THE IMPACT OF COUNTY GOVERNMENT REFORM ON EXPENDITURE: A New Approach

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Abstract: Even though there have been previous studies to explore the relationship between county government form and expenditure, little attention has been paid to the selection problem that might arise when counties choose their government structures to meet their needs. This paper intends to fill this gap in the literature by estimating the effect of county government reform on expenditure with the selection problem corrected. In contrast to the results in previous studies, the reform of county government structure is found to have decreased the size of expenditure in the reformed counties.

Key Words: County government reform, Public expenditure, Selection problem

1. INTRODUCTION

During the past several decades, we have witnessed significant changes in the government form of US counties. A large number of counties have abandoned the traditional form of government, the commission form, either for the commission-administrator or for the council-executive form even though the commission form is still dominant. The commission form has an elected county commission or a board of supervisions. The commission has legislative authority as well as executive and administrative authority.

By contrast, in the commission-administrator form the county council or board, as the legislative body, appoints a county manager who performs executive functions,

such as appointing department heads, hiring county staffs, administering county programs, drafting budgets, and proposing ordinances. The council-executive form of county government has two independently elected bodies: the county board or commission and the county executive. The former, as the legislative body, has legislative authority, but the latter may veto ordinances enacted by the commission, with the commission having override power by an extraordinary majority vote.

The main reasons for the change in the county government form seem to be dual: insufficient own revenue (Benton, 2003) and the spiraling costs of state-mandated programs (Salant, 1991). These two factors urged the US counties to adopt a new form of government, assuming that the modernization of government form might bring more efficient and more effective delivery of services. A basic question arises at this point on whether or not the reorganization of county government structure has generated the expected effect. Several previous studies have tried to answer this question by looking at the empirical data in the past (Benton, 2002; 2003; DeSantis and Renner, 1994; Morgan and Kickham, 1999; Schneider and Park, 1989).

Even though previous studies have found significant relationships between county government reform and size of expenditure, they ignored an important aspect of the selection decision for reform by counties. Since the counties adopting a new form of government might have had a higher level of expenditure, this selection should have been considered in estimating the effect of the reform on government expenditure.

This paper estimates the effect of county government reform on the size of per capita expenditure with the selection problem corrected. Endogenizing the selection of county government reform results in unbiased estimates of the effect of county government reform on expenditure. Since no study has treated the selection problem

in the estimation of the impact of county government reform on expenditure, this paper might be a contribution to the literature.

The paper is organized as follows: first, this paper surveys previous studies on the impact of county government reform on the size of public expenditure. It also explains the selection problem and its impact on the estimation of the impact of county government reform on expenditure in detail. Second, this paper specifies empirical models and explains data sources. Third, this paper reports empirical findings and finally it concludes by summing up theoretical implications of the empirical findings.

2. CAN COUNTY GOVERNMENT REFORM AFFECT EXPENDITURE?

Early state constitutions generally conceptualized county government as an arm of the state, leaving the prime responsibility of serving local constituencies to municipalities. By the Civil War, however, counties were assuming more responsibilities. Many states fashioned them into election districts, paving the way for their becoming a significant political unit for party machines. After World War I, the role of counties as units of local government was strengthened because of population growth, suburbanization, and the reform movement.

By World War II, urbanization and reform movements were bringing changes to county government that broadened its role further: changes in organization, more autonomy from the state, a greater number of intergovernmental linkages, more resources and revenues, better political accountability and a cleaner image. These days, the counties perform a growing list of optional services once largely reserved for municipalities. According to Salant (1991), counties play a quadruple role: administrative arm of the state, traditional government, local government, and regional

government.

In the history of county government, the reorganization of county government form has been one of the key issues regarding the reform of county government (Benton, 2002; 2003). The traditional county commission form has been criticized for being too fragmented and incapable of handling the new functional responsibilities and concomitant priority setting of modern county government. The reformers urged shifts from the traditional form to a version of the commission-administrator form or of the council-executive form, implicitly assuming that a newer form of government would resolve or at least alleviate the problems listed above.

Several studies have tried to examine empirically whether or not the reform of county government form had the expected impacts, specifically on the size of government expenditure (Benton, 2002; DeSantis and Renner, 1994; Morgan and Kickham, 1999; Schneider and Park, 1989). Schneider and Park (1989) tested the total, developmental and redistributive per capita expenditures and number of functions performed by 162 counties located in 50 of the largest Metropolitan Statistical Areas (MSAs). Controlling for the effects of region and population size, they concluded that council-executive counties spent the most and performed the most functions among the three basic forms of county government. Commission-administrator counties were the second and the traditional commission counties were the last.

