

# **Reconsidering Economic Development and Local Government Fiscal Health: Finding the Linkages between a City's Economic Base and Its Budget Volatility**

By

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# Research Question

- Objective: Explore the relationship between a city's economic base and its fiscal health.
  - Research Question: What impact does a city's economic base have on its revenue elasticity and revenue/expenditure volatility?

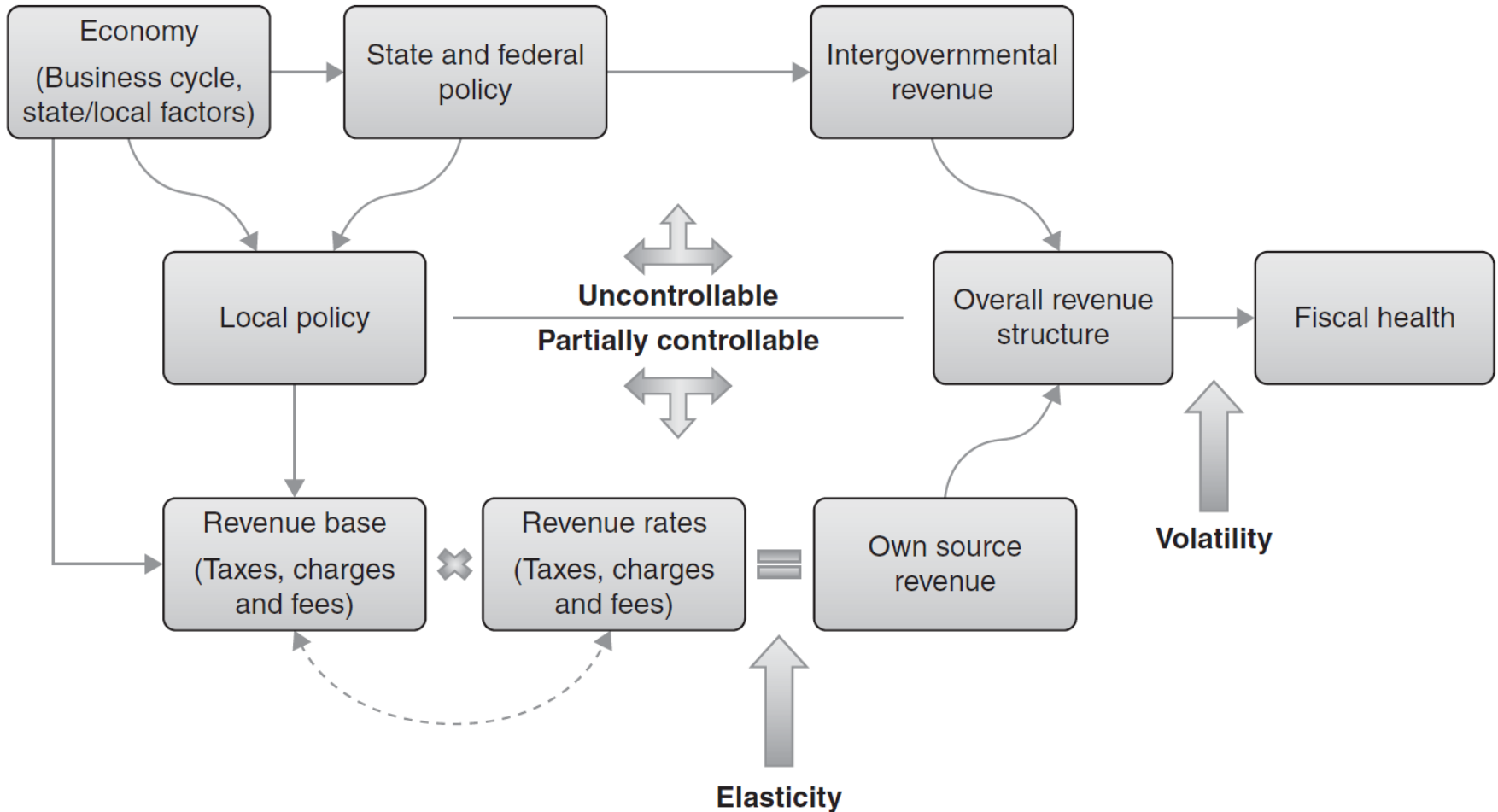
# Municipal Fiscal Health

- Municipal Fiscal Health
  - Revenue Elasticity (Growth)
  - Revenue Volatility (Stability)
  - Expenditure Volatility (Stability)
- Fiscal Structure
  - Endogenous
- Fiscal Policy Space
  - Exogenous

# Fiscal Policy Space

- Five dimensions
  - Intergovernmental context
  - Locally imposed laws
  - Political culture
  - Demand for public goods and services
  - *Economic base*
    - The aggregate of all public enterprises and private firms located in a specific geographic area from which government revenue (property, sales, or other) is directly and indirectly generated.

# Municipal Fiscal Health



# Economic Base and Local Government Revenue

- North American Industrial Classification System (NAICS)
  - Groups industries by similar production processes
  
- Current Fiscal Structures
  - Emerging technologies

# Measuring Economic Base

- Aggregate Employment
- Economic Base Diversification
- Economic Base Clustering/Agglomeration

# Research Design

- Unit of analysis
  - Fiscally Standardized Cities
    - 149 central cities
    - 2005-2012
- Two Way-Fixed Effects Panel Methods
  - Heteroscedasticity and serial correlation present
    - Robust standard errors with Andrews weights
  - All independent variables lagged by one year to correct for endogeneity.



