Were more regional center-cities better able to manage fiscal stress through the Great Recession? Evidence from 2007-2011.

Policy Capstone

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The Great Recession applied significant fiscal stress on local municipalities. This paper explores the measures of fiscal stress in pursuit of determining whether regionalism has a positive effect on the fiscal health of a sample of center-cities in Midwestern Metropolitan Statistical Areas. The author finds significance for regionalism – as defined by the amount of a region's population within the center city – in the major categories of fiscal stress, with a unanimously positive effect on fiscal health.

I. Introduction

The housing collapse, financial crisis and international crises have significantly affected all levels of the American economy. While individuals and corporations file bankruptcy or receive federal assistance, cities in fiscal stress have far fewer options. They tend to rely on savings, new taxes, service cuts and new borrowing to weather economic storms (Arnett, 2011).

At some point, these short-term fixes are insufficient, and some cities fall into a state of crisis where services and basic functions of government are not possible due. In Pennsylvania, this means assistance from the state and a controlled renegotiation of debt. In Michigan, this means a temporary loss of local control and unilateral contract and debt renegotiation.

Midwestern cities are not new to fiscal crisis. Cities like Detroit and Cleveland have lost a significant amount of population over the past few decades, while cities like Chicago and Indianapolis have grown in regional and international importance. Indianapolis became a consolidated city-county government in 1972, going from a mid-sized city to a major city overnight. In contrast, Detroit has lost nearly 60% of its population since then, and continues to top the list of failing cities – most recently coming under the management of an emergency financial manager.

These areas are separated by more than statistics. Celebrity economists like Richard Florida and Edward Glaeser talk about the importance of center-cities to economic. Urbanists such as Jane Jacobs and Robert Putnam discuss the importance of social connections and “social capital” that successful cities facilitate. These authors maintain that cities are important centers and economic drivers, and should not be thought of as expendable within a region.

David Rusk explores cities and state annexation policies, linking them to generally healthier cities. He finds that cities whose borders are able to extend to encompass the suburbs not only experience less fiscal stress, as can be expected with the broader tax base, but are better able to tackle big issues like major economic development and infrastructure projects, alleviating poverty, and decreasing inequality.

A sizeable body of research has been conducted on regions, regionalism and metropolitan government. These studies focus on two types of regionalism: regional govern*ance* and regional govern*ment*. Regional governance is the interrelation of municipalities within a region, describing mechanisms by which independent cities and towns interact. In this category, regional decisions are executed by local adherence to regional plans with little to no power to enforce regional decisions.

Regional government, on the other hand, describes centralization of a region's political hierarchy, as with New York's merger (1895), Jacksonville's city-county consolidation (1968), Indianapolis' city-county consolidation (1972), Louisville's City-County Consolidation (2003) and others. This latter definition of regionalism has a defined structure with a central political body whose purpose is to provide municipal services and service coordination. This concept is not limited to city-county consolidated cities, as some cities are much more able to annex outlying areas. Coined 'elasticity' by David Rusk, the ability for a city to annex outlying areas is a major factor in the political importance and general health of a center city (Rusk, 2003). Cities such as Detroit have, until lately, become increasingly politically irrelevant in terms of regional policy, where elastic cities like Louisville and Indianapolis are the main drivers of investment within the region.

The latter definition of regionalism will be the focus of this paper. This paper will explore the relationship between regionalism and center-cities level of fiscal stress through the crisis.

I.(a) Rationale for this study:

Public choice scholars such as Charles Tiebout argue that rational actors within a region can define unique service levels, delivery systems and interlocal interactions through negotiations. They contend that municipal competition within regions is a good thing.

Lin Ostrom pioneered the field of Social-Ecological Systems, which describes scenarios and requirements for rational actors to utilize collective self-governance in finding efficient outcomes. Regional economic developers call this "coop-etition," a portmanteau of cooperation and competition. She identified eight core principles of engagement which are needed to successfully come to efficient outcomes:

1. Clearly defined boundaries with effective exclusion of external un-entitled parties;
2. Rules regarding the appropriation and provision of common resources that are adapted to local conditions;
3. Collective choice arrangements that allow most resource appropriators to participate in the decision-making process;
4. Effective monitoring by actors who are part of or accountable to the appropriators;
5. A scale of sanctions for resource appropriators who violate community rules;
6. Mechanisms of conflict resolution that are cheap and of easy access;
7. Self-determination of the community recognized and/or enforced by higher-level authorities;
8. In the case of larger common-pool resources, organization in the form of multiple layers of nested enterprises, with small local CPRs at the base level.

(Adapted from Elinor Ostrom, 1990)

Unfortunately, these principles are not part of the decision-making process within many metropolitan regions. Significant transaction costs are associated with policy coordination, and incentive systems cause regional policy goals to take a back seat to local policy goals (Basolo, 2003). The inherent assumption in this framework is that efficient decisions can, over time, be

obtained through stable negotiations when these eight (or more) principles of engagement are followed. During a fiscal crisis, time is short. With a lack of immediate incentive for suburban municipalities to partner with the center-city on deficit reduction and fiscal management, little regional intervention can be expected in the short term to curb fiscal crises. The ability of local governments to respond to the 2008-2011 national economic collapse serves as the crucible by which this analysis of the impact of regionalism is made.

II. Model Development

The financial crisis had a major effect on regions throughout the United States. This shock to the national economy provides a unique scenario to test whether center-cities weathering the same downturn were able to cope differently based on their unique level of regionalism.

II.(a) About the Data

To determine the effect of regionalism on the determinants of fiscal stress in center cities, a dataset was compiled of Midwestern center-cities that are part of metropolitan statistical areas. Cities are compared using time series analysis for the period between 2007 and 2011. The following describes the methodology, variables and treatment of the dataset.

45 cities within metropolitan regions were used for this analysis. Metropolitan Regions were selected for inclusion in the dataset if they were above 50,000 in population at the 2010 Census. Municipal fiscal data are not readily available in certain states for smaller cities, so this threshold was necessary to ensure data availability and comparability. The geographic area is limited to cities in Michigan, Indiana, Ohio, Illinois, Iowa, Nebraska, Minnesota, Missouri, Kansas and Wisconsin. This region provides enough variation for statistical analysis, but avoids the pitfalls associated with comparing Midwestern states with California, Texas, or Florida.

Metropolitan Statistical Area	Center-City	Metro Population	City Population	City's Share of Population
Akron (OH)	Akron	703,200	199,110	28.31%
Ann Arbor (MI)	Ann Arbor	344,791	112,852	32.73%
Appleton (WI)	Appleton	225,666	72,623	32.18%
Bloomington (IN)	Bloomington	192,714	80,405	41.72%
Canton (OH)	Canton	404,422	73,007	18.05%
Cedar Rapids (IA)	Cedar Rapids	257,940	120,758	46.82%
Champaign-Urbana (IL)	Champaign	231,891	81,055	34.95%
Chicago-Naperville-Joliet	Chicago	9,461,105	2,695,598	28.49%
Cincinnati-Middletown	Cincinnati	2,130,151	296,943	13.94%
Cleveland-Elyria-Mentor (OH)	Cleveland	2,077,240	396,815	19.10%
Columbus-Marion-Chillicothe (OH)	Columbus	1,836,536	787,033	42.85%
Davenport-Moline-Rock Island (IA,IL)	Davenport	379,690	99,685	26.25%
Dayton (OH)	Dayton	841,502	141,729	16.84%
Des Moines (IA)	Des Moines	569,633	203,433	35.71%
Detroit-Warren-Livonia (MI)	Detroit	4,296,250	713,387	16.60%
Duluth-Superior (MN,WI)	Duluth	279,771	86,265	30.83%
Elkhart (IN)	Elkhart	197,559	50,949	25.79%
Evansville (IN)	Evansville	358,676	117,429	32.74%
Flint (MI)	Flint	425,790	102,434	24.06%
Fort Wayne (IN)	Fort Wayne	416,257	253,691	60.95%
Grand Rapids-Wyoming (MI)	Grand Rapids	744,160	192,435	25.86%
Green Bay (WI)	Green Bay	306,241	104,057	33.98%
Holland-Grand Haven (MI)	Holland	263,801	33,051	12.53%
Indianapolis (IN)	Indianapolis	1,778,568	807,584	45.41%
Kalamazoo-Portage (MI)	Kalamazoo	326,589	74,262	22.74%
Kansas City (MO,KS)	Kansas City	2,035,334	459,787	22.59%
Lafayette (IN)	Lafayette	201,789	67,140	33.27%
Lansing-East Lansing (MI)	Lansing	464,036	119,128	25.67%
Lincoln (NE)	Lincoln	302,157	254,001	84.06%
Madison (WI)	Madison	568,593	228,200	40.13%
Milwaukee-Waukesha-West Allis (WI)	Milwaukee	1,555,908	594,833	38.23%
Minneapolis-St. Paul-Bloomington (MN,WI)	Minneapolis	3,279,833	382,578	11.66%
Peoria (IL)	Peoria	379,186	115,007	30.33%
Racine (WI)	Racine	195,408	78,860	40.36%
Rochester (MN)	Rochester	186,011	106,769	57.40%
Rockford (IL)	Rockford	349,431	152,871	43.75%
Saginaw (MI)	Saginaw	200,168	51,508	25.73%
South Bend-Mishawaka (IN,WI)	South Bend	319,224	101,168	31.69%
Springfield (IL)	Springfield(IL)	210,170	116,250	55.31%
Springfield (MO)	Springfield(MO)	436,712	157,360	36.03%
St. Cloud (MN)	St. Cloud	189,093	65,862	34.83%
St. Louis (MO)	St. Louis	2,815,000	319,294	11.34%
Toledo (OH)	Toledo	651,429	287,208	44.09%
Topeka (KS)	Topeka	233,870	127,473	54.51%
Wichita (KS)	Wichita	625,526	382,368	61.13%