DeSantis and Renner (1994) estimated regression equations with total per capita expenditure as the dependent variable. The sample size used in their study was far greater than that of Schneider and Park (1989), that is 1,295 out of 3,043 counties. They concluded that reformed counties spent more than unreformed counties. Morgan and Kickham (1999) addressed the same issue in a different setting, a time-series

approach. They selected 10 counties (2 commission-administrator and 8 council-executive counties which had reformed their government form between 1979 and 1987).

They also chose 10 control group counties for the analysis that had similar characteristics to the 10 experimental counties, based on similarities in region, population, growth rates, functional responsibilities, percentage of nonwhite, per capita income, and poverty rates. Based on the separate estimation of regression equations for the two groups of counties, they concluded that changes in form of government had virtually no effect on rates of change in county fiscal behavior.

Even though previous studies shed light on the impact of county government form on the size of expenditure, they have inherent statistical limitations. The results drawn in the study by Morgan and Kickham (1999) can hardly be generalized since it used only 20 counties out of the total of 3,043 counties in the United States. In particular, they did not include any counties from two of the fastest growing states (i.e., California and Florida). Any conclusive test of the effect that a change in county government structure may have on county fiscal behavior should consider the role that population growth plays in the increase in citizen service demands and, hence, the size of expenditure (Benton, 2003, 83). The approach taken by DeSantis and Renner (1994) is better in terms of generalization because 162 counties were included in the analysis. Their approach, however, suffers from a statistical drawback, the selection problem.

For ease of exposition, take a simple example. Suppose there are two counties: one has a very high level of expenditure (county 1) and the other has a very low level (county 2). According to the history of county government reform, it is likely that

county 1 restructures its government form to lessen the burden of the high level of expenditure. Let's assume county 1 has actually chosen a new form of government at some point in time, T. After time T, the level of per capita expenditure in county 1 might decrease if the newer form of government brings the expected impact. Suppose that the level of expenditure in county 2 remains the same. If, however, the level of expenditure in county 1 is still above that of county 2 despite county government reform, comparing the levels of expenditure in these two counties cross-sectionally at some point of time after T will result in a wrong conclusion: the change of government form has increased the per capita expenditure.

It is very likely that the selection problem discussed above might have happened in the past. It has been argued in the literature that counties with a high level of expenditure selected a newer form of county government. Indeed, Kim (2001) by estimating a multinomial logit regression model has found that county government reform is affected by the amount of total expenditure, welfare expenditure, median income, and the percentage of non-white citizens.

When the selection decision of reform is influenced by other factors, estimating the effect of reform on the size of expenditure with a single regression equation excluding the selection decision equation results in biased estimates (Greene, 1993). This paper corrects this problem by estimating simultaneously the selection equation and the equation of the effect of government reform on per capita expenditure.

3. METHODS AND DATA

The selection problem explained in the previous section can be resolved in two ways: two-stage method and maximum likelihood estimation (MLE). Heckman's

(1979) two-stage estimation consists of two steps: first, the selection equation of county government reform is estimated with the Probit model; second, the estimate of the probability density function of the standard normal distribution divided by its cumulative distribution function calculated at the first step is included as an independent variable in the regression equation of the effect of reform on the size of expenditure. The two-stage estimation provides unbiased but inefficient estimates (Greene, 1993; Wang, 1995).

The other technique is the MLE. The selection equation and the expenditure equation are simultaneously estimated based on a pre-specified likelihood function. The resulting estimates are both unbiased and efficient (Greene, 1993; Wang, 1995).

While successful at correcting bias in the parameters, the two-stage method has several shortcomings when compared to the MLE (Wang, 1995). These problems include incorrect signs and implausible magnitudes for the estimate of net impact. MLE estimation yields more efficient and robust parameter estimates relative to a two-stage method. In this paper, therefore, estimates are computed with both techniques and compared to each other.

In both estimation techniques discussed above, the selection equation for county government reform needs to be specified first. The amount of total expenditure (TOTEXPEN), total welfare expenditure (WELFARE), median income (MEDINC), the percentage of citizens with at least a bachelor's degree (XBSPLUS), and the percentage of non-whites (XNWHITE) were selected as independent variables influencing county government reform. The dependent variable, REFORM, is coded 1 if a county adopted the commission-administrator or the council-executive form, and 0 otherwise. The selection equation is estimated with the Probit model.

For the estimation of the impact of government reform on expenditure, total expenditure per capita (PEREXPEN) is used as the dependent variable. To disentangle the effect of the other determinants of per capita expenditure from that of government reform (REFORM), other factors should be controlled for. According to the median voter theorem, levels of pubic good provision are determined by the preference of the median voter when the concerned issue is one-dimensional and the utility function is single-peaked. For the purpose of reflecting the median voter's preference for public expenditure, the median income variable (MEDINC) is used with an expectation of a negative sign on it. The median housing value (MEDHV) also needs to be controlled for since a county with expensive housing might face a high level of resistance against public expenditure. The sign of the coefficient on this variable is expected to be negative.