# Estimation Equations

## Revenue Elasticity

- $RE_{it} = \alpha + AE_{it} + EBD_{it} + EBC_{it} + RE_{it-1}$

## Volatility

- (Revenue Volatility)  $RV_{it} = \alpha + AE_{it} + EBD_{it} + EBC_{it} + RE_{it} + RV_{it-1}$

- (Expenditure Volatility)  $EV_{it} = \alpha + AE_{it} + EBD_{it} + EBC_{it} + RV_{it} + EV_{it-1}$

# Dependent Variables

- $RE_{it}$  (Revenue Elasticity)
  - Natural Log (LN)
    - Own Source Revenue
      - Sales Tax Revenue
      - Property Tax Revenue
- $RV_{it}/EV_{it}$  (Revenue/Expenditure Volatility)
  - Two-step process
    - Own Source Revenue
      - Sales Tax Revenue
      - Property Tax Revenue
    - Direct Expenditures
      - Current Operation Expenditures
      - Capital Outlay Expenditures
      - Salary and Wage Expenditures

# Volatility Explained

- Measuring Volatility:
  - Deviation from a growth trend regression model.
  - Two-step procedure employed by Carroll (2009).
    - Step 1:  $Y_{it} = \alpha + \beta_1 t + \beta_2 i$ 
      - $t$  is a vector of dichotomous variables indicating the year.
      - $i$  is a vector of dichotomous variables identifying the municipality.
    - Step 2:  $V_{it} = \left| \frac{Y_{it} - \hat{Y}_{it}}{\hat{Y}_{it}} \right|$

# Independent Variables

- $AE_{it}$  (Aggregate Employment)
  - Unemployment volatility
    - Calculated using same two-step volatility procedure.
  - Unemployment rate
- $EBD_{it}$  (Economic Base Diversification)
  - Hirschman-Herfindahl Index [HHI]
    - Employee based
    - Firm based
- $EBC_{it}$  (Economic Base Clustering)
  - Productivity Proxy
  - Location Quotient

# HHI Explained

- Measuring Economic Base Diversification

- HHI

- $HHI_j = \sum S_{ij}^2$

- $S_{ij}^2$  is the Market Share of Industry  $i$  in County  $j$ .

- Market Share is determined in one of two ways.

- » As a function of the number of *employees* in Industry  $i$  in County  $j$ .

