Crowding Out Development: Fiscal Federalism after the Great Recession

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Abstract

Decentralization has increased the reliance on locally raised revenue to provide basic social, infrastructural and economic development services. With growing obligations for redistributive expenditure and increasing fiscal stress on local government, it is important to examine whether current decentralization still can result in local efficiency and growth for local government in the post-Great Recession period. Our paper addresses the concern that the rising redistributive responsibility under devolution has the potential to crowd out the local budget for capital investment and thus undermine local economic growth.

We use the most recent Census of Government Finance data in 2012 for all county areas in the continental US to capture the dynamics of local public finance in the post-Great Recession period. We build a structural equation model (SEM) to integrate decentralization, state and federal aid to localities, local fiscal conditions, local demographic need, and economic growth measures.

In contrast to the normative fiscal federalism theory, we do not find decentralization is leading to local economic growth. We find fiscal decentralization shifts local spending structure to more current expenditure and crowds out the local budget for capital investment. Our analysis finds that rural counties are more likely to exhibit these crowding out effects. State aid is important to help relieve this crowding out effect, but we find it does not favor rural places or places with more elder population.

By identifying places with higher crowding out effects and lower state aid, our paper provides an empirical response to Rodriguez-Pose's (2018) call to focus public finance research on "places that don't matter." We call for revisiting traditional theories behind decentralization so that greater attention is given to the tradeoffs between redistributive functions and investment at the local level. To build economic resilience we need to understand where and how decentralization results in crowd out rather than growth promoting local fiscal behavior.

Key Words: Fiscal Decentralization, Public Finance, Local Growth, Intergovernmental Transfers, Structural Equation Model (SEM)

Introduction

Decentralization transfers responsibilities to lower tiers of governments and theoretically, can bring about improved local efficiency of public goods provision, increased citizen participation and government accountability. However, recent studies in OECD countries find growing obligation for local redistributive responsibilities under decentralization is shifting local spending structure to current expenditures (Sacchi and Salotti, 2016; Gonzalez Alegre, 2010; Grisorio and Prota, 2015). As local fiscal effort is driven more by current expenditure on social needs, a potential crowd out of local capital investment for growth may occur (Xu and Warner 2016). This can be exacerbated under decentralization, especially in times of recession.

The level of such crowd out is also affected by broader economic restructuring due to deindustrialization; demographic changes related to concentrated poverty, aging society and increasing education costs; and spatial disparities in local demand and fiscal capacity. Localities vary in their fiscal, administrative and political capacity to manage decentralization and translate it into effective fiscal policies and economic returns (Brenner, 2004, Lobao et al, 2014, Warner and Pratt, 2005). This is especially true in the times of economic downturns (Kim and Warner 2018a; Xu and Warner 2015).

Empirical studies of decentralization on fiscal efficiency and growth are scant, especially at the local level, and most are focused on urban areas (Pagano 2014, Hendrick 2012). Attention to rural areas is lacking (Ward and Brown 2012). Moreover, despite the decline in state aid (Kim and Warner, 2018b) after the Great Recession, US local governments have largely pushed their fiscal limits to maintain critical services, especially for redistributive responsibilities (Kim and Warner 2016; Lobao and Adua 2011). Therefore, it is important to examine whether decentralization still promotes local fiscal efficiency and economic growth, or if decentralization

after the Great Recession is imposing fiscal stress on local governments which are already burdened by broader socioeconomic challenges.

In this paper, we use the most recent available government finance data in the US (2012) to conduct a comprehensive quantitative study to understand the impacts of fiscal decentralization on local growth, with particular emphasis on crowding out. We find rising redistributive responsibility under devolution has the potential to crowd out the local budget for capital investment and thus undermine local economic growth. Such crowding out is expected to be strong in the times of recession and post-recession because more social burdens on public spending may be shifted to the local level, something Peck (2014) calls "scalar dumping." This process is most pronounced in England where local government budgets rely primarily on state transfers and budgets were cut in half after the crisis (Gray and Barford 2018). In the US, state aid fell by ten percent, or $12 Billion after the Great Recession (Kim and Warner 2018b). Thus local governments face a double-jeopardy from decentralization as states shift fiscal pressures to local governments after the economic crisis.

This study makes several contributions. First, empirical study on this issue at the local level is scant. Our work covers all counties areas in the continental US. Second, we look at public spending structure to understand fiscal stress in crowding out under decentralization in the post-Great Recession period. Third, few works simultaneously study decentralization, intergovernmental transfer, local spending structure, local fiscal stress and local growth. We employ structural equation modeling techniques to model these factors as a system. This provides an understanding of the current decentralization system and its impacts on localities in the US. Last, we consider the unequal spatial dimensions of fiscal stress and crowding out to provide insights into implications for better targeted state policy.

Fiscal Efficiency, Functional Decentralization and Fiscal Federalism

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Decentralization has been a trend across nations primarily because of its theoretical claims of increased efficiency and economic growth (Rodríguez-Pose and Sandall, 2008). Built on the normative framework of fiscal federalism and public choice theory (Peterson, 1985 and 1981; Tiebout, 1956; Oates, 1972), the proposition that decentralization will lead to higher local efficiency and promote greater local growth has been widely accepted (Martínez-Vazquez and McNab, 2003). Under fiscal federalism, subnational governments traditionally have a critical role to manage developmental policies and provide efficient levels of local public goods to promote growth and quality of life (Peterson, 1995). In general, both allocative efficiency and productive efficiency are expected to be improved under decentralization and fiscal federalism.

