These local leaders are able to maintain their incumbency through patronage politics, which possibly aggravated by the incremental fiscal resources under decentralization. It should be noted as well though that the new generation of political clan members are also relatively more progressive than their forebears, while several equally progressive new leaders have been elected to offices as well (Coronel et al., 2004).

Since 1991, there have been greater access to mass media and other information sources due to liberal government policies and developments in information and communication technology. Local government data are now in the internet, posted up in the websites of local governments, national government agencies, non-government organizations and other mass media companies. Since 1991, more than 30 performance monitoring systems for local governments have been introduced in the Philippines (Capuno, 2007). Several of these indicators systems are used as basis for bestowing awards or recognitions or for determining grants or aids. While it is not possible to identify the voters with information access, we make the initial attempt here to ascertain the possible impact of the availability information on local government performance.

Using a panel dataset from cities and municipalities in the Philippines in 2001, 2004 and 2007, we investigate whether yardstick competition – measured here as the average spending and revenues of surrounding jurisdictions – influence the pattern of spending for local public services that directly benefit the constituents and for overhead services that benefit office holders and bureaucrats more, and of the mobilization of revenues from local sources. We proceed to establish the relations between yardstick competition and local government fiscal decisions using a two-period model of an incumbent political agent

presented in section 2. Then, in section 3, we describe our estimation strategy and the details of the panel dataset. Briefly, the estimation results shown in section 4 suggest that local governments adjust to their neighbors spending by increasing their overhead outlays, but without necessarily increasing their total expenditures. To account for this seemingly odd result, we discuss the possible reasons and the policy implications in the last section.

## 2. A MODEL OF INCUMBENT BEHAVIOR

Following political agency models of electoral accountability (e.g., Barro, 1973; Ferejohn, 1986; Rogoff, 1990; Persson and Tabellini, 2002; Persson, Roland and Tabellini, 1997), we present in this section a two-period model of an incumbent local chief executive (city or municipal mayor) who desires to stay in office to appropriate rents or enjoy the perks of office. The local chief executive (LCE) makes fiscal decisions affecting the welfare of the voters through the provision of local public goods and the collection of local taxes. The local government uses its tax revenues and fiscal transfers from the central government to finance its expenditures. A part of the local government budget goes to overhead expenditures like new municipal halls, more vehicles and additional support staff that benefit more the office holders than the local constituents. It is assumed that the incumbent LCE effectively determines the budget allocations because she knows the true cost of public provisions, which the voters can only imperfectly infer it from the observed fiscal decisions. Modelling local fiscal decisions from the point of view of the incumbent seems appropriate in the case of the Philippines where mayors and governors, due to weaknesses in governance institutions, effectively control the local government (Lacaba, 1995; Sidel, 1997)

The LCE can take advantage of the information asymmetry because institutional weaknesses render any campaign promise for efficient spending not credible. Following the literature on yardstick competition (e.g, Besley and Case, 1995b; Bordignon, Cerniglia and Revelli, 2004; Revelli, 2005), assume that the uninformed, but rational voters employ performance yardsticks to curb unnecessary public spending. In deciding to re-elect the incumbent LCE, voters assess their LCE's performance relative to that of a previous incumbent or to those in the neighboring jurisdictions. Through yardstick competition, the incumbent is thus motivated to improve her performance to secure more rents in her succeeding term in office. Her motivation for doing so, however, is reduced on her last term when the possibility of future rents is nil. (Besley and Case, 1995a, 1995b)

Consider then an incumbent LCE who makes a fiscal decision in the first period to improve her chances of getting re-elected for another term, which is going to be her last. Let  $U_t$  be the incumbent's utility from office in period  $t$ ,  $t=1, 2$ . Further, assume that she derives positive but diminishing marginal utility from rents (or ego-rents),  $R$ , while in office. Her total utility is then the sum of her utility in the first period and the discounted value of her expected utility in the second period. That is,

$$U = U_1(R_1) + \delta\pi U_2(R_2), \quad (1)$$

where  $\delta$  is her discount factor,  $\pi$  is the probability of re-election and  $0 \leq \delta, \pi \leq 1$ . An incumbent who already faces a term in the first period may be specified as somebody who totally discounts the future (i.e.,  $\delta=0$ ).

In period  $t$ , the incumbent faces the following local government budget constraint,

$$I_t + T_t = pG_t + R_t, \quad (2)$$



where  $I$  is a given amount of central fiscal transfers,  $T$  is local tax revenues,  $G$  is a local public good,  $p$  is the unit price of the local public good, and  $R$  is amount of fiscal resources used for the incumbent's rents in office. In each period, the central fiscal transfers are assumed to be strictly positive, while the amount of local revenues, public goods and rents are each assumed to be non negative (i.e.,  $I_t > 0, T_t \geq 0, G_t \geq 0, R_t \geq 0$ ). The local tax revenues ( $T$ ) comprise the lump-sum taxes ( $\tau$ ) imposed on each of the  $N$  citizen-voters in the locality.