Table 1: Metropolitan Areas, Center Cities and 2010 Population

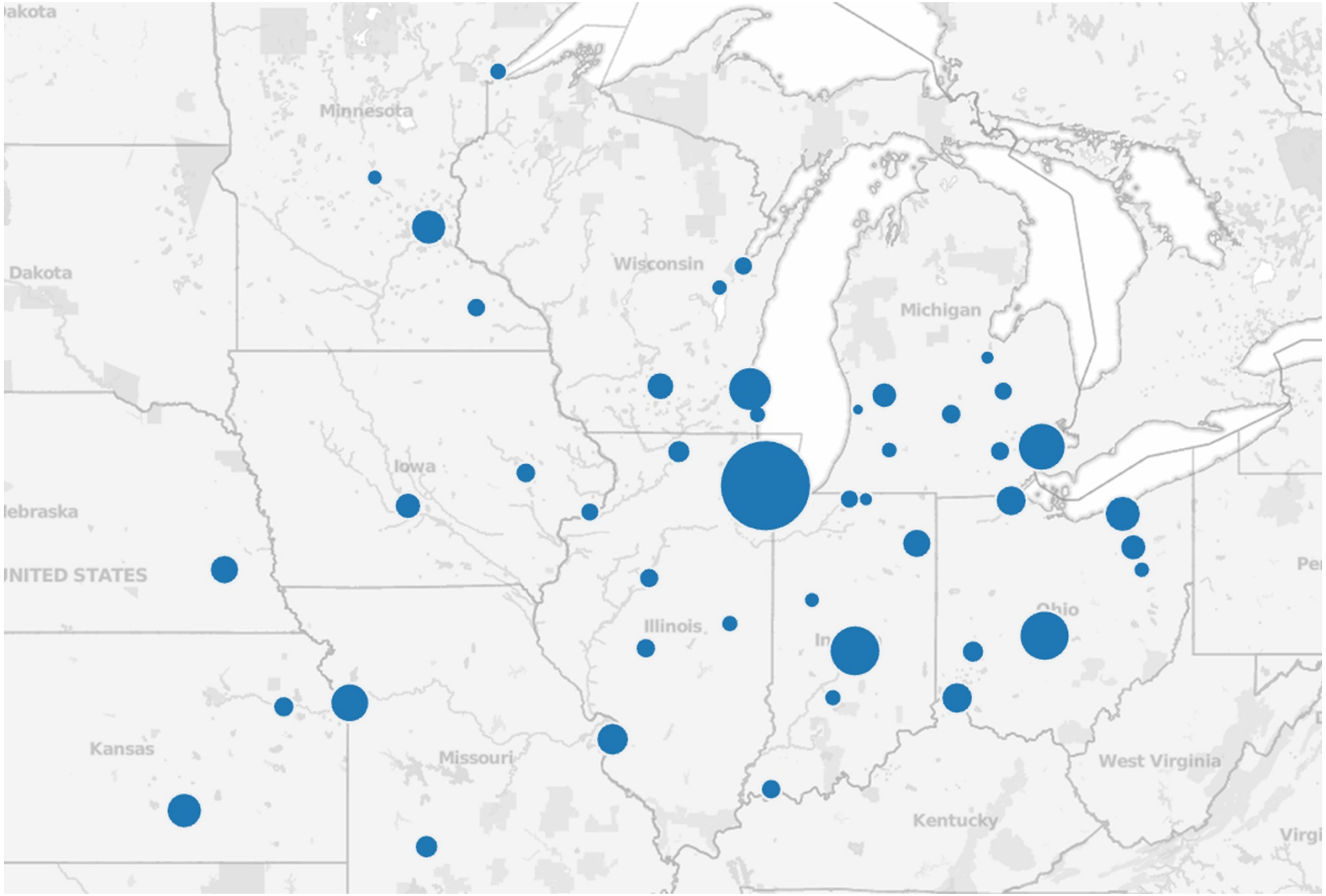


Figure 1: Geographic Limits and Population of Center Cities (2010)

II.(b) Defining Regionalism:

For this study, a city's level of regionalism is defined by the amount of the region's population and economic assets within its borders. Quantitative measures must account for the degree to which a policy body governs a region's assets. It must also take into account the ease of creating partnerships within the region for mutual benefit. It is for this reason that I propose two measures of regionalism:

1.) (Population of the city) / (Population of MSA) = Ratio of City to MSA.
2.) Number of local municipal governments and counties per 10,000 population.

The first measure is the ratio of regional population to center-city population. This measures the amount of economic, social and political activity that is directly affected by decision makers within the center-city. Zoning decisions, tax rates and capital expenditures are significant drivers of local firm location, and thus indirectly drive fiscal health.

The second measure is the ratio of the number of municipal and county governments in the region and the population of that region. This measures the level of governmental fracture within the region, and will help understand whether cities in more centralized regions are better able to cope with stress. It is comprised of the number of local governments that exercise the powers of planning and zoning, as well as the number of counties. This does not include school districts, enterprise services such as water or electricity, nor special-purpose districts like transit authorities, police & fire authorities, and library authorities.

Center-City	Metro Area Population	City Pop.	Total Govs in Region	Gov'ts per Capita	Rank	City's Share of Pop. (City-MSA)	Rank
Akron, OH	703,200	199,110	38	0.0000540387	37	28.31%	29
Ann Arbor, MI	344,791	112,852	10	0.0000290031	45	32.73%	23
Appleton, WI	225,666	72,623	41	0.0001816844	7	32.18%	24
Bloomington, IN	192,714	80,405	15	0.0000778355	26	41.72%	12
Canton, OH	404,422	73,007	29	0.0000717073	30	18.05%	39
Cedar Rapids, IA	257,940	120,758	43	0.0001667054	10	46.82%	7
Champaign, IL	231,891	81,055	47	0.0002026814	4	34.95%	18
Chicago, IL	9,461,105	2,695,598	392	0.0000414328	43	28.49%	28
Cincinnati, OH	2,130,151	296,943	207	0.0000971762	18	13.94%	42
Cleveland, OH	2,077,240	396,815	114	0.0000548805	35	19.10%	38
Columbus, OH	1,836,536	787,033	105	0.0000571729	32	42.85%	11
Davenport, IA	379,690	99,685	63	0.0001659248	11	26.25%	30
Dayton, OH	841,502	141,729	65	0.0000772428	27	16.84%	40
Des Moines, IA	569,633	203,433	67	0.0001176196	13	35.71%	17
Detroit, MI	4,296,250	713,387	127	0.0000295607	44	16.60%	41
Duluth, MN	279,771	86,265	90	0.0003216917	2	30.83%	26
Elkhart, IN	197,559	50,949	11	0.0000556796	34	25.79%	32
Evansville, IN	358,676	117,429	40	0.0001115213	15	32.74%	22
Flint, MI	425,790	102,434	19	0.0000446229	41	24.06%	35
Fort Wayne, IN	416,257	253,691	22	0.0000528520	38	60.95%	3
Grand Rapids, MI	744,160	192,435	42	0.0000564395	33	25.86%	31
Green Bay, WI	306,241	104,057	65	0.0002122511	3	33.98%	20
Holland, MI	263,801	33,051	11	0.0000416981	42	12.53%	43
Indianapolis, IN	1,778,568	807,584	84	0.0000472290	40	45.41%	8
Kalamazoo, MI	326,589	74,262	27	0.0000826727	25	22.74%	36
Kansas City, MO	2,035,334	459,787	187	0.0000918768	19	22.59%	37
Lafayette, IN	201,789	67,140	20	0.0000991134	17	33.27%	21
Lansing, MI	464,036	119,128	35	0.0000754252	28	25.67%	34
Lincoln, NE	302,157	254,001	25	0.0000827384	24	84.06%	1
Madison, WI	568,593	228,200	101	0.0001776315	8	40.13%	14
Milwaukee, WI	1,555,908	594,833	77	0.0000494888	39	38.23%	15
Minneapolis, MN	3,279,833	382,578	246	0.0000750038	29	11.66%	44
Peoria, IL	379,186	115,007	64	0.0001687826	9	30.33%	27
Racine, WI	195,408	78,860	22	0.0001125850	14	40.36%	13
Rochester, MN	186,011	106,769	103	0.0005537307	1	57.40%	4
Rockford, IL	349,431	152,871	19	0.0000543741	36	43.75%	10
Saginaw, MI	200,168	51,508	18	0.0000899245	20	25.73%	33
South Bend, IN	319,224	101,168	19	0.0000595193	31	31.69%	25
Springfield, IL	210,170	116,250	32	0.0001522577	12	55.31%	5
Springfield, MO	436,712	157,360	39	0.0000893037	21	36.03%	16
St. Cloud, MN	189,093	65,862	36	0.0001903825	5	34.83%	19
St. Louis, MO	2,815,000	319,294	307	0.0001090586	16	11.34%	45
Toledo, OH	651,429	287,208	54	0.0000828947	23	44.09%	9
Topeka, KS	233,870	127,473	44	0.0001881387	6	54.51%	6
Wichita, KS	625,526	382,368	55	0.0000879260	22	61.13%	2

