Commercial Real Estate Operating Expenses: ***An analysis of Office operating expenses using NCREIF property level data.***

by

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B.A., Mathematics (2011)

Swarthmore College

Submitted to the Program in Real Estate Development in Conjunction with the Center for Real Estate in Partial Fulfillment of the Requirements for the Degree of Master of Science in Real Estate Development

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Abstract

How do the various categories of operating expenses for institutional grade office buildings vary with changes in rental income and occupancy? The general consensus held is that, following the linear relationship that exists between variable expenses, occupancy and income; a change in either occupancy or income would result in a change in variable expenses. The question is by how much and in what direction?

This thesis contributes to answering that question by exploring how tax, utility, insurance and maintenance expenses for office properties, across key markets in the United States, vary with rental income and occupancy level changes.

To achieve this, time-series data on income and expense data for office properties from Q1 2000 to Q4 2014 was analyzed using two panel regressions. One with fixed effects for buildings to exclude all idiosyncratic characteristics of properties and another with fixed effects for time that captured the building differences.

The analysis shows that the elasticities of these expenses to changes in income and occupancy vary across expense type and also across geographic location. Additionally, in majority of the cases, these elasticities were statistically significant.

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CHAPTER 1- INTRODUCTION

When a sophisticated commercial real estate (CRE) investor examines a potential deal, one of the main line items that capture their attention is the Net Operating Income (NOI) that the asset generates. The NOI represents the income stream generated by the operation of the property. As its name suggests, it is a property's yearly gross income net of operating expenses. Gross income includes both rental income and other income such as parking fees, laundry and vending receipts, etc. Operating expenses are costs incurred during the operation and maintenance of a property. They include repairs and maintenance, as well as insurance, management fees, utilities, supplies, property taxes, etc.[1] All in all, this line item shows the investor the potential income that they stand to gain from the asset after all expenses are paid for from rental revenue and other ancillary revenue sources.

Revenue projections have tended to be more robustly and rigorously derived and so those estimates are often times quite close to reality. Multiple rental indices exist in addition to the numerous databases that track rents. These facilitate the creation of sophisticated forecasting models for rental revenue across the different property types. The same, unfortunately, is not true for operating expenses and it's not due to the lack of data. Many of the databases that track rental information also track these very expenses and so it is quite disappointing that not much work has been done on operating expenses.

Now as an investor, would you not prefer if both estimates that result in the NOI were rigorously derived as opposed to the status quo where only revenue projections are afforded the rigor and sophistication? In light of this dichotomy in estimations for the individual parts that result in NOI, this thesis will seek to create that parallel universe or at least, motivate the creation of a structure for more rigorous forecasting of operating expenses for commercial real estate.

At the moment, very little research has been done to formally analyze or model operating expenses in commercial real estate. I have had the opportunity to review a study done by Serguei Chervachidze, Ph. D. and William Wheaton, Ph. D, which looked at this, but from an aggregate level, that is, from a property type and MSA level. Additionally, the Building Owners and Managers Association (BOMA) publishes annual information on aggregate operating expenses across markets in the United States to shed light on the relative expensiveness of owning and operating commercial property in different markets.

Acknowledging the contributions that have been made to research on operating expenses, this thesis would follow the methodology used by Serguei Chervachidze, Ph. D. and William Wheaton, Ph. D and apply it at the property level so as to track the evolution of operating expenses over a period of time. These expenses will be tracked across different markets to explore how different types of operating

[1] https://www.rcanalytics.com/glossary/n/noi-net-operating-income-.aspx

expenses respond to changes in rental income and occupancy to help illustrate the differences in expense elasticities across markets. Additionally, building characteristics will be investigated to understand how they impact these expenses across markets.

The hope is that the findings of this exercise stimulate further work to be done on operating expenses as their importance to CRE cannot and should not be downplayed.

CHAPTER 2- SCOPE OF STUDY

2.1 NCREIF PROPERTY DATABASE

For this exercise, the data used was obtained from the NCREIF Property Database, which is sponsored by NCREIF, a notable and respected force in the commercial real estate industry. For any asset to be included in the NCREIF property database, it has to meet the following criteria:

- *The asset must be operating, that is, generating revenue and at least 60% occupied*
- *Should have been acquired, at least in part, on behalf of tax-exempt institutions held in a fiduciary environment.*
- *Should be an asset that fits under the broader Apartment, Hotel, Industrial, Office or Retail property types.*
- *Should follow an accounting system that complies with the NCREIF Market Value Accounting Policy Manual*[2]
- *Should be valued on a quarterly (at least) basis, either internally or externally, and externally appraised at least once every three years.*

For each asset in this database, quarterly information on base rental revenue, reimbursable revenue, percentage rent, other income, a host of operating expenses and other pertinent property information like occupancy, renovation dates, square footage, etc are captured. Table 1 below highlights some of the operating expense data points that are contained in this database. Their descriptions are not meant to be exhaustive but merely illustrative of some of the expenses that roll up under those broad headings. Further more, it is critical to understand that those definitions are what dictate the NOI universe in the database and so it is imperative that their origins and definitions be clearly understood. This should provide an idea of the type of analysis that can be done.

Expense Category	Description
General and Administrative	This item includes expenses related to travel, legal, audit fees and other expenses that are essential for property managers to execute their administrative functions.
Marketing and Advertising	This captures costs that are incurred for advertising and marketing of vacant space in the

[2] The Market Value Accounting Policy Manual was established in the mid-1980s when the NCREIF Accounting Committee undertook the summarization of the accounting and reporting practices used in the institutional real estate investment industry. -NCREIF Data Contributor Manual

	asset.
Utilities	This contains expenses for all utility costs. It includes costs for water, sewer, power, fuel, oil, etc.
Repairs and Maintenance	This captures costs for material and labor essential for the upkeep at the property. It also includes service contracts for janitorial, engineering, snow removal, etc.
Insurance	This captures total costs for premiums paid to insure the property.
Property Management Fees	This item represents the fees paid to a property manager (external). It also includes uncapitalized leasing agent fees.
Taxes	This item represents all real estate and property taxes paid for the property.
Other Expenses	All other expenses accrued during the quarter that factor into the calculation of NOI.

Table 1

From the exposition provided by table 1, it should be apparent that there are numerous elements that come together to form operating expenses for commercial real estate. Additionally, it should be evident that each has its own nuances. For that reason, although regressions were run on total expenses, this study would focus more on individual expenses not the whole.

This study will explore tax, utility, insurance, and maintenance expenses and analyze how they vary with changes in expected base rental income (EBRI) and occupancy. EBRI in this study is defined as **base rental income/occupancy**.

MARKETS OF INTEREST

This study will analyze data from fourteen office markets in the United States. Commentary on the findings would be primarily centered on the results for the following markets that would be referred to as *"key markets"* throughout this study: New York, San Francisco, Los Angeles, Washington DC, Chicago and Boston.

CHAPTER 3- LITERATURE REVIEW

There have not been many academic exercises of this nature that have explored operating expenses to the level that this thesis seeks to do. Serguei Chervachidze, Ph. D. and William Wheaton, Ph. D, have undertaken a task that is very similar to this, and which informed the process that will be followed for this study, but from an aggregate level, that is, from a property type and MSA level. In their paper *Operating Costs in Commercial Real Estate Properties: Cyclic, Structural and Geographic Components,* they sought to answer the following four questions:

- *Do costs vary and how between property types/markets?*
- *What drives this variance in costs?*
- *Can this variance be modeled to gain insight about markets with no NCREIF coverage?*
- *What share of OPEX is fixed or variable?*

Their study was in two stages: The first part revealed that operating expense costs vary across property types and that further more, there is strong evidence of market-specific fixed cost effects that suggests that there are significant differences across markets in operating expenses. To achieve these results, a panel equation of the form below was analyzed:

$$RealOPEXSqFt_{jt} = \alpha_j + \beta * RealGISqFt_{jt} + \varepsilon_{jt}$$

The subscripts j and t represent the MSA and time period respectively. Those provide the cross sections that are needed for a panel regression. As the data source for this analysis was the NCREIF Property Index, the time periods analyzed were quarterly. The constant, α_j, represents the fixed costs elements unique to each market and the β is the variable cost element coefficient of the independent variable, which for their study was either property income or occupancy.

The second part of their study explored the determinants of these fixed costs across markets. To ascertain this, they modeled the α_j's identified in the first part of their study as dependents on climate metrics from the National Oceanic and Atmospheric Administration (NOAA), wage data from the Bureau of Labor Statistics (BLS) and state property tax rates from Economy.com for the respective MSAs.

Their results for this second part were also strong and underscored some beliefs that have been held in CRE namely that:

1. Climate conditions are important drivers of OPEX. Their analysis showed for example that 1 more month of cooling resulted in monthly OPEX that was higher by $0.10.
2. Labor costs, holding all else constant, increases OPEX by $0.14 cents with a unit increase in hourly labor wages. What this means in essence is that the higher the hourly wage rate of an MSA, the higher the fixed component of OPEX.

3. Higher MSA tax rates result in higher OPEX. Their results revealed that a percentage increase in tax rates increases average OPEX by $0.22

Overall, their findings exposed the fact that OPEX as an aggregate of all the sub components such as tax, insurance, marketing, etc, has two major components:

- A variable cost component that varies with rental income and building occupancy
- A fixed cost component that varies across markets and is driven by certain market specific characteristics such as climate, wage rates, and tax rates.

In furtherance of their research, they tested if their conclusions held at the property level and analyzed how net operating income changed with fluctuations in rental income and occupancy. Quarterly NOI, OPEX and gross income data from Trepp[3] facilitated this analysis that again involved a panel equation with fixed effects, this time for the individual properties that were being tracked. The equation was of the form

$$log(OPEX_{jt}) = \alpha_j + \beta_1 * log(RENT_{jt}) + \beta_2 * log(OCC_{jt}) + \lambda_t$$

The subscripts j and t represent the individual property and time period respectively. Those provide the cross sections that are needed for a panel regression as mentioned earlier. The constants α_j and λ_t represent the fixed costs elements unique to each asset and the error term respectively. The β's represent the variable cost element coefficient of the independent variables RENT, defined as **property income/occupancy rate,** and OCC (occupancy). As this regression is of the log-log form, the coefficients represent elasticities of operating expenses as rents increase (β_1) and as the property fills up (β_2)

Running this regression on Trepp quarterly data from 2006-2011 for 354 Chicago office properties showed that as RENT increased by 1%, OPEX increased by 0.64% holding occupancy constant, and as occupancy increased by on percentage point, holding RENT constant, OPEX increased by 0.41%.

The studies conducted by Serguei Chervachidze, Ph. D. and William Wheaton, Ph. D, examine aggregate OPEX data and reveal that differences exist in the elasticities of OPEX with changes in occupancy and income. These differences exist between MSA's and also at the property level within MSA's. This study will examine operating expenses at the granular level, that is, at the level of individual components that collectively form the operating expense line item that is netted out to arrive at NOI.

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[3] Trepp, founded in 1979, is the leading provider of information, analytics and technology to the global CMBS, commercial real estate, and banking industries. Trepp provides primary and secondary market participants with the enterprise tools to increase their operational efficiencies, information transparency and investment performance. From its offices in New York, San Francisco and London, Trepp serves its clients with products and services to support trading, research, risk management, surveillance and portfolio management. Trepp is wholly-owned by DMG Information, the business-to-business information division of the Daily Mail and General Trust (DMGT).- https://www.trepp.com/about-us/about-trepp/

CHAPTER 4- NCREIF PROPERTY LEVEL DATA ANALYSIS

As discussed, the data used was obtained from the NCREIF Property Database. It is worth noting that this is a very expansive dataset with over 60 variables. This variety notwithstanding, new variables needed to be created for the purposes of this study. This section will discuss the raw data and the new variables that were generated and the motivation behind the creation of these new variables.

4.1 PER SQUARE FOOT MODIFICATION

The raw NCREIF dataset provides current dollars for both expenses and revenues. For the purposes of this thesis and to facilitate more practical discussions about the data points, each variable was divided by the gross square footage of their property in order to normalize the expenses. This normalization creates a variable for each data point that is relative to the gross square footages of the properties and so direct comparisons on a per square foot per quarter basis can be drawn from the findings.

The following three graphs illustrate the normalized utility expense data for New York City, Washington DC, and Boston office properties. Appendix 3 contains graphs for other expense types.

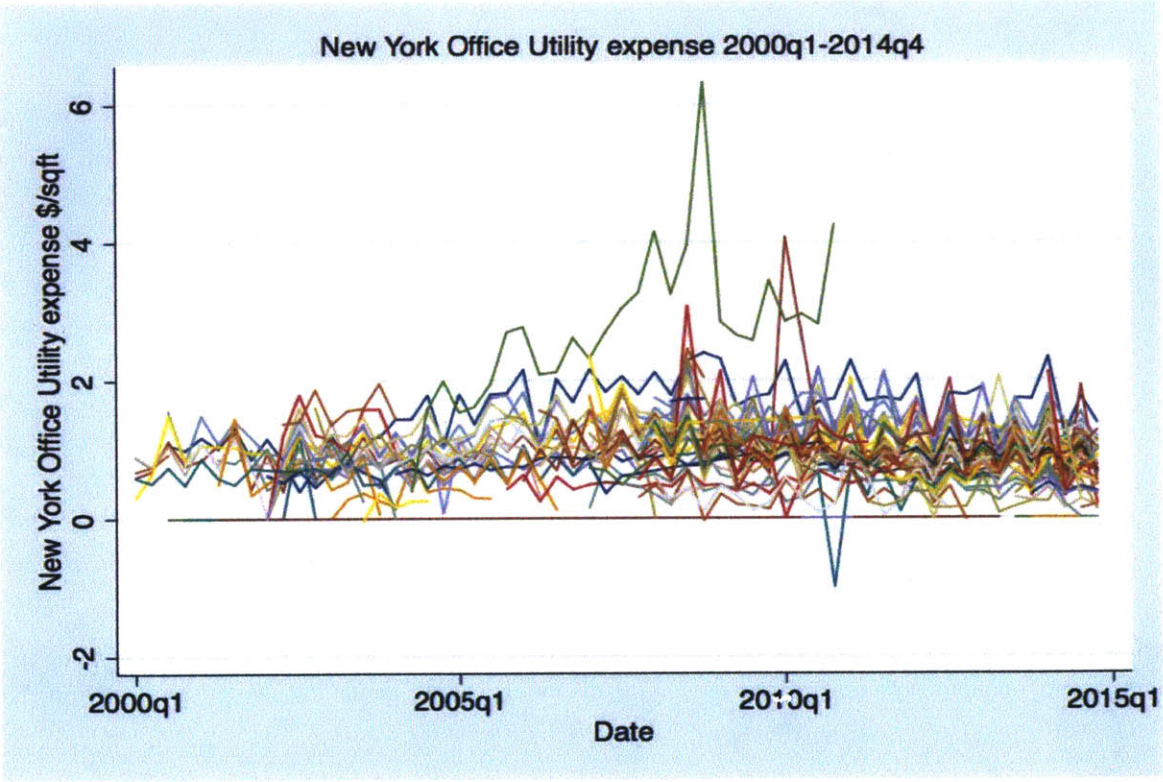


Fig 1

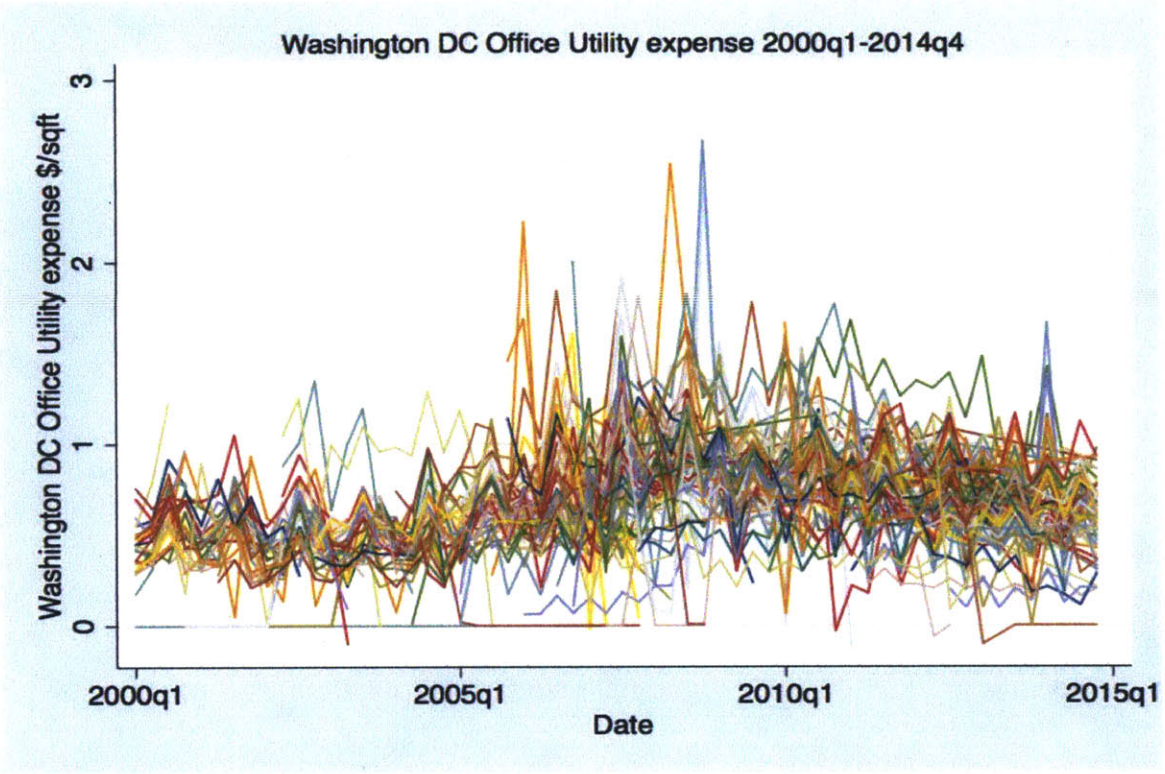

Washington DC Office Utility expense 2000q1-2014q4
Washington DC Office Utility expense $/sqft
0
1
2
3
2000q1
2005q1
2010q1
2015q1
Date

Fig 2

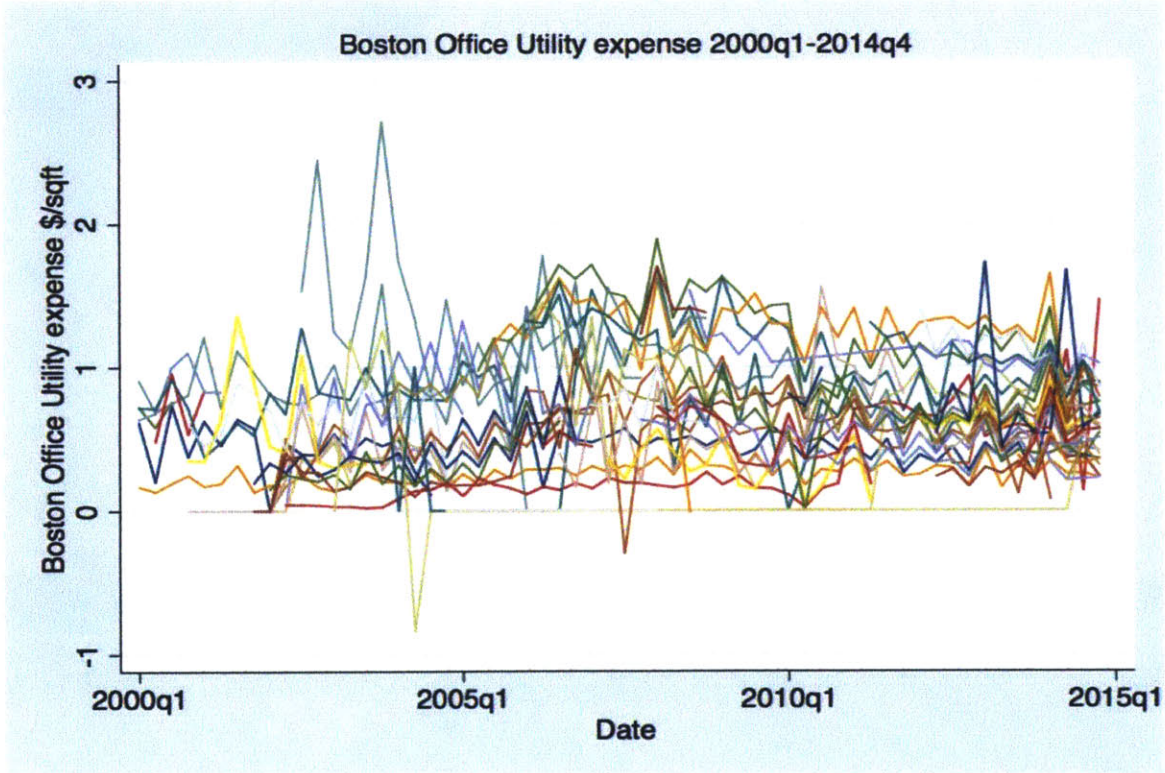

Boston Office Utility expense 2000q1-2014q4
Boston Office Utility expense $/sqft
-1
0
1
2
3
2000q1
2005q1
2010q1
2015q1
Date

Fig 3

4.2 Log conversion

Figures 1-3 from the previous section paint a picture of the distribution of utility expenses over time. Each line represents an individual property whose expenses are being tracked over time. The graphs seem to be following a certain trend line and it is quite evident that each property's change in expense often occurs in the same direction as other properties. To unearth apparent trends in financial data, the Consumer Price Index (CPI) is often used to adjust the data to reflect real growth. For the purposes of this study, and to simplify the process, a CPI adjustment was eschewed for a log transformation.

This log conversion is crucial for this study because it creates the requisite framework for a discussion about the relative elasticities of expenses when log-log regressions are run. The essence and beauty of this transformation lies in the fact that the marginal effect of any of the independent variables on the dependent operating expenses is expected to be linear and so converting the data points to a form that in itself approximates percentage changes facilitates discussions about the impact of a percentage change in the independent variable and its corresponding impact, all else held constant, on the dependent variable.

Additionally, all three figures show some negative expenses for utilities. A ventured guess as to why those assets have negative utility expenses in those quarters is perhaps a result of an expense credit of sorts for utilities in that quarter. They could also be a result of a typing error. Who knows? For this study, such guesses would not be made and so using a log transformation drops those data points (numbers zero and below cannot be transformed to logs without getting imaginary numbers).

To further underscore why a log transformation is necessary for this study, table 2 shows the summary statistics of raw data points converted to dollar per square foot for the purposes of this study. What this table shows is that for the entire universe of stabilized office properties tracked by the NCREIF Property Database from 2000 q1 to 2014 q4, many have data ranges that include negative numbers. This summary thus justifies why this conversion is necessary across all data points.

Variable		Mean	Std. Dev.	Min	Max	Observations	
bvalsqft	overall	252.0195	214.1565	0	8432.54	N =	40110
	between		194.6037	0	2455.146	n =	2689
	within		112.0075	-1995.804	6229.413	T-bar =	14.9163
evalsqft	overall	220.3302	181.1762	0	8432.54	N =	73240
	between		169.9669	0	2475.665	n =	4156
	within		94.63667	-1399.086	6825.1	T-bar =	17.6227
expbas~t	overall	5.704151	3.977258	-95.23397	225.5889	N =	70097
	between		3.284887	-6.130592	93.4414	n =	4011
	within		2.762931	-89.6417	216.8801	T-bar =	17.4762
utili~ft	overall	.4599538	.3867865	-1.761414	16.55568	N =	73240
	between		.317119	-.25	5.145395	n =	4156
	within		.2354111	-2.890059	13.25277	T-bar =	17.6227
maint~ft	overall	.6144984	.4515257	-15.9366	20.83602	N =	73240
	between		.4064158	-.1928077	7.456678	n =	4156
	within		.2694043	-16.47208	19.95152	T-bar =	17.6227
taxsqft	overall	.7482482	.7063824	-10.47072	35.13567	N =	73240
	between		.5740588	-1.345414	5.555601	n =	4156
	within		.442172	-10.26946	33.71886	T-bar =	17.6227
insur~ft	overall	.0939579	.1311151	-2.203823	7.150292	N =	73240
	between		.0949774	-.0461348	1.148934	n =	4156
	within		.0900416	-2.305541	6.302591	T-bar =	17.6227
propsqft	overall	.1482898	.1522265	-8.494233	20.44387	N =	73240
	between		.1057695	-.0405003	1.813154	n =	4156
	within		.1176834	-8.474543	19.37631	T-bar =	17.6227
utili~nt	overall	.0998645	1.272115	-78.04997	257.9711	N =	68969
	between		.4069531	-5.221647	18.48613	n =	3956
	within		1.223014	-72.74377	239.5848	T-bar =	17.434
maint~nt	overall	.1441084	2.395246	-169.8986	441.0065	N =	68969
	between		.7240726	-11.37998	31.69145	n =	3956
	within		2.269671	-158.3745	409.4592	T-bar =	17.434
taxper~t	overall	.172618	3.076116	-273.777	512.6104	N =	68969
	between		1.250293	-25.60536	33.29109	n =	3956
	within		2.890889	-254.7888	479.9746	T-bar =	17.434
insur~nt	overall	.0219464	.4895782	-11.91774	88.07792	N =	68969
	between		.1884161	-7.355824	5.6785	n =	3956
	within		.4657157	-11.17445	82.42137	T-bar =	17.434
p~base~t	overall	.0265651	1.054296	-206.5896	78.28835	N =	68969
	between		.2592327	-14.72358	1.561529	n =	3956
	within		1.030777	-191.8395	77.02922	T-bar =	17.434

Table 2

Fig 4 below shows Boston Office utility expense data that have undergone a logarithmic transformation. The graph follows a trend similar to what was noticed in figure 3. In both instances, the data points seem to be largely constrained within a band and almost always vary in the same direction across time save the few instances where sharp spikes are noticed.

