REGULAR PAPER
The effect of revenue diversification and form of government on public spending

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Abstract

Purpose – Revenue diversification interacting with form of government that has different management behaviors may produce a variation in the level of public spending. The purpose of this paper is to understand how revenue diversification interacts with form of government in determining the level of public spending.
Design/methodology/approach – A cross-sectional research design with the analysis of interaction effects was employed in order to achieve this research objective. Drawing from the economic and financial management perspectives on revenue diversification, this study proposes the following hypotheses: in the council-manager form, greater revenue diversification leads to less spending; in the mayor-council form, greater revenue diversification leads to more spending; and mayor-council governments with diversified revenues spend more than council-manager governments.
Findings – The regression results support the second and third hypotheses, but not the first hypothesis.
Originality/value – This study offers a robust link between revenue diversification and form of government by examining how their interaction produces a variation in the level of public spending.
Keywords Public spending, Financial management, Fiscal illusion, Form of government,
Revenue diversification
Paper type Research paper

Introduction

Since the Great Recession, the anti-tax mood has limited the implementation of tax increases and public service cuts particularly at the local level (Martin *et al.*, 2012). Local governments have tried to find alternative funding strategies to maintain the current level of public spending and public service quality without raising tax rates and levies (Sosin, 2012). Revenue diversification has been considered one of the important funding strategies for those who try to increase public expenditures for public demands as well as to establish revenue stability for uncertainty and risk (Martin *et al.*, 2012; Carroll, 2009). However, there are mixed perspectives on the role of revenue diversification in determining fiscal outputs. Some scholars criticize revenue diversification as an instrument that results in fiscal illusion to increase public expenditures (Pommerehne and Schneider, 1978; Suyderhoud, 1994; Wagner, 1976). Others argue that revenue diversification is not related to an increase in public expenditures because it is adopted to enhance fiscal performance such as revenue stability (Carroll, 2009; Hendrick, 2002).

To reconcile the two comparative perspectives, this study focuses on the role of form of government. Over time, local government reformers have employed various forms of

government either to improve administrative efficiency or to acquire political leadership in delivering public services (Morgan *et al.*, 2007). The forms of government shape the different management behaviors of city governments that broadly encompass the mayor-council and council-manager forms (Frederickson *et al.*, 2004). Fiscal outputs result from budgetary choices shaped by institutions and structures, and environments in general (Hendrick, 2011); missing in our understanding of the determinants of fiscal outputs is an examination of the interaction between budgetary choices, and institutions and structures in fiscal decision-making. Although this idea may suggest that revenue diversification interacting with form of government that has different management behaviors may produce a variation in the level of public spending, empirical research on this theoretical linkage at the nationwide city level is somewhat limited. This study, therefore, examines the following question:

   RQ1. How does revenue diversification coupled with form of government result in a different level of public spending?

According to the 2014 Government Fiscal Analysis, 2,710 municipalities have had fiscal stress since the Great Recession (Governing, 2014). These municipalities might attempt to use revenue diversification either to create revenue stability or to increase revenues in overcoming fiscal stress. This study is an effort to develop a theory of how budgetary choices combined with political structure relates to fiscal outputs at the city level. This effort can benefit the practitioners who try to achieve fiscal goals in budgetary choices. Furthermore, it can offer scholars empirical evidence that the effect of budgetary choices on fiscal outputs may differ depending on institutions and structures.

   Data from the 2012 International City/County Management Association (ICMA) survey, 2012 Comprehensive Annual Financial Reports (CAFR), and the 2012 American Community Survey (ACS), will be used to answer the research question. The next sections review the literature on the effect of revenue diversification and form of government on public spending, and suggest a theoretical linkage between revenue diversification, form of government, and public spending. The subsequent two sections provide the methodology and findings, respectively and the last section discusses findings and draws conclusions.

Revenue diversification, form of government, and public spending
Economic perspective on revenue diversification and the mayor-council form
Revenue diversification enables governments to implement obscure revenue sources used to increase public expenditures without the resistance of taxpayers (Suyderhoud, 1994). As a means of fiscal illusion, it induces taxpayers to accept a higher level of tax burdens as well as public expenditures by fostering a systematic misconception of actual tax burdens on citizens (Carroll, 2009). Thus, it is reasonable to argue that revenue diversification acts as a revenue generator to expand public expenditures. Wagner (1976) found that US local governments that diversify tax revenues into sales taxes tend to have higher total expenditures. Swiss cities with a higher balance between property, sales, and income taxes tend to spend more than others (Pommerehne and Schneider, 1978). Increasing grants and intergovernmental revenues is also used as a means of revenue diversification. Hendrick (1998) concludes that revenue diversification from grants has a positive impact on general fund expenditures per capita.

   Some economists stay in line with the idea that local governments can use revenue diversification as a fiscal strategy for increasing public expenditures (Suyderhoud, 1994; Wagner, 1976). From the economic perspective, revenue diversification may results in fiscal illusion, which can conceal actual costs of public service provision and revenue burdens by generating diversified revenue structures that lead to a perceived imbalance of taxpayers between tax payments and public service benefits (Pommerehne and Schneider, 1978; Suyderhoud, 1994; Wagner, 1976). For example, taxpayers easily can perceive funding sources of total public service costs under a simple tax structure, wherein they cannot pair

funding sources with total public service costs under diversified tax structures (Wagner, 1976). Thus, taxpayers tend to underestimate their fiscal burdens compared to total public service costs (Pommerehne and Schneider, 1978).

The purpose of the mayor-council form is to maximize representativeness for various political groups (Hendrick, 2002). Hence, mayors carry out government works in response to their political supporters such as stakeholders, interest groups, and citizens (Frederickson *et al.*, 2004; Morgan *et al.*, 2007; Mouritzen and Svara, 2002). Mayor-council governments are more responsive to public demands so that they may have a spending-prone behavior in budgetary decision-making relative to council-manager governments (Booms, 1966). Consequently, some mayors may manipulate economic outputs, and budget and tax policies to satisfy their political supporters (Nordhaus, 1975)[1]. The empirical finding shows that mayor-council governments are more likely to manipulate fiscal policies to increase public expenditure as well as to reduce tax burden for their political supporters than council-manager governments (Strate *et al.*, 1993)[2]. Thus, mayor-council governments may prefer to adopt revenue diversification as being a revenue generator to make a larger scale of public expenditures in carrying out public demands from the public supporters. Based on economic perspective and the management characteristics of the mayor-council form, the first hypothesis is proposed as follows:

H1. In the mayor-council form, greater revenue diversification leads to more spending.