Table 2: Measures of Regionalism (2010 only)

II.(c) Defining Fiscal Stress:

Municipal fiscal stress is the subject of substantial literature over the past 30 years. The ample literature has not come upon a single definition of municipal fiscal stress because of the complexities associated with local government, especially across state lines. Stevens and LaPlante (1987) suggest that studies of fiscal distress are best when limited to a specific group of relatively homogenous local governments, and caution against any interstate comparison. However, because levels of regionalism do not vary enough within states to draw statistical conclusions, a simple method of interstate comparison will be proposed and applied.

Local governments may adopt a comprehensive approach to determine their own levels of fiscal stress, such as the Financial Trend Monitoring System (FTMS) offered by the International City/County Management Association (ICMA). FTMSs use extensive local data to diagnose local trends, while lacking significant comparative and benchmarking data (Scorsone et al, 2013).

For geographically extensive comparative studies such as this, a broader set of simple fiscal indicators with interstate comparability should be used. Much literature focuses on identifying simple predictive measures of fiscal stress for what Scorsone et al call “attention-constrained external monitors” such as state governments (2013). An example of this is the study by Tressel and Patrick (2009), who focus on municipalities in Pennsylvania. They apply a binary classification of “distressed” and “not distressed” to municipalities, and formulate a predictive model based on this classification.

Kloha, Weissert and Kleine (2002) determined comparative thresholds of fiscal health indicators and apply a 10-point test to determine the level of fiscal stress in Michigan communities.

While specific measures are not widely accepted, there are general themes present in each definition of fiscal stress. Kloha, Weissert and Kleine (2005) define fiscal distress as "a failure to meet standards in the areas of operating position, debt, and community needs and resources over successive years." The U.S. Government Accountability Office (GAO, 1990) defines fiscal stress as a municipality where “residents bear substantially higher tax burdens in order to obtain levels of public services comparable to better-off communities.” DeSanto et al. (1991) define fiscal distress as a persistent shortfall in cash flow “resulting from an imbalance between revenues and expenditures for given service levels."

Drawing on these general themes – deficits, service levels, burdens, regulatory framework and external forces – a comparative study is possible through careful selection of comparable data and a sample of governments that are truly comparable.

In Trussel & Patrick’s 2009 analysis of all Pennsylvania municipalities, they found four major indicators that determine the probability of a government to be in fiscal distress:

1.) ***Higher*** use of intergovernmental revenue ***increases*** the probability of fiscal stress;

2.) ***Higher*** revenue growth ***decreases*** the probability of fiscal distress;

3.) ***Higher*** administrative expenditures ***decreases*** the risk of fiscal distress; and

4.) ***Higher*** use of debt ***increases*** the risk of fiscal distress.

The first finding is a measure of centralization of revenues. They found in most cases that over-reliance on external funding was either symptomatic or causal of distress at the local level. This measure may have been significant for Pennsylvania in their study, but it suffers from two important drawbacks. First, combining all municipalities – from major cities like Philadelphia and Pittsburgh to rural communities in the Appalachian wilderness – without controlling for the

number of sources allowed by the constitution and state statutes may have subjected the sample to heterogeneous variance or omitted variable bias.

Most states have a hierarchy of services and revenue streams that are used depending on the type of local government. In Michigan, cities are allowed to levy a 1% income tax on residents and .5% on non-residents. Cities are required to maintain roads with state and local funds, while township roads are controlled and funded by the county with only the option of local funding. Unlike Michigan, Illinois allows local sales taxes. Illinois also gives specific and unique taxing authority to the City of Chicago for certain purposes. It could be expected that comparison is easier for center-cities in metropolitan regions, which provide much more similar types of services than the major cities, suburbs, towns, villages and rural townships included in the Trussell & Patrick study.

However, the intergovernmental revenue metric is not present in the Kloha, Wiessert and Kleine study in Michigan, and its purpose in the Trussel & Patrick study was to be a predictor of fiscal stress in Pennsylvania rather than descriptor. These reasons, coupled with the lack of comparable data across states, eliminate the IGR metric from this analysis.

The second finding of Trussell and Patrick's study is intuitive, but undoubtedly assumes that expenditure growth is not outpacing revenue. In Michigan, Kloha, Wiessert and Kleine use real taxable value growth, which largely drives property tax revenues and is often the main source of municipal revenue. Because this study uses time series data, it is possible to use a more appropriate measure of trends by looking directly at the yearly change in revenue.

The third finding by Trussell & Patrick describes the mix of expenditures, not necessarily the quantity. They found municipalities that spent a larger share on administrative costs rather than on services, debt service and capital expenditures, tended to be less likely in fiscal stress.

This measure may be driven by the categorization of administrative and non-administrative expenditures. More spending on services, capital expenditures and debt service can challenge cities by creating less flexibility in budgeting. It was not the intention of the authors to advocate for more spending on administrative costs, but as an indicator that other inflexible costs make a sizeable portion of the budget and thus correlate with fiscal stress. While this measure worked in Pennsylvania, it lacks the "*theoretical validity"* described in Kloha, Weissert and Kleine which enables it to be applied more broadly with causal evidence. At best, it is an indirect indicator of other factors which tend to correlate heavily in Pennsylvania, and not readily applicable outside the state.

Kloha, Weissert and Kleine measure the debt and capital expenditure more directly using long term debt to taxable value and fund balances to revenue, but neglect service levels which are implicit but unmeasured in Trussel & Patrick. This taxable value ratio is sufficient for Michigan, where property taxes fund the majority of local government, but is not sufficient across state lines. To address the service level element of fiscal stress, I broke it down into its component parts. Spending on services is largely a function of the municipality's employment. I used total full time equivalent employees and total police, fire, and public safety officers as more direct measures of service levels. I decided to break police and fire safety services out because of the politics of budgeting. Typically, police and fire are the hardest departments to cut. Because police and fire FTEs are not broken out by municipalities who have combined public safety departments, such as Kalamazoo, MI, I compared the sample of changes in police and fire to overall changes to total city employment where data exists. There was no significant difference in changes between police and fire and overall employment. Because the small number of cities who use combined police and fire seemed to be distributed according to no discernible pattern, I

chose the simpler measure of overall full time equivalent employees as the measure of service levels.

With regard to the debt portion of the implied measure, I utilized debt per capita. Similar to the employment variable, I found a strong correlation between a municipality's debt service and its debt per capita. It stands to reason that a city with higher debt has more debt service per year. Kloha Wiessert and Kleine use debt-to-taxable value as a measure of ability to pay. To account for cities with varying degrees of taxing authority to service their debt without calculating the total taxable value of income, property and special taxes, I chose debt per capita as a simpler measure of a city's ability to pay. While it may not be a satisfactory measure in determining bond rates and credit ratings, the threshold I use compares cities in the sample to one another, accurately capturing cities with abnormally high debt levels.

The fourth finding by Trussell and Patrick, that more debt increases the likelihood of fiscal stress, is accurately captured by debt-per-capita as well.