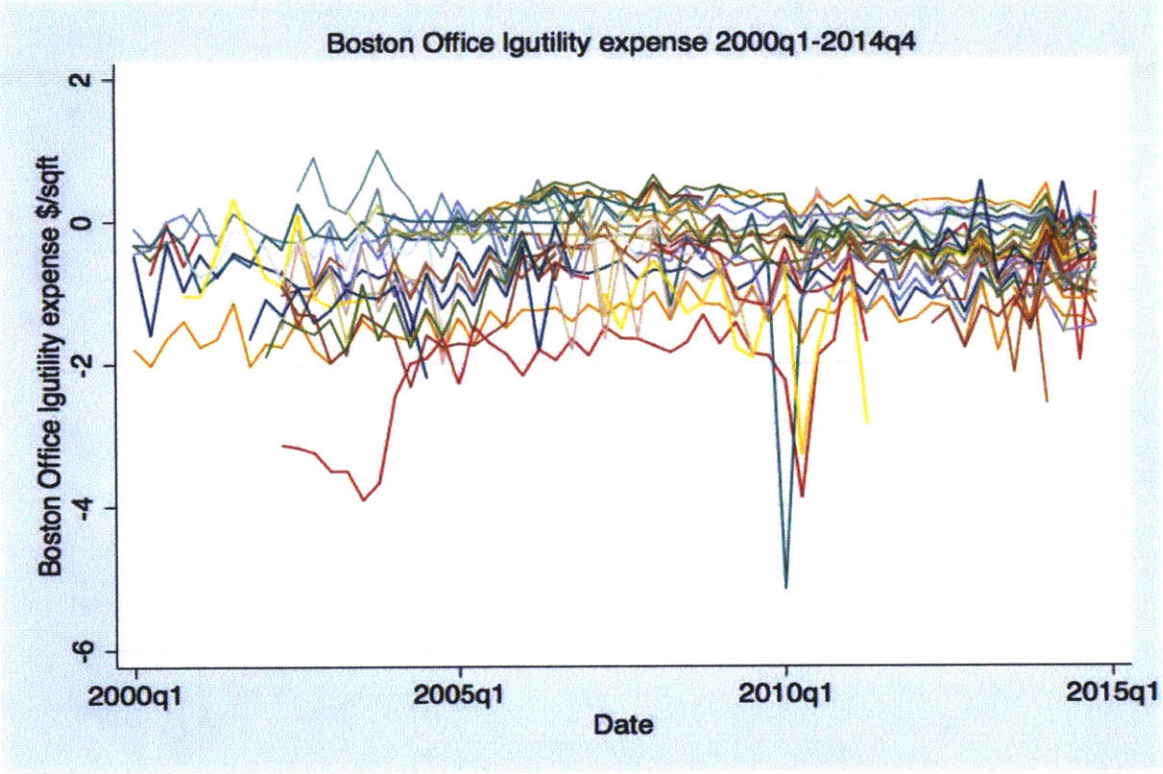


Fig 4

4.3 Panel Models

Now that the data points used in this study have been described, the regressions that were run in this study can be discussed. As was mentioned earlier, the operating expenses that were analyzed in the study were taxes, utility, insurance, and maintenance. The ten regression models that were run across markets and nationally for this study were the following:

$$\textbf{lgexpense}_{jt} = \alpha_j + \beta_1 * lgexpbase_{jt} + \beta_2 * leasepercent_{jt} + \lambda_{jt} \quad (1)$$

$$\textbf{lgutility}_{jt} = \alpha_j + \beta_1 * lgexpbase_{jt} + \beta_2 * leasepercent_{jt} + \lambda_{jt} \quad (2)$$

$$\textbf{lgtax}_{jt} = \alpha_j + \beta_1 * lgexpbase_{jt} + \beta_2 * leasepercent_{jt} + \lambda_{jt} \quad (3)$$

$$\textbf{lginsurance}_{jt} = \alpha_j + \beta_1 ** lgexpbase_{jt} + \beta_2 * leasepercent_{jt} + \lambda_{jt} \quad (4)$$

$$\textbf{lgmaintenance}_{jt} = \alpha_j + \beta_1 ** lgexpbase_{jt} + \beta_2 * leasepercent_{jt} + \lambda_{jt} \quad (5)$$

$$\textbf{lgexpense}_{tj} = \alpha_t + \beta_1 * lgexpbase_{jt} + \beta_2 * leasepercent_{jt} + \beta_3 * Age + \beta_4 * Sqft + \beta_5 * nooffloors + \lambda_{tj} \quad (6)$$

$$\textbf{lgutility}_{tj} = \alpha_t + \beta_1 * lgexpbase_{jt} + \beta_2 * leasepercent_{jt} + \beta_3 * Age + \beta_4 * Sqft + \beta_5 * nooffloors + \lambda_{tj} \quad (7)$$

$$\textbf{lgtax}_{tj} = \alpha_t + \beta_1 * lgexpbase_{jt} + \beta_2 * leasepercent_{jt} + \beta_3 * Age + \beta_4 * Sqft + \beta_5 * nooffloors + \lambda_{tj} \quad (8)$$

$$\textbf{lginsurance}_{tj} = \alpha_t + \beta_1 * lgexpbase_{jt} + \beta_2 * leasepercent_{jt} + \beta_3 * Age + \beta_4 * Sqft + \beta_5 * nooffloors + \lambda_{tj} \quad (9)$$

$$\textbf{lgmaintenance}_{tj} = \alpha_t + \beta_1 * lgexpbase_{jt} + \beta_2 * leasepercent_{jt} + \beta_3 * Age + \beta_4 * Sqft + \beta_5 * nooffloors + \lambda_{tj} \quad (10)$$

Regressions 1 thorough 5 were run with building fixed effects, meaning all the variations in the variables are coming over time within the same property. To capture age and size, models 6 through 10 were run with time fixed effects. Fixing time allows for differences between buildings to be captured in the regressions. Fixed effects models are used in analyzing the impact of variables that vary over time[4] and so employing them in this exercise is very apt.

The subscripts j and t in the models represent the individual property and time period respectively. Those provide the cross sections that are needed for a panel regression as mentioned earlier. The constants α_j, and α_t, represent the fixed costs elements unique in each regression. The variables λ_{tj} and λ_{jt} represent the error terms. The β_1's represent the variable cost element coefficient of the independent variable *lgexpbase*, defined as **base rental income (psf)/occupancy rate.** The coefficient in this case is described as a measure of how elastic each expense type is to a 1% change in EBRI. That is, a 1% change in EBRI results in a β_1% change in each expense type.

The β_2's represent the variable cost element coefficient of the independent variable *leasepercent.* Given that the data points for this variable take values between 0 and 1, its coefficient can also be described as a measure of how elastic each expense type is to a 1% change in percent leased. In this case, a 1% change in percent leased results in a β_2% change in each expense type, all else kept constant.

The coefficients for *Age, Sqft* and *nooffloors* are however not as straightforward as the other two coefficients. In order to be described as elasticities, each coefficient has to be multiplied by 100. Therefore a β_4 coefficient of .002 in equation 10 would therefore imply that a unit change in square footage would result in a .2% increase in maintenance expense. The same holds for the coefficients of *Age* and *nooffloors.*

With the exposition that this chapter provided, it is hoped that the next chapter is more accessible to the reader as it relies on a high-level of understanding and appreciation of the materials and process discussed thus far.

[4] http://www.princeton.edu/~otorres/Panel101.pdf

CHAPTER 5- PANEL ANALYSIS WITH BUILDING FIXED EFFECTS

5.1 REGRESSION OUTPUT

Figure 5 below shows a typical fixed effects panel regression output from STATA. The first section of this chapter will discuss the key components of the regression outputs and set the stage for the discussion of results for each expense type and the variances noted across different markets. Appendix 1 and 2 of contain all the regression outputs for the different expense types across all markets explored for this study.

```
Fixed-effects (within) regression               Number of obs      =     63,860
Group variable: ncreifprop~d                    Number of groups   =      3,726

R-sq:                                           Obs per group:
     within  = 0.0323                                         min =          1
     between = 0.1828                                         avg =       17.1
     overall = 0.1466                                         max =         60

                                                F(2,60132)         =    1004.80
corr(u_i, Xb)  = 0.2632                         Prob > F           =     0.0000

------------------------------------------------------------------------------
   lgutility |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .2779606   .006353    43.75   0.000     .2655088    .2904125
leasepercent |   .2345915   .0171503   13.68   0.000     .2009769    .2682061
       _cons |  -1.613492   .0189872  -84.98   0.000    -1.650707   -1.576277
-------------+----------------------------------------------------------------
     sigma_u |  .97349432
     sigma_e |  .45341134
         rho |  .82174053   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(3725, 60132) = 46.34                 Prob > F = 0.0000
```

Fig. 5

Equations 1 to 12 in section 4.3 described the nature of the regression models and the subsequent paragraphs described the coefficients of the variables. From the regression output above, these coefficients are captured in the column labeled *Coef.* and provide us with an indication of how the dependent variable changes with a change in the independent variable.

The output above represents the results of a fixed effects panel regression that was run on *lgutility* (logged utility per square foot) data for all office properties contained in the NCREIF property database from 2000q1 to 2014q4 that reported utility expenses. A total of 63,860 observations, representing 3,726 properties were used for this regression. The results show that *lgexpbase* (log expected base rental per square foot) and *leasepercent* have a statistically significant influence on

lgutility. This deduction is made from the fact that the p-values (column labeled P>|t|) for the coefficients are less than 0.05. Furthermore, this statistical significance can be ascertained from the fact that the confidence interval for the coefficient does not contain zero. Note however that statistical significance does not necessarily equate to practical significance.

In summary, the results of the regression show that a 10% increase in expected base rental income generates a 2.8% increase in utility expenses, all else held constant. The results also reveal that a 10% increase in leased percentage increases utility expenses by 2.3%, all else held constant. Additionally, both coefficients are statistically significant.

Now that the regression output in fig.5 has been explained, this chapter will discuss the results of the regressions, with building fixed effects, which were run on total expenses and the individual expense types. Each expense discussion would begin with an overview of the regression output and results for all office properties (national), and then segue into a discussion of the MSA results.

5.2 Total Expense Regression Results

Fixed-effects (within) regression — Number of obs = 68,524
Group variable: ncreifprop~d — Number of groups = 3,947

R-sq:
- within = 0.0734
- between = 0.2801
- overall = 0.2422

Obs per group:
- min = 1
- avg = 17.4
- max = 60

F(2,64575) = 2556.36
corr(u_i, Xb) = 0.3397 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3093759	.004355	71.04	0.000	.3008401	.3179117
leasepercent	.1744665	.0115641	15.09	0.000	.1518009	.1971322
_cons	.1015089	.0129438	7.84	0.000	.076139	.1268788
sigma_u	.72867739					
sigma_e	.32237142					
rho	.8363139	(fraction of variance due to u_i)				

F test that all u_i=0: F(3946, 64575) = 66.42 — Prob > F = 0.0000

Fig. 6

The above regression output presents the results for the analysis of the impact of changes in leased percentage and expected base rental income on total office expenses. It shows that nationally, a 10% increase in expected base rental income in a particular building results in a 3% increase in total expenses. Furthermore, the

results tell us that a 10% increase in occupancy in a particular building yields about a 2% increase in expenses. Additionally, both of these coefficients are statistically significant in the determination of total expenses.

Table 3 presents a summary of the coefficients for leased percent and income across the different MSA's analyzed for this study, and their statistical significance.

City	Income Coefficient	Statistically Significant	Occupancy Coefficient	Statistically Significant	Total Expense Constant
National	**0.31%**	**Yes**	**0.17%**	**Yes**	**$1.11**
Atlanta	0.42%	Yes	0.35%	Yes	$0.80
Austin	0.33%	Yes	0.22%	Yes	$1.22
Boston	0.45%	Yes	0.14%	No	$1.25
Cambridge	0.32%	Yes	0.19%	No	$1.31
Chicago	0.20%	Yes	0.26%	Yes	$1.94
Dallas	0.35%	Yes	0.39%	Yes	$0.96
Denver	0.29%	Yes	0.46%	Yes	$1.02
Houston	0.48%	Yes	0.42%	Yes	$0.85
Los Angeles	0.56%	Yes	0.77%	Yes	$0.59
Miami	0.49%	Yes	0.56%	Yes	$0.73
New York	0.69%	Yes	0.30%	Yes	$0.79
Philadelphia	0.37%	Yes	0.08%	No	$1.44
San Fran.	0.36%	Yes	0.21%	Yes	$1.46
Seattle	0.49%	Yes	0.48%	Yes	$0.64
Wash. DC	0.31%	Yes	0.26%	Yes	$1.61

Table 3

Figures 7 to 9 present the results graphically and show a clear difference across cities for how total expenses change with respect to changes in rental income and percent leased for a particular office building.

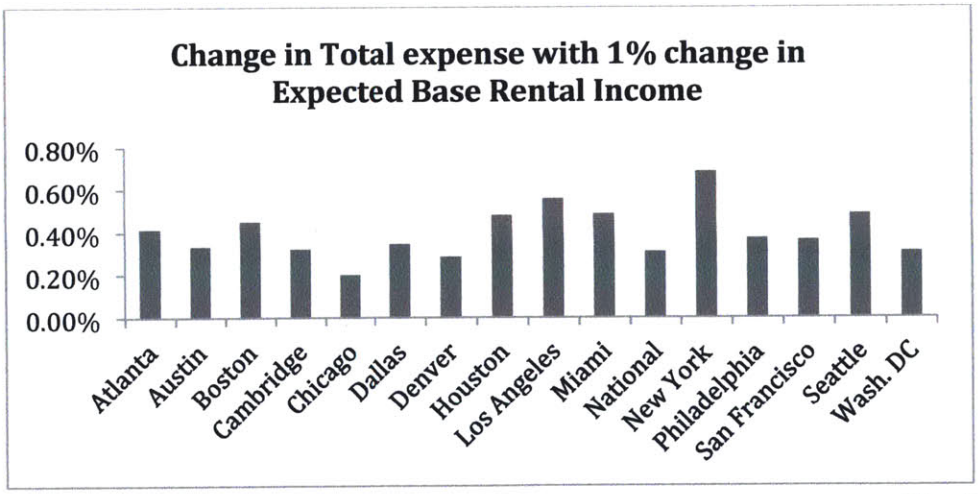


Fig. 7

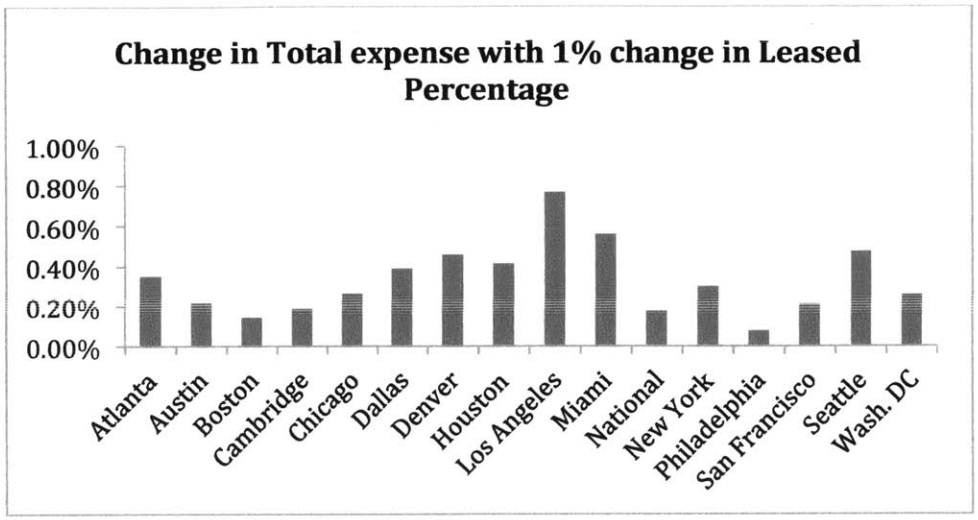


Fig. 8

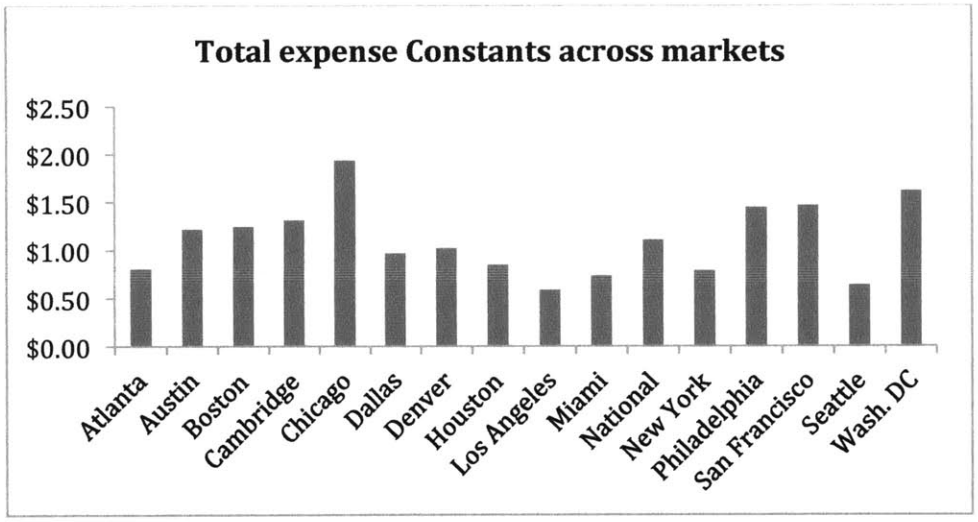


Fig. 9

New York and Chicago have the highest and lowest income elasticities respectively. In New York, a 10% increase in income at a particular building results in a 7% increase in total expenses whereas in Chicago, that same change in income results in a 2% increase in total expenses. Both coefficients are statistically significant in determining total expenses for buildings in their respective cities.

With respect to occupancy, Los Angeles has the highest elasticity. In LA, a doubling of occupancy results in an almost 80% in total expenses. This is noteworthy as in other key markets like Washington DC and San Francisco, a doubling of occupancy results in a 26% and 21% increase in total expenses respectively. With the exception of Cambridge, Boston and Philadelphia, all occupancy coefficients are statistically significant in determining total expenses in their respective markets.

Figure 8 presents the fixed cost (constants) of total expenses for buildings across the different markets. It shows very clearly that these fixed cost elements vary widely across markets with Chicago and Los Angeles having the highest and lowest fixed costs respectively. Baseline total expense costs per square foot per quarter in Chicago are $1.94 compared to $0.59 in Los Angeles and $1.11 nationally.

Collectively, these results confirm the fact that as both income and occupancy increase total expenses also increase, albeit at different rates across markets.

Following the discussion of aggregate expenses, the upcoming sections of this chapter distill four expenses and provide discussions on the regressions for these individual expense types. We will begin with a discussion of utility expenses.

5.3 Utility Expense Regression Results

Figure 5 in section 5.1 presented the results of the regression of income and occupancy on utility expense for all office properties that reported utility income from 2000q1 to 2014q4. What it showed was that nationally, a 100% increase in expected base rental income at a particular office building yields an approximate 30% increase in utility expenses, all else held constant. The results further revealed that a 100% increase in leased percentage increases utility expenses by 23%, all else held constant.

Table 4 presents a summary of the coefficients for leased percent and income across the different MSA's analyzed for this regression together with their statistical significance.

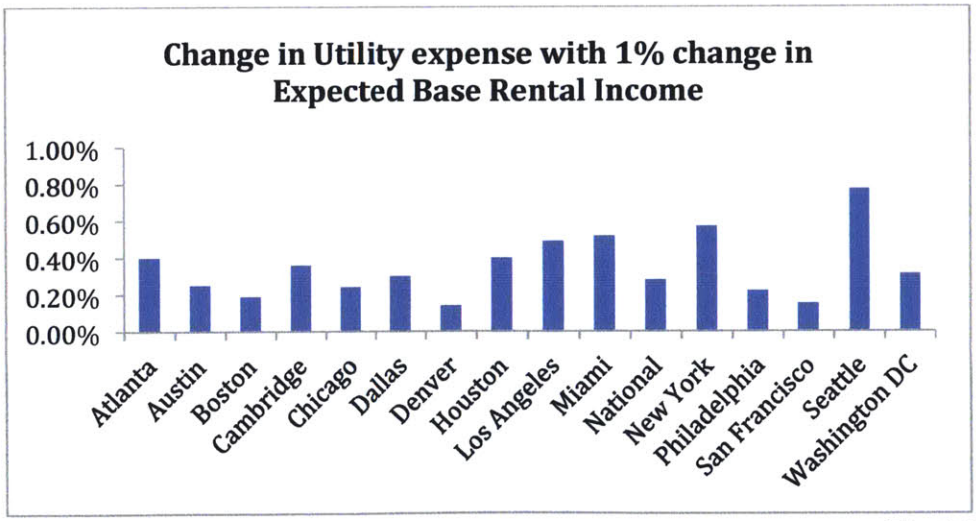


Fig. 10

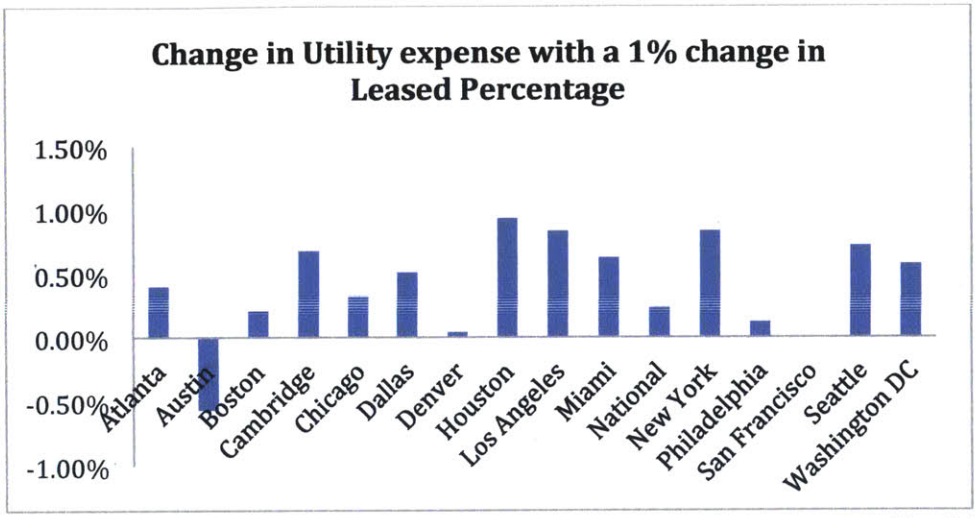


Fig. 11

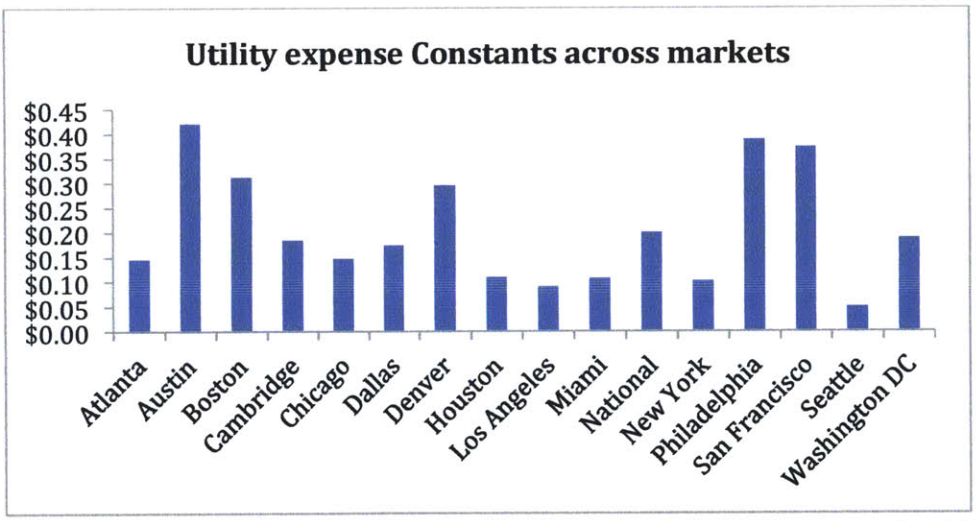


Fig. 12

Figures 10 to 12 are graphical summaries of the coefficients obtained from the regression of *lgexpbase* and *leasepercent* on *lgutility*. The results show a clear difference across cities for how utility expenses change with respect to changes in rental income and percent leased.

City	Income Coefficient	Statistically Significant	Occupancy Coefficient	Statistically Significant	Utility Constant
National	**0.28%**	**Yes**	**0.22%**	**Yes**	**$0.20**
Atlanta	0.40%	Yes	0.40%	Yes	$0.14
Austin	0.25%	Yes	-0.56%	Yes	$0.42
Boston	0.19%	Yes	0.21%	No	$0.31
Cambridge	0.36%	Yes	0.68%	Yes	$0.18
Chicago	0.24%	Yes	0.33%	Yes	$0.15
Dallas	0.30%	Yes	0.51%	Yes	$0.17
Denver	0.14%	Yes	0.04%	No	$0.30
Houston	0.40%	Yes	0.93%	Yes	$0.11
Los Angeles	0.49%	Yes	0.84%	Yes	$0.09
Miami	0.52%	Yes	0.62%	Yes	$0.11
New York	0.57%	Yes	0.83%	Yes	$0.10
Philadelphia	0.22%	No	0.12%	No	$0.39
San Fran.	0.15%	Yes	0.00%	No	$0.37
Seattle	0.77%	Yes	0.72%	Yes	$0.05
Wash. DC	0.31%	Yes	0.58%	Yes	$0.19

Table 4

The table shows that with the exception of Philadelphia, *lgexpbase* is statistically significant in determining *lgutility* nationally and across all other analyzed cities. With respect to *leasepercent*, Boston, Denver, San Francisco and Philadelphia have coefficients that are not statistically significant in determining *lgutility*.