Management perspective on revenue diversification and the council-manager form
From the financial management perspective, revenue diversification is one of the important fiscal decision-making tools to motivate a lower level of public expeniditures. Some fiscal decision-makers claim that revenue diversification is an appropriate funding strategy to establish a stable revenue structure, thereby restraining an increase in public spending (Carroll, 2009; Hendrick, 2002). Revenue stability may allow governments to decide the optimal scale of public programs based on their stable fiscal structure to collect revenue sources, expecting to prevent spillovers of financial resources. Carroll (2005) concludes that revenue diversification is not related to budget maximization at the state level, finding it reduces general expenditures per capita. Further, it is found that local funding strategies reliant on user charges tend to decrease total sewerage expenditures as well as parks and recreation expenditures (Sun and Jung, 2012). The effect of diversified tax structures was found to have a negative impact on local general expenditures (Turnbull, 1998). Revenue diversification may lead to less public spending.

It is argued that some government reformers switched the mayor-council form with the council-manager form, expecting to reduce public expenditures for lower levels of taxing and spending in overcoming fiscal stress caused by urbanization (Booms, 1966). Morgan and Pelissero (1980) argue that fiscal choices of council-manager governments focus on middle-class taxpayers who prefer to reduce public expenditures that actualize the lower level of tax burden. The purpose of the council-manager form is to improve fiscal performance in budgetary decision-making (Frederickson *et al.*, 2004). Council-manager governments are expected to achieve fiscal efficiency by not only minimizing public service costs, but also maximizing public service quality (Nunn, 1996). Most city governments with the council-manager form are typically controlled by non-partisan council members, ensuring that appointed city managers can concentrate more heavily on cost efficiency by insulating decision-making from politics (Morgan and Pelissero, 1980).

Therefore, fiscal choices of council-manager governments are likely to focus on ways to reduce the scale of public expenditures by maintaining revenue stability and fiscal health (Mouritzen and Svara, 2002). For example, some council-managers try to establish a professionally managed bidding and purchasing system in order to prevent unnecessary

costs that may generate fiscal stress (Frederickson *et al.*, 2004). Consequently, the council-manager form may emphasize fiscal policy to reduce public spending. Using the management characteristics of council-manager governments, we have an opportunity to link the relationship between revenue diversification, the council-manager form, and public expenditures. The analysis is theoretically based on the financial management perspective of revenue diversification. Thus, the second hypothesis is addressed as follows:

H2. In the council-manager form, greater revenue diversification leads to less spending.

The existing studies have not reached agreement on the role of revenue diversification. Although many studies have examined the effect of revenue diversification on public spending, little research has been devoted to its interaction with structures and institutions. The following section is intended to reconcile the two perspectives, arguing that the financial management perspective is applicable to revenue diversification interacting with the council-manager form, whereas the economic perspective is attributed to revenue diversification with the mayor-council form in determining the level of public spending.

Reconciliation of the financial management and economic perspectives
This study links revenue diversification, form of government, and public spending because the financial management and economic perspectives do not explain how mayor-council governments resolved a budget dilemma to implement fiscal policies for both an increase in public expenditures and a decrease in tax rates. Meanwhile, Mikesell (1978) addressed a possible strategy that, for political supporters, "political bodies would much prefer to budget out of the expanded revenues provided by an income elastic tax structure, relying on a 'fiscal illusion' to conceal the increased effective rates, but avoiding the necessity of increasing statutory rates" (p. 99). Mayors, as one of the important political bodies, may also increase fees and charges, and intergovernmental revenues and grants to expand public expenditure without increased tax rates (Strate *et al.*, 1993). These studies imply that revenue diversification is an alternative funding strategy for mayors to simultaneously implement increased public expenditure and decreased tax rates.

Consequently, mayors may implement revenue diversification in manipulating fiscal policies to expand public service expenditures without an increase in tax rates. This may not be the case for appointed city managers without political supporters, under the non-partisan political structure, and with professional knowledge insulated from politics. Thus, the effect of revenue diversification on public spending in the council-manager form may be different to the mayor-council form. Drawing from the two perspectives and form of government, this study suggests the following hypothesis for the theoretical linkage between revenue diversification, form of government, and public spending:

H3. Mayor-council governments with diversified revenues spend more than council-manager governments.

Methodology
This research conducts an empirical analysis of US city governments to test the hypotheses. As a major data source, we first collected CAFR (FY 2012) to obtain fiscal information from city governments. The collected information is used to measure revenue diversification at the city level and other fiscal factors. The ICMA 2012 State of the Profession Survey is used as another major data source because it is recognized as the largest nationwide survey data which includes information on form of government. In 2012, the survey was sent to over 5,070 city governments with a population of 2,500 and above, and the response rate was approximately

24.8 percent (International City/County Management Association, 2012a). The data contain information from 1,257 city governments. The information on socioeconomic, political and institutional factors is gained from various sources including the 2012 ICMA survey, the ACS, the 2012-2013 mayoral (re)election data from the US Conference of Mayors (USCM), governmental documents, and the previous literature. Our number of observation is 868 (from 48 states except for Delaware and Hawaii) from which we were able to obtain data from all the sources listed above.

Since this research relies on the data from the ICMA survey and merging multiple sources, there is a concern about the representativeness of the sample cities. Compared to the distribution of cities by the four Census regions and nine divisions reported by the 2012 Census of Government (US Census Bureau, 2012), the selected sample cities are representative as a whole. Only Division 2 (including NJ, NY and PA) in Region 1 and Division 9 (including AK, CA, HI, OR, and WA) in Region 4 are under- and over-represented, respectively. These results are similar to the previous studies that use the ICMA survey as a key source of data (see, e.g. Jimenez, 2013). Cities in Division 2 tend to have the mayor-council form, whereas cities in Division 9, in general, are more likely to be categorized as council-manager form local governments (Jimenez, 2013, 2014). Our research sample may over-represent city governments with the council-manager form[3]. Moreover, in terms of population, our sample cities are generally representative, but somewhat underrepresent relatively larger cities (i.e. population over 100,000). The analytical results of this study, therefore, should be understood in the context of this representativeness issue.