The ethnic compositions of constituents might also influence the level of public expenditure. To control for this effect, the percentage of non-white people (XNWHITE) is included as an independent variable. The estimated coefficient on this variable is expected to be positive. In addition, per capita expenditure will increase with a higher demand for welfare. Therefore, per capita welfare expenditure (PERWEL) should have a positive sign on its coefficient. Another factor concerned with expenditure is the percentage of labor force among the population (XLABORF). If it increases, the demand for welfare will decrease and total expenditure will also decrease. The coefficient on this variable is expected to be negative.

Expenditure in counties might also be affected by federal and state aid to counties since subsidies by the upper level of governments often come with specific mandatory expenditure programs. To control for this type of effect on expenditure, per

capita federal government subsidy (PERFED) and per capita state government subsidy (PERSTAT) are included as independent variables. These variables are expected to have positive signs on their coefficients. The following Table 1 summarizes the definitions and expected signs of the variables used.

<Table 1> around here

Data sources for the variables include *the Census of Government* (1997), *the Census* (1997), and *the Municipal Year Book* (1996). *The Census of Government* (1997) provides revenue and expenditure data of counties such as welfare expenditure, total expenditure, and subsidies from federal and state governments. The data for the demographic variables are obtained from *the Census* (1997). *The Municipal Year Book* (1996) contains information about the government form adopted in each county.

In 1996, there were 2,198 counties in the commission form of government out of a total of 3,043, amounting to 72.2%. Among the others, 369 (12.1%) counties were of the commission-administrator form and 474 (15.6%) were of the council-executive form. The government form in the two remaining counties is not known. It is noteworthy that the commission form is still the dominant form of county government. The descriptive statistics for the variables used in the analysis are reported in Table 2.

<Table 2> around here

4. EMPIRICAL FINDINGS

Table 3 reports the estimation results. Regression equations have been

estimated in three ways: ordinary least square (OLS), two-stage, and maximum likelihood. In the OLS estimation, the selection equation is not included. As the third column in the table shows, the REFORM variable is statistically significant at the .01 level and its sign is positive, implying that the restructuring of county government form has increased per capita expenditure. This result is consistent with those of Benton (2002), DeSantis and Renner (1994), and Schneider and Park (1989). Since the estimated coefficient of the variable is .32, the change of county government form increases per capita expenditure by $320.

<Table 3> around here

The estimation result of the impact of county government reform on expenditure, however, changes when the selection decision is taken into account. The fourth column of Table 3 shows the coefficient estimates with the two-stage estimation method. The signs of coefficients in the selection equation are positive as expected, except for the percentage of citizens with at least a bachelor's degree (XBSPLUS). The estimated coefficients are statistically significant at the .01 level save for XBSPLUS. The variables in the expenditure equation have the expected signs, except for the percentage of labor force among the population (XLABORF).

The estimated coefficients are statistically significant at least at the .05 level, excluding XLABABORF, PERSTAT and REFROM. This result, as discussed above, might have occurred because of inefficiency of the two-stage method (Green, 1993; Wang, 1995). It is well known that Heckman's two-stage estimator is consistent but inefficient. Indeed, inefficient estimators inflate standard errors of the estimated

coefficients. However, it is worth noting that the coefficient on the reform variable (REFORM) is estimated to be negative in contrast to the case of the OLS estimation. Since the magnitude of the coefficient on the reform variable is -.13, the change in county government form may possibly decrease per capita expenditure.

The fifth column in Table 3 reports the estimation results with the maximum likelihood method. The estimated coefficients strengthen the argument that the reform of county government form lowers the level of per capita expenditure. As seen in the table, the coefficient on the reform variable is estimated to be -.26 and statistically significant at the .01 level. This implies that the reform of county government form has reduced per capita expenditure by $260.

Empirical evidence shown up to this point implies that the selection problem is imperative for an accurate estimation of the influence of county government reform on expenditure. In the two-stage and the maximum likelihood methods, the effect of reform on expenditure is estimated to be negative. Therefore, it can be concluded that the reform of county government structure decreases per capita expenditure when the selection problem is simultaneously considered in the estimation. This result contrasts with the findings of previous studies in which the selection problem is ignored.

5. CONCLUSION

In the field of urban service delivery, city governments have dominated research agendas for a long time. County governments have been less researched than suburban cities and much less researched than central cities (Schneider and Park, 1989). Since the late 1980s, however, county governments have attracted attention from the academic community. Among many research issues concerning urban service delivery, several

studies have focused on the effects of county government reform on the size of expenditure.