A representative voter derives utility from  $G$  and a private good  $X$ . To maximize his utility, he allocates his given income ( $y$ ) net of lump-sum taxes ( $\tau$ ) on the private good, whose unit price is set to one. While a voter may want a higher  $G$  for a given  $\tau$  he remits or a lower  $\tau$  for the level of  $G$  provided, he has only an imperfect information about  $p$ , which gives the incumbent the opportunity to increase  $R$ . To counter the overspending on  $R$ , assume that voters use the fiscal performance of the  $J$  neighboring jurisdictions as a benchmark when they decide to re-elect the incumbent. Specifically, they use the average tax rates ( $\tau^0$ ) and public provisions ( $G^0$ ) of the other LGUs, where

$$\tau^0 = \sum_{j=1}^J \tau_j / J, \quad G^0 = \sum_{j=1}^J G_j / J, \quad \text{where } j \neq i.$$

These benchmarks and the fiscal budget constraint (2) together determine the maximum rents that the incumbent can appropriate in the first period. Assume that the total cost of providing  $G^0$ , given  $\tau^0$  and  $I$ , is affordable in each period, i.e.,  $I_t + T^0 - pG^0 \geq 0$ , where  $T^0 = N\tau^0$ . To provide the incentive for seeking another term, let the incumbent's total utility over two periods exceed that of the maximum rents possible in the first period. That is, for  $0 < \delta \leq 1$ ,

$$U_1(I_1 + T^0 - pG^0) + \delta \pi U_2(I_2 + T_2) > U_1(I_1 + T_1). \quad (3)$$

To secure the second-period rents, she has to be re-elected first by providing  $G$  at minimal taxes to voters. Let the relationship between public provisions and taxes, and the probability of re-election be denoted by the following function:

$$\pi = \pi(G, \tau, G^0, \tau^0), \quad 0 \leq \pi \leq 1, \quad \pi_G > 0, \quad \pi_\tau < 0, \pi_{G^0} < 0, \pi_{\tau^0} > 0. \quad (4)$$

In words, the chances of the incumbent of getting re-elected improve with greater provisions of local public goods or with reductions in local taxes, other things held constant. However, she cannot just provide any  $G$  or collect any  $t$ ; she has to be mindful as well of the neighboring jurisdictions' average fiscal performance. Other things constant, her chances to another term in office falls when the other jurisdictions have better public good provisions or tax rates.<sup>1</sup>

Given all the assumptions, the incumbent chooses the optimal level of  $G$  and  $\tau$  to maximize her utility, given the fiscal budget constraint (2) and the benchmarks  $G^0$  and  $\tau^0$ . In the second period, after which she is not allowed to run for the same office anymore, the incumbent will maximize her rents by providing a minimum  $G$  (possibly zero) and imposing the maximum  $\tau$ . Hence, her choice problem reduces to

$$\text{Max}_{\{G, \tau\}} U = U_1(I_1 + T_1 - pG_1) + \delta\pi(G_1, \tau_1; G^0, \tau^0)U_2(I_2 + T_2). \quad (5)$$

The necessary conditions for a maximum are:

$$U'_{G_1} = U'_{1G_1}(-p) + \pi'_{G_1} \delta U_2 = 0$$

$$U'_{\tau_1} = U'_{1\tau_1}(N) + \pi'_{\tau_1} \delta U_2 = 0,$$

The first equation implies that in equilibrium, the incumbent will be willing provide additional level of local public goods and obtain a lower amount of first-period rent so long as the additional local public services increases her chances to another term in office, and therefore

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<sup>1</sup> We assume further that the  $\pi_{GG} > 0$ ,  $\pi_{\tau\tau} < 0$  and  $\pi_{G\tau} = \pi_{\tau G} < 0$ .

the expected value of her second-period rents. The second equation says that in equilibrium, the incumbent will be increasing the tax rate up to the level where her incremental first-period rent offsets the possible reduction in the expected value of the second-period rent due to the adverse effect of the incremental taxes on her the probability of re-election.

Let the solution to these equations be the following pair of functions  $G^*$  and  $\tau^*$ , respectively:

$$G^* = G(G^0, \tau^0, \delta, I_1, I_2, p, N), \quad (6')$$

$$\tau^* = \tau(G^0, \tau^0, \delta, I_1, I_2, p, N). \quad (6'')$$

Depending on the value of the discount factor, model yields two sets of testable hypothesis regarding the effect of yardstick competition on local provision and revenue mobilization. In the first case where  $\delta=0$ , the incumbent will simply maximize her first-period rent by setting  $\tau$  to the possible maximum value and  $G$  to the possible minimum value.<sup>2</sup> Consequently, she will not be influenced by the fiscal decisions of the other LCEs, i.e.,

$$\frac{\partial G^*}{\partial G^0} = 0, \frac{\partial \tau^*}{\partial G^0} = 0, \frac{\partial G^*}{\partial \tau^0} = 0, \frac{\partial \tau^*}{\partial \tau^0} = 0.$$

In the other case where  $\delta>0$ , then the LCE will have an incentive to adjust  $\tau^*$ ,  $G^*$  or both with changes in  $G^0$  or  $\tau^0$ , so long as her probability of re-election sufficiently improves. To illustrate, assume  $dG^0>0$ . Substitute  $G^*$  and  $\tau^*$  in the first-order conditions and then differentiate the resulting pair of equations with respect to  $G^0$  to get,

$$-pU''_{GG} \left[ N \frac{\partial \tau}{\partial G^0} - p \frac{\partial G}{\partial G^0} \right] dG^0 + \delta U_2 \pi''_{GG} \left[ \frac{\partial G}{\partial G^0} + \frac{\partial \tau}{\partial G^0} \right] dG^0 = 0,$$

$$NU''_{\tau G} \left[ N \frac{\partial \tau}{\partial G^0} - p \frac{\partial G}{\partial G^0} \right] dG^0 + \delta U_2 \pi''_{G\tau} \left[ \frac{\partial G}{\partial G^0} + \frac{\partial \tau}{\partial G^0} \right] dG^0 = 0$$

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<sup>2</sup> In reality, the minimum  $G$  and maximum  $\tau$  are institutionally set. For example, the LCE cannot appropriate for herself all of the local government budget without facing administrative or legal sanctions.