Kloha, Weissert and Kleine (2009), Advisory Commission on Intergovernmental Relations (1973), the CBO (1979) and others use general fund balance compared to revenue as a way of determining liquidity and fiscal health. This is satisfactory when looking at a single year of data, but presents problems in a panel datasets as used in this paper. The change in current year fund balance is the direct result of the previous year's operating balance. Rather than address the possibility serial correlation, I use general fund per capita to measure cash position and liquidity. Because population is less related to the current year's fund balance than the previous year's operating balance, it is less prone to serial correlation and will affect standard errors in a more predictable way.

By limiting analysis to center-cities within regions, and accounting for the fixed effects of state laws, I argue that it is possible to determine the impact of the measures of regionalism on the various measures of fiscal stress. The following chart shows a comparison of variables in this study compared with other studies cited previously.

Financial Variables:

Study	Indicator	Measures	Comparable measures used in this study
ACIR (1985)	Continuous operations	Revenues – Expenditures over time	Change in Revenue, 2007-2011 Change in Expenses, 2007-2011
Congressional Budget Office (1978)	Continuous operations	Revenues – Expenditures over time	Yearly Surplus (Deficit)
Congressional Budget Office (1978)	Debt burden	Total Debt / Total revenues	Net General Bonded Debt per Capita
Trussell & Patrick (2009)	Use of Intergovernmental Revenue	IGR as portion of total revenue	*Omitted. Not comparable.*
Trussell & Patrick (2009)	Revenue Growth	Current Revenue – Previous Revenue	Change in Revenue
Trussell & Patrick (2009)	Administrative Expenditures	(Total – Non-Admin Expend.) / Total	Employees per capita, Debt per capita, change in employees per capita
Trussell & Patrick (2009)	Debt Level	Debt to Revenue	Debt per capita
Kloha, Weissert, & Kleine (2005)	Population Growth	Year to year percentage change in Population	Change in Population – 2007 to 2011
Kloha, Weissert, & Kleine (2005)	Revenue Growth	Real Taxable Value Growth	Change in Revenue
Kloha, Weissert, & Kleine (2005)	Revenue Growth	Large Taxable Value Decrease (over 2 years)	Change in Revenue
Kloha, Weissert, & Kleine (2005)	Current Expenses	Expenditures / Taxable Value	Yearly Surplus (Deficit) / Revenue
Kloha, Weissert, & Kleine (2005)	General Fund Operating Deficit	(Revenue – Expenditure) / Total Revenue	Yearly Surplus (Deficit) / Revenue
Kloha, Weissert, & Kleine (2005)	General fund balance to revenues	General fund balance / Total Revenue	Fund Balance Per Capita
Kloha, Weissert, & Kleine (2005)	Fund deficits in current or previous year	(Revenue – Expenditure) / Total Revenue for t_0 and t_{-1}	*Captured in time series, general fund only*
Kloha, Weissert, & Kleine (2005)	Long Term Debt to Taxable Value	LT debt / taxable value	Net General Bonded Debt per Capita

Table 3: Fiscal Stress Variables Selected from Literature and Comparable Study Variables

II.(d) Notes on the data sources:

When possible, I avoided any data obtained through surveys. The U.S. Census Bureau performs a survey of local governments every five years. While this data was tempting to utilize, a quick comparison between audited financial reports and Census data presented significant differences which could not be easily explained. Instead, I relied only audited reports of local finances and excluded cities with missing data.

Information on fund balances, debt, population and employment were obtained from the Comprehensive Annual Financial Reports (CAFRs) from each municipality when available. Yearly CAFRs provide in-depth description of finances, and the statistical section provides additional information on demographics and trends.

Because Indiana only requires first-tier cities (based on population) to compile CAFRs, available financial data was obtained from interviews, FOIA requests and Annual Financial Reports. Similar issues were present with Racine, WI and Topeka, IA. Cities with incomplete or unreliable information were omitted from much of the analysis.

Variables on regionalism were obtained from several sources. Population estimates were obtained from the Decennial Census when available. Additionally, most metropolitan planning organizations generate estimates of population for each year. Certain cities, such as Detroit and Cleveland, used Census 2000 population counts from 2001-2010 in their financial reports, with Census 2010 counts appearing in 2011. Each of these cities experienced significant population loss in that timeframe which was not reflected in their financial assumptions or documentation from the MPO. Lacking reliable estimates, I calculated the population trends between the 2000 Census, the American Community Survey(2007) and the 2010 Census. While certainly not a robust estimate of population within those time frames, it is undoubtedly better than the population estimates reported by these municipalities.

III. Methodological Approach:

I utilize two broad approaches to determine the level of effect that regionalism has on measures of fiscal stress. The first approach uses several econometric models such as time series regression accounting for fixed effects, mediation effects and multivariate regressions to estimate the ceteris paribus effect of regionalism measures on each financial variable. This approach will determine the magnitude and direction that regionalism has on the individual measures of fiscal health.

The second approach mirrors Kloha, Weissert and Kleine by scoring the health of each municipality based on the full package of variables described previously. Rather than assign binary states for each rating and aggregating the number of "yes" outputs on a ten-point scale, I use a standardized index where cities are penalized or rewarded based on their distance from mean values for the sample. This is sensitive to extreme values, which are relevant when comparing cities' relative fiscal health. This fiscal health score is then analyzed across time to determine the ceteris paribus effect, if any, of the measures of regionalism.

III.(a) Econometric Models and Hypotheses for Approach 1

H_1: Higher levels of regionalism positively affect employment changes.

The first hypothesis is to test whether regionalism affects cuts to staff levels as a proxy for service cuts. There was not enough variation in regionalism and FTEs year-to-year to reliably utilize time series regression. Additionally, the arbitrary time period of one year is beside the broader point of regionalism's effect on staff levels through the fiscal crisis, which can allow time to hide the impact of regionalism on service levels. Because of this, I specify a model using the total change in staff levels from 2007-2011 compared to regionalism scores with controls for population, revenue changes and unemployment:

$$\%Change\_FTE_{i(2007\text{-}2011)} = \beta_1 + b_2 City\_MSA\_Ratio_{i(2011)} + \beta_3 \%Change\_in\_Pop_{i(07\text{-}11)} + \beta_4 \%Change\_in\_Rev_{(07\text{-}11)I} + \beta_5 City\_Unem_{i(2011)} + \beta_6 Region\_Unem_{i(2011)} + \varepsilon_i$$

i = 39

This accounts for the total change through the fiscal crisis without suffering from hidden effects due to the lagged response of employment cuts to fiscal crisis.

Change in Total FTEs (2007-2011)			
	Coeff.	**Std. Err.[1]**	**P-Value**
City-to-MSA Ratio	*0.0495474*	*0.27428*	*0.858*
City-to-MSA Ratio (Squared)	*-0.1021274*	*0.2522877*	*0.688*
Change in Pop (07 to 11)	**0.8594143**	**0.3765751**	**0.029**
Change in Rev (07 to 11)	*0.0095426*	*0.0141761*	*0.506*
City Unemployment	*-0.0061654*	*0.0070536*	*0.389*
MSA Unemployment	*0.0068583*	*0.0109346*	*0.535*
constant	*-0.0538146*	*0.0677732*	*0.433*
Observations	39		
Adjusted R^2	0.484		

Table 4: Regression Table for Change in Total FTEs

Regionalism, as measured by the percentage of population within the center-city, was not a significant predictor of changes to city employment when population was controlled for.

However, the relatively high R-squared[2] value may indicate the presence of a mediative effect. In such a model, the relationship between X and Y is significant in a simple regression[3], but further tests show that X affects Y mostly or only through M (a third variable). In such instances, it is possible to determine the effect of X on Y by finding the product of the partial effects of X and M on Y.

[1] All reported standard errors are robust standard errors unless otherwise noted.
[2] R^2 value describes the amount of variation explained by a model. It can be thought of as a percent, with 100% being a model that fully explains all variation, and 0% describing a model that explains nothing. I say it is relatively high because I have only one variable with significance, and yet the model explains 48.4% of the variation. This could be caused by a variety of factors, but this situation and subsequent tests show the presence of collinearity in support of a mediative effect as explained above.
[3] Simple regressions use one variable to describe variation, while multiple regression uses more than one variable.