- » As a function of the number of *firms* in Industry  $i$  in County  $j$ .

# Clustering Variables Explained

- *Location Quotient*

$$- LQ_{ij} = \frac{X_{ij}/X_{*j}}{X_{it}/X_{*t}}$$

$$- LQ_{ij} = \frac{(\text{Concentration of jobs in industry } i \text{ in county } j)}{(\text{Concentration of jobs in industry } i \text{ in state } t)}$$

- $LQ > 1 \Rightarrow$  Higher clustering in county than in state.
- $LQ = 1 \Rightarrow$  Same clustering as state.
- $LQ < 1 \Rightarrow$  Lower clustering in county than in state.

# Clustering Variables Explained (Continued)

- *Productivity Proxy [PP]*
  - Value-added to an economy by an employee.
  - $PP_{it} = [GDP_{it} * \frac{Payroll_{ij}}{Payroll_{it}}] / Emp_{ij}$ 
    - *j* County
    - *t* State
    - *l* Industry

# Goodness of Fit Statistics

	Own Source Revenue		Sales Tax Revenue		Property Tax Revenue	
	Elasticity	Volatility	Elasticity	Volatility	Elasticity	Volatility
<b>F</b>	2141***	33.86***	301.9***	886.2***	1433***	37.28***
<b>Adj-R<sup>2</sup></b>	0.9975	0.862	0.9831	0.9942	0.9963	0.8733
<b>N</b>	1043	1043	980	980	1043	1043

1. Signif. codes: '\*\*\*' 0.001; '\*\*' 0.01; '\*' 0.05; '.' 0.1

2. Time and Individual Fixed Effects were used in all regressions, but not included.



# Results

	Own Source Revenue		Sales Tax Revenue		Property Tax Revenue	
	Elasticity	Volatility	Elasticity	Volatility	Elasticity	Volatility
Unemployment Rate	-			+	-	-
Unemployment Volatility						
Employment HHI					-	-
Establishment HHI						
<b>Clustering Variables</b>						
Goods-Producing Industries		-	+	+	+	-
Utilities		+	-			+
Trade and Transportation	+		+	+		-
Information and Financial Activities		-	+	+	+	
Professional and Business Services		-				-
Education, and Health	+	-	+		+	-
Leisure and Hospitality	+		+		+	
Other Services	+			+		

"-" = negative coefficient and statistically significant at a 90% confidence level.

"+" = positive coefficient and statistically significant at a 90% confidence level.

# Summary of Findings

- Economic Base Diversity increases property tax elasticity and volatility.
- Utility clustering leads to higher own source and property tax volatility, and lower sales tax elasticity.
- Overall, clustering resulted in patterns of increased elasticity and volatility for sales tax revenue and increased elasticity and stability for property tax revenue.

# Implications

- Diversification
  - Impact limited to property tax revenue
  - Exacerbates growth/volatility trade-off
- Clustering eliminates the growth/volatility trade-off
  - Own-source revenue.
  - Property tax revenue.
  - But, exacerbates the growth/volatility trade-off of Sales tax revenue

# Goodness of Fit

	Own Source Revenue	Direct Expenditures	Current Operation Expenditures	Capital Outlay Expenditures	Salary and Wage Expenditures
<b>F</b>	33.43 ***	31.32 ***	50.09 ***	4.04 ***	23.00 ***
<b>Adj-R<sup>2</sup></b>	0.8634	0.8558	0.9058	0.3727	0.8116
<b>N</b>	1043	1043	1043	1043	1043

1. All coefficients multiplied by 1000 for readability

2. Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.'