Given the assumptions about the shape of the utility functions and the probability of election functions, these sufficiency conditions can yield any of the following pairs that denote optimal the local reactions to changes in yardstick competition ( $dG^0 > 0$ ):

$$\begin{aligned} \partial\tau/\partial G^0 &> 0 \text{ and } \partial G/\partial G^0 > 0, \\ \partial\tau/\partial G^0 &= 0 \text{ and } \partial G/\partial G^0 > 0, \\ \partial\tau/\partial G^0 &> 0 \text{ and } \partial G/\partial G^0 = 0. \end{aligned}$$

Similar results can be obtained with  $d\tau^0 > 0$ . It is clear from these comparative static results that the value of the discount factor is critical in determining the effects of yardstick competition.

The other testable hypotheses are as follows. Other things being constant, the  $G^*$  increases an increase in the first-period or second-period central fiscal transfers (i.e.,  $G_{I_1} > 0, G_{I_2} > 0$ ), or a decrease in the price of public good ( $G_p < 0$ ). Also other things being constant, the  $\tau^*$  grows with reductions in the first-period or second-period central fiscal transfers (i.e.,  $\tau_{I_1} < 0, \tau_{I_2} < 0$ ), or an increase in the price of public good ( $\tau_p > 0$ ). Finally, an increase in the size of the constituency ( $N$ ) will increase  $G^*$  (a congestible good) and, thereby, also  $\tau^*$ .

#### 4. DATA AND EMPIRICAL MODEL

##### 4.1 Empirical model

To determine the effect of yardstick competition and other factors that influence local government spending and revenue mobilization, we estimate equations (6') and (6'') using the following regression equations:

$$G_{it} = \alpha_0 + \alpha_1 G_{it}^0 + \alpha_2 T_{it}^0 + (G_{it}^0 \times D_{it})' \alpha_3 + (T_{it}^0 \times D_{it})' \alpha_4 + D_{it}' \alpha_5 + I_{it}' \alpha_6 + P_{it}' \alpha_7 + N_{it}' \alpha_8 + Y_{it}' \alpha_9 + e_{it},$$

$$T_{it} = \beta_0 + \beta_1 G_{it}^0 + \beta_2 T_{it}^0 + (G_{it}^0 \times D_{it})' \beta_3 + (T_{it}^0 \times D_{it})' \beta_4 + D_{it}' \beta_5 + I_{it}' \beta_6 + P_{it}' \beta_7 + N_{it}' \beta_8 + Y_{it}' \beta_9 + v_{it},$$

where  $G_{it}$  and  $T_{it}$  are the total expenditures and total local revenues, respectively, of the  $i$ th LGU (city or municipality) in the  $t$ th year. The two yardstick variables are  $G^0$  and  $T^0$ , which are defined respectively as the average total expenditures and the average total local revenues of all other local governments in the province.

Each yardstick variable is interacted with the vector  $D$ , which includes two proxy variables for the incumbent's discount factor. The first proxy variable indicates whether an LCE has reached term limit on the  $t$ th year and, therefore, has a lower discount factor than an incumbent who can still run for another term. In the Philippines, however, the legal term limits may not have the same effects on the incumbent who belong to a political dynasty whose members normally succeed each other in the same elective position. Arguably, members of political dynasties have longer political horizons and therefore are likely to have higher discount factors.

The vector  $I$  includes the central fiscal transfers and a special health insurance subsidy from the national government instituted in 2004 and from other public and private sponsors. The subsidy comprises the premium payments for the insurance coverage of the indigent families enrolled in the country's social health insurance program.

To account for the differences in the price of local public provisions, we included in the vector  $P$  dummy variables for component cities and high urbanized, independent cities. Relative to municipalities, the cities, and especially the highly dense urban areas, generally have higher costs of living. To control for the size and wealth of the local tax base, the vector  $N$  includes dummy variables for the type and the income class of the local government. Finally, we account for the panel structure of the data with vector  $Y$  that includes dummy variables for the years 2004 and 2007.

The  $\alpha$ 's and  $\beta$ 's, with the bold letters as vectors, are regression coefficients. The error terms  $e$  and  $v$  represent the unobservable factors which may influence  $G$  and  $T$ , respectively. With the assumption that  $e$  and  $v$  are normally distributed, i.e.,  $cov(G, v)=0$  and  $cov(T, e)=0$ , and that the two regression equations have the same set of independent variables, we then estimate equations (6') and (6'') separately using panel data estimation methods.

## 4.2 Variables

Table 1 contains the list of regression variables used and their definitions. The dependent variable  $G$  is measured with *total expenditures net of general public services*, which is the local government's total spending on social, economic and other services<sup>3</sup> that have direct impact on local welfare. It excludes the outlays on general public services which for overhead services like offices of the mayor, legislative council, assessor, budget and treasury, planning and development, civil registrar, and other centralized services. Since these are overhead spending, we use *general public services* as our measure of the rents or perks of office.<sup>4</sup> Both types of public spending are expressed in real per capita term (in 2001 prices). As the other main dependent variable, *local revenues* is defined here as the LGU's revenues from local sources such as real property taxes, regulatory fees, rentals, and service charges, extraordinary receipts, borrowings and inter-local transfers, also in real per capita term.

[Insert Table 1 here.]

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<sup>3</sup>Specifically, social services include health, education, social welfare, housing, labor and employment, economic services encompass local public infrastructures, agriculture, trade and industry, economic enterprises, and other services include payment of debts and other purposes.