Peterson (1981) broke expenditure into developmental, allocative and redistributive categories and argued that local government, in a decentralized system, would focus more on developmental and allocative than redistributive expenditures. This was the core of his "city limits" hypothesis. Others have attempted to measure these three types of expenditure but suffer from the inability to differentiate what is developmental or redistributive (Schneider 1989, Jimenez 2014). Capital expenditure is theoretically argued to have a positive impact on growth (Aschauer, 1989; Barro, 1990; Rodríguez-Pose et al., 2009).

In contrast to fiscal federalism theory, which argues there is convergence between improving fiscal efficiency and local growth under decentralization, state rescaling theory argues that the benefits and returns will vary depending on the fiscal, administrative and political capacity of local governments (Lobao, et al., 2014; Peck, 2012; Lobao and Adua, 2011; Warner and Pratt, 2005; Rodríguez-Pose and Gill, 2004; Rodríguez-Pose and Ezcurra, 2010; Rodríguez-Pose and Gill, 2004; Lessmann, 2012). As localities attempt to balance budgets within increasingly stringent constraints from current operations and social service mandates, short term needs often take precedence and infrastructure investments can be deferred (Aldag et al. 2019). Economic growth

depends on a balance between current expenditures and longer-term capital investments, but our concern is that with devolution, the balance could be shifting away from capital investment. Mandates under decentralization are often concentrated in areas where costs are more driven by redistributive goals. This is especially true for US counties, which are the main actor to administer social welfare programs for the states (Lobao et al 2014, Benton 2002). Unfunded mandates and fiscal stress may limit the ability of local government to adjust its budget to invest in capital expenditures to pursue growth. Thus, we expect spatial variation in the impacts of decentralization on local fiscal efficiency and growth.

Empirical Challenges of Decentralization

In contrast to the normative framework, the theoretical argument that decentralization will promote efficiency and growth is not well supported by empirical studies. The existing empirical studies are typically focused at the cross-national level or aggregated state level. The results of these studies are mixed with negative (Davoodi and Zou, 1998; Rodríguez-Pose and Bwire, 2004), positive (Iimi, 2005), or no relationship to growth (Woller and Phillips, 1998).

With respect to spatial disparity, at the cross-national level, inequality is found to decrease under decentralization in richer nations, but increase in poor nations (Lessman, 2012; Kyriacou et al., 2013 and 2016). Within the OECD countries, the results of decentralization on inequality are inconclusive with positive (Rodriguez-Pose and Gill, 2004), negative (Ezcurra and Pascal, 2008; Lessmann, 2009) and varied results by high- or low- income nation (Rodriguez-Pose and Ezcurra, 2010). At the local level, communities with lower capacity and higher need (based on larger share of dependent populations, such as children, elders, the poor and minorities), and those based in rural areas, metro core cities and old suburbs, are often caught in fiscal stress under decentralization (Kim and Warner 2018a; Xu and Warner, 2016; Kneebone and Berube 2013; Lobao and Kraybill, 2005; Warner and Pratt 2005; Johnson et al., 1995).

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Intergovernmental transfers play a critical role in addressing local disparity. However, empirical evidence has found both substitutive (negative) and complementary (positive) responses of state aid on local expenditure effort (Xu and Warner 2016, Warner and Pratt, 2005; Warner 2001) to either ameliorate local fiscal stress or further exacerbate the disparity. The nature of intergovernmental transfers, which could be either redistributive or growth promoting, is significant to determine whether the fiscal efficiency promise of decentralization can be realized or if greater spatial inequality of fiscal capacity may result (Prud'homme, 1995; Ezcurra and Rodríguez-Pose, 2013). Because the post-recessionary period in the US has been accompanied with cuts in state aid (Kim and Warner 2018b; Peck 2014), this drop of state aid along with the increase in current expenditures and service mandates, may impose fiscal stress on localities and result in crowding out of local spending on capital investment growth.

More importantly, empirical studies have found counties and cities push their fiscal limits to maintain both redistributive and developmental policies simultaneously (Lobao and Kraybill, 2005; Lobao et al., 2014; Einstein and Kogan, 2015). However, rising local redistributive responsibility is likely to cause a substitutive effect on local expenditure to crowd out local economic development and the ability to adjust spending in a growth enhancing way (Xu and Warner, 2016; Rodriquez- Pose & Ezuccra, 2011; Rodríguez-Pose et al., 2009; Warner and Pratt, 2005). Using 2002 to 2007 Census of Government Finance data for all county areas in the continental US, Xu and Warner (2016) found local fiscal effort shifted to a function of local need instead of local growth. They suggested a crowding out effect could be occurring under decentralization.

This crowding out is also supported by European empirical studies which show the impacts of fiscal decentralization on the composition of local public budgets (Sacchi and Salotti, 2016; Gonzalez Alegre, 2010; Grisorio and Prota, 2015). While this impact of decentralization may vary

across regions and spending categories based on different spending functions (Sacchi and Salotti, 2016), a general trend of rising decentralized redistributive functions and current spending responsibility are found under decentralization in OECD countries, especially in the post-recessionary period. For example, using data from 1984 to 2003 in 17 Spanish regions, Gonzalez Alegre (2010) showed that fiscal decentralization is a crucial factor to balance local public capital and current expenditure and affect the share of capital investment in local spending. Grisorio and Prota (2015) found similar results, that the increase of decentralization may result in a drop in the local share for capital expenditure and re-composition of the local budget for Italian regional administrations from 1996 to 2008.

Fiscal Stress after the Great Recession: Is Fiscal Federalism Broken?

The changing local spending structure under decentralization also needs to be understood within broader demographic and economic shifts. Thus, we focus on crowding out and its relationship to local fiscal stress and economic growth in the post-Great Recession period.