Baron and Kenny Test for Mediation

	Dependent Variables	
Independent Variables	**Change in FTE**	**Change in Pop**
City-to-MSA Ratio		**0.4344418**
P-Value (Robust Std. Error)		**0.003**
City-to-MSA Ratio (Squared)		**-0.3251098**
P-Value (Robust Std. Error)		**0.014**
Change in Pop (07 to 11)	**0.8205681**	
P-Value (Robust Std. Error)	**0.007**	
Change in Rev (07 to 11)	*0.0106179*	*0.0107377*
P-Value (Robust Std. Error)	*0.386*	*0.474*
City Unemployment	*-0.0062511*	*-0.004829*
P-Value (Robust Std. Error)	*0.365*	*0.116*
MSA Unemployment	*0.007922*	*-0.0057937*
P-Value (Robust Std. Error)	*0.45*	*0.457*
Observations	39	39
Adjusted R^2	0.4924	0.6267

Table 5: Baron and Kenny Test for Mediation

With the above test confirming the presence of mediation, the indirect effect of regionalism on change in FTE through population change is given as:

$$\beta_x * \beta_m = effect\ of\ \beta_x\beta_m\ on\ Y$$

which, when regressed on change in FTEs, yields the following output:

Combined Effect of Population and Regionalism

	Coeff.	**Std. Err.**	**P-Value**
City-to-MSA(squared)	*-0.07819*	*0.122536*	*0.528*
City-to-MSA*Population Change	**2.11543**	**1.030911**	**0.048**
Change in Rev (07 to 11)	*0.020333*	*0.015938*	*0.211*
City Unemployment	*-0.00916*	*0.006023*	*0.138*
MSA Unemployment	*0.009346*	*0.009043*	*0.309*
constant	*-0.04753*	*0.050282*	*0.351*
Observations	39		
Adjusted R^2	0.396		

Table 6: Combined effect of regionalism and population change on FTEs, 2007-2011

The relevant conclusions from this exercise are limited in terms of usefulness to directly explaining fiscal stress, but are useful in understanding the relationship between regionalism and

fiscal stress. Firstly, population growth was positively affected by regionalism in the dataset. Secondly, population growth was very significant and positively affected cuts to service (that is, growth in population led to positive growth in employment). Combining these two statements, it is reasonable to conclude that cities with a higher regionalism score had less population loss, which in combination affected the level or existence of staff cuts in the sample and time period. At best, this is evidence of a weak association, but it is a large factor in determining the level of service cuts.

The effect of governmental fracture within the region also has a significant effect on the change in service levels through the crisis. If modeled as a straight relationship, the governments-per-capita variable was not significant. By modeling this relationship with a quadratic and controlling for changes in revenues, region size and unemployment, the effect of governments per capita within the region is significant and shows a maximum point at which the positive effects begin to turn negative.

Effect of Governments per Capita on Cuts to Service			
	Coeff.	**Std. Err.**	**P-Value**
%Change in Population	**0.8536441**	**0.3173289**	**0.011**
Governments per 10k-Pop	**0.0458515**	**0.0220552**	**0.046**
Governments per 10k-Pop Squared	**-0.0064286**	**0.0035665**	**0.081**
%Change in Revenue (07-11)	*0.0055968*	*0.0127328*	*0.663*
Center-City Population	*6.29E-09*	*4.92E-09*	*0.211*
City Unemployment	*-0.0038852*	*0.0066837*	*0.565*
MSA Unemployment	*0.0077198*	*0.0102083*	*0.455*
constant	*-0.1244334*	*0.0620252*	*0.054*
Observations	39		
R2	0.5334		

Table 7: Governments Per 10,000 People and Cuts to Service

This finding seems to provide evidence for the existence of an optimal number of city and county governments within a region for minimizing service cuts through the crisis. Solving for the maximum:

$$max(.0458515\ x - .0064286\ x^2) = \mathbf{3.566}$$

The regression shows that, in this dataset and for the time between 2007 and 2011, the level of fracture within the region had a negative effect on service levels when there were more than 3.566 governments – city and county – for every 10,000 people. In short, more local governments within a region were detrimental to the level of services within the central cities beyond a certain point.

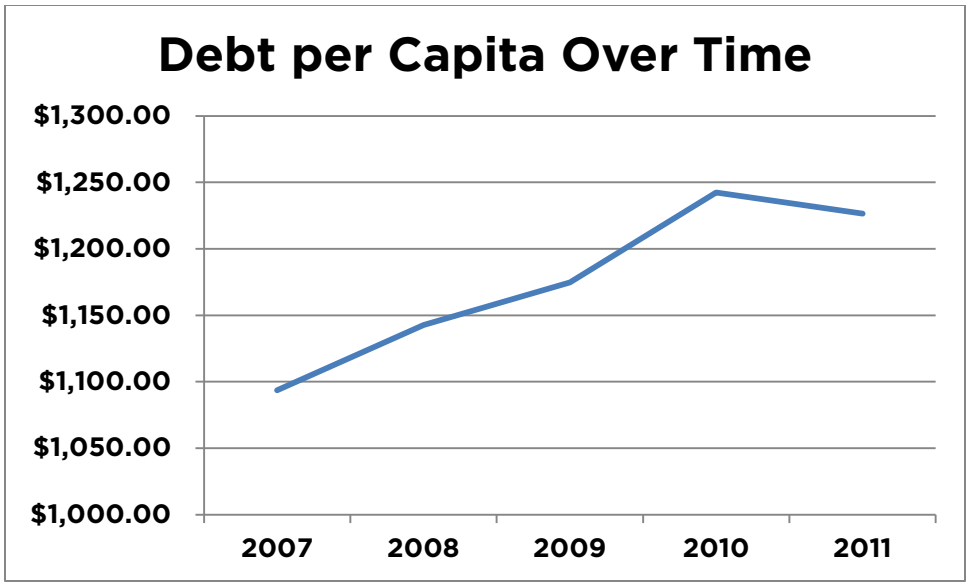
H_2: More regional cities had smaller debt per capita

Overall, cities experienced growth in debt per capita through the fiscal crisis. Debt alone is not an indicator of fiscal stress, but excessive debt is. Local governments use debt to finance major economic development projects capital investments in infrastructure, but debt can also be used to plug holes in yearly budgets as a deficit balance measure. Regardless of its purpose, too much debt can hinder a government's ability to deliver day-to-day services when debt service payments become a sizeable portion of the city's budget.

Kleine, Weissert and Kloha (2005) and Tressel & Patrick (2009) obtained risk thresholds by comparing the cities within their sample. Similarly, I use my dataset to compare debt per capita across cities in determination of whether regionalism has any effect on debt per capita.

Debt per Capita Over Time

	Year	Debt per Capita
Mean	2007	$ 1,093.63
Median	2007	$ 803.87
Std Dev	2007	$ 1,189.73
Mean	2008	$ 1,142.62
Median	2008	$ 858.45
Std Dev	2008	$ 1,231.66
Mean	2009	$ 1,174.72
Median	2009	$ 891.32
Std Dev	2009	$ 1,245.07
Mean	2010	$ 1,242.29
Median	2010	$ 1,072.17
Std Dev	2010	$ 1,306.00
Mean	2011	$ 1,226.52
Median	2011	$ 1,019.38
Std Dev	2011	$ 1,328.25
Mean	2007-2011	$ 1,175.76



To understand the effect of regionalism on Debt per Capita, I use a time series regression which assumes that all differences not controlled for, such as state laws, do not vary over time. I control for metropolitan population and unemployment.

On average, larger cities are able to call down more debt to finance major infrastructure projects, which is not necessarily an indicator of fiscal stress. Because population is heavily impacted by City-MSA, it is not an effective measure of city size. Instead of controlling for population directly, I use revenue as a measure of the city's size. This allows us to understand the effect of the City-MSA regionalism variable while allowing population to vary across time. Further, I specify a quadratic model where City-MSA is able to maximize. The model is specified as follows:

$$\text{Debt Per Capita}_{(2007\text{-}2011)} = \beta_1 + \beta_{2(2007\text{-}2011)}\text{City-MSA} + \beta_{3(2007\text{-}2011)}\text{City-MSA}^2 + \beta_{4(2007\text{-}2011)}\text{City\_Unem} + \varepsilon_i + \alpha_i$$

Effect of Population Ratio on Debt Per Capita			
	Coeff.	**Std. Err.**	**P-Value**
Ratio of City to MSA	**-7645.109**	**3259.654**	**0.02**
Ratio of City to MSA Squared	**5886.163**	**3358.984**	**0.082**
Metro Population (2010)	*-0.004107*	*0.0091563*	*0.654*
Yearly Revenue	*0.000000367*	*0.000000271*	*0.177*
Yearly Average Unemployment (City)	**15.25392**	**5.044755**	**0.003**
Constant	7173.172	10048.57	0.476
Observations	195		
Groups	39		
R^2: Within	0.1223		
Between	0.1224		
Overall	0.1207		

Table 8: Regression Results for Debt Per Capita

This table shows the results of the regression. Strong significance was found for the City-MSA variables as well as yearly unemployment. Because of the quadratic model specification, interpretation is not straightforward. City-MSA and City-MSA^2 must be used in calculating the effect of this measure of regionalism. Solving for the minimum:

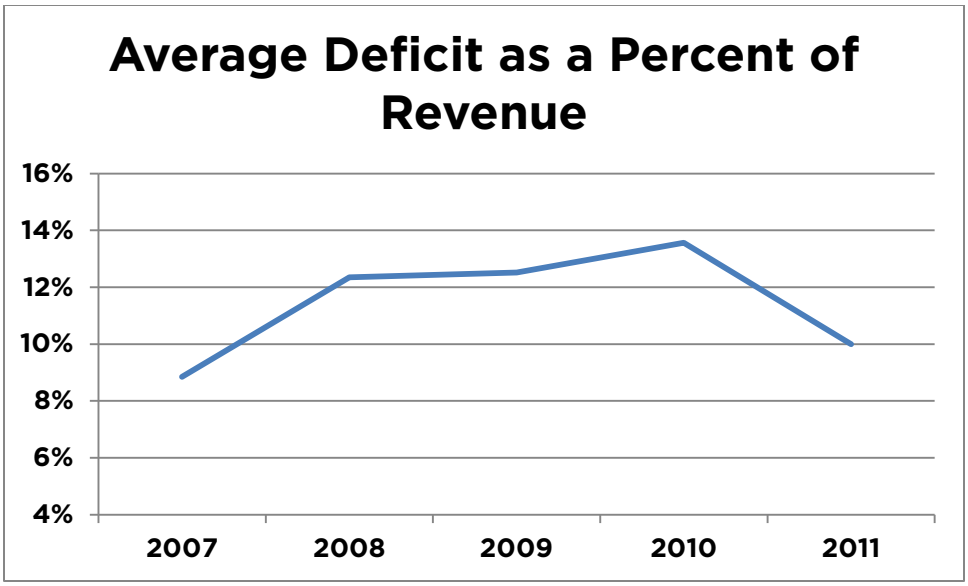
$$min(-7645.109x + 5886.163x^2) = \mathbf{.64941}$$

Interpreting this, the downward effect of regionalism on debt per capita is strongest when the center city has 65.94% of the region's population. A more regional center-city is not a guarantee of smaller debt levels beyond this point, which could be for a number of reasons.

Debt per capita was not significantly determined by governments per capita within the region. (See appendix)

H_3: More regional cities had smaller revenue deficits.

Every city in the dataset had at least one negative difference between revenues and expenditures throughout the stud period, and most had negative differences throughout the study time period.



Most state laws require municipalities to pass and execute balanced budgets. Depending on state laws, these differences are balanced using a varying combination of savings, asset sales, tax increases and new debt. Tax increases often do not take effect until the following year, showing the need for time series analysis. Because state laws vary so much on the nontraditional revenue methods available to cities, this analysis will look solely at the difference of tax revenues to expenditures within the fiscal year.

Yearly Deficits as Percent of Revenue			
	Coeff.	**Std. Err.**	**P-Value**
City-MSA Ratio	**-1.380327**	**0.7310193**	**0.061**
Metropolitan Population	*-2.32E-06*	*4.93E-06*	*0.639*
Yearly Revenue	**3.17E-10**	**1.46E-10**	**0.032**
City Unemployment	*-0.0035152*	*0.0026373*	*0.185*
Constant	*2.806699*	*5.42981*	*0.606*
Number of Obs	194		
Number of Groups	39		
R^2 Within	0.0574		
R^2 Between	0		
R^2 Overall	0		

Table 9: Time Series Regression Results: Deficit/Revenue

The above regression chart shows that City-MSA Ratio is a significant factor in the size of yearly deficits. The negative value is evidence that cities with a greater proportion of regional

population had smaller comparative deficits, supporting the hypothesis that more regional cities were better able to handle the fiscal stress from 2007-2011.

Again with this indicator, governments per capita were not a significant factor determining yearly deficits. See the appendix for regression tables to this effect.

Measuring three main indicators of fiscal stress – service cuts, debt and deficits – I have provided evidence that center cities with a larger proportion of the region's population made smaller cuts to services, had less debt and have smaller deficits. I also found evidence that the composition of the region in which the center-city sits has an impact on the level of service cuts, with either a positive or negative effect depending on the level of regional fracture. This effect did not hold true for debt or deficits.

III.(b) Fiscal Health Scores, Econometric Model & Hypothesis for Approach 2

To construct a measure of fiscal health for each municipality and year, I applied the framework set forth by Kloha, Weissert and Kleine to my data. For each variable, I determined its difference from the mean in standard deviations and summed this difference across all variables.

Most actions by municipalities to improve fiscal health have impacts in the following year, rather than the current. Some steps take even longer, confounding any statistical tools which account for previous year actions. To eliminate the unknown effect of time as a variable, I aggregate the variables across all years and compare fiscal health through the five-year study period.

The following variables are used in this analysis:

- % Change in Employees
- % Change in Revenue
- Deficit to Revenue Ratio
- Fund Balance per capita
- Debt per Capita (Below is Positive)

This analysis assigns positive and negative scores for each of the above variables based on their direction and level of difference from the mean. It is sensitive to outliers, so cities with a large negative fund balance are heavily impacted by the fact that only two of the 45 cities analyzed had a negative general fund balance in any given year. By summing across the five years of the study, yearly variances are balanced out by the broader trend through this period.

Scores for change in employees, change in revenue, deficit to revenue, and fund balance are negative if the city was more negative than the average. Scores improve for cities with less debt per capita.

The following table shows the fiscal health scores for each year of the study, excluding 2007 because the change in FTEs and change in revenue require two years of data.

Fiscal Health Scores by Year and Overall

City	2008	2009	2010	2011	Overall Score	Rank
Appleton	7.9086094	5.8654467	3.6431944	4.5436366	21.96088713	1
Indianapolis	4.4446932	6.2595831	3.6603054	-0.1461749	14.21840679	2
Peoria	2.7036201	1.8970888	2.453752	3.9305918	10.98505273	3
South Bend	2.3705925	-0.2982866	5.759879	2.0629183	9.895103184	4
Springfield, MO	1.9856326	2.6250959	2.7385164	2.1192946	9.468539479	5
Cedar Rapids	0.3340325	6.056066	1.438746	1.4741481	9.302992574	6
Champaign	2.9206563	1.7528801	1.2892355	0.3720574	6.334829337	7
Springfield, IL	2.5852932	1.7183182	1.2263236	0.4951785	6.02511342	8
Rockford	0.5694428	1.2011703	-3.9913577	8.018169	5.797424378	9
Fort Wayne	4.514262	-0.3102135	-0.5880349	1.4028331	5.018846696	10
Madison	2.3166153	0.5358042	1.2657063	-0.3012065	3.816919219	11
Kalamazoo	-2.1114054	3.0959878	1.2197661	1.4114975	3.615846024	12
St. Louis	0.6606905	1.7356925	0.3906968	0.4092176	3.196297408	13
Grand Rapids	1.4353476	0.271454	0.9862995	0.2860485	2.979149541	14
Rochester	0.8680724	0.2205566	0.9488702	0.7028503	2.74034948	15
Lincoln	0.1574558	1.0220816	1.4730453	-0.1439606	2.508622114	16
Saginaw	-0.5630688	0.8611422	1.3489577	-0.637832	1.009199069	17
Canton	-0.4051581	-0.1587506	1.2598631	0.1923977	0.888352146	18
St. Cloud	0.4123255	-1.336435	1.1183918	0.6650611	0.859343374	19
Wichita	0.0033877	0.2003735	-0.1521737	0.0309774	0.082564861	20
Lansing	0.1132286	0.9908869	0.0911794	-1.2289282	-0.033633197	21
Green Bay	-1.61293	0.5492021	0.6656654	-0.0088615	-0.406923909	22
Cincinnati	0.4601762	-0.2417379	-0.05651	-1.1288621	-0.966933743	23
Minneapolis	-0.7062673	0.5691505	-1.41836	0.5681622	-0.987314544	24
Dayton	-1.0205293	-1.0783599	-1.6680515	2.6985549	-1.068385846	25
Toledo	-2.9704286	-0.524937	-0.0724668	1.2793703	-2.288462116	26
Ann Arbor	1.4168844	0.3641005	-2.4407551	-2.4421774	-3.101947689	27
Duluth	-1.5389397	-2.8700617	0.5422531	-0.8020958	-4.668844174	28
Holland	-1.0043805	-1.877013	-1.0591484	-1.1849643	-5.125506189	29
Davenport	-1.0037397	-0.1737316	-2.8670617	-1.44389	-5.488422939	30
Des Moines	-1.611399	-0.6649604	-2.0242857	-1.937282	-6.237927158	31
Columbus	-3.3707171	-3.4209022	0.8300537	-1.3767919	-7.338357514	32
Milwaukee	-2.8181861	-1.3025006	-1.4592386	-1.8037971	-7.383722372	33
Kansas City	-0.0262318	-2.2867193	-3.4356919	-1.7852474	-7.533890398	34
Chicago	-2.0348663	-4.2287628	-1.3992727	-1.1454811	-8.80838293	35
Flint	-0.8799748	-4.0145231	-3.1970611	-2.991268	-11.08282702	36
Detroit	-3.4106822	-2.8262291	-2.6404354	-2.5271394	-11.40448605	37
Akron	-3.8126071	-4.5720571	-0.8398441	-4.085057	-13.30956527	38
Cleveland	-7.2795069	-5.6059001	-5.0409512	-5.5419477	-23.4683059	39

Table 10: Fiscal health scores for each city and year, as well as the overall rank of that city through the study period.