We perform multivariate regression analysis in order to examine the relationship between variables of interest. The following equation is considered for the OLS estimation of regression coefficients:

$$SPD_i = \alpha + \beta_1 \cdot RV_i + \beta_2 \cdot FOG_i + \beta_3 \cdot (RV_i \cdot FOG_i) + C_i + e_i \qquad (1)$$

In the equation, SPD_i is the level of public spending for city i in 2012. Public spending is explained as a function of the level of revenue diversification for city i (RV_i), city i's form of government (FOG_i), an interaction between revenue diversification and form of government ($RV_i \cdot FOG_i$), and a vector for control variables (C_i). e_i is an error term.

The level of city government spending is measured by per capita general fund expenditures for two reasons. First, limiting the scope to general fund expenditures allows us to control the city-by-city variation of other special- or restricted-purpose fund expenditures. That is, we intend to measure the level of city government spending decided through the normal budgeting process and by political representatives or voters in general (Hendrick, 1998; Morgan and Kickham, 1999). City government expenditures for general government operation and some core functions such as public safety, transportation, community development, culture, and recreation or debt service may be included in the calculation (data come from CAFRs). Second, the level of general fund expenditures is measured as a ratio of city population to control for the cross-sectional difference of the total size of tax bases and public service demands. This also can be viewed as an effort to measure the fiscal efficiency of the sample cities (DeSantis and Renner, 1994). Per capita general fund expenditure is transformed into a natural logarithm in order to normalize its skewed distribution (see Stipak, 1991; DeSantis and Renner, 1994).

The level of revenue diversification in each city government is the primary independent variable of interest. In order to capture a variation in revenue diversification at the city level, we use the Herfindahl-Hirschman Index (HHI) that has been often employed in previous studies to measure the extent which a government unit relies on multiple revenue sources

(see, e.g. Carroll, 2009; Hendrick, 2002; Schunk and Porca, 2005; Suyderhoud, 1994)[4]. In this research, the HHI for city government i in 2012 is computed as:

$$\text{HHIi} = \frac{1 - \sum_1^n X_{n,i}^2}{1 - \left(\frac{1}{n}\right)} \qquad (2)$$

where $X_{n,i}^2$ is the share of total general fund revenues from source n.

At the local level, the purposes of revenue diversification are generally to extend tax structures to sales and income taxes as well as to use non-tax sources such as intergovernmental revenues, user charges and fees, fine, and forfeitures and other miscellaneous sources to reduce reliance on the traditional tax source, i.e., property taxes (Cain and Mackenzie, 2008; Park, 2013; Pommerehne and Schneider, 1978; Wagner, 1976; Hendrick, 1998; Carroll and Johnson, 2010; Sun and Jung, 2012). Thus, the index for each city government is calculated using eight different sources of general fund revenues ($n = 8$): property tax, general sales and use tax, other taxes, intergovernmental revenue, charges for service, license and permit revenue, fines and forfeitures, and other miscellaneous revenues (data come from CAFRs). If each source shares the identical portion of general fund revenues, the index equals 1 (i.e. $(1 - 0.125)/0.875 = 1$); on the other hand, the index equals 0 if the general fund is composed of only a single source (i.e. $(1 - 1)/0.875 = 0$). Having a higher level of the HHI denotes that a city government has a more diversified revenue structure than others. Given the two different theoretical approaches to revenue diversification discussed in the previous section, the expected sign of the HHI is mixed.

We use a simple dichotomous classification of form of government in measuring the second key independent variable: the mayor-council and council-manager forms. Some different types of political structure exist at the municipal level (Frederickson *et al.*, 2004). However, it seems to be relevant for us to have a clear-cut separation between two major forms[5] because the major interest of this study is to examine the different fiscal choices of city governments in light of management differences between the forms of government (Campbell and Turnbull, 2003; Coate and Knight, 2011). Mayor-council cities, by definition, have a separation between legislative and executive authority, assigning each of those powers to the council and the elected mayor, respectively. City governments with the mayor-council form may have a chief administrative officer appointed by the mayor and/or the council (Nelson and Svara, 2010). Council-manager cities are served by a manager appointed by the council. In the council-manager form, the mayor is often a member of the council; the mayor and the council share executive and legislative authority (Nelson and Svara, 2012).

The ICMA survey identifies whether city governments have any of three government forms: mayor-council, council-manager, and commission. We presume that the first two categories correspond to the two forms of city government specified above. Cities with the commission form are excluded for three reasons (see Lineberry and Fowler, 1967). First, the commission form generally has no single/separate executive leadership based on citywide representation. Rather, each commissioner is responsible for both legislative and some aspects of executive functions. Second, even though a city with the commission form can have a commissioner designated as an executive leader, such leadership does not have additional authorities or powers compared to other commissioners. These two different but interrelated reasons may not allow us to develop a reliable categorical measure for the form of government variable in terms of either the motivation of executive leaders or their professional management. Third, the data include only a small number of cities with the commission form (21 out of 1,257 city governments). Thus, the use of a binary measure for the commission form may cause a statistical bias in estimating regression models. It should be noted that the exclusion of the commission form has been widely accepted by previous studies (see, e.g. Carr, 2015; Nelson and Svara, 2012). City governments with the

mayor-council form in this study are coded 1, otherwise 0. The expected sign of the form of government variable would be positive given the results of previous studies.

The HHI interacts with the form of government variable to generate the third independent variable of interest. This interaction term is intended to highlight the situation in which mayor-council governments use revenue diversification as budgetary strategies. According to the theoretical discussion in the previous section, the interaction term is expected to be positively associated with the level of city government spending.