The shock of recession has been transmitted to the public sector through multiple venues. Property taxes, as the main revenue stream of local governments in US, have been hit as the economic crisis undermined housing values (Pagano 2014, Justice and Scorsone 2013). The inherent connection between housing values, property taxes, service and infrastructure results in the vicious cycle of local fiscal stress in times of recession and pushes local governments to explore alternative revenue sources (Kim and Warner 2016, Kim 2017). This is exacerbated by state limits on local property taxes which have been found to affect counties more than cities (Wen et al. 2018).

Another source of stress is the shift in economic structure. Deindustrialization, has imposed economic challenges on old industrial cities, especially in the rustbelt region (Hobor 2013; Neumann 2016; Aldag et al 2018). The shift to knowledge and service industries (Kay et al. 2007),

which are exempt from property taxation (Sherman and Doussard 2019), has been linked to greater local government fiscal stress (Aldag et al, 2019). Underinvestment in physical infrastructure has become a major concern, especially in the US where crumbing bridges, roads, water and sewer systems have garnered national attention (ASCE 2017). Unfortunately, state and federal support for aging infrastructure (re)investment has declined as the need for investment has risen (ASCE 2017). This has caused states and localities to look increasingly towards private investment vehicles such as Public-Private Partnerships (Ashton et al. 2012, Weber 2010). As localities attempt to balance budgets within increasingly stringent constraints from current operations and social service mandates, short term needs often take precedence and infrastructure investments can be deferred. Economic growth depends on a balance between current expenditures and longer-term capital investments, but our concern is that with decentralization, the balance could be shifting away from capital investment.

Demographic shifts have also challenged local budgeting and finance, such as the long-standing issue of poverty (Lobao et al. 2012; Warner and Pratt 2005), education and child-related services (Wallace, 2012), and the increasing aging population and need for elderly-based services (Wolf and Amirkhanyan 2010, Warner et al. 2017).

Fiscal stress can also be attributed to the structural transformations under decentralization, as higher-level government passes down responsibilities to localities to ease its own budget stress. In this case, decentralization is not enhancing local fiscal capacity but stressing local governments with increasing unfunded mandates. Peck (2014) calls this "scalar dumping" and it echoes an earlier argument by Peterson (1995) who set forth two theories of federalism: functional and legislative. The classic fiscal federalism fits the optimistic functional theory that each level of the federal system is well designed to carry out the tasks for which it is mainly responsible. "Scalar dumping" can be explained by the pessimistic legislative theory, that higher levels of government

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shift expenditure burdens to lower levels of government while retaining spending on popular programs and investment projects which earn them political credits. This is the core thesis argued by state rescaling literature (Kim and Warner 2018b, Gray and Barford 2018). In this sense, the normative fiscal federalism framework to support decentralization and local fiscal efficiency is broken; and instead we see a movement toward the opposite trajectory where decentralization limits local fiscal capacity and exacerbates local fiscal stress (Kim 2018; Aldag et al. 2019).

The traditional fiscal federalism framework is too simplistic, as it considers the ideal functional allocations of governmental responsibilities and assumes localities have sufficient fiscal capacity to capture the promised fiscal efficiency and growth. We need a broader, more comprehensive theory for local public budgeting and finance that is able to integrate the impacts from demographic, economic and structural changes across different types of localities

We decompose local public expenditure into current spending and capital expenditure to measure crowding out. We build a structural equation model (SEM) which simultaneously models decentralization, state and federal aid to localities, local fiscal stress of crowding out and local demographic need to explore the impacts of decentralization on local spending structure of crowding out, and how it affects local economic growth and spatial inequality.

Data and Methodology

Study Unit and Region

This study covers all county areas in the continental United States, which excludes Alaska, Hawaii and Washington DC. Due to jurisdictional fragmentation, we use county areas because they aggregate all local fiscal data within county boundaries. This unit of analysis is able to capture service spending and revenue collection not only for counties, cities, towns and villages, but also for school districts and other special districts. Thus, it can provide a complete picture of local

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finance, as school funding is a large claimant on both state aid and local tax revenue. The county area is also a useful unit of analysis because it covers the entire US including different political and economic landscapes, ranging from nonmetropolitan rural to metropolitan urban places. In general, county areas are the most commonly used study unit of analysis, especially for scholars interested in spatial inequity, due to their more stable boundaries and the ability to capture full fiscal information of local governments (e.g., Xu and Warner, 2015 and 2016; Lobao, et al., 2014; Lobao and Adua, 2011; Warner and Pratt, 2005; Johnson et al., 1995; Warner 2001).

Data Sources

We used the most recent Census of Government Finance data in 2012 to capture the dynamics of state and local public finance in the post-Great Recession period. Demographic and socioeconomic data are retrieved from the American Community Survey 2009-2013. The prior period American Community Survey 2005-2009 is used as the reference to calculate the change in local employment, population and income in the post-Great Recession. We also differentiate localities into urban metro core and rural places based on Office of Management and Budget 2013 metropolitan status code and percent of urban and rural population information in Census 2010. We differentiate communities with older infrastructure (and thus greater need for capital investment) by percent of housing built after World War II in the 1950s and 1960s.