<sup>4</sup> According to Manasan (2003), general public services accounted for an average of about 40 percent of total expenditures of all local governments in the country during the periods 1985-91 and 1993-2000. According to more recent data from the Bureau of Local Government Finance, the percentage share of general public services in the total municipal spending in each year has risen from 57 in 2001 to 65 in 2010. For cities, the percentage share has likewise risen from about 41 to 58 over the same decade.

The two yardstick variables are *yardstick\_total expenditures* and *yardstick\_local revenues*. Respectively, these variables are the average total expenditures and average local revenues, both in real per capita terms, of other cities and municipalities in the province where the reference LGU belongs geographically.<sup>5</sup> We interact each of these yardstick variable with our two proxies for discount factors – *last term* and *dynasty* – to identify the yardstick competition effect from the effects of tax competition and other possible inter-LGU interactions (Revelli, 2005).

Arguably, a mayor who is approaching her terminal term would have a discount factor approaching zero. We capture this notion with the dummy variable *last term* to indicate if the mayor is on her third consecutive term in office, which is the maximum number of terms for the same office under Philippine laws. However, the same mayor can run again for the same office after a break of only one term. In the interim, the ex-mayor's kin – spouse, son or daughter, brother or sister – usually succeeds her as the LCE. Other clan members may also occupy, either simultaneously or successively, other local elective positions in the province (Rivera, 1999; Coronel et al., 2004; de Dios, 2005). Arguably, members of these so-called political dynasties may have longer time horizon and therefore higher discount factor than non-members. The incumbent's membership in local political families is indicated with the dummy variable *dynasty*.

Apparently due to some legal or administrative loopholes, a few incumbents are able to stay as LCEs for longer than nine consecutive years. We identified these mayors with a dummy

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<sup>5</sup> A city or municipality may be administratively independent of the provincial government, although it may be geographically within the provincial boundaries.

variable *extended term*.<sup>6</sup> Presumably, those serving beyond the normal term limit are aware of their unusual situation and thus are unlikely to rule for longer.

The LGU's fiscal revenues from external sources are captured by the variable *fiscal transfers*, which includes the shares in the national government's internal tax revenues and proceeds from the sale or development of minerals and other natural resources located in the jurisdiction.<sup>7</sup> To account for the effective health insurance subsidy to the LGU, we included *non-LGU SP coverage rate* defined as the proportion of poor families in the locality that are enrolled in the country's social health insurance program unilaterally by the national government, national legislative officials and private sponsors. The unilateral enrolment of the poor families is effectively a subsidy since LGUs are effectively relieved of their responsibilities under the National Health Insurance Act of 1995 to enrol the same group in the so-called Sponsored Program (SP) of national health insurance program.<sup>8</sup>

In the absence of direct measures for the price of local public goods, we assume that the cost of public provision is higher in cities because of higher input costs and that additional resources (e.g., information campaigns, public appearances) are necessary to make spending creditable to the local incumbent, given the more impersonal relationship between the mayor and the voters in cities. Further, we adopt here the Philippine classification of cities, namely *component city* and *highly urbanized independent city*. The former refers to cities whose constituents vote for the city mayor and the provincial governor. Since, a component city is also

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<sup>6</sup> For example, the mayor of the town of Mabalacat in the province of Pampanga effectively served a third term when his election was nullified after a protracted legal proceeding. But since technically he lost the last election, he was allowed to run again for the fourth consecutive time, in which he won and in the two other succeeding elections.

<sup>7</sup> As measured here, *fiscal transfers* in a period is also a good proxy for the next period's transfers since most LGUs are heavily dependent on the internal revenue allotments, which are based on fixed formula and distributed periodically and automatically to LGUs (Guevara, 2000).

<sup>8</sup> Under the so-called Plan GMA, the national government enrolled five million families in 2004, and then 2.5 million each year from 2005 until 2006. (Manasan, 2011)



under the administrative control of the provincial government, it shares its real property tax revenues with the and, in return, received some public services from the same. The city classification refers to the so-called highly urbanized LGUs and independent cities that are administratively and fiscally independent of any provincial government. Instead, they are under the direct supervision of the national government.

To account for the differences in the local tax bases, we grouped the LGUs based on the official income classification. Specifically, we denote an LGU as *middle income class* if it belongs to the 3rd or 4th income class or *low income class* if instead it belongs to the 5th or 6th income class. The LGUs in these two broad income classes have relatively poorer local economies than those in the 1st or 2nd income classes. Finally, we introduced dummy variables for the years 2004 and 2007 to control for the unobserved time-varying factors that affected local spending and revenue mobilization.

#### 4.3 Specification tests

For each of the three dependent variables – *total expenditures net of general public services*, *general public services*, and *local revenues* – we run three alternative panel-data regression models. The base model (Model 1) shows the independent effects of the two yardstick variables. In addition to the independent effects of the yardstick variables, Model 2 and Model 3 also show whether their effects vary when the incumbent is on her last term or belong to a political dynasty. The last two specifications allows us to identify the yardstick competition apart from the effects of other possible LGU interactions.

We controlled for other possible unobserved, time-invariant factors using fixed-effects panel data model. We verified using Hausman tests the appropriateness of the fixed-effects model (relative to the random-effect model) in the specification for the *G* and *T* equations.

#### 4.4 Data

We use a panel data from 1,513 municipalities and cities nationwide, representing around 93 percent of all sub-provincial LGUs<sup>9</sup> in the country and for the election years 2001, 2004 and 2007.

We obtained our data from secondary data sources, all government agencies. Specifically, we culled our local government fiscal data from the Bureau of Local Government Finance and the Commission on Audit, the income and local government classification from the Department of Interior and Local Government, and the population and price data from the National Statistical Coordination Board and National Statistics Office. Data on the number of families enrolled by the national government and other public and private sponsors (i.e., excluding the city and municipal governments) are taken from the Philippine Health Insurance Corporation. Political variables including indicators of political dynasties were created from data obtained from the Commission on Elections.