The table shows the scores of each city in order of rank with least stressed at the top and most stressed at the bottom.

To determine the significance of regionalism on these findings, I use the following model:

$$SCORE = \beta_1 + \beta_2 \text{City-MSA} + \beta_3 \text{City Unemployment} + \beta_4 \text{MSAUnemployment} + \beta_5 \text{Population} + \varepsilon_i$$

Where city and MSA unemployment is used to control for exogenous economic factors, population is used to control for city size, and City-MSA is the policy variable measuring the level of influence the center-city has on the region.

Effect of City-MSA Proportion on Fiscal Health Scores			
	Coeff.	**Std. Err.**	**P-Value**
City-MSA	**15.66329**	**6.013143**	**0.014**
City Unemployment	**-1.197204**	**0.4989222**	**0.022**
MSA Unemployment	**2.208054**	**1.097241**	**0.052**
Population	**-0.0000055**	**0.00000195**	**0.008**
Constant	*-1.00E+01*	*7.23E+00*	*0.176*
Observations	39		
R^2	0.2384		

Table 11: City-MSA is an important indicator of overall fiscal stress.

The regression results provide strong evidence in favor of the hypothesis that a more regional center city has a positive impact on fiscal health.

The coefficient on City-MSA can be interpreted as a ten percent increase in the city's share of regional population leading to an increase in fiscal health score of 1.566329.

IV. Conclusion

Discussions of city-county consolidation pop up from time to time in many center-cities, invariably bearing fruit based on the vicissitudes of local politics, campaign organization and electoral strategy. These discussions have largely centered on service efficiency, equity and coordination. The evidence provided here will hopefully add fiscal robustness to that discussion.

As this sample of Midwestern center-cities weathered the international financial crisis, more regional center-cities cut services less than less regional center-cities. Center-cities that are

part of less fractured regions tended to cut services less as well, with evidence for an optimal level of local governments within the region.

More regional center-cities carried less debt per capita through the crisis, with the downward effect of regionalism on debt per capita at its strongest when the center city has two thirds of the region's population. For comparison, Indianapolis has 46% of its region's population, Saginaw and Lansing have 25% and Detroit has about 16%. Beyond two thirds, a more regional center-city is not a guarantee of smaller debt levels, which could be indicative of a number of reasons which should be explored:

- Increased ability to bond for capital projects;
- Increased share of recent capital/infrastructure investment; or simply
- Poor fiscal health.

In this sample set and time period, every city had yearly revenues outpaced by expenses for at least one year – most ran deficits for all. However more regional center-cities had smaller deficit to revenue ratios. Cities made up these shortfalls by issuing new debt, raising taxes, selling assets and dipping into savings and rainy day funds (Arnett, 2011). None of these deficit solutions make the city more competitive in the long run, possibly extending the depth and period of fiscal stress within the city's borders.

In terms of overall fiscal health, I found that more regional center-cities had higher composite fiscal health scores based on the methodology loosely borrowed from Kleine, Wiessert and Kloha.

IV.(a) Implications

Ultimately, these findings add another facet to the discussion about regionalism. Advocates and opponents of regionalism take their position based on opinions about equity, efficiency and coordination. These concepts are often in opposition, leading to coalition failures.

It is not until an exogenous shock tips the balance toward action on regional policy. In Indianapolis, partisan alignment at the city-county level led to consolidation. In 1895, the threat of being outpaced by the 'Second City' led advocates to a narrow victory in New York City. Louisville's consolidation in 2003 came after two previous failed attempts.

With cities throughout the Midwest experiencing extraordinary fiscal stress, a window is opening for extraordinary measures. Currently in Michigan, six cities are under control of an emergency manager, and another three are under review or are party to a consent agreement. These cities have exhausted the traditional options of tax increases, service cuts and new debt. They have lost the ability to elect local leaders in exchange for a single person with the power to unilaterally renegotiate contracts and debt, sell assets and pass budgets.

This research suggests that rethinking the nature of local and regional government, especially in light of the drastic measures currently being levied, may not be too far-fetched. This link between regionalism and fiscal health is something that policymakers at all levels should begin to consider in the search for long term solutions.

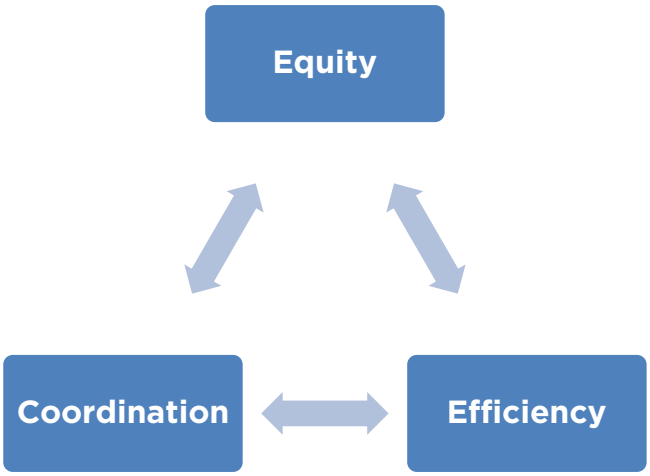


Figure 2: Arguments for and against regionalism initiatives.

IV.(b) Opportunities for further research

This study provides a general framework for further exploration of this issue. The simple metrics for fiscal health can be carried over to most states with relative ease, making it possible to grow the sample and understand not only the effect of regionalism on the center city, but on other cities and towns within the region as well.

Additionally, the quantitative measures of regionalism are still too granular to discern the effect of the unique state and local regulatory framework. This analysis relied heavily on Fixed Effects time series regression, which allows state laws to be different in each state as long as their effect on the policy remains constant over time. Further resolution would come from identifying the bundle of services and powers assigned to governments, and coding for which governmental level oversees each service or power. This would provide a better picture of metropolitan governance models, which were not explored with this analysis.

Appendix I:

Population and Regionalism Metrics, 2011

Center City	City Population (2011)	MSA Population (2010)	Total Muni's	Total Counties	Total Gov'ts	Gov'ts per 10,000 Pop.	Ratio of City Pop. to MSA
Akron, OH	199,110	703,200	36	2	38	0.54039	28.31%
Ann Arbor, MI	113,932	344,791	9	1	10	0.29003	33.04%
Appleton, WI	72,715	225,666	39	2	41	1.81684	32.22%
Bloomington, IN	80,405	192,714	12	3	15	0.77836	41.72%
Canton, OH	73,007	404,422	27	2	29	0.71707	18.05%
Cedar Rapids, IA	126,326	257,940	40	3	43	1.66705	48.97%
Champaign, IL	81,055	231,891	41	6	47	2.02681	34.95%
Chicago, IL	2,695,598	9,461,105	378	14	392	0.41433	28.49%
Cincinnati, OH	296,943	2,130,151	192	15	207	0.97176	13.94%
Cleveland, OH	396,815	2,077,240	109	5	114	0.54881	19.10%
Columbus, OH	790,498	1,836,536	97	8	105	0.57173	43.04%
Davenport, IA	99,685	379,690	59	4	63	1.65925	26.25%
Dayton, OH	141,729	841,502	61	4	65	0.77243	16.84%
Des Moines, IA	203,443	569,633	62	5	67	1.17620	35.71%
Detroit, MI	689,638	4,296,250	121	6	127	0.29561	16.05%
Duluth, MN	86,265	279,771	87	3	90	3.21692	30.83%
Elkhart, IN	50,949	197,559	10	1	11	0.55680	25.79%
Evansville, IN	117,429	358,676	34	6	40	1.11521	32.74%
Flint, MI	101,588	425,790	18	1	19	0.44623	23.86%
Fort Wayne, IN	253,691	416,257	19	3	22	0.52852	60.95%
Grand Rapids, MI	188,040	744,160	38	4	42	0.56439	25.27%
Green Bay, WI	104,057	306,241	62	3	65	2.12251	33.98%
Holland, MI	33,051	263,801	10	1	11	0.41698	12.53%
Indianapolis, IN	820,445	1,778,568	74	10	84	0.47229	46.13%
Kalamazoo, MI	74,262	326,589	25	2	27	0.82673	22.74%
Kansas City, MO	463,202	2,035,334	172	15	187	0.91877	22.76%
Lafayette, IN	67,140	201,789	17	3	20	0.99113	33.27%
Lansing, MI	114,297	464,036	32	3	35	0.75425	24.63%
Lincoln, NE	258,379	302,157	23	2	25	0.82738	85.51%
Madison, WI	233,890	568,593	98	3	101	1.77631	41.13%
Milwaukee, WI	595,525	1,555,908	73	4	77	0.49489	38.28%
Minneapolis, MN	382,578	3,279,833	233	13	246	0.75004	11.66%
Peoria, IL	115,007	379,186	59	5	64	1.68783	30.33%
Racine, WI	78,860	195,408	21	1	22	1.12585	40.36%
Rochester, MN	108,100	186,011	98	5	103	5.53731	58.11%
Rockford, IL	152,871	349,431	17	2	19	0.54374	43.75%
Saginaw, MI	51,508	200,168	17	1	18	0.89924	25.73%
South Bend, IN	101,168	319,224	17	2	19	0.59519	31.69%
Springfield, IL	116,250	210,170	30	2	32	1.52258	55.31%
Springfield, MO	159,498	436,712	34	5	39	0.89304	36.52%
St. Cloud, MN	65,862	189,093	34	2	36	1.90383	34.83%
St. Louis, MO	319,008	2,817,000	291	16	307	1.08981	11.32%
Toledo, OH	287,208	651,429	50	4	54	0.82895	44.09%
Topeka, KS	127,473	233,870	39	5	44	1.88139	54.51%
Wichita, KS	382,368	625,526	51	4	55	0.87926	61.13%
Mean	268,242	983,356	68.133	4.688	72.822	1.12031	34.14%
Median	126,326	379,690	39	3	43	0.82895	32.74%
Standard Deviation	417,638	1,588,161	76.1928	4.0273	79.7274	0.90781	15.21%
Total Cities	45						
Cities With Complete Data	39						