Dependent Variables

Our major interest is to examine if decentralization will cause a shift in local spending structure, where the gap between current and capital expenditure is higher, and if this may undermine local capacity to invest for growth in the post-Great Recession period. We anticipate that current expenditure, which is heavily driven by decentralized redistributive requirements to deal with state mandates, could crowd out local capital investment. Our model is presented in

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Figure 1. Fiscal decentralization and intergovernmental transfers are our two key nodes of interest and we explore their impacts on local spending structure (crowding out). Our second area of interest is the impact of crowding out on local growth. The other nodes in our models are controls.
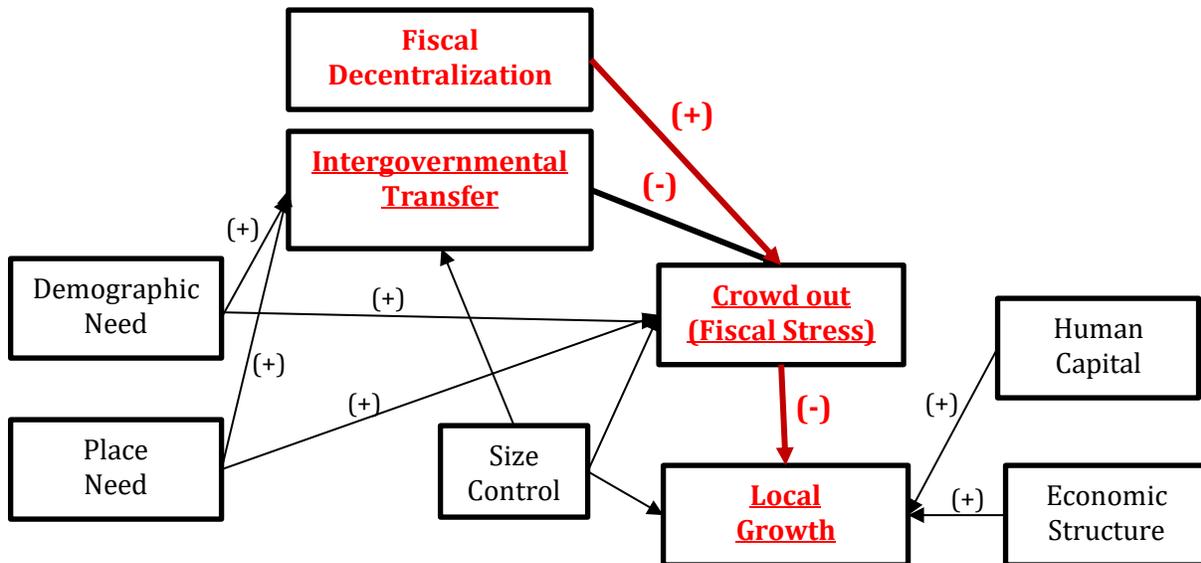

Figure 1 Model Diagram and Hypotheses

In order to measure our main dependent variable, crowding out, we distinguish current expenditure from capital expenditure. While older growth literature (Barro, 1990; Aschauer, 1989) argued current expenditure focusing on welfare, social service, employee benefits and compensation is expected to have no or a negative effect on growth, more recent literature has emphasized the importance of human capital and quality of life investments (Kay, Pratt and Warner 2007; Reese 2012). The concern is the loss of balance between current and capital expenditure, especially as local governments face an infrastructure crisis and the need to replace aging water, sewer and road systems (ASCE 2017). In addition, the needs brought on by climate change require new infrastructure investments (Homsy et al. 2019). Although capital expenditure is important for growth, federal and state support for capital expenditure has declined under decentralization. As local governments seek to meet state service mandates with limited budgets, they may defer investment in longer-term capital projects. To measure the potential crowding out

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effect under decentralization, we subtract capital expenditure from current expenditure, based on Census of Government Finance definitions, and normalize this difference by the sum of these two categories.

$$Crowding\ Out = \frac{Current\ Expenditure^1 - Capital\ Expenditure^2}{Current\ Expenditure\ +\ Capital\ Expenditure}$$

$$= Current\ Expenditure\ Share\% - Capital\ Expenditure\ Share\%$$

In Figure 2 and Figure 3, we can see that current expenditure accounts for 84% of total local government expenditure in 2012, while the capital expenditure share is 12% on average. According to the distributions, 89% of county areas have a current expenditure share greater than 80%, and 57% of them spend more than 90% on current needs. Figure 3 shows that the majority of county areas spend less than 20% on capital investment. This gap between current and capital spending is illustrated in Figure 4, which shows the distribution of such crowding out, the gap between current expenditure shares and capital expenditure shares. At the left end of Figure 4, when the gap is 0, county areas spend equally on both categories. The mean of the gap between current expenditure share and capital expenditure share is 76%. For most county areas (62%), the difference between current expenditure and capital investment share is 80%. There are 27% of county areas where the gap is greater than 90% between the two types of spending shares. These places are of special concern in our analysis.

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[1] Current Expenditure is direct expenditure for public employee compensation and for operations, supplies, materials, and other contractual services. It reflects the short-term maintenance and service delivery responsibilities of local government.