#### 4.5 Descriptive statistics

Table 2 shows the descriptive statistics of the regression variables. The average total expenditures net of general public services is about 4.26 pesos, while the average general public services is about 44 centavos more. The average amount of revenues from local taxes, fees and charges was 1.66 pesos per capita, while about eight pesos per capita was received as transfers from the national government, largely as unconditional block grants. As a measure of external support, an average of 53 percent of the poor population was covered under Sponsored Program of the Philippine Health Insurance Corporation through the initiative of the national government, legislative officials and private entities.

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<sup>9</sup> Our samples exclude the local governments in the Autonomous Region of Muslim Mindanao, which has a different governance structure, and a few other LGUs with missing data.

The mean total expenditures and local revenues of the LGU's neighboring local governments within the same province are 9.33 pesos per capita and 1.73 pesos per capita, respectively. Their respective standard deviations are wide: 5.83 and 1.91 pesos . These figures suggest that the average LGU is likelier to adjust to its neighbors than it having a strongly influence on the fiscal performance of its neighbors.

On the average, about a quarter of all incumbent mayors were on their third consecutive term or belong to political dynasties, while around one percent of them were on extended term (i.e., in office beyond the third consecutive term).

Only around one percent are highly urbanized LGUs or independent cities, while around two percent are component cities. Nearly half of the LGUs are classified as middle income class (3rd or 4th income class), while close to a third are classified as low income class (5th or 6th income class). The 4327 samples of LGUs are roughly evenly divided across the years 2001, 2004 and 2007.

[Insert Table 2 here.]

## 5. RESULTS

### 5.1 Total expenditures net of general public services

Table 3 shows the regression results for the outlays on social, economic and other public services that directly affect the constituents' welfare, our main measure of local public goods (*G*). Interestingly, the LGU's spending for such public goods decreases by about two to three centavos for each additional peso expenditure of the neighboring jurisdictions. While this may suggest benefit spillovers from the neighbors' own service provisions, what could actually happening is that the neighbors' expenditures provides the LGU to channel public funds from

local public goods towards general public services, as will be seen in the next section. In general, the average local revenues of LGUs do not have statistically significant effects, except when interacted with dynasty, where the effect now negative and statistically significant. This suggests that dynasty members are less influenced by relative performance.

Each of the variables last term, extended term or dynasty does not appear to have statistically significant independent effects. The variables component city, middle income class and low income class also do not have statistically significant coefficient estimates. However, the LGU's social and economic spending appears to be lower by about 1.50 to 1.83 pesos in highly urbanized areas or independent cities, and by around 32 centavos in year 2004.

Further, a peso increase fiscal transfers stimulate spending on social, economic and other public services by around 55 centavos. The spending on such services also rises by around 25 centavos for each percentage increase in the non-LGU SP coverage rate.

In the lower half of Table 3, the models explain about 66 percent of the observed variations in total expenditures net of public services. The Hausman test results indicate that the fixed -effect model to be the correct specification.

[Insert Table 3 here.]

## 5.2 General public services

Table 4 shows the regression estimates for general public services, our principal measure of rents or perks of office. Interestingly, the two yardstick variables also have positive and statistically significant direct effects. In particular, a peso increase in the average total expenditures of the surrounding LGUs induces a two-centavo increase in general public services, but the marginal effect is lower in places where the incumbent mayor in on third consecutive

term. Also, an additional in the average local revenues of the neighboring LGUs induces nearly a 10-centavo increase in general public services.

The variable last term also seem to have its direct negative effect on outlays for general public services. In particular, its effect is to lower by such spending nearly eight centavos. Moreover, it confounds the effects of yardstick competition. In particular, the effects on general public services of the average total expenditures and the average local revenues of other LGUS are negative and positive, respectively, in LGUs with last-term incumbents.

The variable dynasty does not appear to have its own direct, independent effect on general public services. However, LCEs on extended term seem to spend more by around 30 centavos. Seemingly, these mayors are maximizing their perks in office since they are unlikely to continually avoid the legal and administrative restrictions on terms of office.

Further, general public services rise by around 41 centavos for each additional peso of fiscal transfers from the national government. However, these overhead spending do not appear sensitive to city or income class designation, or with the proportion of poor families extended health insurance coverage by the national government and other sponsors. Relative to 2001, general public services are lower by around 24 centavos in 2004, but not significantly different in 2007.

The overall  $R^2$  is around 84 percent. In this case, the fixed-effects model also appear appropriate.

[Insert Table 4 here.]

### 5.3 Local revenues

Table 6 shows the regression results for local revenues. In this case, local revenues fall by nearly three centavos for each peso increase in the average spending of the surrounding

LGUs. In contrast, local revenues do not particularly sensitive to changes in the average local revenues of the surrounding LGUs per se. But as shown under Model 3, there is some evidence though that yardstick\_local revenues, when interacted with dynasty, has negative and statistical effect. This again suggests that members of political dynasties neither appear threatened nor motivated by the performance by other mayors. However, neither dynasty, last term nor extended term alone has statistically significant impact on local revenues.

Surprisingly, a peso increase fiscal transfers stimulate a 20-centavo increment in local revenues. The positive relationship is more likely to be a correlation than causal since the largest component of central fiscal transfers, the internal revenue allotment, and local taxes, fees and charges are effectively both based on population and land area.<sup>10</sup>

A percentage point increase in non-LGU SP coverage rate stimulates local revenue mobilization by as much as 33 centavos. Presumably, the extra revenues are use to fund greater expenditures on social, economic and other local public services induced by the expanded health insurance coverage of the poor by the national government and other sponsors (as shown in Table 3).