We use ten control variables. The first four variables are to capture the demand side of public spending (all data come from the ACS): population, per capita median household income, unemployment rate, and aging population rate. Previous studies commonly suggest that population and median income are important components of expenditure functions because they tend to represent general demands for government service provision and public spending (Alm and Evers, 1991; Coate and Knight, 2011; Deno and Mehay, 1987; Fisher, 1996; Liu and Mikesell, 2014). The unemployment rate, measured by the percentage of population unemployed relative to city's total population (age 16 and over), is used as a proxy of economic condition; high unemployment may cause a higher level of public service demands (Hou, 2003). The percentage of population aged 65 and over is used to reflect additional demands for public spending (Coate and Knight, 2011; Wolf and Amirkhanyan, 2010). Population and per capita median household income are transformed into a natural logarithm due to their distributional skewness. All four of these variables are expected to have positive signs.

We also take six variables into account in terms of the supply side of public spending. Two dummy variables are employed to reflect whether a city includes police and fire protection functions in the general fund or not (data come from CAFRs). A review of previous literature on municipal expenditures implies that police and fire protection are important service categories that can generate significant differences in the structure and size of municipal government expenditures (Deno and Mehay, 1987; Ho, 2011; Morgan and Pelissero, 1980). In addition, we include the level of per capita intergovernmental revenues for the general fund (data come from CAFRs). Some scholars view external aid as an important factor that explains the spending behavior of municipal governments (Fisher, 1982; Turnbull, 1998). Particularly, as the concept of the flypaper effect indicates, "the response of local government expenditures to lump-sum grants has often been greater than the effect of equal increases in the income of residents [the demand of local public goods]" (Bae and Feiock, 2004, p. 580). Based upon previous empirical results, we expect a positive sign for these three variables.

The fourth supply side variable is state-imposed local tax and expenditure limitations (local TELs) (Hur, 2007; Mullins and Wallin, 2004; Poterba and Rueben, 1999). As one intended consequence of limitations, local TELs are considered as effective instruments for limiting budgetary choices of decision-makers and for controlling the size and expenditures of city government. A review of associated literature (Amiel et al., 2009; Mullins and Wallin, 2004) and each state's constitution and statute allows us to identify which cities are subject to state-imposed local TELs. Cities with local TELs are coded 1, otherwise 0; the expected sign is negative.

Lastly, we include two variables to capture the political characteristics of the research sample: political conflict and re-election pressure. If political conflict is interpreted in terms of a dissonance between political representatives' self-interests, it causes inefficient resource allocation and, in doing so, results in a higher level of public spending (Mueller, 2003; Von Hagen, 2002). On the other hand, political conflict can be viewed as competition among governmental actors (Baird and Landon, 1972) and may lead to better performance and lower spending. The ICMA survey asks respondents to evaluate the effectiveness of their decision-making bodies (1: highly effective-5: not effective) in terms of "the speed and ease

with which the members reach consensus, how well they work together, and the degree to which political and personality conflict interfere" (International City/County Management Association, 2012b, p. 3). We use the response to this question as a proxy of the level of political conflict, so the sign may be either positive or negative.

Mayors' re-election incentives have been recognized as one significant driver of increases in spending at the local level (Berry and Berry, 1992; Strate *et al.*, 1993). We collected the mayoral election information (data come from the USCM) and identified whether mayors in sample city governments were running for re-election in 2012 or 2013. Cities with mayors who were reelected or came up for re-election are coded 1, otherwise 0. The expected sign is positive.

Table I summarizes variables, measures, and data sources.

Findings

We present our descriptive statistics in Table II. The average of the natural logarithm of per capita general fund expenditures is 6.508 so that the actual amount of per capita general fund expenditures on average is $767.86. City governments in this study tend to have a

Variable	Measure	Data	Expected sign
DV			
City government spending	Ln (Per capita general fund expenditures)	CAFRs	n/a
IV			
Revenue diversification	The Herfindahl-Hirschman Index (HHI)	CAFRs	+/−
Form of government	The mayor-council form: 1 The council-manager form: 0	ICMA's 2012 State of the Profession Survey	+
Interaction between form of government and revenue diversification	Form of city government × HHI	n/a	+
CV			
Population	Ln (Total population)	ACS	+
Median household income	Ln (Per capita median household income)	ACS	+
Unemployment rate	Population not in labor force/total population (age over 16)	ACS	+
Aging population rate	Population aged over 65 / total population	ACS	+
Police function	Police function in the General Fund: 1; Otherwise: 0	CAFRs	+
Fire function	Fire function in the General Fund: 1; Otherwise: 0	CAFRs	+
Intergovernmental aid	Per capita intergovernmental revenues for the General Fund	CAFRs	+
Local TELs	Cities with local TELs: 1 Otherwise: 0	Amiel *et al.* (2009), Mullins and Wallin (2004), and state constitutions and statutes	−
Political conflict	Survey answer for the effectiveness of their decision-making bodies (5-point Likert scale; 1: highly effective-5: not effective)	ICMA's 2012 State of the Profession Survey	+/−
Re-election pressure	Mayors with re-election motivation in 2012 or 2013: 1; Otherwise: 0	The US Conference of Mayors	+

Table I.
Summary of variables, measures and data

Variable and measure (unit)	Mean	SD	Min.	Max.
Spending: per cap. GF expenditures (ln)	6.508	0.497	4.768	8.423
Revenue diversification: HHI	0.751	0.136	0.253	0.975
Form of government (dummy)	0.273	0.446	0	1
Interaction term				
HHI for 237 mayor-council cities	0.748	0.142	0.285	0.943
HHI for 631 council-manager cities	0.752	0.134	0.253	0.975
Interaction term: form of government × HHI	0.204	0.341	0	0.943
Population (ln)	9.838	1.182	7.538	14.196
Median income: per cap. median household income (ln)	10.858	0.374	9.784	12.362
Unemployment rate (%)	5.617	2.325	0.500	15.400
Aging population rate (%)	13.937	5.533	3.367	54.386
Police function (dummy)	0.974	0.161	0	1
Fire function (dummy)	0.811	0.392	0	1
Intergovernmental aid: per cap. GF intergovernmental revenue ($)	96.401	153.615	0	1,927.348
Local TELs (dummy)	0.819	0.385	0	1
Political conflict	2.219	1.010	1	5
Re-election pressure	0.025	0.157	0	1
n			868	

Table II.
Descriptive
analysis results

diversified structure of revenue sources, with a mean of 0.751. Note that the HHI for 237 mayor-council form cities has a mean of 0.748, while the mean of the HHI for 631 council-manager cities is 0.752. The mean of an interaction between the form of government and revenue diversification variables is 0.204.