Among the list of the key markets discussed earlier, New York City's utility expenses are the most sensitive to changes in rental income with an almost 6% increase in utility costs with a 10% increase in income. San Francisco has the least sensitive utility expenses as a 10% increase in rental income results in an expected increase of about 2% in utility expenses. Since these results represent quarterly changes, their acknowledgment may prove beneficial to quarterly revenue and expense reforecasts that are often conducted by CRE professionals.

The impact of leasing on the utility expenses in New York, Los Angeles and Washington DC are the highest among the key markets discussed earlier. What these coefficients are essentially saying is that with an increase in occupancy, say from 90% to 100%, utility expenses in a particular building should expect to increase by 8.3%, 8.4%, and 5.8% respectively across those three cities. Although the signs of the occupancy coefficients for Boston, Denver, Philadelphia and San Francisco are in line with expectations, they are not statistically significant in determining utility expenses for building in those cities. This points to the likelihood of the existence other variables that are better predictors of utility expenses in those markets. Chapter 6 investigates the effects of other variables.

The negative occupancy coefficient for Austin is very surprising. Although it is a statistically significant coefficient, its sign is different from what is expected. It

implies that a 10% increase in occupancy leads to an approximate 6% reduction in utility expenses in a particular building. This may imply that buildings in Austin have characteristics that make them more energy efficient with increased occupancy or that utility expenses are grossed up to full occupancy levels when there are vacancies leading to decreased utility expenses as the building leases up.

With respect to the utility constant, which is the fixed portion of the utility expense, San Francisco and Boston have the highest constants per quarter. The cross-market differences exposed in Fig. 12 are a testament to the existence of some underlying market specific drivers for utility expenses. For example in San Francisco, your base utility bill includes a charge that is fixed based on the size of meter installed at your property.[5] Such costs are not typical across all markets.

5.4 Tax Expense Regression Results

Fixed-effects (within) regression — Number of obs = 65,455
Group variable: ncreifprop~d — Number of groups = 3,877

R-sq:
within = 0.0386
between = 0.2129
overall = 0.2015

Obs per group:
min = 1
avg = 16.9
max = 60

F(2,61576) = 1236.40
corr(u_i, Xb) = 0.3069 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3255815	.0066284	49.12	0.000	.3125898	.3385732
leasepercent	.2220566	.0178125	12.47	0.000	.1871441	.2569691
_cons	-1.178569	.0198368	-59.41	0.000	-1.217449	-1.139689
sigma_u	.75519512					
sigma_e	.47211042					
rho	.71900401	(fraction of variance due to u_i)				

F test that all u_i=0: F(3876, 61576) = 21.14 — Prob > F = 0.0000

Fig. 13

The above regression output presents the results for the analysis of the impact of changes in leased percentage and expected base rental income on tax expense. It shows that nationally, a 10% increase in expected base rental income in a particular building results in a 3% increase in tax expenses. Furthermore, the results tell us that a 10% increase in occupancy in a particular building results in an approximate increase of 2% in tax expense. Additionally the results show that both of these

[5] http://www.sfwater.org/index.aspx?page=170

coefficients are statistically significant in the determination of tax expense in a particular building.

Table 5 presents a summary of the coefficients for leased percent and income across the different MSA's analyzed for this study, and their statistical significance.

City	Income Coefficient	Statistically Significant	Occupancy Coefficient	Statistically Significant	Tax Constant
National	**0.33%**	**Yes**	**0.22%**	**Yes**	**$0.31**
Atlanta	0.39%	Yes	0.14%	No	$0.24
Austin	0.38%	Yes	0.49%	Yes	$0.31
Boston	0.49%	Yes	0.40%	Yes	$0.39
Cambridge	0.34%	Yes	0.21%	Yes	$0.52
Chicago	0.32%	Yes	0.01%	No	$0.81
Dallas	0.59%	Yes	1.03%	Yes	$0.11
Denver	0.39%	Yes	0.41%	Yes	$0.26
Houston	0.50%	Yes	0.54%	Yes	$0.22
Los Angeles	0.74%	Yes	0.49%	Yes	$0.11
Miami	0.39%	Yes	0.59%	Yes	$0.21
New York	0.79%	Yes	0.03%	No	$0.31
Philadelphia	0.43%	Yes	-0.37%	No	$0.41
San Fran.	0.46%	Yes	0.35%	No	$0.26
Seattle	0.51%	Yes	0.48%	Yes	$0.13
Wash. DC	0.37%	Yes	0.13%	No	$0.63

Table 5

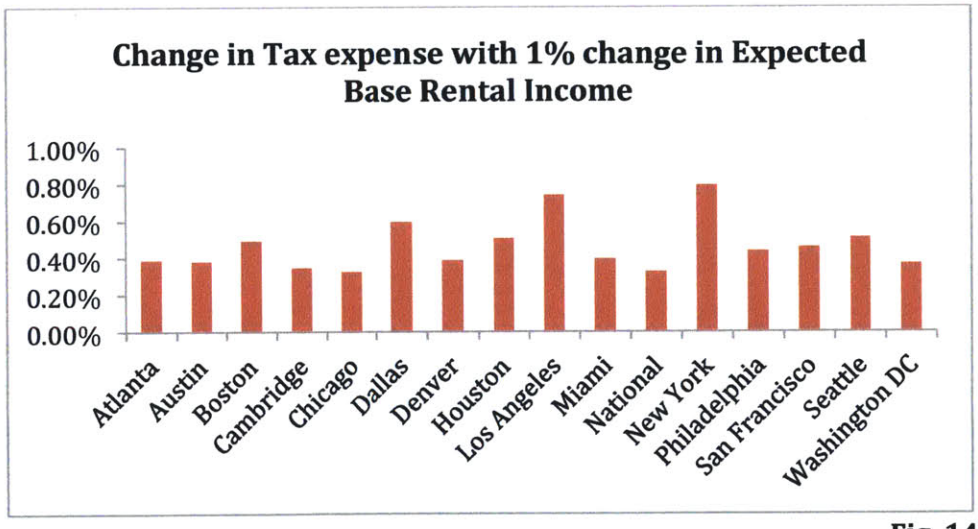


Fig. 14

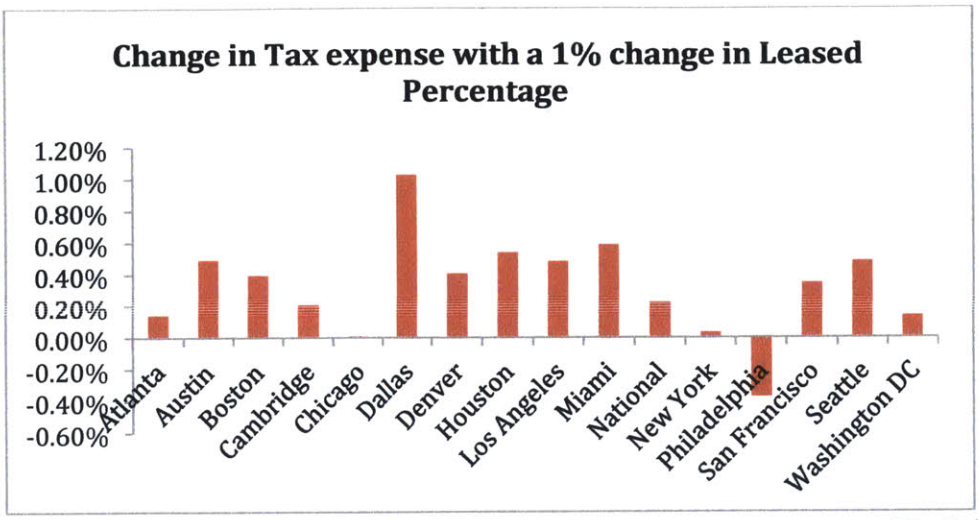


Fig. 15

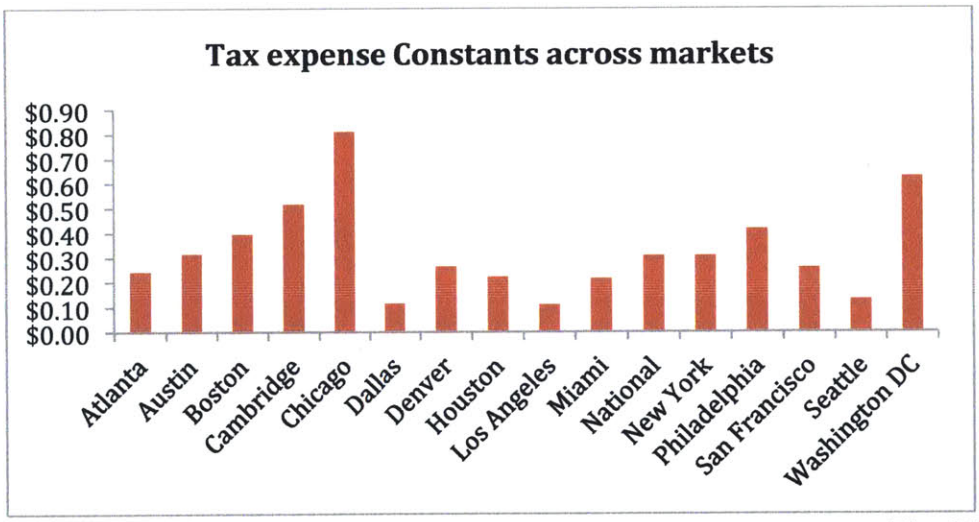


Fig. 16

Figures 14 to 16 are graphical summaries of the coefficients obtained from the regression of *lgexpbase* and *leasepercent* on *lgtax*. The results show a clear difference across cities for how tax expenses change with respect to changes in rental income and percent leased.

Tax expenses often make up a large fraction of operating expenses. Their impact on net income is substantial enough that many companies invest in the services of tax consultants to appeal taxes when they are higher than anticipated. The table shows that *lgexpbase* is statistically significant in determining *lgtax* for all the cities that were analyzed in this study. With respect to *leasepercent*, six out of the fourteen cities have occupancy coefficients that are not statistically significant in determining tax expense.

Among the list of the key markets, New York City comes up top again as the city where tax expenses are most sensitive to changes in rental income. In New York, a

10% increase base rental income results in an 8% increase in tax expense. Chicago has the least sensitive tax expenses as a 10% increase in rental income results in an expected increase of about 3% in tax expenses, which is in line with the national estimate. These results show the linear relation expected between increased value and property taxes, which is that more valuable assets have to pay higher taxes commensurate with their value. What these coefficients further show is that across some markets like Washington DC, as properties get more valuable their exposure to increased taxes is minimal as compared to other markets like Los Angeles and New York City. Essentially valuable assets in markets with low tax expense sensitivities are getting a break!

According to the results, a building in Dallas would more than double its tax expense with a doubling of occupancy whereas a building in Philadelphia will see a reduction in tax expense of about 37% with a doubling of occupancy. This discrepancy in elasticities across these two cities is interesting as it points towards a potential for increased NOI in Philadelphia with increased occupancy, but alas the coefficient is not statistically significant in determining tax expense in Philadelphia and thus has little or no influence on tax expense. This negative occupancy coefficient for Philadelphia may also be a result of the grossing up of tax expenses per the leases of the buildings that reported tax expenses.

Fig. 16 shows that Chicago has the highest tax constant per quarter of $0.81. A careful analysis of the results for these key markets show another trend that makes senses intuitively. Comparing the magnitude of income elasticities and tax constants across markets shows that the more sensitive a city is to income changes the lower their tax constants. This trend may be indicative of policies across states that may be in place to tax commercial property owners more or equalize property taxes across commercial and residential properties[6].

5.5 Insurance Expense Regression Results

Insurance policies tend to be of two general forms: Policies that cover a wide range of perils or risks, or policies that cover specified risks. Property insurance is purchased to protect the value of the built property and its contents in the event that a claim for a loss covered under the policy is made. These policies tend to vary from market to market, and furthermore, the determination of value is also not uniform across all policies.

These peculiarities notwithstanding, the results of the analysis show notable variances in the income elasticities of insurance expense.

[6] http://taxfoundation.org/article/state-and-local-property-taxes-target-commercial-and-industrial-property

```
Fixed-effects (within) regression               Number of obs      =     66,166
Group variable: ncreifprop~d                    Number of groups   =      3,898

R-sq:                                           Obs per group:
     within  = 0.0195                                         min =          1
     between = 0.1788                                         avg =       17.0
     overall = 0.1488                                         max =         60

                                                F(2,62266)         =     619.16
corr(u_i, Xb)  = 0.3162                         Prob > F           =     0.0000
```

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2109105	.0062112	33.96	0.000	.1987365	.2230846
leasepercent	-.1027158	.0169488	-6.06	0.000	-.1359354	-.0694962
_cons	-3.032121	.0187232	-161.94	0.000	-3.068819	-2.995424
sigma_u	.88150438					
sigma_e	.45312154					
rho	.79099594	(fraction of variance due to u_i)				

F test that all u_i=0: F(3897, 62266) = 53.89 Prob > F = 0.0000

Fig. 17

The above regression output presents the results for the analysis of the impact of changes in leased percentage and expected base rental income on insurance expense. It shows that nationally, a 10% increase in expected base rental income in a particular building results in a 2% increase in insurance expenses. Interestingly, the results tell us that a 10% increase in occupancy in a particular building results in an approximate decrease of 1% in insurance expense. This is indicative of an inverse relationship between insurance expenses and occupancy across markets. It also points to the fact that across many markets, growth in insurance expenses is not as pronounced as other expenses.

Overall, the results show that both of these coefficients are statistically significant in the determination of insurance expense in a particular building.

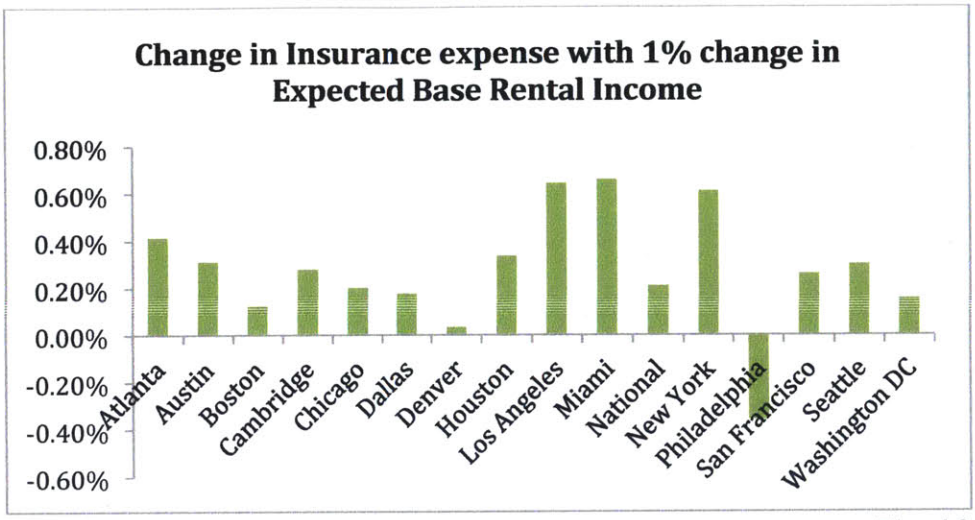


Fig. 18

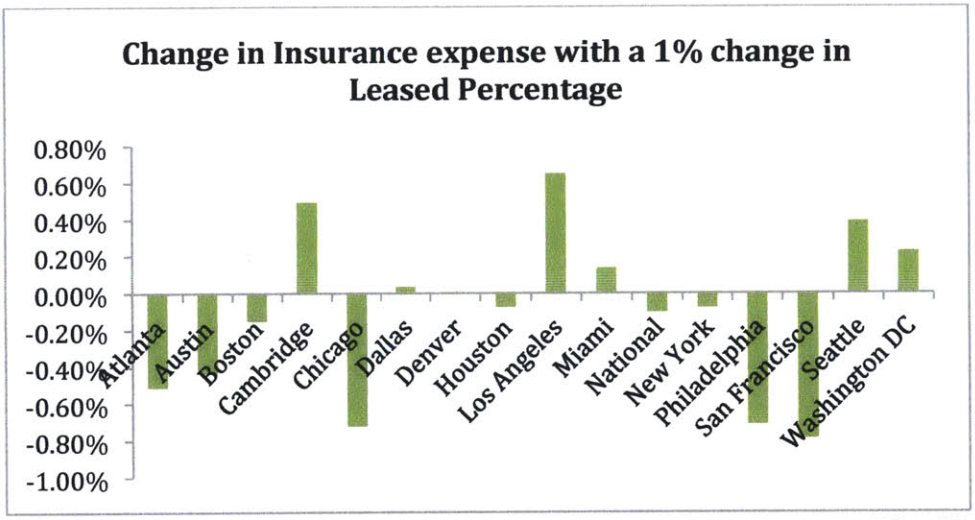


Fig. 19

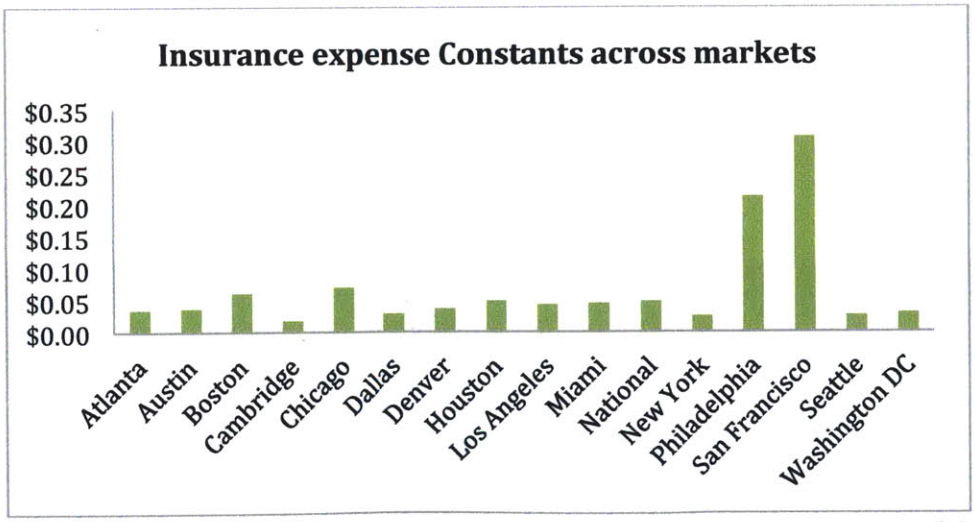


Fig. 20

Figures 18 to 20 are graphical summaries of the coefficients obtained from the regression of *lgexpbase* and *leasepercent* on *lginsurance*. The results show a clear difference across cities for how insurance expenses change with respect to changes in rental income and percent leased. Table 6 summarizes the coefficients and statistical significance of these coefficients.

City	Income Coefficient	Statistically Significant	Occupancy Coefficient	Statistically Significant	Insurance Constant
National	**0.21%**	**Yes**	**-0.10%**	**Yes**	**$0.05**
Atlanta	0.41%	Yes	-0.51%	Yes	$0.04
Austin	0.31%	Yes	-0.44%	Yes	$0.04
Boston	0.13%	No	-0.15%	No	$0.06
Cambridge	0.28%	Yes	0.49%	Yes	$0.02
Chicago	0.20%	Yes	-0.72%	Yes	$0.07
Dallas	0.18%	Yes	0.04%	No	$0.03
Denver	0.03%	No	0.01%	No	$0.04
Houston	0.34%	Yes	-0.08%	No	$0.05
Los Angeles	0.64%	Yes	0.65%	Yes	$0.04
Miami	0.66%	Yes	0.13%	No	$0.05
New York	0.61%	Yes	-0.08%	No	$0.02
Philadelphia	-0.36%	Yes	-0.71%	No	$0.21
San Fran.	0.25%	Yes	-0.70%	Yes	$0.31
Seattle	0.30%	Yes	0.39%	Yes	$0.03
Wash. DC	0.16%	Yes	0.22%	Yes	$0.03

Table 6

The table shows that with the exception of Boston and Denver *lgexpbase* is statistically significant in determining *lginsurance* nationally and across all other analyzed cities. With respect to *leasepercent*, it is not surprising to see that very few have statistically significant coefficients. This stems from the general nature of insurance polies.

Among the key markets, Los Angeles has the most elastic insurance expense. The coefficient implies that a 6.4% increase in insurance expense is expected with a 10% increase in rental income. This is not surprising as one would expect that more expensive assets in Los Angeles would incur higher premiums given Los Angeles' locational characteristics that predisposes properties in that city to earthquakes. Miami also has a high coefficient and this could be attributed to flood insurance policy requirements. From these two cities, it should be evident that although rental income elasticity of insurance expense varies across markets, these variances could be driven by market specific characteristics dictated by nature. It is no surprise then that Boston, Washington DC and Chicago have income coefficients that are below

the national estimate as these cities are insulated from many of the perils that buildings in other states are exposed to.

5.6 Maintenance Expense Regression Results

Fixed-effects (within) regression — Number of obs = 66,277
Group variable: ncreifprop~d — Number of groups = 3,857

R-sq:
within = 0.0456
between = 0.1643
overall = 0.1410

Obs per group:
min = 1
avg = 17.2
max = 60

F(2,62418) = 1491.45
corr(u_i, Xb) = 0.2163 — Prob > F = 0.0000

lgmaintena~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2958036	.005604	52.78	0.000	.2848199	.3067874
leasepercent	.2898942	.0153704	18.86	0.000	.2597681	.3200203
_cons	-1.389481	.0169525	-81.96	0.000	-1.422708	-1.356254
sigma_u	.91400852					
sigma_e	.41264029					
rho	.83069027	(fraction of variance due to u_i)				

F test that all u_i=0: F(3856, 62418) = 45.87 — Prob > F = 0.0000

Fig. 21

The above regression output presents the results for the analysis of the impact of changes in leased percentage and expected base rental income on maintenance expense. It shows that nationally, a 10% increase in expected base rental income in a particular building results in an approximate increase of 3% in maintenance expenses. Furthermore, the results tell us that a 10% increase in occupancy in a particular building also results in an approximate increase of 3% in maintenance expense. Both of these coefficients are statistically significant and thus have an influence on maintenance expense in a particular building.

Table 6 presents a summary of the coefficients for leased percent and income across the different MSA's analyzed for this study, and their statistical significance.

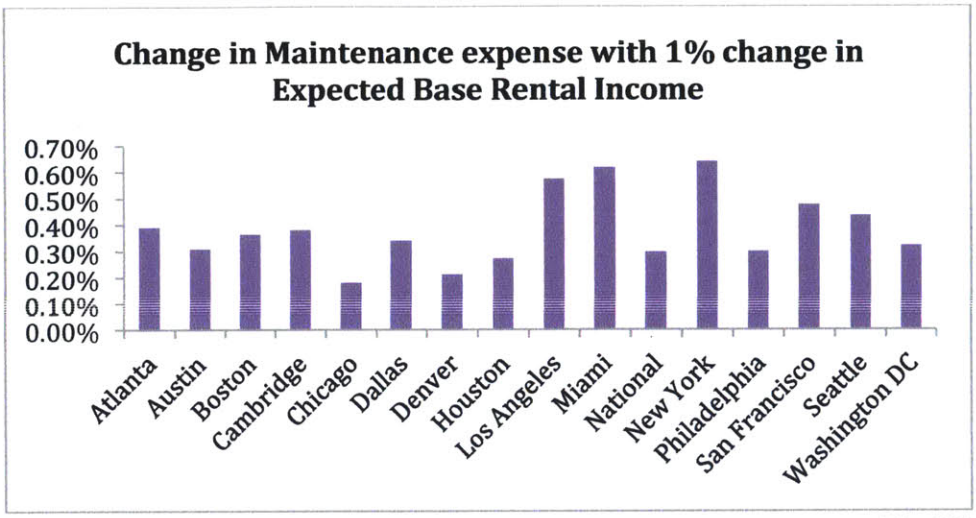


Fig 22

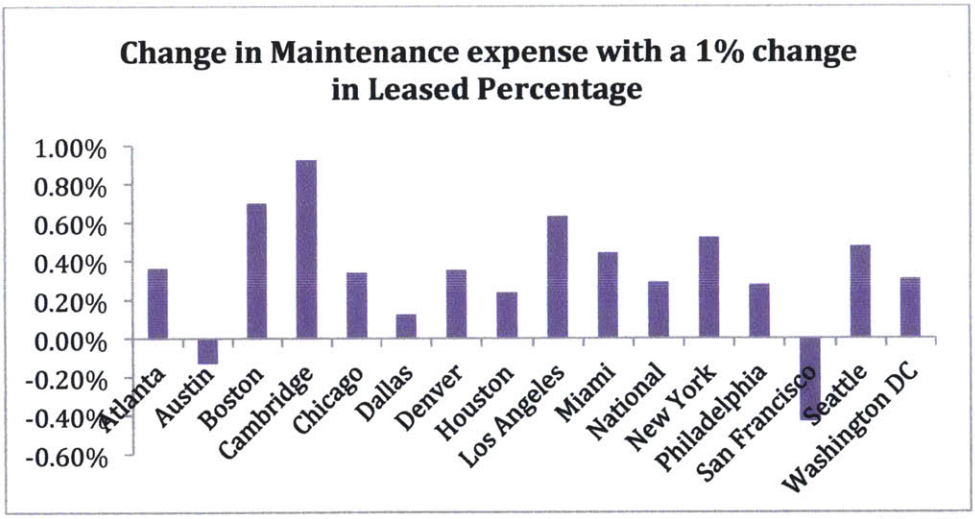


Fig. 23

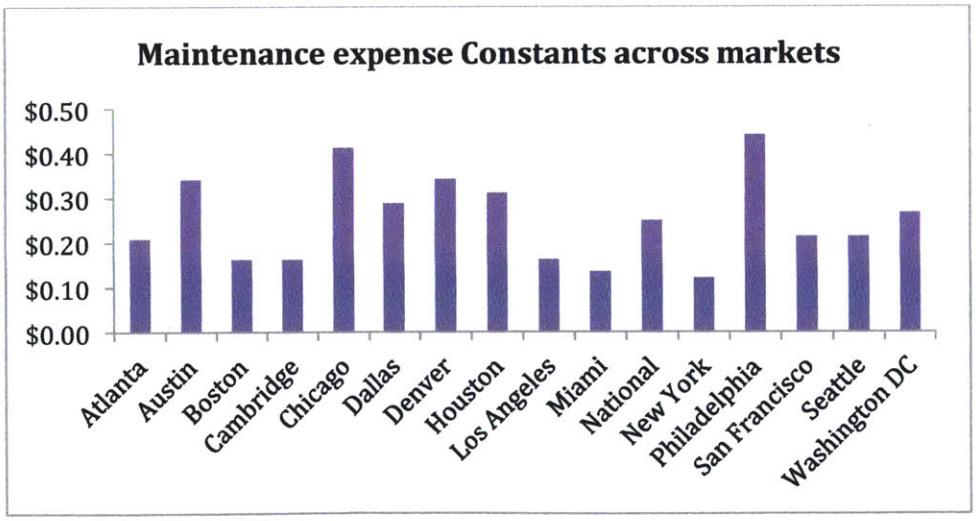


Fig. 24

Figures 22 to 24 are graphical summaries of the coefficients obtained from the regression of *lgexpbase* and *leasepercent* on *lgmaintenance*. The results show a clear difference across cities for how maintenance expenses change with respect to changes in rental income and percent leased.