[2] Capital expenditure is for construction of buildings and other improvements, purchase of land, equipment, and existing structures, and payments on capital leases. These expenditures are important for longer-term infrastructure needs.
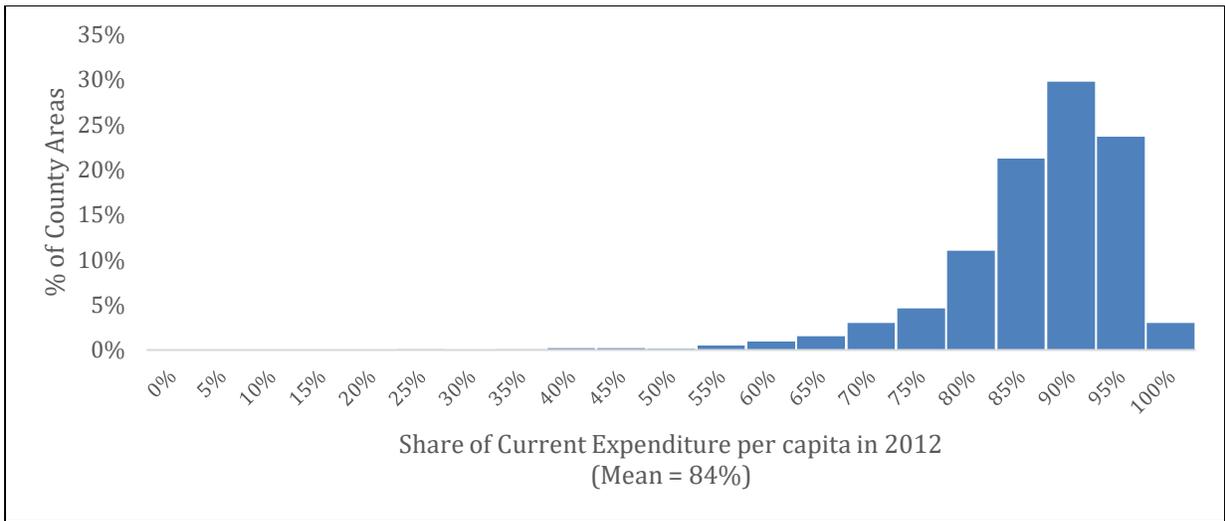
Figure 2: Distribution of the Current Expenditure Share of US County Areas in 2012
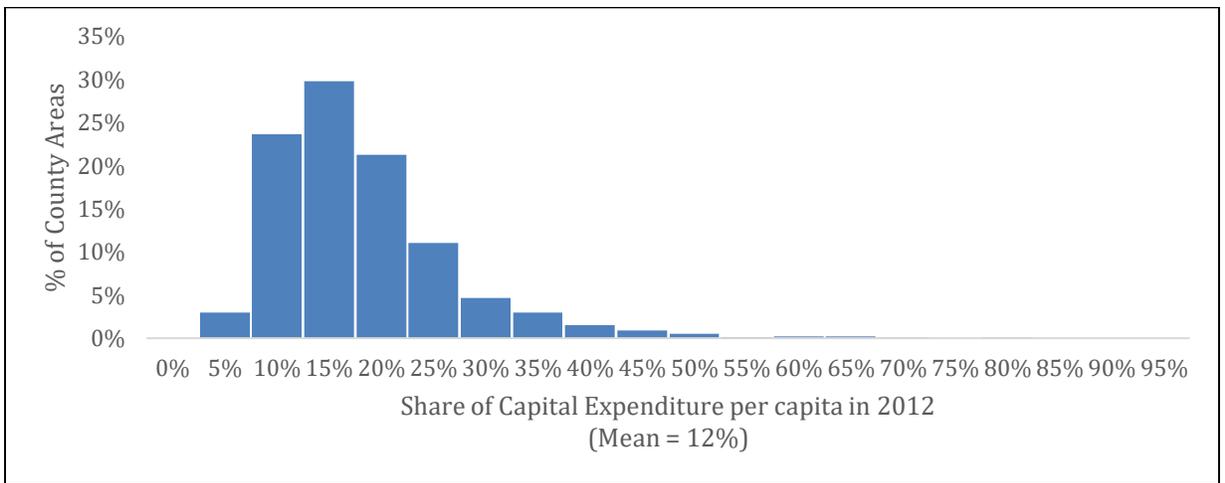

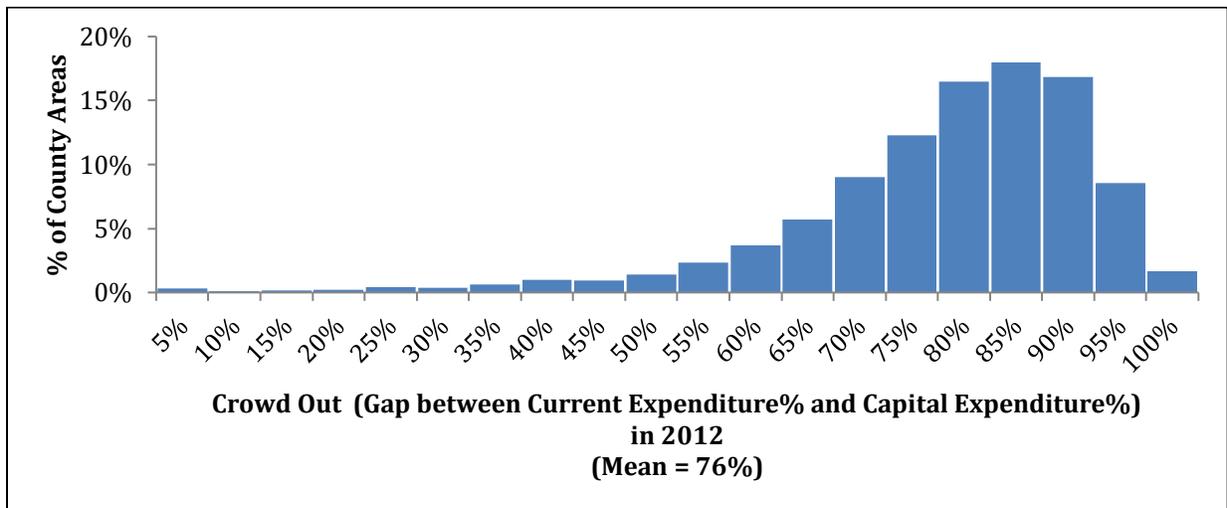Figure 3: Distribution of the Capital Expenditure Share of US County Areas in 2012

Figure 4: Distribution of the Normalized Gap between Current Expenditure and Capital Expenditure of US County Areas in 2012

Source: US Census of Government, 2012

Our second dependent variable is local growth. Based on the literature (Carlino and Mills, 1987; Deller and Lledo, 2007; Deller, 2010; Partridge et al., 2008), we use the three most common indicators to measure local growth: population growth, employment growth and per capita income growth. While theory from the normative fiscal federalism framework argues that decentralization will enhance local efficiency and promote growth, our hypothesis is derived from empirical literature of decentralization in more recent years that finds decentralization may result in uneven patterns across space.