3. Time and Individual Fixed Effects were used in all regressions, but not included in the presentation of material.

# Results

	Own-Source Revenue	Direct Expenditures	Current Operating Expenditures	Capital Expenditures	Salary and Wages Expenditures
Own Source Revenue Volatility		+	+	-	+
Fiscal Slack (Per Capita)	+				
Intergovernmental Revenue (Per Capita)					
Elastic Revenue Sources (%)	+				
Revenue Diversification			-		
Operational Spending (%)	+				
Population (Ln)			+		
Unemployment Rate		+		+	+
Unemployment Volatility				+	

# Results Continued

	Own-Source Revenue	Direct Expenditures	Current Operating Expenditures	Capital Expenditures	Salary and Wages Expenditures
Employment HHI					
Establishment HHI					
Goods-Producing Industries	-	-	-	-	-
Utilities	+	+	+		
Trade and Transportation		-	-		-
Information and Financial Services		-			-
Professional and Business Services	-	-		-	-
Education and Health	-			+	
Leisure and Hospitality		-		+	-
Other Services		+			

# Summary of Findings

- No evidence of a relationship between economic base diversity and budget volatility
- Clustering resulted in patterns of lower budget volatility
- Utility clustering resulted in patterns of increased budget volatility
- Capital outlay volatility is less predictable than operational and salary outlays
- Revenue volatility drives expenditure volatility

**THANK YOU**  
**COMMENTS AND QUESTIONS**



# Appendix A: Full Models (1 of 2)

	Elasticity			Volatility		
	Own Source Revenue	Sales Tax Revenue	Property Tax Revenue	Own Source Revenue	Sales Tax Revenue	Property Tax Revenue
<b>Intercept</b>	9.687 ***	15.247 ***	8.8924 ***	19.737	-518.2 **	60.377 *
<b>Unemployment Rate</b>	-0.855 **	0.544	-1.529 ***	-8.943	256.11 .	-27.59 .
<b>Unemployment Volatility</b>	-0.034	0.0896	-0.019	-1.123	4.2719	-0.629
<b>Employment HHI</b>	-0.441	-8.069	-4.994 **	-32.06	484.32	-331.5 ***
<b>Establishment HHI</b>	0.0276	-3.86	0.1492	-40.87	-37.32	-12.39
<b>LQ Agriculture, Forestry, Fishing and Hunting</b>	-8E-04	-0.017	7E-05	-0.202	-0.114	-0.243
<b>PP Agriculture, Forestry, Fishing and Hunting</b>	9E-05	-2E-04	0.0002 *	-0.008 *	-0.018	-0.009 *
<b>LQ Mining, Quarrying, and Oil and Gas Extraction</b>	-0.002	0.0493 **	0.0018	-0.059	7.5748 ***	-0.15
<b>PP Mining, Quarrying, and Oil and Gas Extraction</b>	-1E-04	0.0001	-1E-04	0.0077	0.0012	-0.008
<b>LQ Utilities</b>	-0.009	-0.049	-0.059	3.6066 *	11.755	7.3511 ***
<b>PP Utilities</b>	-8E-05	-1E-03 .	-2E-04	0.0029	0.065	-0.003
<b>LQ Construction</b>	-0.004	0.1355	-0.033	-4.375 ***	30.102 *	-9.657 ***
<b>PP Construction</b>	-0.003	0.1547 *	0.0013	0.6605	-2.061	0.2966
<b>LQ Wholesale Trade</b>	0.0012	-0.027	-0.06	-2.248	-25.92	-3.271
<b>PP Wholesale Trade</b>	0.0036	0.0453 .	0.0074	-0.453 .	4.9714 .	-0.617 .
<b>LQ Information</b>	-0.028	0.4364 *	-0.04	-2.83	61.822 **	-8.452 ***
<b>PP Information</b>	0.0016	0.0058	0.0062 .	0.041	-0.178	0.1266
<b>LQ Finance and Insurance</b>	0.0141	-0.191	0.0274	2.1128	-8.844	1.1804
<b>PP Finance and Insurance</b>	7E-06	0.0181	-0.004	-0.093	4.0986 .	0.276
<b>LQ Real Estate and Rental and Leasing</b>	-0.018	0.0271	-0.022	-1.301 .	7.1766	-0.918
<b>PP Real Estate and Rental and Leasing</b>	0.0036	0.016	-8E-04	0.0549	2.925 *	0.0129

1. Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

2. Time and Individual Fixed Effects were used in all regressions, but not included in the presentation of material.

# Appendix A: Full Models (2 of 2)

	Elasticity			Volatility		
	Own Source Revenue	Sales Tax Revenue	Property Tax Revenue	Own Source Revenue	Sales Tax Revenue	Property Tax Revenue
LQ Professional, Scientific and Technical	-0.002	-0.144	-0.013	-0.9	3.5639	-4.02 **
PP Professional, Scientific and Technical	0.0146	0.0233	-0.006	0.8856	-0.133	1.3421
LQ Management of Companies and Enterprises	0.0227	0.0853	-0.027	-2.28 .	9.8843	-3.616 *
PP Management of Companies and Enterprises	0.0013	-4E-04	0.002	-0.101	-0.263	-0.12
LQ Administrative and Support and Waste Management and Remediation Services	0.0466	0.1298	0.0296	-3.312 .	25.504	-5.978 **
PP Administrative and Support and Waste Management and Remediation Services	0.002	0.0531	-0.005	0.0714	-0.442	1.4578 .
LQ Educational Services	0.039	-0.087	0.0582	-2.509	-0.843	-4.687 .
PP Educational Services	0.017 *	0.0661 *	0.0204 *	-0.743 *	0.7833	-1.004 *
LQ Health Care and Social Assistance	0.0998	-0.171	-0.104	-9.465 *	24.006	-17.34 **
PP Health Care and Social Assistance	0.0334	0.143	-0.013	-0.011	6.7177	-0.16
LQ Arts, Entertainment, and Recreation	0.0495	0.0414	0.0505	-0.079	-11.84	-1.016
PP Arts, Entertainment, and Recreation	0.0051	0.07 *	0.003	0.1116	1.3666	-0.281
LQ Accommodation and Food Services	0.1764 *	-0.131	0.2821 **	-3.813	22.444	3.5784
PP Accommodation and Food Services	0.0071	-0.059	-0.025	0.7302	-0.953	0.5795
LQ Other Services, except Public Administration	-0.031	0.2043	-0.023	-1.55	53.894 **	-1.14
PP Other Services, except Public Administration	0.1029 .	0.1739	0.0208	0.8194	-19.54	2.8483
LQ Manufacturing	0.0711	0.2068	0.0264	5.115 .	69.17 *	1.6281
PP Manufacturing	-1E-03	0.0218 **	0.0028	-0.227 *	2.1458 *	-0.432 ***
LQ Retail Trade	-0.035	0.1826	0.0091	-1.592	26.638	-9.09 .
PP Retail Trade	0.1121 *	0.5253 *	0.0775	-1.037	40.737 .	-0.947
LQ Transportation and Warehousing	0.0148	-0.067	-0.005	-1.734	39.729 .	-3.332
PP Transportation and Warehousing	0.0006	0.0219	0.0022	-0.25	2.4056	-0.385
DV Elasticity				1.2126	3.4402 .	2.2321 .
Yt-1	0.5026 ***	0.0491 ***	0.5722 ***	501.77 ***	26.526 .	476.94 ***

1. Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

2. Time and Individual Fixed Effects were used in all regressions, but not included in the presentation of material.

# Descriptive Statistics (1 of 2)

	N	Min	Max	Range	Median	Mean	Std.Dev
<b>Dependent Variables</b>							
<b>Own Source Revenue (Ln)</b>	1043	17.8904	24.7330	6.8427	20.4026	20.4573	1.0891
<b>Own Source Revenue (Vol)</b>	1043	0.0000	0.0348	0.0348	0.0067	0.0084	0.0066
<b>Sales Tax (Ln)</b>	979	8.5313	22.7590	14.2277	18.4523	18.1823	1.7556
<b>Sales Tax (Vol)</b>	979	0.0001	3.6064	3.6064	0.0313	0.0997	0.3393
<b>Property Tax (Ln)</b>	1043	16.7566	23.6249	6.8683	19.5147	19.5364	1.0753
<b>Property Tax (Vol)</b>	1043	0.0001	0.0607	0.0606	0.0085	0.0104	0.0085
<b>Economic Base Variables</b>							
<b>Unemployment Rate</b>	1043	0.0240	0.1690	0.1450	0.0600	0.0663	0.0271
<b>Unemployment Volatility</b>	1043	0.0000	0.8929	0.8929	0.0940	0.1175	0.1016
<b>Employment HHI</b>	1043	0.0812	0.1285	0.0472	0.0898	0.0906	0.0057
<b>Establishment HHI</b>	1043	0.0715	0.1589	0.0875	0.0923	0.0947	0.0134
<b>LQ Agriculture, Forestry, Fishing and Hunting</b>	1043	0.0000	13.0108	13.0108	0.6986	1.1547	1.4387
<b>PP Agriculture, Forestry, Fishing and Hunting</b>	1043	0.1778	1052.1520	1051.9750	7.5246	23.1769	64.2505
<b>LQ Mining, Quarrying, and Oil and Gas Extraction</b>	1043	0.0000	13.7674	13.7674	0.3323	0.6145	1.1561
<b>PP Mining, Quarrying, and Oil and Gas Extraction</b>	1043	0.0000	355.9269	355.9269	6.9896	17.1189	31.8865

# Descriptive Statistics (2 of 2)

	N	Min	Max	Range	Median	Mean	Std.Dev
<b>Economic Base Variables (Continued)</b>							
LQ Utilities	1043	0.0000	1.0646	1.0646	0.2491	0.2867	0.1874
PP Utilities	1043	1.0505	324.7481	323.6976	24.6568	35.6144	39.4740
LQ Construction	1043	0.4257	3.3217	2.8960	1.5944	1.6455	0.5274
PP Construction	1043	0.3648	5.2898	4.9250	1.1834	1.2966	0.6066
LQ Wholesale Trade	1043	0.6118	2.7878	2.1760	1.2114	1.2307	0.3176
PP Wholesale Trade	1043	0.5657	15.1931	14.6275	2.3318	2.4960	1.1494
LQ Information	1043	0.2195	1.6625	1.4431	0.7426	0.7478	0.2487
PP Information	1043	1.7239	32.4085	30.6846	4.9624	5.6103	3.3725
LQ Finance and Insurance	1043	0.4801	2.4137	1.9337	1.3458	1.3675	0.3388
PP Finance and Insurance	1043	0.3729	23.7455	23.3726	2.0254	2.6794	2.5128
LQ Real Estate and Rental and Leasing	1043	1.5593	5.6906	4.1313	2.8758	2.9647	0.5893
PP Real Estate and Rental and Leasing	1043	1.6295	22.7554	21.1259	5.8396	6.5001	2.9990
LQ Professional, Scientific and Technical Services	1043	0.6789	3.7961	3.1172	2.0066	1.9928	0.6034
PP Professional, Scientific and Technical Services	1043	0.3386	5.6681	5.3295	1.1590	1.3080	0.7488
LQ Management of Companies and Enterprises	1043	0.0860	2.7995	2.7135	0.3444	0.4119	0.2679
PP Management of Companies and Enterprises	1043	0.0998	40.1612	40.0614	4.0012	5.3798	4.7588
LQ Administrative and Support and Waste Management	1043	0.2540	2.1095	1.8556	0.7202	0.7470	0.2475
PP Administrative and Support and Waste Management	1043	0.2096	3.6702	3.4606	1.1609	1.1838	0.4928
LQ Educational Services	1043	0.1514	1.6236	1.4722	0.5610	0.5770	0.2093
PP Educational Services	1043	0.1173	15.8650	15.7476	1.4361	2.0555	2.0975
LQ Health Care and Social Assistance	1043	0.4046	1.2290	0.8243	0.7329	0.7431	0.1385
PP Health Care and Social Assistance	1043	0.8413	6.9586	6.1173	1.5979	1.6956	0.6114
LQ Arts, Entertainment, and Recreation	1043	0.4020	2.8824	2.4804	0.8568	0.8854	0.3262
PP Arts, Entertainment, and Recreation	1043	0.2701	12.4944	12.2243	1.1507	1.6193	1.3406
LQ Accommodation and Food Services	1043	0.2799	1.7692	1.4894	0.8509	0.8493	0.1793
PP Accommodation and Food Services	1043	0.3805	5.5725	5.1920	0.6952	0.7841	0.4258
LQ Other Services, except Public Administration	1043	1.1976	3.1220	1.9244	2.1414	2.1462	0.2873
PP Other Services, except Public Administration	1043	0.2963	1.7649	1.4686	0.5837	0.6142	0.1937
LQ Manufacturing	1043	0.1348	2.2146	2.0799	0.3852	0.4131	0.1897
PP Manufacturing	1043	1.0798	37.0471	35.9673	5.9582	6.7237	3.8330
LQ Retail Trade	1043	0.7430	2.0480	1.3050	1.0242	1.0501	0.1631
PP Retail Trade	1043	0.5324	1.9642	1.4318	0.9832	0.9989	0.1906
LQ Transportation and Warehousing	1043	0.2513	1.8346	1.5833	0.7114	0.7642	0.2749
PP Transportation and Warehousing	1043	0.5961	11.8729	11.2768	2.4547	2.8754	1.6923