City	Income Coefficient	Statistically Significant	Occupancy Coefficient	Statistically Significant	Maintenance Constant
National	**0.30%**	**Yes**	**0.28%**	**Yes**	**$0.25**
Atlanta	0.39%	Yes	0.36%	Yes	$0.21
Austin	0.31%	Yes	-0.13%	No	$0.34
Boston	0.36%	Yes	0.70%	Yes	$0.16
Cambridge	0.38%	Yes	0.92%	Yes	$0.16
Chicago	0.18%	Yes	0.34%	Yes	$0.41
Dallas	0.34%	Yes	0.12%	No	$0.29
Denver	0.21%	Yes	0.35%	Yes	$0.34
Houston	0.27%	Yes	0.24%	Yes	$0.31
Los Angeles	0.58%	Yes	0.63%	Yes	$0.16
Miami	0.62%	Yes	0.44%	Yes	$0.14
New York	0.64%	Yes	0.52%	Yes	$0.12
Philadelphia	0.30%	Yes	0.28%	No	$0.44
San Fran.	0.48%	Yes	0.40%	Yes	$0.21
Seattle	0.43%	Yes	0.47%	Yes	$0.21
Wash. DC	0.32%	Yes	0.30%	Yes	$0.27

Table 7

Repair and maintenance expenses are ordinarily expected to increase with an increase in occupancy. For example, one would expect a building that was 70 percent leased to have higher maintenance costs as the property leases up. The lease up means that janitorial services and other area sensitive services need to be expanded to cover the additional leased space. Noting that increased occupancy is often times followed by increased rental income; it necessarily follows that an increase in income should result in an increase in maintenance expenses.

The results show that income is statistically significant in determining maintenance expenses nationally and across the cities analyzed for this study. Again, New York City has the most sensitive maintenance expenses. A 10% increase in rental income in New York results in a 6.4% increase in maintenance expenses. Chicago has the least sensitive maintenance expenses of all the cities analyzed for this study.

As was mentioned earlier, a linear relationship exists between occupancy and maintenance costs and so with the exception of the sign of the coefficient for Austin, the resulting signs are in line with what is expected. Although Austin's occupancy coefficient is not statistically significant, its negative sign may point to an incidence of maintenance expense gross ups in leases.

This chapter presented the results of the panel regressions run with building fixed effects. What they showed was that across many markets, income and occupancy have a significant influence on the determination of total expenses and categorical expenses. Note however that these regressions do not capture building differences as buildings are fixed and looked at over time.

The following chapter presents the results for the panel regressions run with time fixed effects. These regressions were run in an effort to capture the differences between buildings in each MSA. As time is fixed for these regressions, it allows us to capture the differences between buildings over time. This type of analysis allows for the inclusion of building characteristics and facilitates the discussion of how variables like age, size and the number of floors in an office building influence expenses.

Additionally, the elasticities of income and occupancy from these time fixed regressions would be compared to those identified in the regressions from this chapter.

CHAPTER 6- PANEL ANALYSIS WITH TIME FIXED EFFECTS

6.1 TOTAL EXPENSE REGRESSION RESULTS

```
Fixed-effects (within) regression               Number of obs      =     56,992
Group variable: Date                            Number of groups   =         60

R-sq:                                           Obs per group:
     within  = 0.2767                                         min =        421
     between = 0.7750                                         avg =      949.9
     overall = 0.2819                                         max =      1,196

                                                F(5,56927)         =    4355.95
corr(u_i, Xb)  = 0.0695                         Prob > F           =     0.0000
```