Compared to municipalities, component cities and highly urbanized LGUs collect less local taxes (in real per capita terms) by as much as 71 centavos and 2.76 pesos, respectively. However, local revenues do not appear to significantly different across LGU income classifications. As in the previous tables, the dummy for year 2004 is found to have negative and statistically significant coefficients (-0.43).

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<sup>10</sup> In another set of regressions, the other major component of fiscal transfers - shares in the proceeds of sale of minerals and natural resources, which are not based on the size of the local population or land area - is found to have a negative, albeit not statistically significant, effects on local revenues. The regression results are not shown here, but are available upon request from the authors.

In this case, the overall  $R^2$  is only about 0.04, although the  $F$ -statistic test indicates that the regressors are jointly different from zero. As in the previous cases, the specification tests reveal the fixed-effects model to be appropriate. For model 3 in Table 5, however, we used the Sargan-Hansen test for overidentifying restriction (Schaffer and Stillman, 2010). The  $p$ -value indicates a failure to reject the null hypothesis, which effectively means that the fixed-effects model is the correct specification.

[Insert Table 5 here.]

#### 5.4 Marginal effects of yardstick variables

In contrast to results shown in Tables 3-5, Table 6 shows the full marginal effects (i.e., own and interaction effects) of the yardstick variable on each of the three dependent variables for two cases. Corresponding to the case where the incumbent is on her last term and does not belong to a political dynasty (hence, a discount factor near zero), the results in the top half of Table 6 indicate that the yardstick variables generally have no effect, which suggest that incumbents with low discount factors are not much influenced by comparisons with other incumbent mayors. Interestingly, `yardstick_total` expenditures has negative and statistically significant effects on local revenues (in model 2), while `yardstick_local` revenues have positive effects on general public services (in model 2) and the opposite effects on total expenditures net of general public services.

Corresponding to the case where the incumbent can still run for the same office and belongs to a political dynasty (hence, a positive and high discount factor), the results in the bottom half of Table 6 show greater sensitivity to yardstick competition. In particular, general public services seem to vary positively with either yardstick measure. Moreover, local revenues and total expenditures net of public services vary negatively with the average total expenditures

of the surrounding jurisdictions. What seems to be happening is that while local revenues falls with the average expenditures of the other LGUs, the LGU in turn also reduces its total expenditures for social and economic services and then channel freed up resources to general public services.

[Insert Table 6 here.]

## 6. DISCUSSION AND CONCLUSION

To recapitulate, we find some significant, policy-relevant observations about the effects of yardstick competition on local government fiscal decisions in the Philippines. In particular, the main effect of the changes in the mean expenditures of the surrounding jurisdictions is to re-allocate LGU budget for social and economic services and towards overhead spending that do not have direct impact on constituents' welfare. As it were, local government's justify their construction of new or bigger office buildings by pointing out the new or bigger edifices in the neighboring jurisdictions. Since these perks are financed from reduced outlays on public services, the LCEs could be minimizing the burden on their constituents by collecting less local taxes, which could explain the negative effect of the mean expenditures of neighboring LGUs on local revenue mobilization. More importantly, the influence of yardstick competition depends on the incumbent's term.

While an end-term mayor is expected to behave differently from another that can still run for the same office, membership in political dynasty encourages the incumbent to take a longer term view of her fiscal decisions while in office. However, the results the incumbents who dynasty members are perhaps less sensitive to increases in their neighbors' average expenditures when they budget for social, economic and other services. This could mean that dynasty



members feel politically secure either because political dynasties effectively function like political parties with their own election machineries (De Dios 2007), or that the presence of political dynasty could signal elite capture (Solon, Fabella and Capuno 2009; Rivera 1999). In contrast, the mayors who are on extended terms have higher general public services, which indicate that they must be enjoying the perks while in office.

Fiscal transfers stimulate higher spending for both local public services and general public services. However, these transfers also appear to stimulate local revenue mobilization, but only because they have the same tax base.<sup>11</sup>

To conclude, local governments seem to adjust to their neighbors' fiscal performance, but they all seem to adjust their spending towards greater perks in office. While this may seem odd, it follows as well from the assumption of voters' incomplete information or understanding of fiscal decisionmaking. While local public services have better welfare impact, expenditures on them are less verifiable than outlays for municipal halls and central offices. To an incumbent LCE, therefore, spending on general public services, besides their direct utility to her, are a more visible form of accounting for the public funds. The LCE may also find it easier to justify such spending when practiced as well in other localities. The policy challenge then is to introduce and institutionalize sharper yardstick measures that also promote provision of local public services, rather than just spending or revenue mobilization.

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<sup>11</sup> A similar positive correlation between the internal revenue allotment (IRA) and municipal local business taxes and real property taxes reported in Manasan (2003).