Our third dependent variable is intergovernmental transfers, including state aid per capita and federal aid per capita in 2012. State aid is more important than federal aid due to its larger magnitude (Warner, 2001; Xu and Warner, 2016). According to Table 1, state aid per capita is $1490 on average while federal aid is only $171 per capita in 2012. Theoretically, intergovernmental transfers should have a substitutive effect to relieve local fiscal stress, so that localities are fiscally capable to better match public goods and services to local needs in a growth-enhancing way. But in the post Great Recession world of broken Fiscal Federalism, this may not be the case.

Independent Variables

We primarily consider three sets of independent variables for state policy, local need and local economic capacity to model the relationships between fiscal decentralization, local fiscal stress and economic growth simultaneously. The descriptive statistics of model variables are shown in Table 1.

State Policy: Our key explanatory variable of interest is state fiscal decentralization to localities. We measure decentralization[3] to capture the degree of local share in total state and local

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[3] Expenditure decentralization = local direct expenditure / state and local direct expenditure

expenditure. We expect higher decentralization to lead to higher crowding out by local governments since they will have to increase their current spending to deal with the challenge of

Table 1: Descriptive Statistics of Model Variables

	Mean	St. dev.
Crowding Out	0.76	0.15
Fiscal Decentralization[1]	0.52	0.06
Intergovernmental Transfer		
Federal Aid per capita[1]	$170.69	$291.30
State Aid per capita[1]	$1490.03	$716.34
Local Growth		
Employment Growth[2,3]	-2.25%	2.25%
Population Growth[2,3]	2.64%	5.61%
Per Capita Income Growth[2,3]	-1.57%	7.79%
Demographic Need		
Percent Under 18 Year Old[2]	23.09%	3.37%
Percent 65 Years Old & Over[2]	16.43%	4.26%
Percent in Poverty[2]	16.71%	6.47%
Percent Minority[2]	15.73%	4.26%
Place Need		
Urban Metro Core[4]	N = 463 (14.95%)	
GINI Coefficient[2]	0.44	0.03
Percent Postwar Housing (built 1950-1960)[2]	19.93%	6.81%
Percent Rural[5]	58.59%	31.36%
Human Capital		
Percent Bachelor & Up[2]	19.71%	8.80%
Percent High School only[2]	34.92%	6.98%
Economic Structure		
Percent Construction[2]	7.23%	2.34%
Percent Manufacturing[2]	12.14%	6.88%
Percent Agriculture & Mining[2]	6.92%	7.43%
Percent F.I.R.E. [2]	4.68%	1.91%
Percent Service (Education, Health, Social) [2]	23.13%	4.54%
Percent Professional [2]	6.58%	3.18%
Percent Public Administration[2]	5.75%	3.20%
Size Control		
Population (natural log) [1]	10.28	1.45
Local Expenditure per capita[1]	4525.91	2488.62

N= 3098, U.S. Counties excluding Alaska, Hawaii, Washington, D.C.
1 Census of Government 2012
2 American Community Survey 2005-2009
3 American Community Survey 2009-2013
4 Office of Management and Budget 2010 Standards and its 2013 Code
5 US Census 2010

state mandates. In addition, intergovernmental transfers are theoretically expected to respond to local need by playing a redistributive role to equalize regional disparity. However, empirical evidence on this has found both substitutive (negative) and complementary (positive) responses of state aid on local expenditure effort (Xu and Warner 2016, Warner and Pratt, 2005; Warner 2001).

Local Need: Besides the state mandates from decentralization, local response to bottom-up citizen demands will also affect local fiscal effort, especially in places with higher need. Those places often suffer from lower capacity as well. This may cause these local governments to have more crowd out of capital investment by current spending.

In this study, local need is measured by demographic need and place need. With respect to demographic composition, places with a higher percent of dependent population, which are elderly (over 65) or young (under 18), are expected to have higher crowding out effects, as these two age groups require more local government services. Higher percent of minorities and people in poverty will also increase local need and require more current spending by localities.

We also consider spatial dimensions of need. Following the logic of the U- shaped cost curve, urbanized counties and rural places are expected to be more likely to experience fiscal stress and thus, have higher crowding out effects under decentralization (Lobao and Kraybill, 2005; Warner and Pratt, 2005; Warner, 2001; Johnson et al., 1995). Urban places have high concentrations of poor and other groups in need. Tax base and fiscal resources are limited in rural places but the cost of service delivery is higher due to low density. We used the Office of Management and Budget metropolitan code in 2013 to delineate urban metro core counties, and the percent of rural population to capture places with more rural settings.

In addition, we employed the method by Lucy and Phillips (2000) and Xu and Warner (2016) that used the share of postwar housing built in the 1950s and 1960s as a proxy for communities with old housing and infrastructure. These places would be especially hurt by crowd out, as their needs for infrastructure replacement are high.

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The GINI coefficient of income inequality is also included to capture places with high inequality. Places with higher inequality may have lower crowding out effects because elites may push for more capital investment despite high local need for current expenditure.

Local Economic Capacity: The third group of independent variables are local economic capacity controls for the growth model. Human capital, measured by educational level, is critical for local growth (Reese, 2012; Shaffer, 2002). In our model, we used percent of bachelor degree and higher, as well as percent of high school degree to measure the human capital of localities. We also controlled for local economic structure[4], using the percent of major occupations, such as construction, manufacturing, mining, and services (education, health, professional service and public administration).

Size Controls: All the models are controlled by total population to capture size of localities. For the crowding out effects model, total expenditure per capita is included as another control.