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.676857	.0056867	119.03	0.000	.6657111	.688003
leasepercent	-.2539286	.0195444	-12.99	0.000	-.2922358	-.2156214
Age	.0024523	.0002006	12.22	0.000	.0020591	.0028455
grosssquarefeet	-1.47e-07	1.38e-08	-10.66	0.000	-1.74e-07	-1.20e-07
nooffloors	.0171105	.0004034	42.42	0.000	.0163198	.0179011
_cons	-.2904512	.019521	-14.88	0.000	-.3287124	-.25219
sigma_u	.06232754					
sigma_e	.68934982					
rho	.00810858	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(59, 56927) = 7.12                     Prob > F = 0.0000
```

Fig. 25

The above regression output presents the results for the analysis of the impact of leased percentage, expected base rental income, age, square footage and the number of floors in an office building on total expenses. The results show that nationally, buildings with double the rental income have expenses that are about 70% higher. With respect to occupancy, the sign is surprisingly negative, but yet statistically significant. The coefficient tells us that nationally, buildings with double the occupancy have about 25% less expenses. This is interesting because one would expect that higher occupancies would result in higher expenses, but these results tell another story. This may be a result of the differences in lease structures across markets or other building characteristics that have caused buildings to be more efficient over the fourteen-year analysis period of this study. Unsurprisingly, the results confirm that nationally, older buildings incur higher expenses. The results show is that buildings that are a year older have expenses that are about .2% higher. The impact of square footage on total expenses nationally is however negative. The results paint a picture that say that buildings that are 100,000 square feet bigger have expenses that are 1% less. Although the coefficient is statistically significant, one would expect that larger buildings would incur higher expenses. Finally, the results confirm that nationally, office buildings with more floors incur higher expenses. The coefficient tells us that buildings with an extra floor have total

expenses that are about 2% higher. Comparing this coefficient to that of square footage should raise eyebrows, as it should directly follow that taller buildings are bigger and thus perhaps these coefficients should have the same sign.

Table 8 presents a summary of the coefficients for the independent variables age, square footage, expected base rental income, leased percentage and number of floors. The coefficient for size (*grosssquarefeet in the regressions*) is presented as what a building that is 100,000 square feet larger across different markets incurs in expenses. This meaning will be preserved throughout this chapter. Appendix 2 provides the full regression outputs for all the time fixed effect regressions that were run.

City	Income Coef.	Occupancy Coef.	Age Coef.	Size Coef.	Floors Coef.	Expense Constant
National	**0.68%**	**-0.25%**	**0.25%**	**-1.47%**	**1.71%**	**$0.75**
Atlanta	0.63%	0.39%	0.35%	-0.42%	0.51%	$0.48
Austin	0.67%	0.03%	-0.07%	4.52%	1.87%	$0.75
Boston	1.34%	-0.83%	-0.42%	4.07%	-1.99%	$0.60
Cambridge	0.76%	-0.03%	-0.67%	3.06%	3.58%	$0.53
Chicago	0.46%	0.07%	-0.48%	-0.80%	0.12%	$1.82
Dallas	0.85%	-0.14%	0.11%	-1.07%	1.19%	$0.59
Denver	0.20%	0.69%	-0.66%	-2.27%	0.52%	$1.00
Houston	0.48%	0.17%	-0.36%	1.40%	0.14%	$1.04
Los Angeles	0.56%	0.30%	-0.43%	0.40%	0.77%	$0.81
Miami	0.56%	0.81%	0.33%	-1.86%	0.94%	$0.44
New York	0.84%	0.23%	0.21%	1.06%	-0.36%	$0.68
Philadelphia	0.45%	0.94%	-0.45%	0.20%	-1.90%	$1.11
San Fran.	0.35%	0.17%	-0.16%	-3.16%	0.66%	$1.63
Seattle	0.50%	0.10%	-0.15%	-2.83%	0.68%	$0.90
Wash. DC	0.47%	0.42%	0.17%	-0.63%	6.05%	$0.49

Table 8

Figures 26 to 28 are graphical summaries of the coefficients obtained from the regression of *Age, nooffloors, and grosssquarefeet* on total expenses. The results show a clear difference across cities for how total expenses are impacted by age, property size and number of floors.

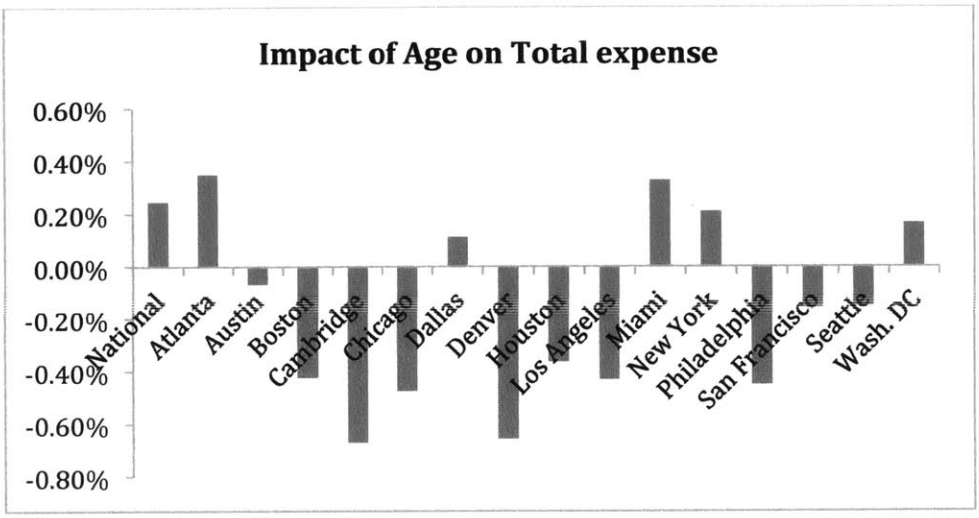


Fig. 26

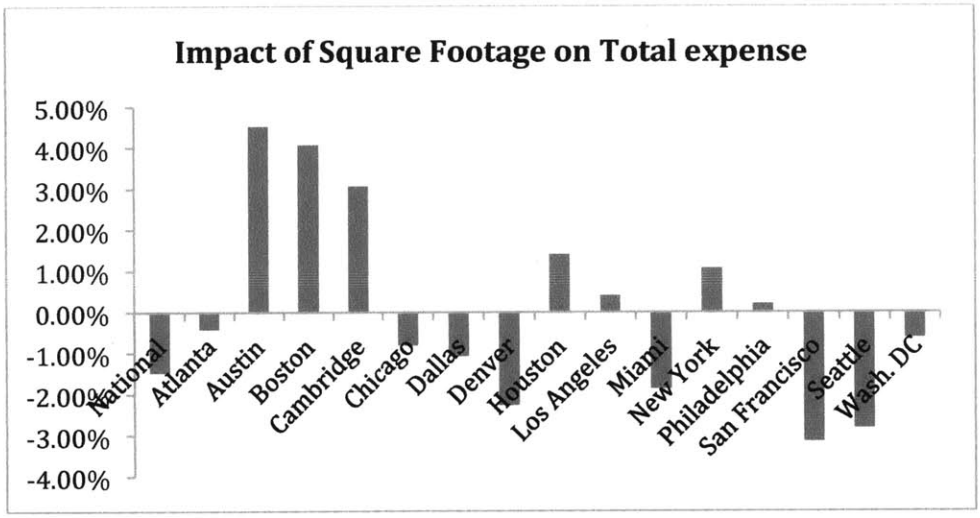


Fig. 27

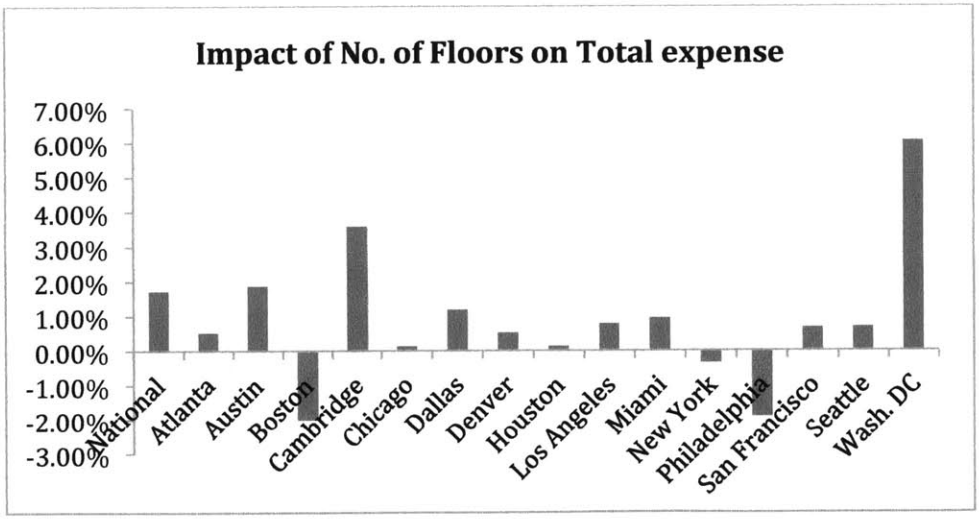


Fig. 28

As discussed, these results show that the impact of building characteristics varies widely across markets. With the exception of Dallas, Denver and Austin, all other MSA's have statistically significant age coefficients. Atlanta has the highest age impact on total expenses of about .4%. The results show that cities like Cambridge, Chicago and Boston however have older buildings with lower expenses. This is interesting because one would ideally expect that older buildings would incur higher expenses. These reduced expenses could be a result of a host of innumerable reasons and thus the impact of age on the categorical expenses across cities would shed some more light on this.

With respect to size, the coefficient is not statistically significant across 7 markets. The results show that larger buildings in cities like Austin and Boston incur much higher total expenses

The height of an office building, which is being approximated by the number floors, is shown to have a significant influence on total expenses across all but two markets (Chicago and Houston). The results show that taller buildings in Washington DC incur about 6% higher expenses for each additional floor. Taller buildings in Boston and Philadelphia however seem to be experiencing a break, all else held constant. Their coefficients are negative implying that taller buildings experience lower total expenses.

Table 9 below compares the elasticities of occupancy and income obtained from the Building Fixed Effects (BFE) and Time Fixed Effects (TFE) total expense regressions.

City	TFE Income Elast.	BFE Income Elast.	TFE Occupancy Elast.	BFE Occupancy Elast.
National	**0.68%**	**0.31%**	**-0.25%**	**0.17%**
Atlanta	0.63%	0.42%	0.39%	0.35%
Austin	0.67%	0.33%	0.03%	0.22%
Boston	1.34%	0.45%	-0.83%	0.14%
Cambridge	0.76%	0.32%	-0.03%	0.19%
Chicago	0.46%	0.20%	0.07%	0.26%
Dallas	0.85%	0.35%	-0.14%	0.39%
Denver	0.20%	0.29%	0.69%	0.46%
Houston	0.48%	0.48%	0.17%	0.42%
Los Angeles	0.56%	0.56%	0.30%	0.77%
Miami	0.56%	0.49%	0.81%	0.56%
New York	0.84%	0.69%	0.23%	0.30%
Philadelphia	0.45%	0.37%	0.94%	0.08%
San Fran.	0.35%	0.36%	0.17%	0.21%
Seattle	0.50%	0.49%	0.10%	0.48%
Wash. DC	0.47%	0.31%	0.42%	0.26%

Table 9

The differences in the elasticities observed from the two types of regressions rest in what they each represent. The coefficients from the Building Fixed Effects regressions tell the story of changes in expenses that result from changes in income and occupancy at a particular building, whereas the coefficients of the Time Fixed Effects regressions represent the state of buildings in a particular market. As an example, an income elasticity of 0.5 observed from the BFE regression implies that a doubling of income at a particular property results in a 50% increase in expenses. The parallel explanation for a 0.5 income elasticity observed from the TFE regressions would imply that buildings with double the rental income have 50bu% higher expenses. These same definitions hold for the occupancy elasticities observed across both regressions.

From Table 9 we observe that in many instances the BFE and TFE elasticities are very different. For example, Boston has a TFE income elasticity of 1.34% and a BFE income elasticity of 0.45%. What these elasticities show are two different sides of the same coin. The TFE elasticity implies that buildings with double the rental income have expenses that are 134% higher, whereas the BFE elasticity implies a 45% increase in total expenses when a particular building's income doubles. This dichotomy is a by-product of the exclusion of building differences in the BFE regressions and hence the reason why the Time Fixed Effect regressions were run to highlight the differences in the underlying properties.

The remainder of this chapter will present the results for the categorical expenses with minimal commentary.

6.2 Utility Expense Regression Results

Fixed-effects (within) regression — Number of obs = 53,481
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1751
between = 0.3764
overall = 0.1777

Obs per group:
min = 369
avg = 891.4
max = 1,131

F(5,53416) = 2268.10
corr(u_i, Xb) = 0.0318 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.6431789	.0070759	90.90	0.000	.6293102	.6570476
leasepercent	-.1013256	.0238859	-4.24	0.000	-.1481421	-.0545091
Age	.0052987	.0002433	21.77	0.000	.0048218	.0057757
grosssquarefeet	-2.42e-08	1.66e-08	-1.46	0.144	-5.68e-08	8.29e-09
nooffloors	.0077544	.000486	15.95	0.000	.0068018	.0087071
_cons	-2.090789	.0234185	-89.28	0.000	-2.136689	-2.044889
sigma_u	.1262953					
sigma_e	.81804375					
rho	.02328044	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 53416) = 19.84 — Prob > F = 0.0000

Fig. 29

Fig. 29 presents the results for the TFE regression run on utility expense. The results show that nationally, buildings with double the rental income have utility expenses that are about 64% higher. With respect to occupancy, the sign is again surprisingly negative, but yet statistically significant. The coefficient tells us that nationally, buildings with double the occupancy have about 10% less expenses. This is interesting because one would expect that higher building occupancies would result in higher utility expenses, but these results tell another story. This may be a result of the existence of more energy efficient buildings across markets. With respect to age, the results confirm that nationally, older buildings incur higher utility expenses. The coefficient, which is statistically significant, tells us that buildings that are a year older have expenses that are about .5% higher. Square footage on the other hand is not a statistically significant influencer on utility expenses from this regression. Additionally, the results confirm that nationally, office buildings with more floors incur higher utility expenses. The coefficient tells us that buildings with an extra floor have utility expenses that are about .8% higher.

Table 10 presents a summary of the coefficients for the independent variables age, square footage, expected base rental income, leased percentage and number of floors.

City	Income Coef.	Occupancy Coef.	Age Coef.	Size Coef.	Floors Coef.	Utility Constant
National	**0.64%**	**-0.10%**	**0.53%**	**-0.24%**	**0.78%**	**$0.12**
Atlanta	0.73%	0.32%	1.16%	3.07%	-0.72%	$0.07
Austin	1.00%	-0.19%	0.10%	3.87%	0.48%	$0.10
Boston	-0.52%	0.37%	-0.02%	-1.58%	1.91%	$1.01
Cambridge	0.58%	0.04%	-0.07%	-6.29%	-2.54%	$0.30
Chicago	0.68%	-0.48%	0.05%	-0.44%	0.75%	$0.12
Dallas	0.68%	-0.45%	2.66%	-1.70%	0.23%	$0.13
Denver	0.12%	0.98%	1.15%	-10.70%	1.66%	$0.13
Houston	0.42%	0.53%	0.72%	-0.95%	-0.65%	$0.15
Los Angeles	0.73%	-0.65%	-1.04%	1.29%	0.65%	$0.21
Miami	0.86%	1.57%	0.61%	0.60%	-0.16%	$0.02
New York	0.36%	0.47%	-0.21%	2.97%	-0.64%	$0.27
Philadelphia	0.26%	-0.20%	0.27%	-5.67%	0.54%	$0.51
San Fran.	0.47%	0.12%	0.31%	-4.44%	1.09%	$0.15
Seattle	0.63%	0.24%	0.52%	1.54%	-0.98%	$0.10
Wash. DC	0.28%	0.77%	0.03%	-5.79%	0.22%	$0.19

Table 10

Figures 30 to 32 are graphical summaries of the coefficients obtained from the regression of *Age, nooffloors, and grosssquarefeet* on utility expense. The results

show a clear difference across cities for how utility expenses are impacted by age, property size and number of floors.

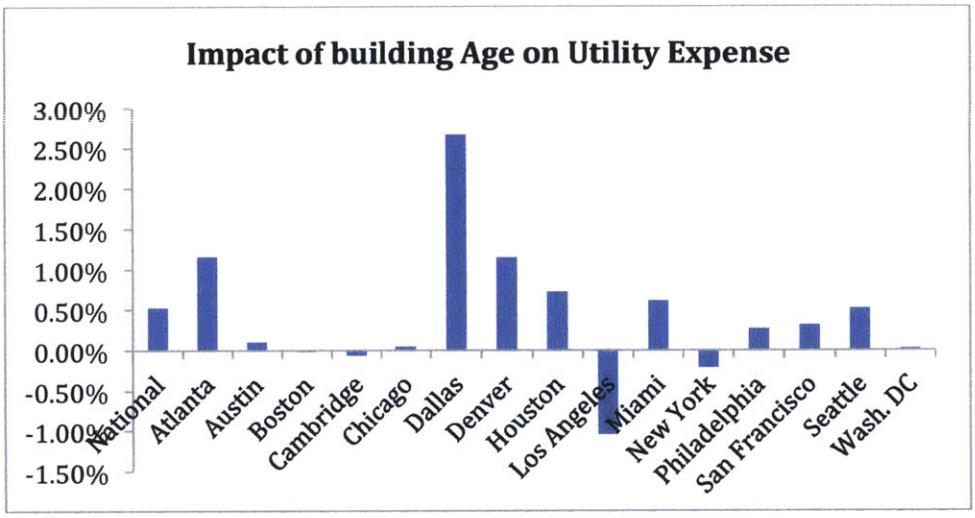


Fig. 30

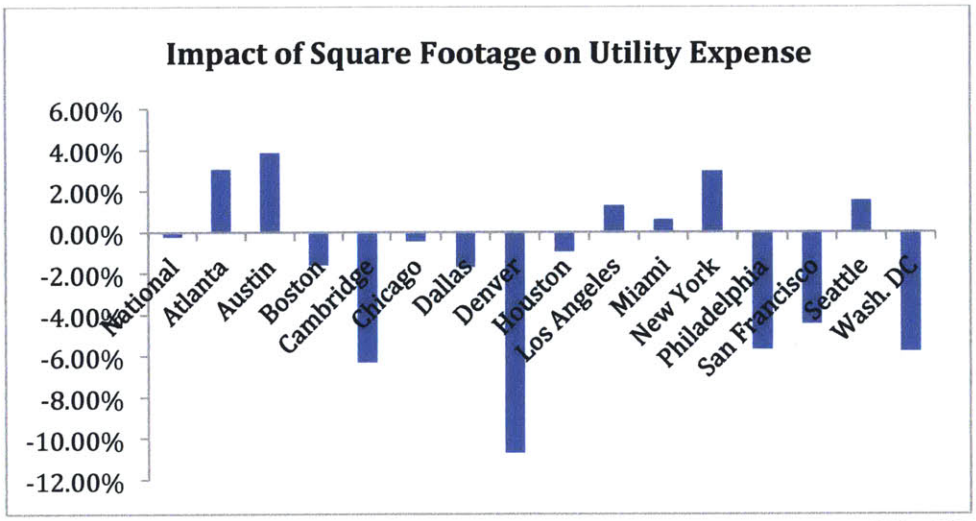


Fig. 31

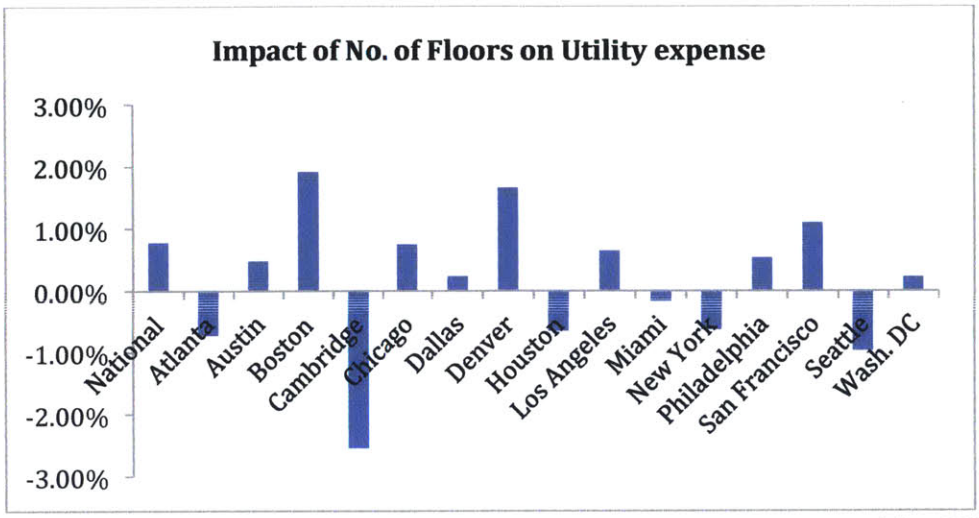


Fig. 32

Table 11 below compares the elasticities of occupancy and income obtained from the Building Fixed Effects and Time Fixed Effects utility expense regressions.

City	TFE Income Elast.	BFE Income Elast.	TFE Occupancy Elast.	BFE Occupancy Elast.
National	**0.64%**	**0.28%**	**-0.10%**	**0.22%**
Atlanta	0.73%	0.40%	0.32%	0.40%
Austin	1.00%	0.25%	-0.19%	-0.56%
Boston	-0.52%	0.19%	0.37%	0.21%
Cambridge	0.58%	0.36%	0.04%	0.68%
Chicago	0.68%	0.24%	-0.48%	0.33%
Dallas	0.68%	0.30%	-0.45%	0.51%
Denver	0.12%	0.14%	0.98%	0.04%
Houston	0.42%	0.40%	0.53%	0.93%
Los Angeles	0.73%	0.49%	-0.65%	0.84%
Miami	0.86%	0.52%	1.57%	0.62%
New York	0.36%	0.57%	0.47%	0.83%
Philadelphia	0.26%	0.22%	-0.20%	0.12%
San Fran.	0.47%	0.15%	0.12%	0.00%
Seattle	0.63%	0.77%	0.24%	0.72%
Wash. DC	0.28%	0.31%	0.77%	0.58%

Table 11

6.3 Tax Expense Regression Results

Fixed-effects (within) regression — Number of obs = 54,549
Group variable: Date — Number of groups = 60

R-sq:
within = 0.2155
between = 0.5623
overall = 0.2188

Obs per group:
min = 408
avg = 909.1
max = 1,149

F(5,54484) = 2993.29
corr(u_i, Xb) = 0.0554 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5322899	.0057489	92.59	0.000	.5210221	.5435578
leasepercent	.4505495	.0195854	23.00	0.000	.412162	.4889371
Age	.001249	.0002	6.25	0.000	.0008571	.0016409
grosssquarefeet	-1.79e-08	1.37e-08	-1.31	0.191	-4.47e-08	8.91e-09
nooffloors	.0145902	.0004033	36.18	0.000	.0137999	.0153806
_cons	-1.86903	.0194581	-96.05	0.000	-1.907169	-1.830892
sigma_u	.09093788					
sigma_e	.67577495					
rho	.01778654	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 54484) = 14.07 — Prob > F = 0.0000

Fig. 33

The above regression output presents the results for the TFE regression run on Tax expense. The results show that nationally, buildings with double the rental income have utility expenses that are about 53% higher. With respect to occupancy, the coefficient tells us that nationally, buildings with double the occupancy have about 45% higher tax expenses. This is in line with expectations, as one would expect that more valuable assets be taxed higher. With regard to age, the results show that nationally, older buildings incur higher tax expenses. This is interesting, as one would expect that older buildings should incur lesser tax expense. The statistically significant coefficient tells us that buildings that are a year older have tax expenses that are about .1% higher. Square footage is not a statistically significant influencer on tax expenses just as was the case with utility expenses. Finally, the results show that nationally, office buildings with more floors incur higher tax expenses. The coefficient tells us that buildings with an extra floor have tax expenses that are about 1.4% higher.

Table 12 presents a summary of the coefficients for the independent variables age, square footage, expected base rental income, leased percentage and number of floors.

City	Income Coef.	Occupancy Coef.	Age Coef.	Size Coef.	Floors Coef.	Tax Constant
National	**0.53%**	**0.45%**	**0.12%**	**-0.18%**	**1.46%**	**$0.15**
Atlanta	0.53%	0.58%	-0.18%	-1.47%	1.31%	$0.12
Austin	0.47%	0.07%	-0.57%	5.23%	2.42%	$0.34
Boston	0.70%	-0.55%	-0.17%	2.05%	0.09%	$0.55
Cambridge	0.44%	0.07%	-0.06%	0.50%	-2.80%	$0.58
Chicago	0.47%	0.17%	-0.74%	0.71%	-0.60%	$0.80
Dallas	0.77%	0.89%	-1.35%	-1.40%	1.22%	$0.12
Denver	0.25%	0.28%	-1.99%	-5.65%	1.56%	$0.54
Houston	0.47%	0.65%	-1.53%	2.13%	0.41%	$0.24
Los Angeles	0.65%	0.46%	-0.73%	-2.17%	1.15%	$0.15
Miami	0.54%	0.46%	-0.36%	-2.62%	1.82%	$0.16
New York	0.98%	0.39%	-0.24%	0.71%	0.15%	$0.15
Philadelphia	0.80%	1.64%	-0.26%	2.32%	-0.43%	$0.04
San Fran.	0.24%	0.44%	0.15%	-1.74%	0.55%	$0.34
Seattle	0.38%	0.24%	-0.52%	-3.26%	1.06%	$0.22
Wash. DC	0.37%	0.55%	-0.05%	2.03%	5.66%	$0.21

Table 12

Figures 34 to 36 are graphical representations of the coefficients obtained from the regression of *Age, nooffloors, and grosssquarefeet* on tax expense. The results show a clear difference across cities for how tax expenses are impacted by age, asset size and number of floors.

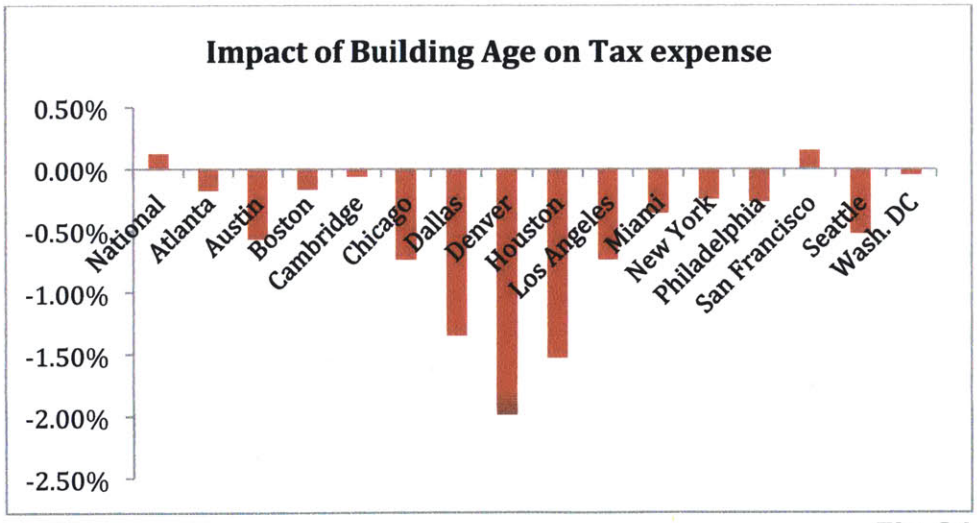


Fig. 34

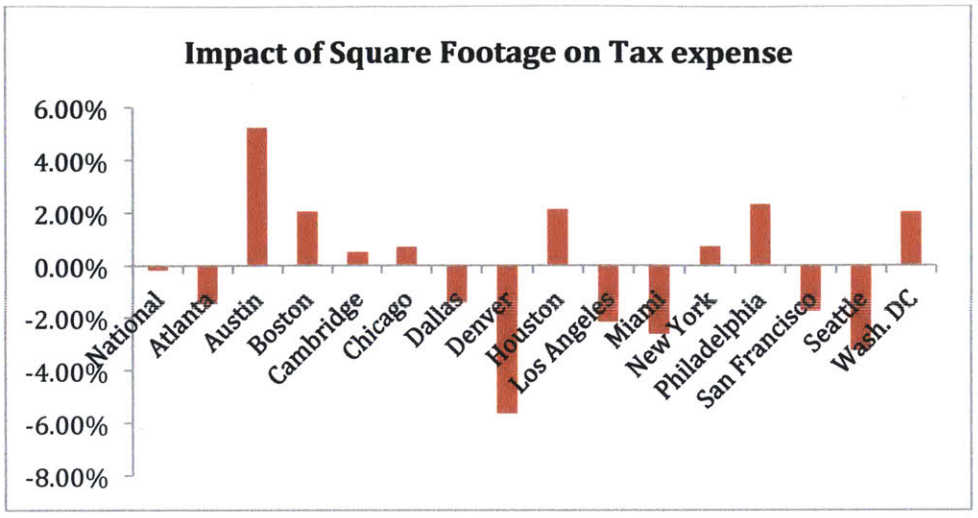


Fig. 35

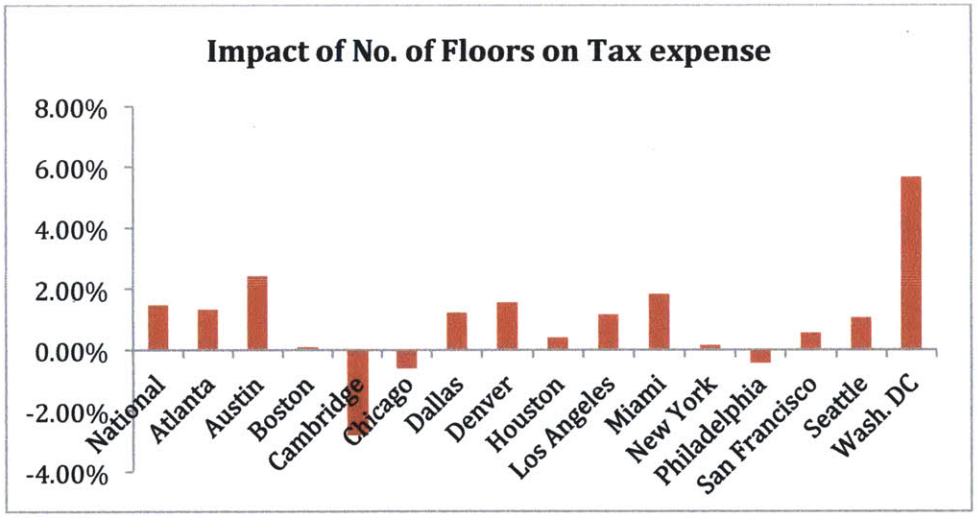


Fig. 36

Figure 34 provides a very striking image. It shows that across many markets older buildings incur lower tax expenses. This is in line with what is expected as one would expect that older buildings incur lower tax expense.

Table 13 compares the elasticities of occupancy and income obtained from the Building Fixed Effects and Time Fixed Effects tax expense regressions.

City	TFE Income Elast.	BFE Income Elast.	TFE Occupancy Elast.	BFE Occupancy Elast.
National	**0.53%**	**0.33%**	**0.45%**	**0.22%**
Atlanta	0.53%	0.39%	0.58%	0.14%
Austin	0.47%	0.38%	0.07%	0.49%
Boston	0.70%	0.49%	-0.55%	0.40%
Cambridge	0.44%	0.34%	0.07%	0.21%
Chicago	0.47%	0.32%	0.17%	0.01%
Dallas	0.77%	0.59%	0.89%	1.03%
Denver	0.25%	0.39%	0.28%	0.41%
Houston	0.47%	0.50%	0.65%	0.54%
Los Angeles	0.65%	0.74%	0.46%	0.49%
Miami	0.54%	0.39%	0.46%	0.59%
New York	0.98%	0.79%	0.39%	0.03%
Philadelphia	0.80%	0.43%	1.64%	-0.37%
San Fran.	0.24%	0.46%	0.44%	0.35%
Seattle	0.38%	0.51%	0.24%	0.48%
Wash. DC	0.37%	0.37%	0.55%	0.13%

Table 13

6.4 Insurance Expense Regression Results

Fixed-effects (within) regression — Number of obs = 55,197
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1586
between = 0.4751
overall = 0.1621

Obs per group:
min = 381
avg = 920.0
max = 1,174

F(5,55132) = 2078.13
corr(u_i, Xb) = 0.0651 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.6393041	.0073563	86.91	0.000	.6248856	.6537226
leasepercent	-.1320096	.0251944	-5.24	0.000	-.1813908	-.0826284
Age	.0020374	.0002597	7.84	0.000	.0015283	.0025465
grosssquarefeet	-6.52e-08	1.78e-08	-3.67	0.000	-1.00e-07	-3.04e-08
nooffloors	.0116002	.0005248	22.10	0.000	.0105716	.0126288
_cons	-3.838504	.0251208	-152.80	0.000	-3.887741	-3.789267
sigma_u	.29223585					
sigma_e	.87928237					
rho	.09947337	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 55132) = 60.00 — Prob > F = 0.0000

Fig. 37

Figure 37 presents the results for the TFE regression run on Insurance expense. The results show that nationally, buildings with double the rental income have insurance expenses that are about 64% higher. With respect to occupancy, the coefficient tells us that nationally, buildings with double the occupancy have about 13% lower insurance expenses. With regard to age, the results show that nationally, older buildings incur higher insurance expenses. The statistically significant coefficient tells us that buildings that are a year older have insurance expenses that are about .2% higher. The results show that square footage is a statistically significant influencer on insurance expenses. The negative coefficient implies that nationally, larger buildings incur lower insurance expenses. Finally, the results show that nationally, office buildings with more floors incur higher insurance expenses. This is to be expected as taller buildings in key markets often indicate higher values and thus higher insured values. The coefficient tells us that buildings with an extra floor have insurance expenses that are about 1.2% higher.

Table 14 below presents a summary of the coefficients for the independent variables age, square footage, expected base rental income, leased percentage and number of floors.

City	Income Coef.	Occupancy Coef.	Age Coef.	Size Coef.	Floors Coef.	Insurance Constant
National	**0.64%**	**-0.13%**	**0.20%**	**-0.65%**	**1.16%**	**$0.02**
Atlanta	0.45%	0.29%	0.08%	-3.83%	0.22%	$0.02
Austin	0.53%	0.05%	-0.01%	2.18%	1.72%	$0.02
Boston	0.42%	-0.88%	0.02%	8.12%	-1.45%	$0.06
Cambridge	0.44%	-0.29%	-0.15%	-0.75%	-0.29%	$0.03
Chicago	0.54%	0.16%	-0.41%	0.72%	0.15%	$0.02
Dallas	0.35%	0.63%	-1.24%	-0.96%	1.69%	$0.01
Denver	0.21%	0.23%	0.27%	2.79%	-1.51%	$0.03
Houston	0.36%	-0.56%	-0.93%	0.14%	1.22%	$0.07
Los Angeles	0.74%	0.46%	-0.48%	0.38%	1.36%	$0.04
Miami	0.78%	-0.31%	2.53%	-5.72%	1.39%	$0.03
New York	0.23%	-0.20%	0.16%	1.48%	0.63%	$0.05
Philadelphia	-0.27%	-0.40%	-0.37%	7.17%	-2.81%	$0.22
San Fran.	0.26%	-0.78%	-0.35%	-2.12%	1.07%	$0.30
Seattle	0.06%	0.41%	-0.47%	-13.10%	3.29%	$0.04
Wash. DC	0.28%	0.09%	0.43%	3.95%	-1.70%	$0.02

Table 14

Figures 38 to 40 are graphical summaries of the coefficients obtained from the regression of *Age, nooffloors, and grosssquarefeet* on insurance expense. The results

show a clear difference across cities for how insurance expenses are impacted by age, property size and number of floors.

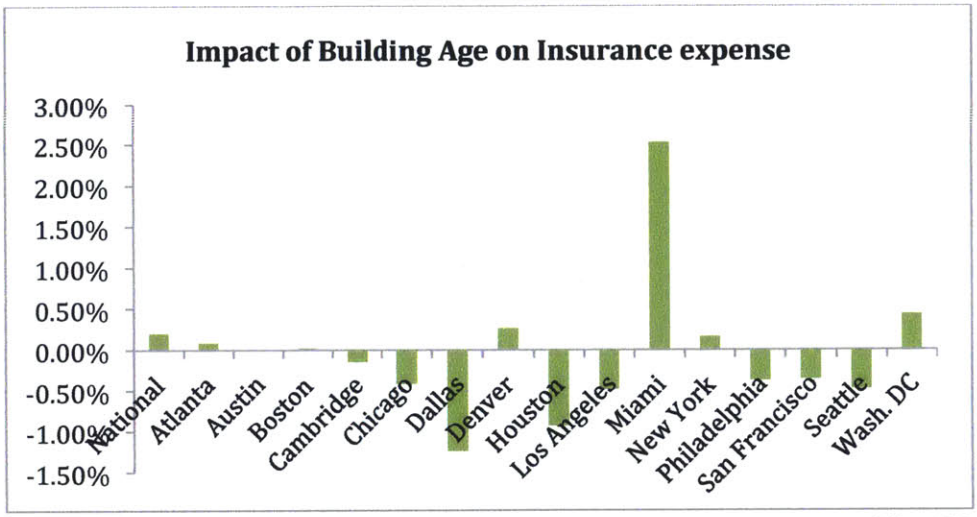


Fig. 38

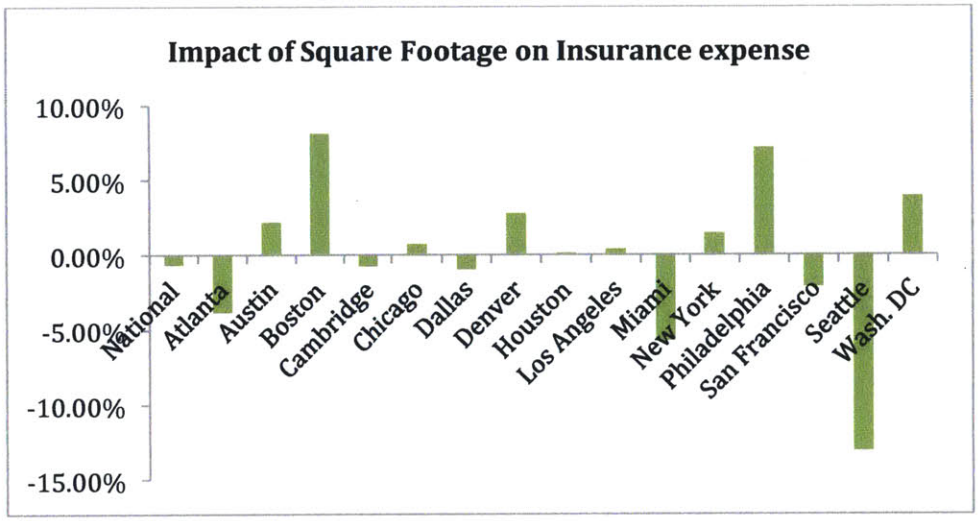


Fig. 39

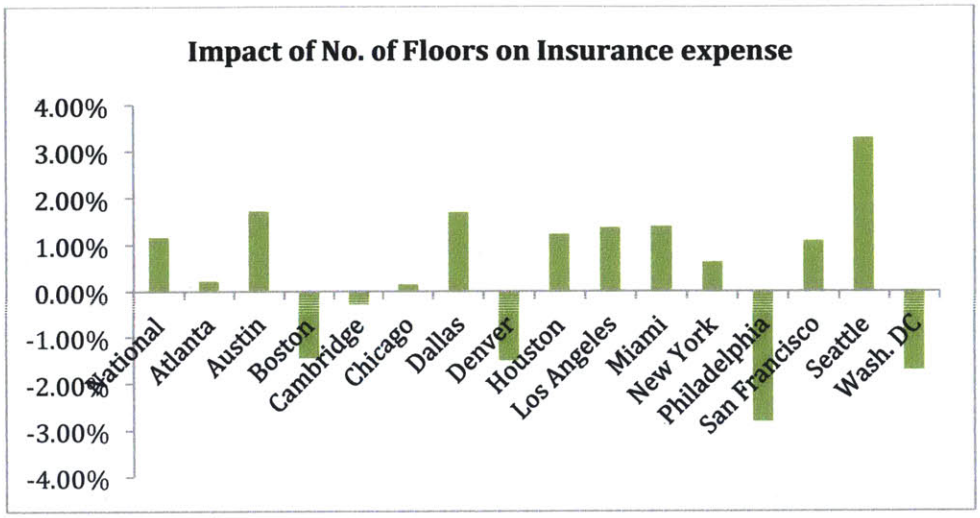


Fig. 40

Table 15 compares the elasticities of occupancy and income obtained from the Building Fixed Effects and Time Fixed Effects insurance expense regressions.

City	TFE Income Elast.	BFE Income Elast.	TFE Occupancy Elast.	BFE Occupancy Elast.
National	**0.64%**	**0.21%**	**-0.13%**	**-0.10%**
Atlanta	0.45%	0.41%	0.29%	-0.51%
Austin	0.53%	0.31%	0.05%	-0.44%
Boston	0.42%	0.13%	-0.88%	-0.15%
Cambridge	0.44%	0.28%	-0.29%	0.49%
Chicago	0.54%	0.20%	0.16%	-0.72%
Dallas	0.35%	0.18%	0.63%	0.04%
Denver	0.21%	0.03%	0.23%	0.01%
Houston	0.36%	0.34%	-0.56%	-0.08%
Los Angeles	0.74%	0.64%	0.46%	0.65%
Miami	0.78%	0.66%	-0.31%	0.13%
New York	0.23%	0.61%	-0.20%	-0.08%
Philadelphia	-0.27%	-0.36%	-0.40%	-0.71%
San Fran.	0.26%	0.25%	-0.78%	-0.70%
Seattle	0.06%	0.30%	0.41%	0.39%
Wash. DC	0.28%	0.16%	0.09%	0.22%

Table 15

6.5 Maintenance Expense Regression Results

Fixed-effects (within) regression — Number of obs = 55,278
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1798
between = 0.5300
overall = 0.1836

Obs per group:
min = 407
avg = 921.3
max = 1,163

F(5,55213) = 2420.76
corr(u_i, Xb) = 0.0512 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5324745	.006282	84.76	0.000	.5201616	.5447873
leasepercent	-.0009284	.0214832	-0.04	0.966	-.0430355	.0411788
Age	.0031361	.0002204	14.23	0.000	.002704	.0035681
grosssquarefeet	-1.99e-07	1.51e-08	-13.14	0.000	-2.28e-07	-1.69e-07
nooffloors	.0165376	.0004421	37.40	0.000	.015671	.0174042
_cons	-1.678233	.0212423	-79.00	0.000	-1.719868	-1.636597
sigma_u	.08063615					
sigma_e	.74816925					
rho	.0114827	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 55213) = 10.35 — Prob > F = 0.0000

Fig. 41

The regression output above presents the results for the TFE regression run on Maintenance expense. The results show that nationally, buildings with double the rental income have insurance expenses that are about 53% higher. With respect to occupancy, the coefficient is not statistically significant and is almost zero. This tells us that nationally, building occupancy has little to no influence on maintenance expenses. With regard to age, the results show that nationally, older buildings incur higher maintenance expenses. The statistically significant coefficient tells us that buildings that are a year older have maintenance expenses that are about .3% higher. The results show that square footage is a statistically significant influencer on insurance expenses. The negative coefficient implies that nationally, larger buildings incur lower maintenance expenses. This is very surprising, as one would expect larger buildings to have higher maintenance expenses. Finally, the results show that nationally, office buildings with more floors incur higher insurance expenses. This is in line with expectations. The coefficient tells us that buildings with an extra floor have maintenance expenses that are about 1.7% higher.

Table 16 below presents a summary of the coefficients for the independent variables age, square footage, expected base rental income, leased percentage and number of floors.

City	Income Coef.	Occupancy Coef.	Age Coef.	Size Coef.	Floors Coef.	Maintenance Constant
National	**0.53%**	**-0.01%**	**0.31%**	**-1.99%**	**1.65%**	**$0.19**
Atlanta	0.84%	0.22%	0.64%	-2.39%	1.46%	$0.09
Austin	0.55%	-0.05%	0.55%	5.84%	1.34%	$0.16
Boston	0.63%	0.16%	-0.34%	2.69%	-1.70%	$0.20
Cambridge	0.18%	0.94%	-0.22%	-8.45%	3.51%	$0.25
Chicago	0.37%	0.03%	-0.25%	-1.78%	0.47%	$0.43
Dallas	0.51%	0.10%	1.27%	-2.51%	1.83%	$0.14
Denver	0.27%	1.03%	0.68%	4.16%	-0.88%	$0.16
Houston	0.39%	0.05%	-0.07%	-0.43%	0.54%	$0.29
Los Angeles	0.61%	-0.10%	-1.33%	1.65%	0.10%	$0.36
Miami	0.51%	0.41%	1.96%	2.78%	0.87%	$0.09
New York	0.60%	0.07%	-0.31%	-0.21%	-0.07%	$0.26
Philadelphia	0.28%	0.01%	-0.21%	-5.16%	1.13%	$0.62
San Fran.	0.24%	0.46%	-0.63%	-4.51%	0.90%	$0.45
Seattle	0.40%	0.24%	0.46%	1.07%	0.08%	$0.23
Wash. DC	0.28%	0.39%	0.13%	-9.49%	1.27%	$0.30

Table 16

The graphs in figures 42 to 44 are graphical summaries of the coefficients obtained from the regression of *Age, nooffloors, and grosssquarefeet* on maintenance expense. The results show a clear difference across cities for how maintenance expenses are impacted by age, property size and number of floors.

The regression outputs (see appendix 2) show that with the exception of Cambridge, Houston, and Philadelphia, *Age* has a statistically significant influence on maintenance expense. As discussed in the early parts of this section, the expectation is for older buildings to have higher maintenance expenses. This appears not to be the case across all markets as is evinced by figure 42.

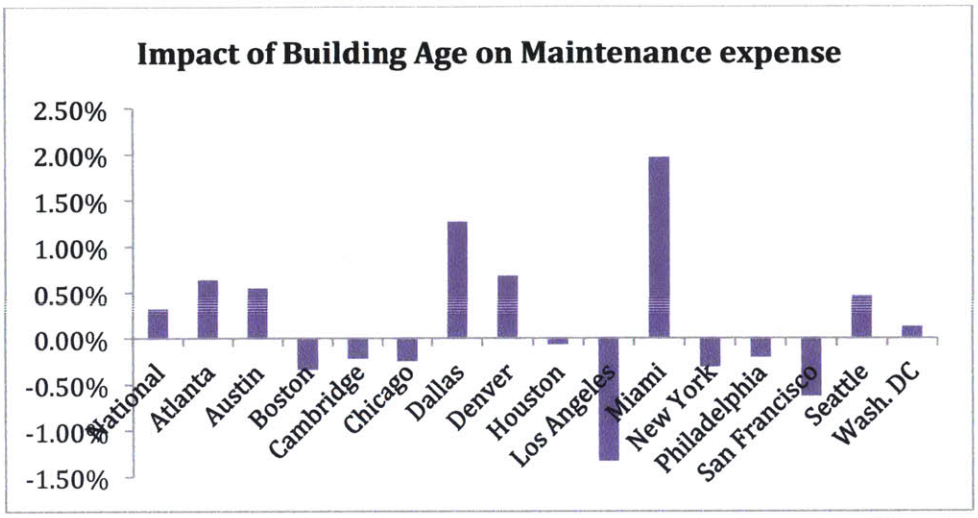


Fig. 42

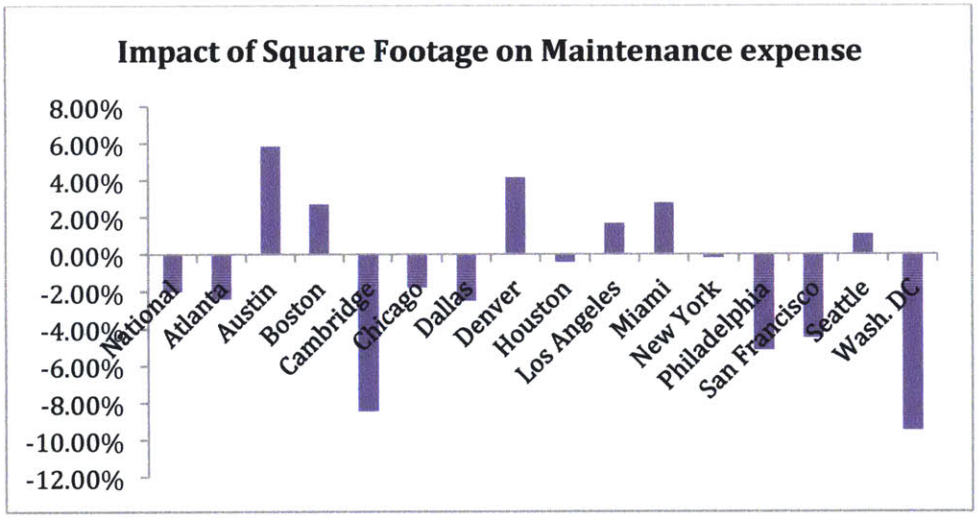


Fig. 43

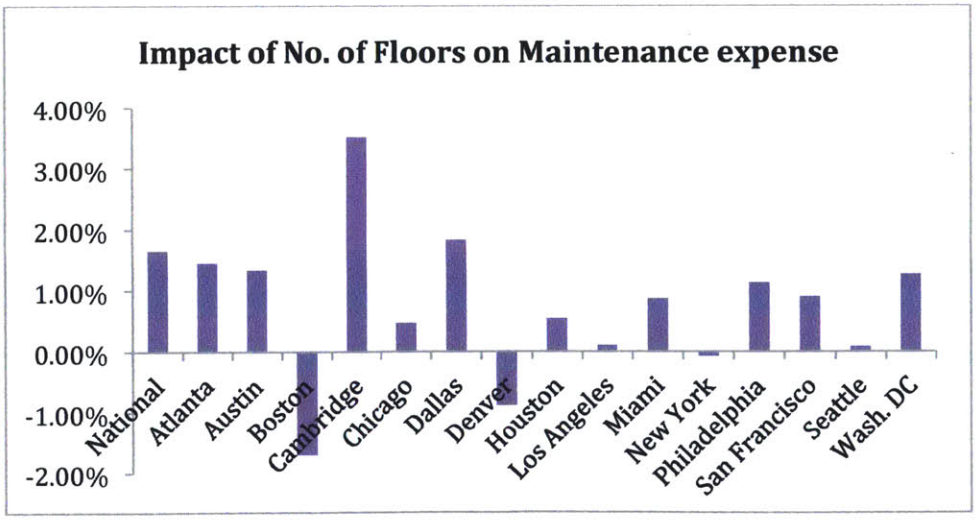


Fig. 44

Table 16 compares the elasticities of occupancy and income obtained from the Building Fixed Effects and Time Fixed Effects maintenance expense regressions.

City	TFE Income Elast.	BFE Income Elast.	TFE Occupancy Elast.	BFE Occupancy Elast.
National	**0.53%**	**0.30%**	**-0.01%**	**0.28%**
Atlanta	0.84%	0.39%	0.22%	0.36%
Austin	0.55%	0.31%	-0.05%	-0.13%
Boston	0.63%	0.36%	0.16%	0.70%
Cambridge	0.18%	0.38%	0.94%	0.92%
Chicago	0.37%	0.18%	0.03%	0.34%
Dallas	0.51%	0.34%	0.10%	0.12%
Denver	0.27%	0.21%	1.03%	0.35%
Houston	0.39%	0.27%	0.05%	0.24%
Los Angeles	0.61%	0.58%	-0.10%	0.63%
Miami	0.51%	0.62%	0.41%	0.44%
New York	0.60%	0.64%	0.07%	0.52%
Philadelphia	0.28%	0.30%	0.01%	0.28%
San Fran.	0.24%	0.48%	0.46%	0.40%
Seattle	0.40%	0.43%	0.24%	0.47%
Wash. DC	0.28%	0.32%	0.39%	0.30%

Table 16

The last two chapters have provided an exposition into the varying degrees of expense sensitivities to income, occupancy and other building characteristics across markets. It is hoped that this stimulates further interest in exploring the underlying drivers for the observed differences across markets.

The next and final chapter will summarize the findings of this study and suggest potential next steps to advance these findings.

CHAPTER 7- CONCLUSION

This thesis set out to explore how operating expenses respond to changes in office rental income and occupancy. It also sought to explore building characteristics that tend to impact expenses such as age and size.

The building fixed effects regressions revealed that expenses respond to changes in income and occupancy differently with respect to expense types and also across markets. Furthermore, this study showed that income and occupancy tend to be statistically significant determinants of tax, insurance, utility, and maintenance expenses across markets.

The time fixed effects regressions exposed the variances across markets with respect to how building characteristics influence expenses. They provided a strong contrast for what income and occupancy elasticities across markets are when building differences are considered. In several instances, these elasticities varied largely both in magnitude and sign.

To further the findings of this study, a stage two analysis similar to what was done by Serguei Chervachidze, Ph. D. and William Wheaton, Ph. D, needs to be conducted to ascertain the underlying drivers of these cross-market variances. Some guesses were made in the study as to why certain markets showed particular results, but those need to be supported with empirical studies in order to be validated. Another interesting next step would be to investigate how different lease structures and tenants impact expenses. A cross-market analysis of leases by SIC code and their impact on operating expenses could potentially shed some more light on the differences across markets. For example, could it be that technology focused tenants drive up expenses more than financial service tenants? Could the saturation of a market by a certain type of tenant be the reason why expenses are perceived to be higher there? These are all questions that this study should stimulate and it is hoped that more work will be done on this to further the findings and create a better expense forecasting and benchmarking tool.

BIBLIOGRAPHY

"About Trepp." Web. 21 June 2015. <https://www.trepp.com/about-us/about-trepp/>.

Chervachidze, Serguei, and William C. Wheaton. "Operating Costs in Commercial Real Estate Properties: Cyclic, Structural and Geographic Components." CBRE-EA, 2015.

DiPasquale, Denise, and William C. Wheaton. Urban Economics and Real Estate Markets. Englewood Cliffs, NJ: Prentice Hall, 1996. Print.

"Frequently asked questions about NCREIF and the NCREIF property index (NPI)." Web. 14 June 2015. <https://www.ncreif.org/public_files/Users_Guide_to_NPI.pdf>.

"Non-Residential." San Francisco Public Utilities Commission:. Web. 21 June 2015. <http://www.sfwater.org/index.aspx?page=170>.

"Real Capital Analytics Commercial Real Estate Glossary." Web. 16 June 2015. <https://www.rcanalytics.com/glossary/n/noi-net-operating-income-.aspx>.

"State and Local Property Taxes Target Commercial and Industrial Property." Tax Foundation. Web. 22 June 2015. <http://taxfoundation.org/article/state-and-local-property-taxes-target-commercial-and-industrial-property>.

Torres-Reyna, Oscar. "Panel Data Analysis Fixed and Random Effects Using STATA (v. 4.2)." Web. 8 June 2015. <http://www.princeton.edu/~otorres/Panel101.pdf>.

Wooldridge, Jeffrey M. Introductory Econometrics: A Modern Approach. 2nd ed. Australia: South-Western College Pub., 2003. Print.

APPENDIX 1

Panel Regression with building Fixed Effects- STATA Output

National

Total Expenses