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**Table 1. Variable Definitions**

Variable	Definition
Total expenditures net of general public services	Total expenditures of the local government net expenditures on general public services, per capita (in 2001 prices)
General public services	Expenditures on general public services, per capita (in 2001 prices)
Local revenues	Total revenues from local sources including real property taxes, fees and charges, borrowings, extraordinary receipts and inter-local transfers, per capita (in 2001 prices)
Yardstick_total expenditures	Average total expenditures per capita of all other cities and municipalities in the province, in 2001 prices
Yardstick_local revenues	The average local revenues per capita of all other cities and municipalities in the province, in 2001 prices
Last term	=1 if incumbent mayor is on his/her third consecutive term in office, 0 otherwise
Extended term	=1 if incumbent mayor is over his/her third consecutive term in office, 0 otherwise
Dynasty	= 1 if incumbent mayor is related by blood or marriage to a previous or current mayor, governor or member of Congress, in the same province, 0 otherwise
Yardstick_total expenditures_Last term	Interaction of total expenditures and last term
Yardstick_local revenues_Last term	Interaction of local revenues and last term
Yardstick_total expenditures_Dynasty	Interaction of total expenditures and dynasty
Yardstick_local revenues_Dynasty	Interaction of local revenues and dynasty
Fiscal transfers	Total internal revenue allotment and shares in national wealth received from the national government, per capita (in 2001 pesos)
Non-LGU SP coverage rate	Proportion of poor families enrolled by the national government, national legislative officials and private sponsors in the PhilHealth Sponsored Program
Highly urbanized independent city	=1 if classified as a highly urbanized city or independent component city, 0 otherwise
Component city	=1 if classified as a component city of a province, 0 otherwise
Middle income class	=1 if 3rd or fourth income class LGU, 0 otherwise
Low income class	=1 of 5th or 6th income class LGU, 0 otherwise
Year 2004	=1 if year is 2004, 0 otherwise
Year 2007	=1 if year is 2007, 0 otherwise

**Table 2. Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
Total expenditures net of general public services	4327	4.26	4.64	0.03	185.62
General public services	4327	4.70	4.30	0.29	123.97
Local revenues	4327	1.66	3.44	0.00	81.87
Yardstick_total expenditures	4327	9.33	5.83	4.14	67.49
Yardstick_local revenues	4327	1.73	1.91	0.25	22.63
Last term	4327	0.24	0.43	0.00	1.00
Extended term	4327	0.01	0.10	0.00	1.00
Dynasty	4327	0.24	0.43	0.00	1.00
Yardstick_total expenditures_Last term	4327	2.33	5.16	0.00	67.36
Yardstick_local revenues_Last term	4327	0.45	1.30	0.00	22.63
Yardstick_total expenditures_Dynasty	4327	2.27	4.71	0.00	67.35
Yardstick_local revenues_Dynasty	4327	0.41	1.16	0.00	22.15
Fiscal transfers	4327	7.98	8.07	1.11	307.49
Non-LGU SP coverage rate	4327	0.53	0.99	0.00	33.90
Highly urbanized independent city	4327	0.01	0.09	0.00	1.00
Component city	4327	0.02	0.13	0.00	1.00
Middle income class	4327	0.48	0.50	0.00	1.00
Low income class	4327	0.31	0.46	0.00	1.00
Year 2004	4327	0.35	0.48	0.00	1.00
Year 2007	4327	0.33	0.47	0.00	1.00

**Table 3. Panel data regressions of total expenditures net of general public services**

Independent Variables	Model 1		Model 2		Model 3	
	Coefficient	Robust Standard Error	Coefficient	Robust Standard Error	Coefficient	Robust Standard Error
Yardstick_total expenditures	-0.023*	0.012	-0.0246*	0.013	-0.029**	0.013
Yardstick_local revenues	-0.1045	0.09	-0.0621	0.076	-0.0941	0.089
Yardstick_total expenditures_ Last term			0.0034	0.014		
Yardstick_local revenues_ Last term			-0.0953	0.088		
Yardstick_total expenditures_ Dynasty					0.043	0.03
Yardstick_local revenues_ Dynasty					-0.1148*	0.06
Last term	-0.028	0.053	0.1098	0.167	-0.0284	0.053
Extended term	-0.321	0.226	-0.346	0.228	-0.3406	0.242
Dynasty	0.0913	0.104	0.0923	0.104	-0.1065	0.24
Fiscal transfers	0.548***	0.026	0.5479***	0.026	0.5472***	0.026
Non-LGU SP coverage rate	0.2475***	0.068	0.2487***	0.069	0.2508***	0.068
Highly urbanized independent city	-1.6931**	0.696	-1.8339***	0.634	-1.5295**	0.709
Component city	0.0012	0.320	0.0062	0.32	-0.0146	0.319
Middle income class	0.127	0.109	0.1327	0.109	0.1242	0.11
Low income class	0.1993	0.184	0.2078	0.184	0.1967	0.183
Year 2004	-0.3128***	0.106	-0.3279***	0.103	-0.3114***	0.106
Year 2007	-0.081	0.135	-0.0953	0.131	-0.0768	0.137
Constant	0.1635	0.297	0.1129	0.289	0.2037	0.296
No. of observations	4327		4327		4327	
<i>R</i> -squared: within	0.8027		0.8033		0.8034	
Between	0.5519		0.5531		0.5514	
Overall	0.6647		0.6659		0.6645	
<i>F</i> -statistic	103.53		89.82		90.71	
Prob> <i>F</i>	0.00		0.00		0.00	
Fixed Effects (LGU) Hausman test ( $H_0$ : Random effects)	YES		YES		YES	
Chi-squared stat.	829.43		1018.24		878.77	
Prob>chi-squared	0.00		0.00		0.00	