We checked the correlation among the variables employed prior to regression analysis. The results show a negative correlation coefficient between form of government and per capita general fund expenditure (ln). This indicates that city governments with the mayor-council form may be likely to have a lower level of public spending than the council-manager form. Some explanatory variables appear to have statistically significant relationships with each other, but coefficients are relatively small ($|\gamma| < 0.4$). The strong correlation between the form of government variable and the interaction term is observed ($\gamma = 0.9$) so we use the mean-centered revenue diversification variable instead of the original one to avoid potential multicollinearity. Mean-centering a variable used in computing the interaction term is often recommended as a way to minimize multicollinearity without altering regression results (Brambor *et al.*, 2006; Jaccard and Turrisi, 2003; Yu, 2000). Using the mean-centered HHI, all correlation coefficients are less than 0.5.

The regression results of our empirical models are presented in Table III. We found no clear evidence of multicollinearity[6] and endogeneity[7]. However, the test results suggested that heteroscedasticity[8] could affect our estimation results, so we ran all regression models with robust standard errors. Overall, the regression models are statistically significant at the 99% confidence level and they explain approximately 21-31 percent of the cross-sectional variation in per capita general fund expenditures. As shown in Table AI, we also ran some supplementary models in order to check the robustness of the analysis results. Constant results are observed across models, so we discuss our findings based on the results presented in Table III.

Model 1 is concerned with the individual effects of the revenue diversification and form of government variables, which have been the primary focus of previous studies. The positive coefficient of the revenue diversification variable appears to be statistically significant. As discussed previously, the association between revenue diversification and public spending has been inconclusive. Our result indicates that revenue diversification may contribute to the level of public spending at the city level. In contrast, the coefficient of form

Variable	Model 1 B (SE)	Model 2 (mayor-council form) B (SE)	Model 3 (council-manager form) B (SE)	Model 4 B (SE)
(Mean-centered) Revenue diversification	0.2713 (0.1192)**	0.6509 (0.2027)***	0.1479 (0.1459)	0.1016 (0.1432)
Form of government	−0.0572 (0.0360)	–	–	−0.0518 (0.0356)
Interaction term	–	–	–	0.5669** (0.2463)
Population (ln)	0.0118 (0.0142)	0.0587 (0.0292)**	0.0033 (0.0161)	0.0147 (0.0142)
Median income (ln)	0.2241 (0.0490)***	0.2816 (0.0983)***	0.2154 (0.0573)***	0.2300 (0.0492)***
Unemployment rate	0.0118 (0.0077)	0.0305 (0.0154)**	0.0078 (0.0084)	0.0131 (0.0077)*
Aging population rate	1.9195 (0.3300)***	1.5520 (0.6284)**	2.1114 (0.3718)***	1.9686 (0.3276)***
Police function	0.2489 (0.1026)**	−0.0447 (0.1709)	0.2989 (0.1105)***	0.2343 (0.1015)**
Fire function	0.1699 (0.0424)***	0.0809 (0.0828)	0.1965 (0.0475)***	0.1751 (0.0420)***
Intergovernmental aid	0.0014 (0.0001)***	0.0012 (0.0003)***	0.0014 (0.0001)***	0.0014 (0.0001)***
Local TELs	−0.0350 (0.0411)	0.0627 (0.0660)	−0.0629 (0.0516)	−0.0286 (0.0411)
Political conflict	−0.0059 (0.0146)	−0.0488 (0.0293)*	0.0097 (0.0169)	−0.0056 (0.0146)
Re-election pressure	0.0635 (0.0671)	−0.0271 (0.0708)	omitted	0.0457 (0.0686)
Constant	3.1677 (0.5804)***	2.4092 (1.1556)	3.2654 (0.6737)***	3.0650 (0.5837)***
Model	$n = 868$; $F = 17.75^{***}$ $R^2 = 0.2723$	$n = 237$; $F = 5.02^{***}$ $R^2 = 0.2149$	$n = 631$; $F = 19.59^{***}$ $R^2 = 0.3135$	$n = 868$; $F = 16.77^{***}$ $R^2 = 0.2771$

Notes: Two-tailed tests. Dependent variable is Ln (per capita general fund expenditures). $*p < 0.10$; $**p < 0.05$; $***p < 0.01$

Table III.
Regression analysis results with robust standard errors

of government in Model 1 has a negative sign, but it is not statistically significant. Although some previous studies have demonstrated the impact of form of government on public spending, our result demonstrates no clear evidence that form of government itself matters in shaping the expenditure behavior of city governments.

The intent of Models 2 and 3 is to examine our first and second hypotheses. The positive and significant coefficient of the HHI variable is observed in Model 2. It tells us that revenue diversification may have a positive impact on per capita general fund expenditure in the absence of the council-manager form, that is, under the mayor-council form. Unlike this finding, the revenue diversification variable has a positive direction in Model 3, but it is not statistically significant. This may indicate that the use of revenue diversification as a budgetary strategy is not necessarily associated with increases in public spending under the council-manager form. The impact of revenue diversification on spending presented in Model 1 may be attributed to the positive association between diversified revenue structures and expenditures in mayor-council cities; the fiscal illusion approach to revenue diversification may correspond to the mayor-council form rather than the council-manager form.

The results of Model 4 provide us with a chance to test our last hypothesis. According to Jaccard and Turrisi (2003), the coefficients of main predictor variables no longer indicate the individual impacts of the variables if an interaction term is presented in a model. Instead, each coefficient describes the effect one variable has on dependent variables when the other variables are 0. From this perspective, the insignificant result of the HHI variable in Model 4 suggests that revenue diversification may not make a significant variation in spending, particularly under the council-manager form (i.e. form of government = 0). This result is in accord with the result of Model 3. Further, the insignificance of the form of government variable in the model does not simply mean that there is no significant relationship between form of government and spending, but implies no significant mean difference of per capita

expenditures between the two forms, especially when the revenue diversification variable is equal to its sample mean (i.e. the mean-centered HHI = 0).