```
Fixed-effects (within) regression               Number of obs      =     68,524
Group variable: ncreifprop~d                    Number of groups   =      3,947

R-sq:                                           Obs per group:
     within  = 0.0734                                         min =          1
     between = 0.2801                                         avg =       17.4
     overall = 0.2422                                         max =         60

                                                F(2,64575)         =    2556.36
corr(u_i, Xb)  = 0.3397                         Prob > F           =     0.0000

------------------------------------------------------------------------------
   lgexpense |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .3093759    .004355    71.04   0.000     .3008401    .3179117
leasepercent |   .1744665   .0115641    15.09   0.000     .1518009    .1971322
       _cons |   .1015089   .0129438     7.84   0.000      .076139    .1268788
-------------+----------------------------------------------------------------
     sigma_u |  .72867739
     sigma_e |  .32237142
         rho |   .8363139   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(3946, 64575) = 66.42                 Prob > F = 0.0000
```

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =     63,860
Group variable: ncreifprop~d                    Number of groups   =      3,726

R-sq:                                           Obs per group:
     within  = 0.0323                                         min =          1
     between = 0.1828                                         avg =       17.1
     overall = 0.1466                                         max =         60

                                                F(2,60132)         =    1004.80
corr(u_i, Xb)  = 0.2632                         Prob > F           =     0.0000

------------------------------------------------------------------------------
   lgutility |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .2779606    .006353    43.75   0.000     .2655088    .2904125
leasepercent |   .2345915   .0171503    13.68   0.000     .2009769    .2682061
       _cons |  -1.613492   .0189872   -84.98   0.000    -1.650707   -1.576277
-------------+----------------------------------------------------------------
     sigma_u |  .97349432
     sigma_e |  .45341134
         rho |  .82174053   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(3725, 60132) = 46.34                 Prob > F = 0.0000
```

Tax Expense

```
Fixed-effects (within) regression               Number of obs      =     65,455
Group variable: ncreifprop~d                    Number of groups   =      3,877

R-sq:                                           Obs per group:
     within  = 0.0386                                         min =          1
     between = 0.2129                                         avg =       16.9
     overall = 0.2015                                         max =         60

                                                F(2,61576)         =    1236.40
corr(u_i, Xb)  = 0.3069                         Prob > F           =     0.0000

------------------------------------------------------------------------------
       lgtax |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  lgexpbase |   .3255815   .0066284    49.12   0.000     .3125898    .3385732
leasepercent|   .2220566   .0178125    12.47   0.000     .1871441    .2569691
       _cons |  -1.178569   .0198368   -59.41   0.000    -1.217449   -1.139689
-------------+----------------------------------------------------------------
     sigma_u |  .75519512
     sigma_e |  .47211042
         rho |  .71900401   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(3876, 61576) = 21.14                 Prob > F = 0.0000
```

Insurance Expense

```
Fixed-effects (within) regression               Number of obs      =     66,166
Group variable: ncreifprop~d                    Number of groups   =      3,898

R-sq:                                           Obs per group:
     within  = 0.0195                                         min =          1
     between = 0.1788                                         avg =       17.0
     overall = 0.1488                                         max =         60

                                                F(2,62266)         =     619.16
corr(u_i, Xb)  = 0.3162                         Prob > F           =     0.0000

------------------------------------------------------------------------------
 lginsurance |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  lgexpbase |   .2109105   .0062112    33.96   0.000     .1987365    .2230846
leasepercent|  -.1027158   .0169488    -6.06   0.000    -.1359354   -.0694962
       _cons |  -3.032121   .0187232  -161.94   0.000    -3.068819   -2.995424
-------------+----------------------------------------------------------------
     sigma_u |  .88150438
     sigma_e |  .45312154
         rho |  .79099594   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(3897, 62266) = 53.89                 Prob > F = 0.0000
```

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 66,277
Group variable: ncreifprop~d — Number of groups = 3,857

R-sq:
within = 0.0456
between = 0.1643
overall = 0.1410

Obs per group:
min = 1
avg = 17.2
max = 60

F(2,62418) = 1491.45
corr(u_i, Xb) = 0.2163 — Prob > F = 0.0000

lgmaintena~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2958036	.005604	52.78	0.000	.2848199	.3067874
leasepercent	.2898942	.0153704	18.86	0.000	.2597681	.3200203
_cons	-1.389481	.0169525	-81.96	0.000	-1.422708	-1.356254
sigma_u	.91400852					
sigma_e	.41264029					
rho	.83069027	(fraction of variance due to u_i)				

F test that all u_i=0: F(3856, 62418) = 45.87 — Prob > F = 0.0000

Atlanta

Total Expenses

Fixed-effects (within) regression — Number of obs = 1,511
Group variable: ncreifprop~d — Number of groups = 84

R-sq:
within = 0.0975
between = 0.3341
overall = 0.2276

Obs per group:
min = 1
avg = 18.0
max = 58

F(2,1425) = 76.93
corr(u_i, Xb) = 0.2258 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4153458	.0357847	11.61	0.000	.3451494	.4855422
leasepercent	.3506416	.0906461	3.87	0.000	.1728275	.5284557
_cons	-.2211118	.0939818	-2.35	0.019	-.4054693	-.0367542
sigma_u	.36438651					
sigma_e	.308438					
rho	.58258365	(fraction of variance due to u_i)				

F test that all u_i=0: F(83, 1425) = 22.24 — Prob > F = 0.0000

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =       1,488
Group variable: ncreifprop~d                    Number of groups   =          84

R-sq:                                           Obs per group:
     within  = 0.1425                                         min =           1
     between = 0.2430                                         avg =        17.7
     overall = 0.1694                                         max =          58

                                                F(2,1402)          =      116.49
corr(u_i, Xb)  = 0.1600                         Prob > F           =      0.0000
```

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4007668	.0286237	14.00	0.000	.3446169	.4569167
leasepercent	.4039368	.0733558	5.51	0.000	.2600379	.5478357
_cons	-1.931777	.0757538	-25.50	0.000	-2.08038	-1.783174
sigma_u	.48692884					
sigma_e	.24427212					
rho	.79893804	(fraction of variance due to u_i)				

F test that all u_i=0: F(83, 1402) = 69.64 Prob > F = 0.0000

Tax Expense

```
Fixed-effects (within) regression               Number of obs      =       1,383
Group variable: ncreifprop~d                    Number of groups   =          84

R-sq:                                           Obs per group:
     within  = 0.0174                                         min =           1
     between = 0.2242                                         avg =        16.5
     overall = 0.0924                                         max =          56

                                                F(2,1297)          =      11.51
corr(u_i, Xb)  = 0.2238                         Prob > F           =      0.0000
```

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3854895	.0809551	4.76	0.000	.2266721	.5443068
leasepercent	.1381268	.2129363	0.65	0.517	-.2796104	.555864
_cons	-1.423126	.2235377	-6.37	0.000	-1.861661	-.9845908
sigma_u	.64685508					
sigma_e	.66652284					
rho	.48502842	(fraction of variance due to u_i)				

F test that all u_i=0: F(83, 1297) = 5.56 Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,365
Group variable: ncreifprop~d — Number of groups = 83

R-sq:
within = 0.0494
between = 0.0589
overall = 0.0713

Obs per group:
min = 1
avg = 16.4
max = 57

F(2,1280) = 33.28
corr(u_i, Xb) = -0.0142 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.414899	.0567412	7.31	0.000	.303583	.5262151
leasepercent	-.5135177	.148823	-3.45	0.001	-.8054816	-.2215538
_cons	-3.350607	.1572073	-21.31	0.000	-3.65902	-3.042195
sigma_u	.43585877					
sigma_e	.45190777					
rho	.48192796	(fraction of variance due to u_i)				

F test that all u_i=0: F(82, 1280) = 11.34 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,488
Group variable: ncreifprop~d — Number of groups = 84

R-sq:
within = 0.0952
between = 0.2322
overall = 0.2027

Obs per group:
min = 1
avg = 17.7
max = 58

F(2,1402) = 73.77
corr(u_i, Xb) = 0.2649 — Prob > F = 0.0000

lgmaintena~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3902515	.0349013	11.18	0.000	.3217872	.4587159
leasepercent	.3624317	.0857853	4.22	0.000	.1941504	.530713
_cons	-1.571921	.0897046	-17.52	0.000	-1.747891	-1.395952
sigma_u	.59765905					
sigma_e	.28588182					
rho	.81379857	(fraction of variance due to u_i)				

F test that all u_i=0: F(83, 1402) = 61.48 — Prob > F = 0.0000

Austin

Total Expenses

```
Fixed-effects (within) regression               Number of obs      =       1,486
Group variable: ncreifprop~d                    Number of groups   =          98

R-sq:                                           Obs per group:
     within  = 0.1403                                         min =           1
     between = 0.3158                                         avg =        15.2
     overall = 0.3122                                         max =          57

                                                F(2,1386)          =      113.13
corr(u_i, Xb)  = 0.3958                         Prob > F           =      0.0000

------------------------------------------------------------------------------
   lgexpense |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .3329619   .0232611    14.31   0.000      .287331    .3785927
leasepercent |   .2170035   .0562623     3.86   0.000     .1066351     .327372
       _cons |   .1956419   .0568917     3.44   0.001     .0840387    .3072451
-------------+----------------------------------------------------------------
     sigma_u |  .42981507
     sigma_e |  .24143372
         rho |   .7601533   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(97, 1386) = 37.21                     Prob > F = 0.0000
```

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =       1,430
Group variable: ncreifprop~d                    Number of groups   =          96

R-sq:                                           Obs per group:
     within  = 0.0362                                         min =           1
     between = 0.1913                                         avg =        14.9
     overall = 0.1232                                         max =          57

                                                F(2,1332)          =       25.04
corr(u_i, Xb)  = 0.2784                         Prob > F           =      0.0000

------------------------------------------------------------------------------
   lgutility |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |    .245753     .04679     5.25   0.000      .153963    .3375431
leasepercent |  -.5645603   .1126266    -5.01   0.000    -.7855051   -.3436155
       _cons |  -.8659325   .1138044    -7.61   0.000    -1.089188   -.6426771
-------------+----------------------------------------------------------------
     sigma_u |  .96091804
     sigma_e |  .47829544
         rho |  .80144035   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(95, 1332) = 43.55                     Prob > F = 0.0000
```

Tax Expense

Fixed-effects (within) regression — Number of obs = 1,327
Group variable: ncreifprop~d — Number of groups = 97

R-sq:
within = 0.0729
between = 0.0813
overall = 0.1605

Obs per group:
min = 1
avg = 13.7
max = 45

F(2,1228) = 48.30
corr(u_i, Xb) = 0.2186 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3803067	.0438138	8.68	0.000	.2943485	.4662649
leasepercent	.4921694	.1194368	4.12	0.000	.2578466	.7264921
_cons	-1.161175	.1169426	-9.93	0.000	-1.390604	-.9317452
sigma_u	.92319658					
sigma_e	.48006623					
rho	.78715086	(fraction of variance due to u_i)				

F test that all u_i=0: F(96, 1228) = 11.36 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,356
Group variable: ncreifprop~d — Number of groups = 94

R-sq:
within = 0.0522
between = 0.2370
overall = 0.1748

Obs per group:
min = 1
avg = 14.4
max = 44

F(2,1260) = 34.68
corr(u_i, Xb) = 0.3288 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3125442	.0410021	7.62	0.000	.2321044	.3929841
leasepercent	-.4368751	.1129636	-3.87	0.000	-.6584926	-.2152576
_cons	-3.285767	.1098158	-29.92	0.000	-3.501208	-3.070325
sigma_u	.39805616					
sigma_e	.45050684					
rho	.43842408	(fraction of variance due to u_i)				

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,439
Group variable: ncreifprop~d — Number of groups = 97

R-sq:
within = 0.0536
between = 0.1219
overall = 0.1757

Obs per group:
min = 1
avg = 14.8
max = 57

F(2,1340) = 37.93
corr(u_i, Xb) = 0.3066 — Prob > F = 0.0000

lgmaintena~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3091529	.0357659	8.64	0.000	.2389897	.3793161
leasepercent	-.1322365	.0868087	-1.52	0.128	-.3025323	.0380592
_cons	-1.075725	.0875642	-12.28	0.000	-1.247503	-.9039475
sigma_u	.53257191					
sigma_e	.36897904					
rho	.67567283	(fraction of variance due to u_i)				

F test that all u_i=0: F(96, 1340) = 24.77 — Prob > F = 0.0000

Boston

Total Expenses

Fixed-effects (within) regression — Number of obs = 1,087
Group variable: ncreifprop~d — Number of groups = 76

R-sq:
within = 0.0369
between = 0.1786
overall = 0.1320

Obs per group:
min = 1
avg = 14.3
max = 60

F(2,1009) = 19.33
corr(u_i, Xb) = 0.2456 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4497733	.0730943	6.15	0.000	.306339	.5932076
leasepercent	.1405908	.1761434	0.80	0.425	-.2050586	.4862403
_cons	.2194109	.2493147	0.88	0.379	-.2698239	.7086456
sigma_u	.83120632					
sigma_e	.4839004					
rho	.74687188	(fraction of variance due to u_i)				

F test that all u_i=0: F(75, 1009) = 25.33 — Prob > F = 0.0000

Utility Expense

Fixed-effects (within) regression — Number of obs = 1,037
Group variable: ncreifprop~d — Number of groups = 74

R-sq: — Obs per group:
within = 0.0073 — min = 1
between = 0.0339 — avg = 14.0
overall = 0.0000 — max = 60

F(2,961) = 3.51
corr(u_i, Xb) = -0.1282 — Prob > F = 0.0302

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.1890743	.0731356	2.59	0.010	.0455503	.3325983
leasepercent	.2099672	.1631003	1.29	0.198	-.1101066	.530041
_cons	-1.156961	.2414352	-4.79	0.000	-1.630763	-.6831604
sigma_u	.4645325					
sigma_e	.43600459					
rho	.53164701	(fraction of variance due to u_i)				

F test that all u_i=0: F(73, 961) = 20.09 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 1,064
Group variable: ncreifprop~d — Number of groups = 74

R-sq: — Obs per group:
within = 0.0506 — min = 1
between = 0.3929 — avg = 14.4
overall = 0.1884 — max = 60

F(2,988) = 26.34
corr(u_i, Xb) = 0.2582 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4906055	.067788	7.24	0.000	.3575806	.6236305
leasepercent	.3951383	.1510944	2.62	0.009	.0986355	.6916411
_cons	-.9305342	.2243947	-4.15	0.000	-1.370879	-.4901893
sigma_u	.30951188					
sigma_e	.41132381					
rho	.36152101	(fraction of variance due to u_i)				

F test that all u_i=0: F(73, 988) = 7.22 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,040
Group variable: ncreifprop~d — Number of groups = 72

R-sq:
within = 0.0062
between = 0.1774
overall = 0.0923

Obs per group:
min = 1
avg = 14.4
max = 60

F(2,966) = 3.02
corr(u_i, Xb) = 0.3075 — Prob > F = 0.0493

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.1260564	.0681708	1.85	0.065	-.0077236	.2598364
leasepercent	-.152802	.1510487	-1.01	0.312	-.4492235	.1436195
_cons	-2.793445	.2252834	-12.40	0.000	-3.235546	-2.351344
sigma_u	.55742982					
sigma_e	.40869735					
rho	.65038306	(fraction of variance due to u_i)				

F test that all u_i=0: F(71, 966) = 17.53 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,048
Group variable: ncreifprop~d — Number of groups = 74

R-sq:
within = 0.0572
between = 0.1001
overall = 0.0727

Obs per group:
min = 1
avg = 14.2
max = 60

F(2,972) = 29.49
corr(u_i, Xb) = -0.0059 — Prob > F = 0.0000

lgmaintena~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3640359	.0553742	6.57	0.000	.2553692	.4727026
leasepercent	.6987561	.1233103	5.67	0.000	.4567711	.9407411
_cons	-1.819332	.1828687	-9.95	0.000	-2.178195	-1.460469
sigma_u	.46045524					
sigma_e	.3300225					
rho	.6606315	(fraction of variance due to u_i)				

F test that all u_i=0: F(73, 972) = 19.86 — Prob > F = 0.0000

Cambridge

Total Expense

```
Fixed-effects (within) regression               Number of obs      =       357
Group variable: ncreifprop~d                    Number of groups   =        24

R-sq:                                           Obs per group:
     within  = 0.1056                                         min =         2
     between = 0.2562                                         avg =      14.9
     overall = 0.1649                                         max =        39

                                                F(2,331)           =     19.55
corr(u_i, Xb)  = 0.2772                         Prob > F           =    0.0000

------------------------------------------------------------------------------
   lgexpense |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .3227209   .0517038     6.24   0.000     .2210115    .4244304
leasepercent |   .1875915   .1540581     1.22   0.224     -.115465     .490648
       _cons |   .2720038   .1809139     1.50   0.134    -.0838822    .6278898
-------------+----------------------------------------------------------------
     sigma_u |  1.4894615
     sigma_e |  .29908651
         rho |  .96124145   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(23, 331) = 108.11                     Prob > F = 0.0000
```

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =       341
Group variable: ncreifprop~d                    Number of groups   =        20

R-sq:                                           Obs per group:
     within  = 0.1311                                         min =         2
     between = 0.1729                                         avg =      17.1
     overall = 0.2198                                         max =        39

                                                F(2,319)           =     24.07
corr(u_i, Xb)  = 0.1862                         Prob > F           =    0.0000

------------------------------------------------------------------------------
   lgutility |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .3643927   .0585025     6.23   0.000     .2492933     .479492
leasepercent |   .6823552   .1778235     3.84   0.000     .3325002    1.03221
       _cons |  -1.691135   .2062393    -8.20   0.000    -2.096896   -1.285374
-------------+----------------------------------------------------------------
     sigma_u |  .53308078
     sigma_e |  .34520799
         rho |  .70454834   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(19, 319) = 25.10                     Prob > F = 0.0000
```

Tax Expense