Some have found a statistically significant relationship between them and others have not. Regardless of their findings, the previous studies suffer from a statistical drawback in their research design that they have ignored the selection problem. The selection problem arises when one estimates the effects of county government reform on the level of expenditure without considering the selection decision of county government form.

This paper corrects the selection problem and re-estimates the effect of county government reform on the size of public expenditure. Using the US county data, the study has found that the reform of county government structure from the traditional one, commission form, to a newer one, commission-administrator or council-executive form, has decreased per capita expenditure in counties. This result is contrary to and more convincing than the findings of previous studies in that the estimated coefficients with the selection problem considered explicitly are unbiased and efficient.

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TABLE 1

DEFINITION AND EXPECTED SIGN OF VARIABLES USED

Variable	Definition	Expected Sign
	Selection Equation	
TOTEXPEN	total expenditure in thousands	+
WELFARE	welfare expenditure in thousands	+
MEDINC	median income in a county	+
XBSPLUS	Percentage of citizens with at least a bachelor's degree	+
XNWHITE	Percentage of citizens whose race is non-white	+
	Expenditure Equation	
MEDINC	median income in a county	-
MEDHV	median housing value in a county	-
XNWHITE	Percentage of citizens whose race is non-white	+
XLABORF	Percentage of labor force among the population	-
PERWEL	per capita welfare expenditure in thousands	+
PERSTAT	per capita subsidy from the state government in thousands	+
PERFED	per capita subsidy from the federal government in thousands	+
REFORM	1 if a county has reformed its government form, 0 otherwise	?

TABLE 2

DESCRIPTIVE STATISTICS

Variable	Mean	Standard Deviation	Minimum	Maximum
REFORM	.28	.45	.00	1.00
TOTEXPEN	70.076.29	329.212.70	161.00	12.64E06
WELFARE	9.586.28	88.189.54	.00	4.095.177.00
MEDINC	23.780.68	6.414.67	8.595.00	59.284.00
XBSPLUS	13.27	6.31	3.69	53.42
XNWHITE	12.39	15.42	.00	94.90
PEREXPEN	.72	1.33	.00	58.32
MEDHV	52.331.05	30.349.00	14.999.00	500.001.00
XLABORF	60.88	6.81	31.97	87.90
PERWEL	6.27E-2	1.13E-1	.00	1.28
PEESTAT	.23	.35	.00	5.17
PERFED	2.00E-2	6.79E-2	.00	2.16

TABLE 3
ESTIMATION RESULTS

Equation	Independent Variable	Model		
		OLS	Two-Stage	Maximum Likelihood
Selection Equation	Constant		-2.68***	-.23***
			(.12)	(.06)
	TOTEXPEN		.65E-6***	-.61E-7
			(.19E-6)	(.67E-6)
	WELFARE		.71E-5***	.10E-5
			(.16E-5)	(.31E-5)
	MEDINC		.73E-4***	.26E-5
			(.57E-5)	(.18E-5)
	XBSPLUS		-.31E-2	.82E-3
			(.53E-2)	(.13E-2)
	XNWHITE		.21E-1***	.13E-2***
			(.17E-2)	(.43E-3)
Expenditure Equation	Constant	-.49**	-.65***	.02
		(.22)	(.24)	(.12)
	MEDINC	.42E-4***	.54E-4***	.10E-4***
		(.72E-5)	(.98E-5)	(.36E-5)
	MEDHV	-.33E-5***	-.30E-5**	-.12E-5**
		(.12E-5)	(.12E-5)	(.56E-6)
	XNWHITE	.10E-1***	.13E-1***	.94E-3
		(.15E-2)	(.24E-5)	(.66E-3)
	XLABORF	.40E-2	.34E-2	-.96E-3
		(.49E-2)	(.49E-2)	(.23E-2)
	PERWEL	.77E-3***	.79E-3***	.27E-3
		(.87E-4)	(.88E-4)	(.31E-3)
	PEESTAT	.13E-2	.13E-2	.11E-2
		(.12E-2)	(.12E-2)	(.20E-2)
	PERFED	1.00***	1.00***	1.00***
		(.15E-2)	(.15E-2)	(.15E-1)
	REFORM	.32***	-.13	-.26***
		(.55E-1)	(.27)	(.75E-1)
	λ		.27*	
			(.16)	
	σ			1.46***
				(.28E-2)
	ρ			.99***
				(.39E-3)
	R^2	.998	.998	
	Log Likelihood			-5514.50

Notes. 1. Standard errors are in parentheses.

2. *, **, *** Statistically significant at the .10, .05, and .01 levels, respectively.

3. $\lambda=\frac{\phi}{\Phi}$.*

4. σ and ρ are the estimate of standard deviation of the error term in the expenditure equation and the correlation coefficient between the error terms of the two equations, respectively.

* ϕ and Φ are the probability density function and the cumulative distribution function of the standard normal distribution, respectively.