# Full Model Expenditures (1 of 2)

## Table 2: Volatility Regression Results

	Own Source Revenue	Direct Expenditures	Current Operation Expenditures	Capital Outlay Expenditures	Salary and Wage Expenditures
Fiscal Slack (Per Capita)	0.000 *	0.000	0.000	0.001	0.000
Intergovernmental Revenue (Per Capita)	0.0007	-0.0004	-0.0002	-0.0001	-0.0007
Elastic Revenue Sources (%)	-11.483 **	-2.774	-0.233	-11.517	7.116
Revenue Diversification	1.112	-5.377	-7.449 **	27.215	-3.008
Operational Spending (%)	2.142 .	1.643	1.526	7.979	1.068
Population (Ln)	-0.994	1.014	5.897 **	-6.678	0.779
Unemployment Rate	-9.434	-30.643 **	-5.715	-141.410 *	-32.689 .
Unemployment Volatility	-0.954	1.163	0.497	-10.351 .	2.300
Employment HHI	-28.000	84.090	-38.132	483.710	74.723
Establishment HHI	-39.760	-25.629	-12.718	30.181	30.677
LQ Agriculture, Forestry, Fishing and Hunting	-0.262	-0.320 .	-0.247 .	-1.316	0.103
PP Agriculture, Forestry, Fishing and Hunting	-0.008 *	-0.008 *	-0.004	-0.031 .	-0.004
LQ Mining, Quarrying, and Oil and Gas Extraction	-0.052	-0.230	0.023	-0.833	0.255
PP Mining, Quarrying, and Oil and Gas Extraction	0.008	0.006	0.001	-0.018	-0.001
LQ Utilities	3.646 **	2.339 .	3.126 **	-4.907	-2.094
PP Utilities	0.002	0.011 *	0.014 ***	-0.006	-0.002
LQ Construction	-4.545 ***	-2.863 **	-3.034 ***	-1.607	-2.988 .
PP Construction	0.769	0.298	0.088	3.520	0.366
LQ Wholesale Trade	-2.075	1.332	0.616	6.572	1.876
PP Wholesale Trade	-0.378	-0.161	-0.232	-0.511	0.391
LQ Information	-2.594	-3.055 .	-1.396	-9.273	-4.222
PP Information	0.051	-0.251 *	-0.014	-0.477	-0.168
LQ Finance and Insurance	2.326	-1.547	-0.554	-3.022	-5.708 **
PP Finance and Insurance	-0.187	-0.254	-0.096	-0.388	-0.075