```
Fixed-effects (within) regression               Number of obs      =       342
Group variable: ncreifprop~d                    Number of groups   =        20

R-sq:                                           Obs per group:
     within  = 0.2954                                         min =         2
     between = 0.4194                                         avg =      17.1
     overall = 0.3875                                         max =        39

                                                F(2,320)           =     67.09
corr(u_i, Xb)  = 0.2661                         Prob > F           =    0.0000

------------------------------------------------------------------------------
       lgtax |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .3442578   .0297981    11.55   0.000     .2856327    .4028828
leasepercent |   .2089964   .0904486     2.31   0.021     .0310473    .3869454
       _cons |  -.6617165   .1049371    -6.31   0.000    -.8681703   -.4552626
-------------+----------------------------------------------------------------
     sigma_u |  .25826414
     sigma_e |  .17587667
         rho |  .68317462   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(19, 320) = 28.89                     Prob > F = 0.0000
```

Insurance Expense

```
Fixed-effects (within) regression               Number of obs      =       349
Group variable: ncreifprop~d                    Number of groups   =        24

R-sq:                                           Obs per group:
     within  = 0.1211                                         min =         2
     between = 0.0696                                         avg =      14.5
     overall = 0.0940                                         max =        39

                                                F(2,323)           =     22.25
corr(u_i, Xb)  = 0.0498                         Prob > F           =    0.0000

------------------------------------------------------------------------------
 lginsurance |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .2806491   .0461448     6.08   0.000     .1898668    .3714315
leasepercent |   .4906063    .140207     3.50   0.001     .2147721    .7664406
       _cons |  -4.032436   .1625763   -24.80   0.000    -4.352279   -3.712594
-------------+----------------------------------------------------------------
     sigma_u |  .96906273
     sigma_e |  .27234334
         rho |  .92679927   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(23, 323) = 44.37                     Prob > F = 0.0000
```

Maintenance Expense

```
Fixed-effects (within) regression               Number of obs      =       342
Group variable: ncreifprop~d                    Number of groups   =        20

R-sq:                                           Obs per group:
     within  = 0.1748                                         min =         2
     between = 0.1762                                         avg =      17.1
     overall = 0.1384                                         max =        39

                                                F(2,320)           =     33.88
corr(u_i, Xb)  = -0.1780                        Prob > F           =    0.0000

------------------------------------------------------------------------------
lgmaintena~e |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .3815892   .0559037     6.83   0.000     .2716039    .4915745
leasepercent |   .9229109   .1696889     5.44   0.000      .589064    1.256758
       _cons |  -1.817772   .1968706    -9.23   0.000    -2.205096   -1.430448
-------------+----------------------------------------------------------------
     sigma_u |  .35533526
     sigma_e |  .32995885
         rho |  .53697925   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(19, 320) = 15.95                     Prob > F = 0.0000
```

Chicago

Total Expenses

```
Fixed-effects (within) regression               Number of obs      =       986
Group variable: ncreifprop~d                    Number of groups   =        69

R-sq:                                           Obs per group:
     within  = 0.0479                                         min =         1
     between = 0.3693                                         avg =      14.3
     overall = 0.1160                                         max =        60

                                                F(2,915)           =     23.04
corr(u_i, Xb)  = 0.1873                         Prob > F           =    0.0000

------------------------------------------------------------------------------
   lgexpense |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |    .201588    .031385     6.42   0.000      .139993    .263183
leasepercent |   .2649977   .1338436     1.98   0.048     .0023217    .5276738
       _cons |   .6605856   .1235632     5.35   0.000     .4180853    .9030858
-------------+----------------------------------------------------------------
     sigma_u |  .33940944
     sigma_e |  .31251354
         rho |  .54118615   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(68, 915) = 10.14                     Prob > F = 0.0000
```

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =       978
Group variable: ncreifprop~d                    Number of groups   =        67

R-sq:                                           Obs per group:
     within  = 0.0607                                         min =         1
     between = 0.2024                                         avg =      14.6
     overall = 0.0818                                         max =        60

                                                F(2,909)           =     29.39
corr(u_i, Xb)  = 0.1357                         Prob > F           =    0.0000
```

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2356895	.0324648	7.26	0.000	.1719749	.2994041
leasepercent	.3257186	.1456222	2.24	0.026	.0399238	.6115134
_cons	-1.921342	.1333729	-14.41	0.000	-2.183097	-1.659587
sigma_u	.4862655					
sigma_e	.33861721					
rho	.67343643	(fraction of variance due to u_i)				

F test that all u_i=0: F(66, 909) = 34.41 — Prob > F = 0.0000

Tax Expense

```
Fixed-effects (within) regression               Number of obs      =       942
Group variable: ncreifprop~d                    Number of groups   =        68

R-sq:                                           Obs per group:
     within  = 0.0191                                         min =         1
     between = 0.2203                                         avg =      13.9
     overall = 0.0262                                         max =        57

                                                F(2,872)           =      8.48
corr(u_i, Xb)  = -0.0008                        Prob > F           =    0.0002
```

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3248097	.0789145	4.12	0.000	.1699253	.4796942
leasepercent	.0072608	.3227707	0.02	0.982	-.6262373	.640759
_cons	-.2113932	.3005065	-0.70	0.482	-.8011939	.3784074
sigma_u	.45677064					
sigma_e	.7316459					
rho	.28045	(fraction of variance due to u_i)				

F test that all u_i=0: F(67, 872) = 4.09 — Prob > F = 0.0000

Insurance Expense

```
Fixed-effects (within) regression               Number of obs      =       952
Group variable: ncreifprop~d                    Number of groups   =        67

R-sq:                                           Obs per group:
     within  = 0.0309                                         min =         1
     between = 0.1298                                         avg =      14.2
     overall = 0.0319                                         max =        58

                                                F(2,883)           =     14.08
corr(u_i, Xb)  = 0.0095                         Prob > F           =    0.0000

------------------------------------------------------------------------------
 lginsurance |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .2035376   .0479493     4.24   0.000     .1094298    .2976454
leasepercent |  -.7221354   .2181988    -3.31   0.001    -1.150384   -.2938866
       _cons |  -2.662294   .1998093   -13.32   0.000    -3.054451   -2.270138
-------------+----------------------------------------------------------------
     sigma_u |  .59505921
     sigma_e |  .49881519
         rho |  .58730864   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(66, 883) = 10.41                     Prob > F = 0.0000
```

Maintenance Expense

```
Fixed-effects (within) regression               Number of obs      =       983
Group variable: ncreifprop~d                    Number of groups   =        67

R-sq:                                           Obs per group:
     within  = 0.0498                                         min =         1
     between = 0.0860                                         avg =      14.7
     overall = 0.0713                                         max =        60

                                                F(2,914)           =     23.93
corr(u_i, Xb)  = 0.1203                         Prob > F           =    0.0000

------------------------------------------------------------------------------
lgmaintena~e |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .1813329   .0287928     6.30   0.000     .1248252    .2378406
leasepercent |   .3380145   .1294253     2.61   0.009     .0840092    .5920198
       _cons |  -.8840573   .1182412    -7.48   0.000    -1.116113   -.6520015
-------------+----------------------------------------------------------------
     sigma_u |  .47596567
     sigma_e |  .30213917
         rho |  .71277828   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(66, 914) = 30.52                     Prob > F = 0.0000
```

Dallas

Total Expenses

```
Fixed-effects (within) regression               Number of obs      =       1,252
Group variable: ncreifprop~d                    Number of groups   =          87

R-sq:                                           Obs per group:
     within  = 0.1333                                         min =           1
     between = 0.1521                                         avg =        14.4
     overall = 0.1774                                         max =          60

                                                F(2,1163)          =       89.45
corr(u_i, Xb)  = 0.1916                         Prob > F           =      0.0000

------------------------------------------------------------------------------
   lgexpense |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .3465822   .0280075    12.37   0.000     .2916314     .401533
leasepercent |   .3901292   .0672926     5.80   0.000     .2581008    .5221576
       _cons |   -.035694   .0744053    -0.48   0.632    -.1816776    .1102896
-------------+----------------------------------------------------------------
     sigma_u |   .8975948
     sigma_e |  .24178088
         rho |  .93235081   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(86, 1163) = 86.36                     Prob > F = 0.0000
```

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =       1,228
Group variable: ncreifprop~d                    Number of groups   =          85

R-sq:                                           Obs per group:
     within  = 0.0351                                         min =           1
     between = 0.0630                                         avg =        14.4
     overall = 0.0321                                         max =          60

                                                F(2,1141)          =       20.78
corr(u_i, Xb)  = -0.0174                        Prob > F           =      0.0000

------------------------------------------------------------------------------
   lgutility |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .2977736   .0545474     5.46   0.000     .1907492     .404798
leasepercent |     .51211   .1325168     3.86   0.000      .252106     .772114
       _cons |  -1.747234   .1475483   -11.84   0.000    -2.036731   -1.457738
-------------+----------------------------------------------------------------
     sigma_u |  .80344554
     sigma_e |   .4643021
         rho |  .74965028   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(84, 1141) = 36.49                     Prob > F = 0.0000
```

Tax Expense

Fixed-effects (within) regression — Number of obs = 1,178
Group variable: ncreifprop~d — Number of groups = 85

R-sq:
- within = 0.1577
- between = 0.0447
- overall = 0.2442

Obs per group:
- min = 1
- avg = 13.9
- max = 60

F(2,1091) = 102.11
corr(u_i, Xb) = 0.0557 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5934112	.0498998	11.89	0.000	.4955008	.6913216
leasepercent	1.028956	.1161482	8.86	0.000	.8010566	1.256855
_cons	-2.166587	.1316587	-16.46	0.000	-2.42492	-1.908255
sigma_u	1.3741029					
sigma_e	.39721792					
rho	.92288044	(fraction of variance due to u_i)				

F test that all u_i=0: F(84, 1091) = 24.43 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,190
Group variable: ncreifprop~d — Number of groups = 85

R-sq:
- within = 0.0114
- between = 0.0314
- overall = 0.1093

Obs per group:
- min = 1
- avg = 14.0
- max = 60

F(2,1103) = 6.37
corr(u_i, Xb) = 0.2759 — Prob > F = 0.0018

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.179795	.0504007	3.57	0.000	.0809029	.278687
leasepercent	.0353076	.1180805	0.30	0.765	-.1963802	.2669955
_cons	-3.53714	.1318126	-26.83	0.000	-3.795772	-3.278508
sigma_u	.55259648					
sigma_e	.42053338					
rho	.63325546	(fraction of variance due to u_i)				

F test that all u_i=0: F(84, 1103) = 14.30 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,244
Group variable: ncreifprop~d — Number of groups = 85

R-sq:
within = 0.0619
between = 0.1651
overall = 0.0863

Obs per group:
min = 1
avg = 14.6
max = 60

F(2,1157) = 38.16
corr(u_i, Xb) = 0.0294 — Prob > F = 0.0000

lgmaintena~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3393047	.0390002	8.70	0.000	.2627856	.4158238
leasepercent	.1221642	.0937371	1.30	0.193	-.0617495	.306078
_cons	-1.243734	.1036688	-12.00	0.000	-1.447134	-1.040334
sigma_u	.49571886					
sigma_e	.33680794					
rho	.68416782	(fraction of variance due to u_i)				

F test that all u_i=0: F(84, 1157) = 26.92 — Prob > F = 0.0000

Denver

Total Expenses

Fixed-effects (within) regression — Number of obs = 810
Group variable: ncreifprop~d — Number of groups = 55

R-sq:
within = 0.1651
between = 0.5111
overall = 0.4343

Obs per group:
min = 1
avg = 14.7
max = 60

F(2,753) = 74.45
corr(u_i, Xb) = 0.4364 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2859932	.0264227	10.82	0.000	.2341221	.3378642
leasepercent	.4590094	.0718097	6.39	0.000	.3180383	.5999804
_cons	.0186747	.0751135	0.25	0.804	-.128782	.1661314
sigma_u	.27199986					
sigma_e	.18074531					
rho	.69368954	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 753) = 29.37 — Prob > F = 0.0000

Utility Expense

Fixed-effects (within) regression — Number of obs = 802
Group variable: ncreifprop~d — Number of groups = 55

R-sq:
within = 0.0058
between = 0.0923
overall = 0.0786

Obs per group:
min = 1
avg = 14.6
max = 60

F(2,745) = 2.16
corr(u_i, Xb) = 0.2664 — Prob > F = 0.1162

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.143897	.0693037	2.08	0.038	.0078431	.2799508
leasepercent	.0415629	.189251	0.22	0.826	-.3299658	.4130916
_cons	-1.218238	.1975161	-6.17	0.000	-1.605993	-.830484
sigma_u	.49137775					
sigma_e	.47149999					
rho	.52063531	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 745) = 13.78 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 801
Group variable: ncreifprop~d — Number of groups = 55

R-sq:
within = 0.0712
between = 0.3567
overall = 0.2988

Obs per group:
min = 1
avg = 14.6
max = 60

F(2,744) = 28.51
corr(u_i, Xb) = 0.3792 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3878266	.0538445	7.20	0.000	.2821213	.4935318
leasepercent	.4065128	.1472864	2.76	0.006	.1173664	.6956593
_cons	-1.340254	.1536823	-8.72	0.000	-1.641957	-1.038551
sigma_u	.45577211					
sigma_e	.36763275					
rho	.60582995	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 744) = 17.99 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 803
Group variable: ncreifprop~d — Number of groups = 55

R-sq: — Obs per group:
within = 0.0006 — min = 1
between = 0.1659 — avg = 14.6
overall = 0.1328 — max = 59

F(2,746) = 0.22
corr(u_i, Xb) = 0.4162 — Prob > F = 0.8018

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.0344048	.0517623	0.66	0.506	-.0672123	.1360219
leasepercent	.0083523	.1421609	0.06	0.953	-.2707307	.2874353
_cons	-3.30273	.148583	-22.23	0.000	-3.59442	-3.011039
sigma_u	.50213768					
sigma_e	.35338699					
rho	.66876867	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 746) = 24.01 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 809
Group variable: ncreifprop~d — Number of groups = 55

R-sq: — Obs per group:
within = 0.0510 — min = 1
between = 0.3992 — avg = 14.7
overall = 0.3028 — max = 60

F(2,752) = 20.19
corr(u_i, Xb) = 0.4496 — Prob > F = 0.0000

lgmaintena~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2120419	.0378924	5.60	0.000	.1376544	.2864293
leasepercent	.3502407	.102981	3.40	0.001	.1480763	.5524052
_cons	-1.071882	.1078057	-9.94	0.000	-1.283518	-.860246
sigma_u	.50326331					
sigma_e	.25920358					
rho	.79034388	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 752) = 33.26 — Prob > F = 0.0000

Houston

Total Expenses

Fixed-effects (within) regression — Number of obs = 1,371
Group variable: ncreifprop~d — Number of groups = 100

R-sq:
within = 0.1391
between = 0.2059
overall = 0.1665

Obs per group:
min = 1
avg = 13.7
max = 60

F(2,1269) = 102.50
corr(u_i, Xb) = 0.0248 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4809044	.0337359	14.25	0.000	.4147202	.5470887
leasepercent	.4153635	.0967657	4.29	0.000	.2255251	.605202
_cons	-.1682213	.1058128	-1.59	0.112	-.3758085	.0393659
sigma_u	.43472669					
sigma_e	.29061389					
rho	.6911378	(fraction of variance due to u_i)				

F test that all u_i=0: F(99, 1269) = 20.79 — Prob > F = 0.0000

Utility Expense

Fixed-effects (within) regression — Number of obs = 1,306
Group variable: ncreifprop~d — Number of groups = 95

R-sq:
within = 0.1455
between = 0.0273
overall = 0.0951

Obs per group:
min = 1
avg = 13.7
max = 60

F(2,1209) = 102.93
corr(u_i, Xb) = -0.2019 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3972911	.0326995	12.15	0.000	.3331371	.4614451
leasepercent	.9343738	.0935982	9.98	0.000	.750741	1.118007
_cons	-2.20835	.1018484	-21.68	0.000	-2.408169	-2.008531
sigma_u	.39762191					
sigma_e	.28119962					
rho	.66660585	(fraction of variance due to u_i)				

F test that all u_i=0: F(94, 1209) = 17.77 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 1,340
Group variable: ncreifprop~d — Number of groups = 98

R-sq:
- within = 0.0819
- between = 0.2057
- overall = 0.2079

Obs per group:
- min = 1
- avg = 13.7
- max = 60

F(2,1240) = 55.28
corr(u_i, Xb) = 0.1725 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5035705	.0485648	10.37	0.000	.4082924	.5988487
leasepercent	.5388343	.1368438	3.94	0.000	.2703634	.8073053
_cons	-1.502785	.1507808	-9.97	0.000	-1.798599	-1.206972
sigma_u	.49093874					
sigma_e	.40943042					
rho	.5897918	(fraction of variance due to u_i)				

F test that all u_i=0: F(97, 1240) = 8.83 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,344
Group variable: ncreifprop~d — Number of groups = 98

R-sq:
- within = 0.0302
- between = 0.0396
- overall = 0.0723

Obs per group:
- min = 1
- avg = 13.7
- max = 59

F(2,1244) = 19.34
corr(u_i, Xb) = 0.1512 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3381421	.056966	5.94	0.000	.2263819	.4499022
leasepercent	-.0774429	.1554569	-0.50	0.618	-.3824296	.2275438
_cons	-3.017195	.1732132	-17.42	0.000	-3.357018	-2.677373
sigma_u	.68344838					
sigma_e	.46190615					
rho	.68645091	(fraction of variance due to u_i)				

F test that all u_i=0: F(97, 1244) = 27.02 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,308
Group variable: ncreifprop~d — Number of groups = 96

R-sq:
within = 0.0464
between = 0.0988
overall = 0.1189

Obs per group:
min = 1
avg = 13.6
max = 60

F(2,1210) = 29.41
corr(u_i, Xb) = 0.1739 — Prob > F = 0.0000

lgmaintena~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2718397	.0356397	7.63	0.000	.2019173	.3417621
leasepercent	.2365686	.0989765	2.39	0.017	.042384	.4307531
_cons	-1.167505	.1088945	-10.72	0.000	-1.381148	-.9538623
sigma_u	.53177712					
sigma_e	.29701658					
rho	.76221703	(fraction of variance due to u_i)				

F test that all u_i=0: F(95, 1210) = 23.70 — Prob > F = 0.0000

Los Angeles

Total Expenses

Fixed-effects (within) regression — Number of obs = 747
Group variable: ncreifprop~d — Number of groups = 50

R-sq:
within = 0.5042
between = 0.3706
overall = 0.3841

Obs per group:
min = 1
avg = 14.9
max = 60

F(2,695) = 353.43
corr(u_i, Xb) = -0.1329 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5593826	.0221878	25.21	0.000	.5158193	.6029458
leasepercent	.7690628	.0797965	9.64	0.000	.6123918	.9257338
_cons	-.5313286	.0841086	-6.32	0.000	-.6964659	-.3661912
sigma_u	.3702955					
sigma_e	.18846677					
rho	.79425372	(fraction of variance due to u_i)				

F test that all u_i=0: F(49, 695) = 24.34 — Prob > F = 0.0000

Utility Expense

Fixed-effects (within) regression — Number of obs = 743
Group variable: ncreifprop~d — Number of groups = 50

R-sq:
within = 0.2200
between = 0.1897
overall = 0.1364

Obs per group:
min = 1
avg = 14.9
max = 60

F(2,691) = 97.44
corr(u_i, Xb) = -0.0100 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4852421	.0378245	12.83	0.000	.4109774	.5595067
leasepercent	.8356552	.1361001	6.14	0.000	.5684358	1.102875
_cons	-2.407214	.1435698	-16.77	0.000	-2.6891	-2.125329
sigma_u	.70638499					
sigma_e	.32099047					
rho	.82884988	(fraction of variance due to u_i)				

F test that all u_i=0: F(49, 691) = 36.59 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 741
Group variable: ncreifprop~d — Number of groups = 49

R-sq:
within = 0.3818
between = 0.4393
overall = 0.3757

Obs per group:
min = 1
avg = 15.1
max = 60

F(2,690) = 213.07
corr(u_i, Xb) = -0.1258 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.7391944	.0361421	20.45	0.000	.6682328	.810156
leasepercent	.4854282	.1312648	3.70	0.000	.2277019	.7431545
_cons	-2.193933	.1377939	-15.92	0.000	-2.464479	-1.923388
sigma_u	.37510431					
sigma_e	.30658579					
rho	.5995074	(fraction of variance due to u_i)				

F test that all u_i=0: F(48, 690) = 12.12 — Prob > F = 0.0000

Insurance Expense

```
Fixed-effects (within) regression               Number of obs      =       746
Group variable: ncreifprop~d                    Number of groups   =        50

R-sq:                                           Obs per group:
     within  = 0.2632                                         min =         1
     between = 0.3448                                         avg =      14.9
     overall = 0.2928                                         max =        60

                                                F(2,694)           =    123.93
corr(u_i, Xb)  = -0.0124                        Prob > F           =    0.0000

------------------------------------------------------------------------------
 lginsurance |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .6441434   .0420378    15.32   0.000     .5616069    .7266798
leasepercent |   .6485134   .1359725     4.77   0.000     .3815466    .9154802
       _cons |  -3.142612   .1502178   -20.92   0.000    -3.437548   -2.847677
-------------+----------------------------------------------------------------
     sigma_u |   .4067374
     sigma_e |  .32004856
         rho |  .61760384   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(49, 694) = 15.15                     Prob > F = 0.0000
```

Maintenance Expense

```
Fixed-effects (within) regression               Number of obs      =       748
Group variable: ncreifprop~d                    Number of groups   =        50

R-sq:                                           Obs per group:
     within  = 0.3003                                         min =         1
     between = 0.2237                                         avg =      15.0
     overall = 0.1887                                         max =        60

                                                F(2,696)           =    149.33
corr(u_i, Xb)  = -0.0628                        Prob > F           =    0.0000

------------------------------------------------------------------------------
lgmaintena~e |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .5750503   .0343573    16.74   0.000     .5075939    .6425068
leasepercent |   .6308664   .1235473     5.11   0.000     .3882963    .8734365
       _cons |  -1.813612   .1302367   -13.93   0.000    -2.069316   -1.557908
-------------+----------------------------------------------------------------
     sigma_u |   .7846741
     sigma_e |  .29187782
         rho |  .87845353   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(49, 696) = 32.68                     Prob > F = 0.0000
```

Miami

Total Expenses

```
Fixed-effects (within) regression               Number of obs      =       821
Group variable: ncreifprop~d                    Number of groups   =        44

R-sq:                                           Obs per group:
     within  = 0.3766                                         min =         1
     between = 0.5541                                         avg =      18.7
     overall = 0.5518                                         max =        60

                                                F(2,775)           =    234.05
corr(u_i, Xb)  = 0.3975                         Prob > F           =    0.0000

------------------------------------------------------------------------------
   lgexpense |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .4867902   .0238752    20.39   0.000     .4399225    .5336579
leasepercent |   .5600942   .0831217     6.74   0.000     .3969238    .7232645
       _cons |  -.3098712   .0822736    -3.77   0.000    -.4713766   -.1483657
-------------+----------------------------------------------------------------
     sigma_u |  .32810229
     sigma_e |  .17847667
         rho |  .77166472   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(43, 775) = 38.58                     Prob > F = 0.0000
```

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =       816
Group variable: ncreifprop~d                    Number of groups   =        44

R-sq:                                           Obs per group:
     within  = 0.1935                                         min =         1
     between = 0.3666                                         avg =      18.5
     overall = 0.3112                                         max =        60

                                                F(2,770)           =     92.39
corr(u_i, Xb)  = 0.2990                         Prob > F           =    0.0000

------------------------------------------------------------------------------
   lgutility |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .5168046    .040288    12.83   0.000     .4377173    .5958919
leasepercent |   .6246027   .1417629     4.41   0.000      .346315    .9028904
       _cons |  -2.237017    .141135   -15.85   0.000    -2.514072   -1.959962
-------------+----------------------------------------------------------------
     sigma_u |  .72969054
     sigma_e |  .29942555
         rho |  .85588316   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(43, 770) = 62.89                     Prob > F = 0.0000
```

Tax Expense

Fixed-effects (within) regression — Number of obs = 812
Group variable: ncreifprop~d — Number of groups = 43

R-sq:
within = 0.1029
between = 0.3604
overall = 0.3580

Obs per group:
min = 1
avg = 18.9
max = 60

F(2,767) = 44.00
corr(u_i, Xb) = 0.4195 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3936064	.0465488	8.46	0.000	.3022282	.4849846
leasepercent	.5889391	.1557494	3.78	0.000	.2831934	.8946847
_cons	-1.5374	.1550057	-9.92	0.000	-1.841686	-1.233114
sigma_u	.42754689					
sigma_e	.32882956					
rho	.62832759	(fraction of variance due to u_i)				

F test that all u_i=0: F(42, 767) = 16.34 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 819
Group variable: ncreifprop~d — Number of groups = 45

R-sq:
within = 0.1951
between = 0.5003
overall = 0.4358

Obs per group:
min = 1
avg = 18.2
max = 60

F(2,772) = 93.56
corr(u_i, Xb) = 0.4470 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.6594527	.0483303	13.64	0.000	.5645783	.7543271
leasepercent	.1339835	.1687416	0.79	0.427	-.1972632	.4652302
_cons	-3.092834	.1678575	-18.43	0.000	-3.422346	-2.763323
sigma_u	.64619396					
sigma_e	.35965913					
rho	.76348574	(fraction of variance due to u_i)				