The interaction term is statistically significant with a positive direction. This reveals that because form of government is a dichotomous variable, the mean difference of per capita general fund expenditures between the forms of government (i.e. the mean for mayor-council cities minus the mean for council-manager cities) is likely to be bigger as revenue diversification increases. What makes this understandable, considering the insignificance of the HHI variable in Model 4, is the positive association between revenue diversification and spending under the mayor-council form, as the result of Model 2 indicates. Given no significant mean difference of spending between the two forms when cities encounter the average level of HHI, it is also reasonable to suppose that mayor-council cities may be able to have a higher level of per capita expenditures than council-manager cities at a point over the city average of HHI[9].

To demonstrate these findings, we estimated how the mean difference of per capita spending between the two forms of government is changed according to the level of revenue diversification, and drew linear prediction lines as shown in Figure 1. At average and lower revenue diversification levels, mayor-council governments appear to spend less than council-manager governments. When the level of revenue diversification increases to approximately 0.860 and over; however, the mean difference becomes a positive value. Though the mean expenditure difference between the two forms is not statistically significant until it reaches at the HHI scores of 0.93, this result indicates the likelihood that mayor-council governments may have a higher level of per capita expenditures than council-manager governments. In fact, 65 out of 237 (27.4 percent) sample mayor-council cities in this study have HHI scores more than 0.860. Their average per capita spending ($751.08) is larger than those of council-manager cities with the same range of revenue diversification ($720.55). We can conclude, therefore, that the mayor-council form, when it is coupled with a higher level of revenue diversification, may motivate city governments to spend more than their counterparts in the council-manager form.
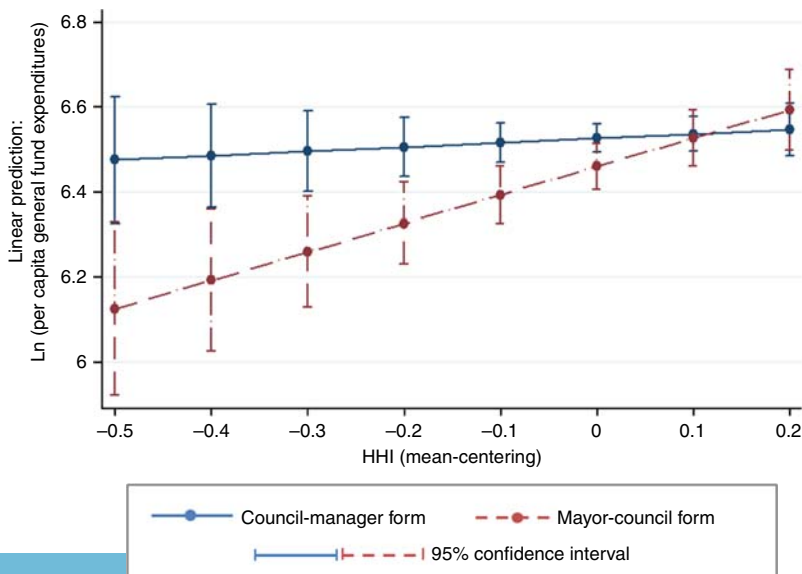

Figure 1.
Linear predictions of
the interaction effect

Among the control variables, three demand side variables – median household income, unemployment rate, and aging population rate – are positively associated with the dependent variable across the models. They seem to play expected roles as the indicators of demand for public service provision and public spending. Population is expected to carry out a similar role, but it fails to have statistical significance in our models. The inclusion of both police and fire protection functions in the general fund is confirmed as an important factor in explaining the size of city government spending. With regard to intergovernmental revenues, the reliance of external aids may contribute to a higher level of city government spending, as expected. In contrast, the results show that political and institutional factors including local TELs, political conflict, and re-election pressure are not significantly associated with the level of public spending.

Discussion and conclusions

The findings show that the economic perspective may be applied to the relationship between revenue diversification and public spending. Revenue diversification itself has a significantly positive effect on public spending in Model 1. We expected the mayor-council form to have a positive effect on public spending. However, the result shows that form of government alone is not associated with public spending. This result may follow another perspective: political structures do not matter for fiscal choices. For example, Deno and Mehay (1987) argue that governments decide the scale of public expenditures with a focus not on political structure but another factor such as median income.

This study attempted to offer a robust theory about revenue diversification and form of government by examining how their interaction produces a variation in the level of public spending. We expected that, in the council-manager form, greater revenue diversification leads to less spending. The finding shows that revenue diversification does not matter to public spending in council-manager forms of government. Thus, the first hypothesis is not supported. The literature shows that council-manager governments may implement revenue diversification to improve fiscal performance but not to increase public spending. The logic behind this argument is that the council-manager form can establish a centralized decision-making system to minimize wasteful and unnecessary public service costs from various decision actors (Campbell and Turnbull, 2003). Indeed, as an incentive for job security, city managers often attempt to maximize profits by delivering public services with minimized costs (Hayes and Chang, 1990). Thus, the focus of council-manager governments is on middle-class taxpayers who expect a lower level of tax burden (Morgan and Pelissero, 1980). This policy difference may explain the finding that revenue diversification is not related to the level of public spending in the council-manager form.

The results support the second hypothesis that in the mayor-council form, greater revenue diversification leads to more spending. Mayor-council governments may have a complicated decision-making process from stakeholders, interest groups, and their political supporters because mayors focus on policy effectiveness to achieve accountability to the public (Campbell and Turnbull, 2003). This complicated decision-making process can generate a larger scale of public expenditures to cover various public demands (Booms, 1966). The linear prediction of the interaction effect shows the spending-prone behavior for mayor-council governments to diversify revenue sources for increasing public expenditures. Thus, this spending-prone behavior of mayor-council governments is aligned with the economic perspective of revenue diversification.

Lastly, our findings support the third hypothesis that mayor-council governments with diversified revenues spend more than council-manager governments. The results help us to understand the existing theoretical issues about revenue diversification, form of government, and public spending. The existing literature has offered an inconclusive relationship between revenue diversification and public spending because of the two

comparative perspectives based on financial management and fiscal illusion. Our results suggest that fiscal illusion theory applies more to the mayor-council form, whereas financial management theory applies more to the council-manager form. This indicates that budget decision-makers may implement revenue diversification strategies to achieve different purposes either for revenue generators or fiscal stability (Carroll and Stater, 2009; Hendrick, 2002). In this regard, forms of government need to be considered as one of the important factors for the relationship between revenue diversification as budgetary choices and public expenditures as fiscal outputs.