Structural Equation Model

Our model analyzes the impacts of decentralization on local growth. Crowding out (the greater differential between current and capital expenditure) is an endogenous variable in our model. We want to test if county areas with higher decentralization experience greater crowding out and consequent lower growth. Intergovernmental transfers are considered endogenous as well because normative fiscal federalism theory argues they will be driven by local need. These transfers are both responses to local need and critical factors to affect local expenditure structure and relieve local fiscal stress. We employed structural equation models (SEM) to model the key statistical relationships between state fiscal decentralization, local crowding out and fiscal stress, local economic growth simultaneously.

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[4] All the sectors included in the model account for 66% of local economies on average. We left out 34% of local economies as reference for modeling requirements.

The structural equation models are listed below.

$$CR_i = \alpha_1 + \beta_1 FD_i + \beta_2 IT_i + \beta_3 DN_i + \beta_4 PN_i + \beta_5 S_i + \beta_6 TE_i + \varepsilon_i$$

$$\Delta LG_i = \alpha_2 + \beta_7 CR_i + \beta_8 HC_i + \beta_9 EC_i + \beta_{10} DN_i + \beta_{11} S_i + \varepsilon_i$$

$$IT_i = \alpha_3 + \beta_{12} FD_i + \beta_{13} DN_i + \beta_{14} PN_i + \beta_{15} S_i + \varepsilon_i$$

where:

CR_i measures crowding out;

$\alpha_1, \alpha_2, \alpha_3$ is the constant;

FD_i denotes fiscal decentralization in expenditure;

ΔLG_i represents local growth measures: population growth, employment growth and per capita income growth from ACS05-09 to ACS09-13

IT_i measures intergovernmental transfers, which are federal aid per capita and state aid per capita;

DN_i is demographic need including percent of the elders, the young, the poor, and minorities;

PN_i denotes place need and is differentiated into metro core, percent rural, and old infrastructure (measured by percent of postwar housing share) and GINI for income inequality;

S_i represents size of population;

TE_i is total local expenditure per capita;

HC_i measures human capital, including percent of bachelor or higher degree and percent with just high school degree;

EC_i stands for economic structure, which is percent of major occupations: construction, manufacturing, mining, F.I.R.E., and services (education and health, professional service and public administration).

ε_i are the error terms.

Model Results

The results of our structural equation models are shown in Table 2. Equation 1 to equation 4 answer our primary research question – does fiscal decentralization crowd out local growth? The last two models display the role of intergovernmental transfers in this multilevel fiscal system to answer if they will help relieve crowding out effects and enable local government expenditures to pursue growth. These models give a more comprehensive picture of the fiscal decentralization system in the US than any single model. Together, they explore if crowding out may affect local growth.

Crowding Out

The answer to our primary question is yes, fiscal decentralization is associated with higher crowding out in local spending. County areas in states with higher decentralization exhibit higher crowding out effects. Where expenditure decentralization is greater by 1%, the disparity between current and capital expenditure will be 0.14% higher. Thus decentralization leads to more crowding out effects in local spending. Intergovernmental transfers play an important role to help ameliorate crowding out. Both state aid and federal aid can reduce the gap between current expenditure and capital spending. Although the impact of federal aid per capita is around 2.5 times as large as state aid to relieve crowd out, the magnitude of state aid is almost 10 times that of federal aid, which makes local fiscal stress more sensitive to the volatility of intergovernmental transfers from state government.

Crowd out in local spending is also driven by local need. Crowding out is greater in places with more elders and more poverty, but not in places with more children and more minorities. When the percent of older people increases by 1%, localities spend 0.21% more on current than capital expenditure. The rise of poverty rate by 1% leads to a 0.34% increase in crowding out. The

spatial dimensions of local need show local crowding out is higher in county areas in more rural settings, and those with older infrastructure (as measured by higher postwar housing share). When there is a 1% increase of rural population, crowding out in local spending will rise by 0.04%, but we see no impact in the metro core. The impact of postwar housing share is much higher; a 1% increase of postwar housing share will result in a 0.19% increase in crowd out in the local budget. County areas with more inequality have less crowding out as expected; elites in such places may be able to argue for greater investments in capital expenditures, which are assumed to be growth promoting.

Local Growth

Equations 2 to 4 model how crowding affects local growth. We find that places with higher crowding out have lower local growth, as their capital investment for growth is more likely to be burdened by decentralized current spending responsibilities. When crowding out rises by 1%, this leads to a decrease of local growth in population by 0.02%, employment by 0.01% and income by 0.03%.

Human capital, measured by two different educational levels, is significant on all local growth indicators. The percent of people with higher education significantly drives population, employment and income growth in the post-Great Recession period. The share of people with just a high school degree shows divergent effects on growth. It is negatively associated with population growth, positively related to employment growth and not significant on income growth.

When it comes to economic structure, sectors demonstrate different impacts across indicators of local growth. A higher percent of construction jobs is associated with higher population growth. However, it is not significant on employment growth and income growth. In contrast, places which are more dependent on the manufacturing sector have lower population

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growth. Interestingly, we found the increase of mining shares is positively related to growth on all indicators of population, employment and income. This reflects the resource boom, especially in areas reliant on fracking, in the period since the Great Recession. The percent of service employment is negatively associated with population growth, but positive on employment and income growth in equations 3 and 4. Education and health services have been leading economic sectors in the post Great Recession period. Finally, localities with relative larger employment in public administration have higher population growth, but not higher employment and income growth.