# Full Model Expenditures (2 of 2)

## Table 2: Volatility Regression Results

	Own Source Revenue	Direct Expenditures	Current Operation Expenditures	Capital Outlay Expenditures	Salary and Wage Expenditures
LQ Real Estate and Rental and Leasing	-1.089	0.204	-0.034	-1.923	0.112
PP Real Estate and Rental and Leasing	0.048	0.315 **	0.089	0.670	0.030
LQ Professional, Scientific and Technical Services	-1.145	0.474	-0.270	0.580	-1.070
PP Professional, Scientific and Technical Services	0.854	1.138	0.798	5.765	-1.394
LQ Management of Companies and Enterprises	-2.627 *	0.159	-0.230	2.313	2.697
PP Management of Companies and Enterprises	-0.113 .	-0.110 .	-0.076	-0.815 **	-0.087
LQ Administrative and Support and Waste Management and Remediation Services	-3.596 *	-0.482	1.101	-4.926	-3.863
PP Administrative and Support and Waste Management and Remediation Services	0.111	-0.093	-0.174	-1.183	-3.010 **
LQ Educational Services	-2.567	0.667	0.303	-0.097	-0.945
PP Educational Services	-0.750 *	-0.296	-0.288	0.324	-0.276
LQ Health Care and Social Assistance	-10.709 *	-0.602	-0.347	12.072	4.602
PP Health Care and Social Assistance	-0.065	1.106	0.447	8.267 .	1.798
LQ Arts, Entertainment, and Recreation	0.120	0.607	0.031	11.268	-4.789 *
PP Arts, Entertainment, and Recreation	0.217	0.254	-0.220	3.674 *	-0.037
LQ Accommodation and Food Services	-3.865	-0.330	4.032	-14.542	-10.764 .
PP Accommodation and Food Services	0.295	-2.305 *	-0.408	-8.973	1.189
LQ Other Services, except Public Administration	-1.595	2.972 *	0.013	4.548	-3.602
PP Other Services, except Public Administration	0.869	-1.093	1.108	1.821	-0.530
LQ Manufacturing	4.423	0.596	0.643	-11.370	-2.096
PP Manufacturing	-0.202 *	0.070	-0.051	0.531	0.147
LQ Retail Trade	-1.334	2.625	1.768	-13.422	4.268
PP Retail Trade	-1.051	-0.492	-1.002	-12.901	3.951
LQ Transportation and Warehousing	-2.362	-1.154	-2.782 .	11.069	2.268
PP Transportation and Warehousing	-0.325	-0.594 **	-0.389 *	-0.298	-0.580 .
Own Source Revenue Volatility		165.680 ***	132.280 ***	-121.960	188.630 ***
Yt-1	483.520 ***	332.770 ***	475.460 ***	165.290 ***	313.330 ***

# Appendix C: Industry Aggregation (1 of 2)

- Goods Producing
  - Agriculture, Forestry, Fishing, Hunting
  - Mining, Quarrying, and Oil and Gas Extraction
  - Construction
  - Manufacturing
- Utilities
  - Utilities
- Trade and Transportation
  - Wholesale Trade
  - Retail Trade
  - Transportation and Warehousing
- Information and Financial Activities
  - Information
  - Finance and Insurance
  - Real Estate and Rental and Leasing

# Appendix C: Industry Aggregation (2 of 2)

- Professional and Business Services
  - Professional, Scientific, and Technical Services
  - Management of Companies and Enterprises
  - Administrative and Support and Waste Management and Remediation
- Education and Health
  - Education Services
  - Health Care and Social Assistance
- Leisure and Hospitality
  - Arts, Entertainment, and Recreation
  - Accommodation and Food Services
- Other Services
  - Other Services Except Public Administration