The findings provide a more robust theory about revenue diversification as either from the financial management perspective or economic perspective. However, our results suggest that it is difficult for us to understand a clear-cut perspective of revenue diversification. In another theoretical background that mayors, as one of the important political actors, may adopt revenue diversification to carry out their political interests where governments can increase public expenditures without raising tax rates; whereas, city managers, as one of the appointed public officials, may focus on financial management where governments can employ revenue diversification to achieve fiscal efficiency and effectiveness regardless of an increase in public expenditures.

This study also has limitations. First, we only considered general fund government spending as an outcome variable[10], even though there are several different facets of fiscal output (Hendrick, 2004). Revenue growth, budget deficits, fiscal health, and many other different concepts can be employed as dependent variables, and all these attempts can contribute to our knowledge about the relationship between political structure, fiscal strategy, and fiscal outputs. Second, it should be noted that the key research variables – form of government and revenue diversification – can be measured in a variety of ways. Although we tried to measure the variables more rigorously than previous studies (e.g. efforts to consider CAO and to use eight different categories of general fund revenues), it is still possible that there exist more relevant measures of the variables such as Nelson and Svara's (2012) seven different categories of form of government and tax- and non-tax-revenue diversification categories used by Suyderhoud (1994) and Carroll (2009).

Third, we are not free from the issue of selection bias, even though our sample cities are generally representative. Further, although form of government and city spending are time-variant, we were not able to perform a longitudinal analysis due to the lack of data. We recognize that the use of cross-sectional data in analyzing the relationship between the variables of interest may lead to questions about the robustness of our findings. The supplementary results presented in Table AI are expected to contribute to this issue[11]. Using other estimation strategies such as the Heckman-selection model, increasing the number of sampled cities or extending the timeframe for analysis can also be considered as possible remedies for these sample selection issues. Lastly, this study focuses on the relationship between form of government, revenue diversification, and fiscal outputs on the public expenditure side, but not on the public revenue side. Mayors may implement revenue diversification for fiscal stability and flexibility in order to reduce tax burdens of citizens. It is also found that fiscal stability as a result of an increase in reliance on user-charge financing tends to decrease public service expenditures (Sun and Jung, 2012). However, we do not examine the relationship between form of government, revenue diversification, and fiscal stability and flexibility on the public revenue side. These issues are agendas left for future research.

Despite several limitations, this study has important implications for the field of public management as well as public budgeting and finance. First, we do not have a biased perspective on the effect of revenue diversification on public spending; rather, we intend to use the results to stress a situation in which revenue diversification can be adopted not only to satisfy public demands for an increase in public expenditures but also to achieve another fiscal

goal such as revenue stability. However, it should be noted that budgetary choices, coupled with institutions, may produce different fiscal outputs. Thus, the necessity of well-designed institutional mechanisms for controlling, monitoring, and checking governmental fiscal decisions can be highlighted in this sense. Second, further research needs to consider the theoretical linkage between budgetary choices, institutions and structure, and fiscal outputs. Local governments are surrounded by many fiscal institutions such as TELs, performance-based budgeting, debt limitations, home rule privilege, and so forth. However, many studies in the field of public budgeting and finance have ignored these institutions in examining the relationship between budgetary choices and fiscal outputs. In this regard, this study sheds light on the theoretical linkage by providing empirical evidence on the relationship between revenue diversification, form of government, and public spending.

Notes

1. There are two perspectives on elected officials' fiscal manipulation for budget and tax policies. On one hand, elected officials' fiscal manipulation varies depending on the election cycle. For example, it has been found that elected officials tend to maintain the extant fiscal policies in an immediate year following election while they tend to manipulate fiscal policies during an election year (Berry and Berry, 1992; Mikesell, 1978). In this regard, elected officials tend to consider incentives for re-election only in an election year. On the other hand, elected officials attempt to manipulate tax and budget policies regardless of election cycle; thus, their fiscal behaviors shaped by incentives for re-election appear to be in both an immediate year following an election and an election year (Nordhaus, 1975; Strate *et al.*, 1993). In this regard, these studies consider elected officials as representing the pressure for re-election. Given the latter perspective, this study links revenue diversification, the mayor-council form, and public spending because of a lack of longitudinal data reflecting the time effect of the election year. Furthermore, we do not have sufficient samples to examine group comparison between mayor-council governments in an immediate year following an election and during an election year. Thus, we used an election year as a control variable in the models. The study should be understood in this limitation.

2. The existing literature on fiscal illusion has argued that the power struggling between mayor and council members can prevent excessive and unnecessary public costs from their political supporters (e.g. pork barrel projects) (Baqir, 2002; Nunn, 1996). In this regard, there are two issues: the struggle of power between mayor and councils may limit fiscal manipulation, and mayor-council governments may cover the excessive and unnecessary public costs from their political supporters by increasing revenues from non-tax financial resources without raising tax rates. Fiscal illusion theory has focused on the second issue. Because little research has been devoted to the first issue, we follow the second issue for the theoretical linkage, and left the first issue in future research.

3. In total, 27 percent of our sample cities (237) have the mayor-council form whereas 73 percent (631 cities) has the council-manager form (see Table II). According to several studies, though they use different population ranges as their sampling frames (i.e. cities with population over 2,500 or over 10,000), the distributional ratio between the mayor-council and council-manager forms at the US city level appears to be 2:3 (MacManus and Bullock, 2003; Nelson and Svara, 2010). That is, approximately 40 percent of cities tend to have the mayor-council form whereas others are council-manager governments. The research sample for this study, therefore, seems to somewhat over-represent council-manager cities.