Intergovernmental Transfers

According to equations 1 to 4, we found that fiscal decentralization is associated with crowding out capital expenditures, and places where the crowding out is greater, experience lower growth in population, employment and income. One important feature of a decentralized system however, is the role of intergovernmental transfers, which may help adjust local fiscal structure, relieve local fiscal stress from crowding out and equalize disparity of local capacity and need. Our model equations 5 and 6 show how federal aid and state aid respond to different types of local need. First, federal aid is responsive to places with more racial minorities, higher inequality and the metro core. Specifically, when there is 1% increase in racial minorities and inequality, federal aid will increase by $2.26 and $6.68 per capita correspondingly. However, places with more poverty and in more rural settings do not receive more federal aid in the post-Great Recession period.

Table 2: Structural Equation Modeling Results (SEM)

	Equation1: Crowding Out	Equation2: Population Growth	Equation3: Employment Growth	Equation4: Per Capita Income Growth	Equation5: State Aid per capita	Equation6: Federal Aid per capita
Crowding Out Effects		-0.02*	-0.01***	-0.03***		
Fiscal Decentralization	0.14***					
Intergovernmental Transfer						
Federal Aid per capita	-6.57e-05***	-	-	-	-	-
State Aid per capita	-2.52e-05***	-	-	-	-	-
Demographic Need						
Percent Under 18 Year Old	-0.16	-	-	-	31.93	1054.50*
Percent 65 Years Old & Over	0.21*	-	-	-	276.33	-1236.12*
Percent in Poverty	0.34***	-	-	-	-251.38**	606.56**
Percent Minority	0.03	-	-	-	225.88***	-153.90
Place Need						
Urban Metro Core	-0.01	-	-	-	121.86***	152.55***
GINI Coefficient	-0.43***	-	-	-	668.12**	-864.50
Percent Postwar Housing	0.19***	-	-	-	-96.24	402.02*
Percent Rural	0.04**	-	-	-	-71.54**	-12.43
Human Capital						
Percent Bachelor & Up	-	0.08***	0.10***	0.11***	-	-
Percent High School	-	-0.07***	0.06***	0.02	-	-
Economic Structure						
Percent Construction	-	0.25***	-0.07**	0.13	-	-
Percent Manufacturing	-	-0.06*	0.01	0.02	-	-
Percent Agriculture & Mining	-	0.09***	0.05***	0.24***	-	-
Percent F.I.R.E.	-	-0.10	0.01	0.09	-	-
Percent Service (Education, Health, Social)	-	-0.14***	0.03**	0.18***	-	-
Percent Professional Service	-	-0.07	-0.10***	-0.09	-	-
Percent Public Administration	-	0.10**	-0.02	0.01	-	-
Size Control						
Population (natural log)	-7.92e-03	7.92e-03***	-1.49e-03**	-8.72e-03***	-55.50***	-158.12***
Local Expenditure per capita	-1.31e-05***	-		-	-	-

N = 3098; Log Likelihood = 17858.755

Second, state aid is more a function of assistance to education and poverty relief, as the results of equation 6 show the positive responses of state aid to localities with more young people and more poverty. The increase of people under 18 years old and poverty rate by 1% will result in $10.55 and $6.07 more state aid per capita to be given to localities. By contrast, places with more elder people receive less state aid. Regarding the spatial dimensions of local need, states generally provide more aid to metro core and communities with old housing and infrastructure. There is a $4.02 increase in state aid per capita if the community has 1% more housing built in the 1950s and 1960s.

These intergovernmental transfer results show the divergent effects with respect to relieving local fiscal stress. The mechanisms of federal aid and state aid are complex and spatially diverse and respond to certain types of local demographic need and types of communities. Thus we may expect greater inequality across space and time as a result of decentralization and its effects on crowding out and on growth, especially for rural areas with older population.

Conclusion

Our models have attempted to model decentralization, crowding out, intergovernmental transfers and local growth as an integrated system. We quantitatively examine the impacts of fiscal decentralization on local spending structure and its impact on growth. In contrast to the normative framework of fiscal federalism, we do not find decentralization is leading to local growth. Instead, our model reveals the mechanism of crowding out under decentralization, where current expenditures at the local level crowd out local spending capital investment. While rising decentralized redistributive

responsibilities are critical in times of recession, capital investment for infrastructure and growth is also important.

Under decentralization the burdens on localities to fund service mandates is rising, particularly for current spending for social responsibilities. Localities may defer investment in infrastructure and other capital expenditures to meet these mandates and social responsibilities. A balanced portfolio of current and capital expenditures is needed to enable local governments to invest in both infrastructure and services, to further promote their growth and ensure social welfare in the post-recessionary period.

Our research draws attention to the question of whether fiscal federalism is broken after the Great Recession. Decentralization policy is often "blind" to the disparities of local need and capacity and our models show intergovernmental transfers do not make up the difference. This may help explain why the potential economic growth benefits promised by decentralization have failed to materialize (Rodríguez-Pose et al, 2009). Our models show intergovernmental transfers are important to relieve local crowding out but are not responsive to all the demographic needs, and they show spatial diversity in reducing fiscal stresses across types of localities.

By identifying places with higher crowding out effects and lower state aid, our paper provides an empirical response to Rodriguez-Pose's (2018) call to focus public finance research on "places that don't matter." We show the need for more adaptive and spatially-targeted state fiscal policy as the key to support local governments in the post-Great Recession environment. We also call for revisiting traditional fiscal federalism theories behind decentralization so that greater attention is given to the tradeoffs between redistributive functions and capital investment at the local level. To build economic

resilience we need to understand where and how decentralization results in crowd out rather than growth promoting local fiscal efficiency. This perspective can help us better understand the connections between changing multilevel political and fiscal dynamics, local spending structure and socioeconomic context, and better answer the question if local governments are "Ready or Not?" and if they are experiencing the "Post-Fiscal Crisis or the Next Fiscal Crisis".

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