Appendix II: Regression Tables

Hypothesis 3: Regionalism and Deficits

City-MSA (Significant)

```
. xtreg change_in_fundsaspercentofrevenu  city_msa metro_pop_2010 revenue unem_city, fe

Fixed-effects (within) regression               Number of obs      =       194
Group variable: region_id                       Number of groups   =        39

R-sq:  within  = 0.0553                         Obs per group: min =         4
       between = 0.0000                                        avg =       5.0
       overall = 0.0000                                        max =         5

                                                F(4,151)           =      2.21
corr(u_i, Xb)  = -0.9997                        Prob > F           =    0.0705

------------------------------------------------------------------------------
change_in_~u |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    city_msa |  -1.380327   .7310193    -1.89   0.061    -2.824674    .0640201
metro_p~2010 |  -2.32e-06   4.93e-06    -0.47   0.639    -.0000121    7.42e-06
     revenue |   3.17e-10   1.46e-10     2.17   0.032     2.85e-11    6.05e-10
   unem_city |  -.0035152   .0026373    -1.33   0.185    -.0087261    .0016956
       _cons |   2.806699    5.42981     0.52   0.606    -7.921513    13.53491
-------------+----------------------------------------------------------------
     sigma_u |   3.681296
     sigma_e |  .08073165
         rho |   .9995193   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(38, 151) =     6.11             Prob > F = 0.0000
```

Governments Per Capita (Not Significant)

```
. xtreg change_in_fundsaspercentofrevenu govs_per_msa10k metro_pop_2010 revenue unem_city, fe

Fixed-effects (within) regression               Number of obs      =       194
Group variable: region_id                       Number of groups   =        39

R-sq:  within  = 0.0457                         Obs per group: min =         4
       between = 0.0073                                        avg =       5.0
       overall = 0.0046                                        max =         5

                                                F(4,151)           =      1.81
corr(u_i, Xb)  = -1.0000                        Prob > F           =    0.1306

------------------------------------------------------------------------------
change_in_~u |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
govs_per~10k |   5897.737   4171.916     1.41   0.160    -2345.131     14140.6
metro_p~2010 |   .0022783   .0016133     1.41   0.160    -.0009093    .0054659
     revenue |   2.76e-10   1.44e-10     1.91   0.058    -9.12e-12    5.61e-10
   unem_city |  -.0033121    .002646    -1.25   0.213      -.00854    .0019159
       _cons |   -9157.98   6479.873    -1.41   0.160    -21960.91    3644.946
-------------+----------------------------------------------------------------
     sigma_u |  5898.2093
     sigma_e |  .08114399
         rho |          1   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(38, 151) =     6.00             Prob > F = 0.0000
```

```
. xtreg change_in_fundsaspercentofrevenu govs_per_msa10k  govs_per_msa10k_sq metro_pop_2010 revenue
unem_city, fe
note: govs_per_msa10k omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       194
Group variable: region_id                       Number of groups   =        39

R-sq:  within  = 0.0456                         Obs per group: min =         4
       between = 0.0080                                        avg =       5.0
       overall = 0.0051                                        max =         5

                                                F(4,151)           =      1.81
corr(u_i, Xb)  = -1.0000                        Prob > F           =    0.1307

------------------------------------------------------------------------------
change_in_~u |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
govs_per~10k |  (omitted)
govs_per_m~q |   1806.051   1277.954     1.41   0.160    -718.9296    4331.031
metro_p~2010 |   .0015196    .001077     1.41   0.160    -.0006083    .0036474
     revenue |   2.76e-10   1.44e-10     1.91   0.058    -9.13e-12    5.61e-10
   unem_city |   -.003312    .002646    -1.25   0.213    -.0085399     .001916
       _cons |  -5608.713   3970.444    -1.41   0.160    -13453.51    2236.085
-------------+----------------------------------------------------------------
     sigma_u |  9035.0431
     sigma_e |  .08114432
         rho |          1   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(38, 151) =     5.99             Prob > F = 0.0000
```

Method 2:

City-MSA (Significant)

```
. reg overallscore city_msa  unem_msa unem_city population, ro

Linear regression                                       Number of obs =      39
                                                        F(  4,    34) =    6.27
                                                        Prob > F      =  0.0007
                                                        R-squared     =  0.2384
                                                        Root MSE      =  7.6845

------------------------------------------------------------------------------
             |               Robust
overallscore |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    city_msa |   15.66329   6.013143     2.60   0.014     3.443115    27.88347
    unem_msa |   2.208054   1.097241     2.01   0.052    -.0218081    4.437915
   unem_city |  -1.197204   .4989222    -2.40   0.022    -2.211135   -.1832718
  population |  -5.50e-06   1.95e-06    -2.82   0.008    -9.46e-06   -1.54e-06
       _cons |  -9.999976   7.229254    -1.38   0.176    -24.69159    4.691636
------------------------------------------------------------------------------
```

Governments Per Capita (Not Significant)

```
. reg overallscore  govs_per_msa10k unem_msa unem_city population, ro

Linear regression                                       Number of obs =      39
                                                        F(  4,    34) =    4.56
                                                        Prob > F      =  0.0047
                                                        R-squared     =  0.1774
                                                        Root MSE      =  7.9865

------------------------------------------------------------------------------
             |               Robust
overallscore |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
govs_per~10k |   1.138602    1.19106     0.96   0.346    -1.281923    3.559126
    unem_msa |   2.058874   1.074114     1.92   0.064    -.1239891    4.241737
   unem_city |    -1.2933   .5197039    -2.49   0.018    -2.349465   -.2371343
```

```
  population |  -4.75e-06   1.69e-06    -2.80   0.008    -8.18e-06   -1.31e-06
       _cons |  -4.120799   6.047429    -0.68   0.500    -16.41065    8.169055
------------------------------------------------------------------------------

.

. reg overallscore  govs_per_msa10k govs_per_msa10k_sq unem_msa unem_city population, ro

Linear regression                                      Number of obs =      39
                                                       F(  5,    33) =    3.90
                                                       Prob > F      =  0.0069
                                                       R-squared     =  0.2117
                                                       Root MSE      =  7.9357

------------------------------------------------------------------------------
             |               Robust
overallscore |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
govs_per~10k |   6.068589   4.708092     1.29   0.206    -3.510095    15.64727
govs_per_m~q |  -.9340938   .7186927    -1.30   0.203    -2.396285    .5280976 ←Squared
    unem_msa |   1.940241   1.106102     1.75   0.089    -.3101397    4.190622
   unem_city |   -1.09174   .5599441    -1.95   0.060    -2.230955    .0474749
  population |  -3.73e-06   1.55e-06    -2.40   0.022    -6.89e-06   -5.68e-07
       _cons |  -8.925872   7.233339    -1.23   0.226    -23.64221    5.790467
------------------------------------------------------------------------------

.
```

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