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$



**Table 4. Panel data regressions of general public services**

Independent Variables	Model 1		Model 2		Model 3	
	Coefficient	Robust Standard Error	Coefficient	Robust Standard Error	Coefficient	Robust Standard Error
Yardstick_total expenditures	0.0193**	0.008	0.0257***	0.009	0.0214**	0.009
Yardstick_local revenues	0.0984*	0.057	0.0703	0.058	0.0946*	0.056
Yardstick_total expenditures_ Last term			-0.0173*	0.01		
Yardstick_local revenues_ Last term			0.0699**	0.036		
Yardstick_total expenditures_ Dynasty					-0.0174	0.022
Yardstick_local revenues_ Dynasty					-0.0786	0.058
Last term	-0.0806**	0.039	-0.0411	0.089	-0.0811**	0.039
Extended term	0.2721	0.174	0.3136*	0.175	0.2874*	0.173
Dynasty	0.0023	0.085	0.003	0.084	0.3047	0.191
Fiscal transfers	0.4096***	0.014	0.4088***	0.014	0.4095***	0.014
Non-LGU SP coverage rate	-0.017	0.068	-0.0189	0.067	-0.0153	0.068
Highly urbanized independent city	-0.3163	0.336	-0.2318	0.295	-0.2189	0.288
Component city	-0.1446	0.235	-0.1482	0.235	-0.1534	0.236
Middle income class	0.0865	0.096	0.0833	0.096	0.0884	0.096
Low income class	0.1972	0.125	0.1917	0.125	0.196	0.125
Year 2004	-0.2462***	0.076	-0.2398***	0.076	-0.2375***	0.077
Year 2007	-0.0823	0.075	-0.0793	0.074	-0.0599	0.076
Constant	1.1184***	0.194	1.1128***	0.196	1.0925***	0.2
No. of observations	4327		4327		4327	
<i>R</i> -squared: within	0.7747		0.7754		0.7753	
Between	0.8392		0.8395		0.8371	
Overall	0.8354		0.8357		0.8343	
<i>F</i> -statistic	486.82		409.26		434.09	
Prob> <i>F</i>	0.00		0.00		0.00	
Fixed Effects (LGU) Hausman test ( $H_0$ : Random effects)	YES		YES		YES	
Chi-squared stat.	192.74		243.15		198.71	
Prob>chi-squared	0.00		0.00		0.00	

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Table 5. Panel data regressions of local revenues**

Independent Variables	Model 1		Model 2		Model 3	
	Coefficient	Robust Standard Error	Coefficient	Robust Standard Error	Coefficient	Robust Standard Error
Yardstick_total expenditures	-0.0253***	0.007	-0.0267***	0.008	-0.0287***	0.007
Yardstick_local revenues	0.0079	0.088	0.0125	0.071	0.0135	0.086
Yardstick_total expenditures_ Last term			0.0036	0.009		
Yardstick_local revenues_ Last term			-0.0118	0.078		
Yardstick_total expenditures_ Dynasty					0.0219	0.02
Yardstick_local revenues_ Dynasty					-0.1432**	0.067
Last term	0.0114	0.049	-0.002	0.143	0.0107	0.049
Extended term	0.0138	0.133	0.0057	0.133	0.0088	0.129
Dynasty	0.0798	0.095	0.0796	0.095	0.1295	0.187
Fiscal transfers	0.1984***	0.026	0.1986***	0.026	0.1977***	0.026
Non-LGU SP coverage rate	0.324***	0.105	0.3244***	0.105	0.3278***	0.105
Highly urbanized independent city	-2.7444***	0.681	-2.7578***	0.628	-2.5502***	0.661
Component city	-0.6873***	0.242	-0.6867***	0.243	-0.7057***	0.241
Middle income class	-0.0486	0.099	-0.0481	0.099	-0.0494	0.099
Low income class	-0.0766	0.176	-0.0756	0.176	-0.0794	0.176
Year 2004	-0.4354***	0.132	-0.4363***	0.129	-0.4285***	0.131
Year 2007	-0.0794	0.129	-0.0796	0.124	-0.061	0.129
Constant	0.3717	0.247	0.3747	0.235	0.3856	0.247
No. of observations	4327		4327		4327	
<i>R</i> -squared: within	0.5282		0.5283		0.5306	
between	0.0000		0.0000		0.0003	
overall	0.0369		0.0370		0.0323	
<i>F</i> -statistic	27.01		25.11		24.63	
Prob> <i>F</i>	0.00		0.00		0.00	
Fixed Effects (LGU) Hausman test (H <sub>0</sub> : Random effects)	YES		YES		YES	
Chi-squared statistic	617.65		763.23		701.98 <sup>a</sup>	
Prob.chi-squared	0.00		0.00		0.00	

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ <sup>a</sup> Test of overidentifying restriction: Sargan-Hansen statistic.

**Table 6. Marginal effects of yardstick\_total expenditures and yardstick\_local revenues**

Yardstick variable	Total expenditures net of general public services	General public services	Local revenues
Case 1: Last term = 1, dynasty = 0			
A. Model 2			
Yardstick_total expenditures	-0.0212 (0.0153)	0.0084 (0.0101)	-0.0230*** (0.0084)
Yardstick_local revenues	-0.1574 (0.1201)	0.1402** (0.0631)	0.0007 (0.1200)
B. Model 3			
Yardstick_total expenditures	0.0140 (0.0314)	0.0039 (0.0208)	-0.0068 (0.0187)
Yardstick_local revenues	-0.2090* (0.1160)	0.0160 (0.0776)	-0.1297 (0.1105)
Case 2: Last term = 0, dynasty = 1			
A. Model 2			
Yardstick_total expenditures	-0.0246 (0.0126)	0.0257*** (0.0090)	-0.0268*** (0.0077)
Yardstick_local revenues	-0.0621 (0.0761)	0.0703 (0.0577)	0.0125 (0.0712)
B. Model 3			
Yardstick_total expenditures	-0.0290** (0.0126)	0.0214** (0.0092)	-0.0287*** (0.0070)
Yardstick_local revenues	-0.0941 (0.0891)	0.0946* (0.0565)	0.0135 (0.0864)

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Figures in parentheses are robust standard errors.