4. There are two ways to capture the feature of revenue structure: the proportional balance of public revenue sources and the number of revenue sources. Although both ways are useful in understanding revenue structure, we focus on the balance side for three reasons. First, previous studies have emphasized that the balanced structure of local government revenues is the important antecedent of fiscal illusion (Wagner, 1976; Pommerehne and Schneider, 1978; Suyderhoud, 1994; Hendrick, 1998). Second, according to the 2012 census of government data, over 85 percent of local revenues are composed of five key sources including property and sales

taxes, intergovernmental revenues, and charge and license fees. This revenue structure provides a possibility that scholars overestimate the complexity of revenue structure with other revenue sources such as cigarette and motel taxes that have only a small portion of total revenues. Third, we focus on general funds to capture general management performance, and use CAFRs to collect consistent financial data. However, CAFRs do not provide full information about the number of revenue sources. In addition, one might argue that the level of tax diversification and non-tax diversification need to be measured separately (Carroll, 2009). However, we posit that the essence of revenue diversification at the city level is not to capture the extent to which a city government generates non-tax revenues relative to tax revenues, but to measure the extent to which a government avoids the reliance on one traditional source of revenue (e.g. property tax).

5. As an adapted form of city government, mayor-council cities with CAOs were also considered separately in the analysis process. However, we do not report those results because the consideration of CAOs did not make any significant difference in the overall result of the regression analysis.

6. VIF is less than 1.54 in all models, so all explanatory variables are not subject to a concern for multicollinearity. Particularly, both the form of government variable and the interaction term have a consistent sign across the models. Therefore, we are convinced that we prevent the potential problems of multicollinearity warned by the strong correlation between the form of government variable and the interaction term by centering the revenue diversification variable.

7. One might argue that there might be an endogeneity problem in our regression models, particularly due to the revenue diversification variable (i.e. the assumption of simultaneity for the relationship between expenditures and revenues; see Chapman and Gorina, 2012). We used two different ways to handle this issue. First, the results of the Durbin-Wu-Hausman test (see Davidson and MacKinnon, 1993) revealed that the revenue diversification variable (i.e. the mean-centered HHI) is exogenous so that endogeneity is not a problem in the regression models. The residuals predicted in the reduced models for revenue diversification were employed in the augmented models for city government spending. We then found that the coefficients for the residuals are not statistically significant ($p > 0.122$). Second, instead of our OLS models, we ran the two-stage predictor substitution (2SPS) models using tax stability (or tax visibility) as an additional exogenous variable for the augmented model in addition to all current controls. Tax stability is calculated as the percentage of total tax revenues derived from property and sales taxes. According to previous studies, tax stability is a significant background of revenue diversification (Dollery and Worthington, 1996), but is not necessarily associated with the increase of government spending (Carroll, 2009). The results of the 2SPS models are not significantly different from those of the OLS models in terms of the coefficients and statistical significances of the form of government ($p > 0.100$), revenue diversification ($p > 0.112$; $p < 0.003$ in Model 3) and interaction term ($p < 0.022$) variables. Although it is hard to fully disregard potential endogeneity problems, we do not find clear evidence that it makes our results biased.

8. The results of the Breusch-Pagan test show that our models and data may violate the homoscedasticity assumption ($\chi^2 = 3.11$-4.87, $p < 0.08$).

9. Due to a potential bias that the interaction of the key variables may generate, one might argue that we may need to include the second-order terms of the main variables in the interaction model. We found that the result of Model 4 is consistent when we employ the second-order interaction approach ($F = 15.70$; $R^2 = 0.2782$): the revenue diversification variable has the coefficient of 0.1963 ($p = 0.202$), the form of government variable has the coefficient of -0.0534 ($p = 0.135$), and the interaction term has the coefficient of 0.5664 ($p = 0.023$).

10. Although we employed two dummy variables in order to control for the functional variation in general fund expenditures, there are many other functional characteristics we did not reflect in the econometrics models such as park and recreation and highway maintenance. This should be an additional limitation of this study in terms of measuring the dependent variable. For future research, examining the effects of the key independent variables on expenditures by specific functions can be one way to address this limitation.

11. Along this line of thinking, one might argue that there has to be a year lag between the form of government variable and the other fiscal variables because the impact of political structures on fiscal strategy and outputs may be delayed. We checked whether the sample cities in our data set had a different form of government in 2011, compared to 2012, and identified that no sample city changed its form during this particular timeframe. Thus, we conclude that our results may not be altered if the form of government variable is lagged one year.

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Appendix

Variable	Model S1 B (SE)	Model S2 B (SE)	Model S3 B (SE)	
(Mean-centered)				
Revenue diversification	−0.1221 (0.1478)	−0.0979 (0.1498)	0.6684 (0.2004)***	
Form of government	0.0028 (0.0352)	−0.0009 (0.0351)	0.0518 (0.0356)	
Interaction term	0.6397 (0.2331)***	0.6072 (0.2356)**	−0.5669 (0.2463)**	
Population (ln)	0.0013 (0.0145)	0.0053 (0.0143)	0.0147 (0.0142)	
Median income (ln)	0.2541 (0.0480)***	0.2727 (0.0471)***	0.2300 (0.0492)***	
Unemployment rate	0.0016 (0.0080)	0.0126 (0.0071)*	0.0131 (0.0077)*	
Aging population rate	1.6281 (0.3224)***	1.9725 (0.3190)***	1.9686 (0.3276)***	
Police function	0.2542 (0.1006)**	0.2418 (0.0984)**	0.2343 (0.1015)**	
Fire function	0.1708 (0.0424)***	0.1581 (0.0419)***	0.1751 (0.0420)***	
Intergovernmental aid	0.0012 (0.0001)***	0.0013 (0.0001)***	0.0014 (0.0001)***	
Local TELs	0.0156 (0.0423)	−0.0043 (0.0383)	−0.0286 (0.0411)	
Political conflict	−0.0055 (0.0135)	−0.0060 (0.0136)	−0.0056 (0.0146)	
Re-election pressure	−0.0054 (0.0667)	0.0029 (0.0671)	0.0457 (0.0686)	
Constant	3.2211 (0.5879)***	2.9860 (0.5654)***	3.0132 (0.5822)***	
Treatment	Nine census division dummies included	Four census Region dummies included	No regional dummies; form of government reversely coded	
Model	$n = 868$; $F = 17.48$*** $R^2 = 0.3506$	$n = 868$; $F = 17.32$*** $R^2 = 0.3371$	$n = 868$; $F = 16.77$*** $R^2 = 0.2771$	**Table AI.** Supplementary regression results with robust standard errors

Notes: Two-tailed tests. Dependent variable is Ln (per capita general fund expenditures). *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$

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