F test that all u_i=0: F(44, 772) = 47.72 — Prob > F = 0.0000

Maintenance Expense

```
Fixed-effects (within) regression               Number of obs      =       820
Group variable: ncreifprop~d                    Number of groups   =        44

R-sq:                                           Obs per group:
     within  = 0.2202                                         min =         1
     between = 0.3353                                         avg =      18.6
     overall = 0.2915                                         max =        60

                                                F(2,774)           =    109.30
corr(u_i, Xb)  = 0.1892                         Prob > F           =    0.0000

------------------------------------------------------------------------------
lgmaintena~e |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .6181885   .0427797    14.45   0.000     .5342104    .7021666
leasepercent |   .4399437   .1493878     2.94   0.003     .1466905    .7331969
       _cons |  -1.998004   .1485957   -13.45   0.000    -2.289702   -1.706306
-------------+----------------------------------------------------------------
     sigma_u |  .56562949
     sigma_e |  .31843357
         rho |  .75933749   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(43, 774) = 49.50                     Prob > F = 0.0000
```

New York

Total Expenses

```
Fixed-effects (within) regression               Number of obs      =     1,460
Group variable: ncreifprop~d                    Number of groups   =       100

R-sq:                                           Obs per group:
     within  = 0.2682                                         min =         1
     between = 0.4519                                         avg =      14.6
     overall = 0.4600                                         max =        60

                                                F(2,1358)          =    248.83
corr(u_i, Xb)  = 0.1719                         Prob > F           =    0.0000

------------------------------------------------------------------------------
   lgexpense |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .6850981   .0307866    22.25   0.000     .6247036    .7454927
leasepercent |   .3010092   .0924163     3.26   0.001      .119715    .4823034
       _cons |  -.2399386   .1251195    -1.92   0.055     -.485387    .0055099
-------------+----------------------------------------------------------------
     sigma_u |  .71635688
     sigma_e |  .21313177
         rho |  .91867924   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(99, 1358) = 25.36                    Prob > F = 0.0000
```

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =         1,445
Group variable: ncreifprop~d                    Number of groups   =            96

R-sq:                                           Obs per group:
     within  = 0.0768                                         min =             1
     between = 0.0138                                         avg =          15.1
     overall = 0.0471                                         max =            60

                                                F(2,1347)          =         56.00
corr(u_i, Xb)  = -0.1694                        Prob > F           =        0.0000

------------------------------------------------------------------------------
   lgutility |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .5674024   .0556698    10.19   0.000     .4581936    .6766113
leasepercent |   .8323739   .1667034     4.99   0.000     .5053473    1.1594
       _cons |  -2.291144   .2265261   -10.11   0.000    -2.735526   -1.846761
-------------+----------------------------------------------------------------
     sigma_u |  .85552451
     sigma_e |  .38395691
         rho |   .8323492   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(95, 1347) = 23.15                     Prob > F = 0.0000
```

Tax Expense

```
Fixed-effects (within) regression               Number of obs      =         1,426
Group variable: ncreifprop~d                    Number of groups   =            97

R-sq:                                           Obs per group:
     within  = 0.1310                                         min =             1
     between = 0.4163                                         avg =          14.7
     overall = 0.3135                                         max =            60

                                                F(2,1327)          =        100.04
corr(u_i, Xb)  = 0.1612                         Prob > F           =        0.0000

------------------------------------------------------------------------------
       lgtax |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .7936294   .0571898    13.88   0.000     .6814372    .9058216
leasepercent |    .029868   .1693577     0.18   0.860      -.30237    .362106
       _cons |  -1.184183   .2297372    -5.15   0.000    -1.634871   -.7334958
-------------+----------------------------------------------------------------
     sigma_u |  .48867873
     sigma_e |  .38839122
         rho |   .6128681   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(96, 1327) = 12.31                     Prob > F = 0.0000
```

Insurance Expense

```
Fixed-effects (within) regression               Number of obs      =       1,416
Group variable: ncreifprop~d                    Number of groups   =          98

R-sq:                                           Obs per group:
     within  = 0.0238                                         min =           1
     between = 0.1672                                         avg =        14.4
     overall = 0.0393                                         max =          60

                                                F(2,1316)          =       16.05
corr(u_i, Xb)  = -0.1122                        Prob > F           =      0.0000

------------------------------------------------------------------------------
  lginsurance |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
   lgexpbase |   .6119476   .1114176     5.49   0.000      .393372    .8305233
leasepercent |  -.0788195   .3309879    -0.24   0.812     -.728141     .570502
       _cons |  -3.692052   .4477744    -8.25   0.000    -4.570482   -2.813622
-------------+---------------------------------------------------------------
     sigma_u |  .67259125
     sigma_e |  .75350879
         rho |  .44344165   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(97, 1316) = 7.09                     Prob > F = 0.0000
```

Philadelphia

Total Expense

```
Fixed-effects (within) regression               Number of obs      =         206
Group variable: ncreifprop~d                    Number of groups   =          15

R-sq:                                           Obs per group:
     within  = 0.0695                                         min =           1
     between = 0.2775                                         avg =        13.7
     overall = 0.0924                                         max =          41

                                                F(2,189)           =        7.06
corr(u_i, Xb)  = 0.0564                         Prob > F           =      0.0011

------------------------------------------------------------------------------
   lgexpense |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |   .3721654   .0990782     3.76   0.000     .1767242    .5676067
leasepercent |   .0756684   .2979968     0.25   0.800    -.5121587    .6634955
       _cons |   .3663846   .3090499     1.19   0.237    -.2432456    .9760149
-------------+----------------------------------------------------------------
     sigma_u |  .16333378
     sigma_e |  .26151186
         rho |  .28062418   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(14, 189) = 4.15                     Prob > F = 0.0000
```

Utility Expense

Fixed-effects (within) regression — Number of obs = 206
Group variable: ncreifprop~d — Number of groups = 15

R-sq:
within = 0.0205
between = 0.0207
overall = 0.0163

Obs per group:
min = 1
avg = 13.7
max = 41

F(2,189) = 1.98
corr(u_i, Xb) = -0.0439 — Prob > F = 0.1408

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2150818	.1091755	1.97	0.050	-.0002772	.4304409
leasepercent	.1222924	.3283663	0.37	0.710	-.5254413	.7700261
_cons	-.9459183	.3405458	-2.78	0.006	-1.617677	-.2741594
sigma_u	.18991844					
sigma_e	.28816304					
rho	.30282878	(fraction of variance due to u_i)				

F test that all u_i=0: F(14, 189) = 5.87 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 199
Group variable: ncreifprop~d — Number of groups = 15

R-sq:
within = 0.1154
between = 0.1443
overall = 0.0927

Obs per group:
min = 1
avg = 13.3
max = 41

F(2,182) = 11.87
corr(u_i, Xb) = 0.0625 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4343271	.0937778	4.63	0.000	.2492955	.6193586
leasepercent	-.3722761	.2842929	-1.31	0.192	-.93321	.1886577
_cons	-.8807964	.2937644	-3.00	0.003	-1.460418	-.3011746
sigma_u	.50126156					
sigma_e	.24733595					
rho	.80420106	(fraction of variance due to u_i)				

F test that all u_i=0: F(14, 182) = 13.09 — Prob > F = 0.0000

Insurance Expense

```
Fixed-effects (within) regression               Number of obs      =       176
Group variable: ncreifprop~d                    Number of groups   =        14

R-sq:                                           Obs per group:
     within  = 0.0467                                         min =         1
     between = 0.0003                                         avg =      12.6
     overall = 0.0339                                         max =        41

                                                F(2,160)           =      3.92
corr(u_i, Xb)  = -0.0480                        Prob > F           =    0.0218
```

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	-.3552671	.1462581	-2.43	0.016	-.6441125	-.0664216
leasepercent	-.7133818	.4449923	-1.60	0.111	-1.592198	.1654341
_cons	-1.550227	.4651844	-3.33	0.001	-2.468921	-.631534
sigma_u	.56139821					
sigma_e	.36313936					
rho	.70501356	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(13, 160) = 10.91                     Prob > F = 0.0000
```

Maintenance Expense

```
Fixed-effects (within) regression               Number of obs      =       205
Group variable: ncreifprop~d                    Number of groups   =        15

R-sq:                                           Obs per group:
     within  = 0.0424                                         min =         1
     between = 0.0559                                         avg =      13.7
     overall = 0.0473                                         max =        41

                                                F(2,188)           =      4.16
corr(u_i, Xb)  = 0.0269                         Prob > F           =    0.0171
```

lgmaintena~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2998176	.1074392	2.79	0.006	.0878763	.511759
leasepercent	.2758896	.3230642	0.85	0.394	-.361407	.9131863
_cons	-.8175598	.3349684	-2.44	0.016	-1.478339	-.15678
sigma_u	.27891916					
sigma_e	.2835062					
rho	.49184473	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(14, 188) = 10.57                     Prob > F = 0.0000
```

San Francisco

Total Expenses

```
Fixed-effects (within) regression               Number of obs      =     1,793
Group variable: ncreifprop~d                    Number of groups   =       108

R-sq:                                           Obs per group:
     within  = 0.0928                                         min =         1
     between = 0.1951                                         avg =      16.6
     overall = 0.1252                                         max =        60

                                                F(2,1683)          =     86.06
corr(u_i, Xb)  = -0.0437                        Prob > F           =    0.0000
```

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3637559	.0278206	13.08	0.000	.3091894	.4183225
leasepercent	.2079535	.0748715	2.78	0.006	.0611025	.3548045
_cons	.3812155	.0944831	4.03	0.000	.1958988	.5665321
sigma_u	.32701113					
sigma_e	.24674602					
rho	.63720867	(fraction of variance due to u_i)				

F test that all u_i=0: F(107, 1683) = 23.70 Prob > F = 0.0000

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =     1,749
Group variable: ncreifprop~d                    Number of groups   =       104

R-sq:                                           Obs per group:
     within  = 0.0031                                         min =         1
     between = 0.0817                                         avg =      16.8
     overall = 0.0857                                         max =        60

                                                F(2,1643)          =      2.57
corr(u_i, Xb)  = 0.3078                         Prob > F           =    0.0772
```

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.1445835	.0638828	2.26	0.024	.0192832	.2698839
leasepercent	.0352911	.1789423	0.20	0.844	-.315688	.3862702
_cons	-1.006987	.2223823	-4.53	0.000	-1.44317	-.5708048
sigma_u	.50467856					
sigma_e	.52993963					
rho	.47559871	(fraction of variance due to u_i)				

F test that all u_i=0: F(103, 1643) = 14.23 Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 1,687
Group variable: ncreifprop~d — Number of groups = 107

R-sq:
- within = 0.0223
- between = 0.0735
- overall = 0.0350

Obs per group: min = 1, avg = 15.8, max = 59

F(2,1578) = 17.96
corr(u_i, Xb) = -0.1486 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4571312	.0772552	5.92	0.000	.3055975	.608665
leasepercent	.346824	.234171	1.48	0.139	-.1124951	.8061432
_cons	-1.361384	.2763775	-4.93	0.000	-1.903489	-.819278
sigma_u	.43670335					
sigma_e	.69758445					
rho	.28155954	(fraction of variance due to u_i)				

F test that all u_i=0: F(106, 1578) = 4.32 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,653
Group variable: ncreifprop~d — Number of groups = 108

R-sq:
- within = 0.0213
- between = 0.0442
- overall = 0.0265

Obs per group: min = 1, avg = 15.3, max = 60

F(2,1543) = 16.77
corr(u_i, Xb) = -0.0346 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2612905	.0663522	3.94	0.000	.1311405	.3914404
leasepercent	-.7896508	.2011141	-3.93	0.000	-1.184137	-.3951649
_cons	-1.181254	.2355485	-5.01	0.000	-1.643283	-.7192249
sigma_u	.58916727					
sigma_e	.59459271					
rho	.49541687	(fraction of variance due to u_i)				

F test that all u_i=0: F(107, 1543) = 11.37 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,762
Group variable: ncreifprop~d — Number of groups = 105

R-sq:
within = 0.0947
between = 0.0063
overall = 0.0176

Obs per group:
min = 1
avg = 16.8
max = 60

F(2,1655) = 86.57
corr(u_i, Xb) = -0.2132 — Prob > F = 0.0000

lgmaintena~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4763651	.0369779	12.88	0.000	.4038366	.5488936
leasepercent	.4310968	.1112475	3.88	0.000	.2128961	.6492975
_cons	-1.540164	.1322215	-11.65	0.000	-1.799503	-1.280825
sigma_u	.56754029					
sigma_e	.33656458					
rho	.73982196	(fraction of variance due to u_i)				

F test that all u_i=0: F(104, 1655) = 44.46 — Prob > F = 0.0000

Seattle

Total Expenses

Fixed-effects (within) regression — Number of obs = 1,211
Group variable: ncreifprop~d — Number of groups = 72

R-sq:
within = 0.3218
between = 0.2569
overall = 0.2782

Obs per group:
min = 1
avg = 16.8
max = 59

F(2,1137) = 269.80
corr(u_i, Xb) = -0.0269 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4880908	.0215853	22.61	0.000	.4457393	.5304422
leasepercent	.4755446	.0727677	6.54	0.000	.3327706	.6183186
_cons	-.4457785	.0765078	-5.83	0.000	-.5958907	-.2956662
sigma_u	.33697444					
sigma_e	.21667528					
rho	.7074879	(fraction of variance due to u_i)				

F test that all u_i=0: F(71, 1137) = 29.73 — Prob > F = 0.0000

Utility Expense

Fixed-effects (within) regression — Number of obs = 1,157
Group variable: ncreifprop~d — Number of groups = 71

R-sq:
- within = 0.2416
- between = 0.2884
- overall = 0.1987

Obs per group: min = 1, avg = 16.3, max = 59

F(2,1084) = 172.67
corr(u_i, Xb) = -0.2400 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.7658155	.0423251	18.09	0.000	.6827671	.848864
leasepercent	.7218332	.1400595	5.15	0.000	.4470148	.9966515
_cons	-2.985996	.1479907	-20.18	0.000	-3.276377	-2.695616
sigma_u	.4081098					
sigma_e	.41179623					
rho	.49550393	(fraction of variance due to u_i)				

F test that all u_i=0: F(70, 1084) = 12.51 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 1,182
Group variable: ncreifprop~d — Number of groups = 72

R-sq:
- within = 0.1905
- between = 0.0777
- overall = 0.1820

Obs per group: min = 1, avg = 16.4, max = 59

F(2,1108) = 130.40
corr(u_i, Xb) = -0.1259 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5079074	.0322523	15.75	0.000	.4446248	.5711899
leasepercent	.4818662	.1085551	4.44	0.000	.2688693	.694863
_cons	-2.028507	.1142458	-17.76	0.000	-2.25267	-1.804345
sigma_u	.51684748					
sigma_e	.32178114					
rho	.72066294	(fraction of variance due to u_i)				

F test that all u_i=0: F(71, 1108) = 14.06 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,191
Group variable: ncreifprop~d — Number of groups = 72

R-sq: — Obs per group:
within = 0.0294 — min = 1
between = 0.0015 — avg = 16.5
overall = 0.0037 — max = 57

F(2,1117) = 16.92
corr(u_i, Xb) = -0.1386 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3023871	.0551675	5.48	0.000	.1941435	.4106307
leasepercent	.3880989	.172177	2.25	0.024	.0502723	.7259256
_cons	-3.638199	.1850929	-19.66	0.000	-4.001368	-3.27503
sigma_u	.71389131					
sigma_e	.51152939					
rho	.66075294	(fraction of variance due to u_i)				

F test that all u_i=0: F(71, 1117) = 29.84 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,200
Group variable: ncreifprop~d — Number of groups = 72

R-sq: — Obs per group:
within = 0.1363 — min = 1
between = 0.1200 — avg = 16.7
overall = 0.0637 — max = 59

F(2,1126) = 88.82
corr(u_i, Xb) = -0.1270 — Prob > F = 0.0000

lgmaintena~e	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4342839	.0337577	12.86	0.000	.3680487	.500519
leasepercent	.4734834	.1116545	4.24	0.000	.2544092	.6925576
_cons	-1.542951	.118229	-13.05	0.000	-1.774925	-1.310978
sigma_u	.53949333					
sigma_e	.33031739					
rho	.72733691	(fraction of variance due to u_i)				

F test that all u_i=0: F(71, 1126) = 33.64 — Prob > F = 0.0000

Washington DC

Fixed-effects (within) regression — Number of obs = 2,734
Group variable: ncreifprop~d — Number of groups = 160

R-sq:
- within = 0.1352
- between = 0.2308
- overall = 0.2135

Obs per group: min = 1, avg = 17.1, max = 58

F(2,2572) = 201.10
corr(u_i, Xb) = 0.2549 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.310119	.015668	19.79	0.000	.2793959	.340842
leasepercent	.2601337	.0633007	4.11	0.000	.1360081	.3842592
_cons.	.478233	.0688376	6.95	0.000	.3432502	.6132158
sigma_u	.43720931					
sigma_e	.29888767					
rho	.68150318	(fraction of variance due to u_i)				

F test that all u_i=0: F(159, 2572) = 34.83 — Prob > F = 0.0000

Utility Expense

Fixed-effects (within) regression — Number of obs = 2,694
Group variable: ncreifprop~d — Number of groups = 159

R-sq:
- within = 0.1083
- between = 0.1464
- overall = 0.1361

Obs per group: min = 1, avg = 16.9, max = 58

F(2,2533) = 153.80
corr(u_i, Xb) = 0.0285 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3096823	.0190918	16.22	0.000	.2722452	.3471195
leasepercent	.5784033	.0783022	7.39	0.000	.4248605	.7319461
_cons	-1.67183	.0848611	-19.70	0.000	-1.838234	-1.505426
sigma_u	.42106259					
sigma_e	.36825354					
rho	.56660667	(fraction of variance due to u_i)				

F test that all u_i=0: F(158, 2533) = 9.25 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 2,682
Group variable: ncreifprop~d — Number of groups = 160

R-sq:
- within = 0.0790
- between = 0.1713
- overall = 0.1217

Obs per group:
- min = 1
- avg = 16.8
- max = 56

F(2,2520) = 108.02
corr(u_i, Xb) = 0.1198 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3665322	.0249682	14.68	0.000	.3175719	.4154924
leasepercent	.1337602	.091962	1.45	0.146	-.0465686	.314089
_cons	-.4692637	.1029515	-4.56	0.000	-.6711418	-.2673855
sigma_u	.70410351					
sigma_e	.43265725					
rho	.72590792	(fraction of variance due to u_i)				

F test that all u_i=0: F(159, 2520) = 18.78 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 2,631
Group variable: ncreifprop~d — Number of groups = 160

R-sq:
- within = 0.0190
- between = 0.0294
- overall = 0.0447

Obs per group:
- min = 1
- avg = 16.4
- max = 56

F(2,2469) = 23.93
corr(u_i, Xb) = 0.1166 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.1571401	.0236626	6.64	0.000	.1107394	.2035407
leasepercent	.2238722	.0965947	2.32	0.021	.0344572	.4132872
_cons	-3.519745	.1053536	-33.41	0.000	-3.726336	-3.313154
sigma_u	.57677528					
sigma_e	.44909544					
rho	.62256145	(fraction of variance due to u_i)				

F test that all u_i=0: F(159, 2469) = 20.88 — Prob > F = 0.0000

Maintenance Expense

```
Fixed-effects (within) regression               Number of obs      =      2,693
Group variable: ncreifprop~d                    Number of groups   =        159

R-sq:                                           Obs per group:
     within  = 0.1055                                         min =          1
     between = 0.0946                                         avg =       16.9
     overall = 0.0896                                         max =         58

                                                F(2,2532)          =     149.31
corr(u_i, Xb)  = 0.0153                         Prob > F           =     0.0000

------------------------------------------------------------------------------
lgmaintena~e |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   lgexpbase |    .320565   .0188724    16.99   0.000     .2835581     .357572
leasepercent |    .3044129  .0774024     3.93   0.000     .1526345     .4561913
       _cons |   -1.319185  .0838897   -15.73   0.000    -1.483685    -1.154686
-------------+----------------------------------------------------------------
     sigma_u |   .47886584
     sigma_e |   .36401866
         rho |   .63377142   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0: F(158, 2532) = 22.02                     Prob > F = 0.0000
```

APPENDIX 2

Panel Regression with Time Fixed Effects- STATA Output

National

Total Expenses

```
Fixed-effects (within) regression               Number of obs      =     56,992
Group variable: Date                            Number of groups   =         60

R-sq:                                           Obs per group:
     within  = 0.2767                                         min =        421
     between = 0.7750                                         avg =      949.9
     overall = 0.2819                                         max =      1,196

                                                F(5,56927)         =    4355.95
corr(u_i, Xb)  = 0.0695                         Prob > F           =     0.0000
```

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.676857	.0056867	119.03	0.000	.6657111	.688003
leasepercent	-.2539286	.0195444	-12.99	0.000	-.2922358	-.2156214
Age	.0024523	.0002006	12.22	0.000	.0020591	.0028455
grosssquarefeet	-1.47e-07	1.38e-08	-10.66	0.000	-1.74e-07	-1.20e-07
nooffloors	.0171105	.0004034	42.42	0.000	.0163198	.0179011
_cons	-.2904512	.019521	-14.88	0.000	-.3287124	-.25219
sigma_u	.06232754					
sigma_e	.68934982					
rho	.00810858	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(59, 56927) = 7.12                     Prob > F = 0.0000
```

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =     53,481
Group variable: Date                            Number of groups   =         60

R-sq:                                           Obs per group:
     within  = 0.1751                                         min =        369
     between = 0.3764                                         avg =      891.4
     overall = 0.1777                                         max =      1,131

                                                F(5,53416)         =    2268.10
corr(u_i, Xb)  = 0.0318                         Prob > F           =     0.0000
```

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.6431789	.0070759	90.90	0.000	.6293102	.6570476
leasepercent	-.1013256	.0238859	-4.24	0.000	-.1481421	-.0545091
Age	.0052987	.0002433	21.77	0.000	.0048218	.0057757
grosssquarefeet	-2.42e-08	1.66e-08	-1.46	0.144	-5.68e-08	8.29e-09
nooffloors	.0077544	.000486	15.95	0.000	.0068018	.0087071
_cons	-2.090789	.0234185	-89.28	0.000	-2.136689	-2.044889
sigma_u	.1262953					
sigma_e	.81804375					
rho	.02328044	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(59, 53416) = 19.84                     Prob > F = 0.0000
```

Tax Expense

Fixed-effects (within) regression — Number of obs = 54,549
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.2155 — min = 408
between = 0.5623 — avg = 909.1
overall = 0.2188 — max = 1,149

F(5,54484) = 2993.29
corr(u_i, Xb) = 0.0554 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5322899	.0057489	92.59	0.000	.5210221	.5435578
leasepercent	.4505495	.0195854	23.00	0.000	.412162	.4889371
Age	.001249	.0002	6.25	0.000	.0008571	.0016409
grosssquarefeet	-1.79e-08	1.37e-08	-1.31	0.191	-4.47e-08	8.91e-09
nooffloors	.0145902	.0004033	36.18	0.000	.0137999	.0153806
_cons	-1.86903	.0194581	-96.05	0.000	-1.907169	-1.830892
sigma_u	.09093788					
sigma_e	.67577495					
rho	.01778654	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 54484) = 14.07 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 55,197
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.1586 — min = 381
between = 0.4751 — avg = 920.0
overall = 0.1621 — max = 1,174

F(5,55132) = 2078.13
corr(u_i, Xb) = 0.0651 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.6393041	.0073563	86.91	0.000	.6248856	.6537226
leasepercent	-.1320096	.0251944	-5.24	0.000	-.1813908	-.0826284
Age	.0020374	.0002597	7.84	0.000	.0015283	.0025465
grosssquarefeet	-6.52e-08	1.78e-08	-3.67	0.000	-1.00e-07	-3.04e-08
nooffloors	.0116002	.0005248	22.10	0.000	.0105716	.0126288
_cons	-3.838504	.0251208	-152.80	0.000	-3.887741	-3.789267
sigma_u	.29223585					
sigma_e	.87928237					
rho	.09947337	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 55132) = 60.00 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 55,278
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1798
between = 0.5300
overall = 0.1836

Obs per group:
min = 407
avg = 921.3
max = 1,163

F(5,55213) = 2420.76
corr(u_i, Xb) = 0.0512 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5324745	.006282	84.76	0.000	.5201616	.5447873
leasepercent	-.0009284	.0214832	-0.04	0.966	-.0430355	.0411788
Age	.0031361	.0002204	14.23	0.000	.002704	.0035681
grosssquarefeet	-1.99e-07	1.51e-08	-13.14	0.000	-2.28e-07	-1.69e-07
nooffloors	.0165376	.0004421	37.40	0.000	.015671	.0174042
_cons	-1.678233	.0212423	-79.00	0.000	-1.719868	-1.636597
sigma_u	.08063615					
sigma_e	.74816925					
rho	.0114827	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 55213) = 10.35 — Prob > F = 0.0000

Atlanta

Total Expenses

Fixed-effects (within) regression — Number of obs = 1,351
Group variable: Date — Number of groups = 60

R-sq:
within = 0.2699
between = 0.1802
overall = 0.2599

Obs per group:
min = 14
avg = 22.5
max = 30

F(5,1286) = 95.07
corr(u_i, Xb) = 0.0272 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.6349243	.0332732	19.08	0.000	.5696486	.7002
leasepercent	.3925612	.1058068	3.71	0.000	.1849883	.6001342
Age	.0034901	.0011238	3.11	0.002	.0012855	.0056947
grosssquarefeet	-4.16e-08	6.44e-08	-0.64	0.519	-1.68e-07	8.49e-08
nooffloors	.0051077	.0018044	2.83	0.005	.0015677	.0086476
_cons	-.7385697	.105519	-7.00	0.000	-.9455781	-.5315614
sigma_u	.15944957					
sigma_e	.44567101					
rho	.11347702	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1286) = 2.46 — Prob > F = 0.0000

Utility Expense

Fixed-effects (within) regression — Number of obs = 1,329
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
within = **0.3025** — min = 14
between = **0.3791** — avg = 22.1
overall = **0.2929** — max = 29

F(5,1264) = 109.66
corr(u_i, Xb) = **0.0948** — Prob > F = **0.0000**

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.7313913	.0352628	20.74	0.000	.6622113	.8005712
leasepercent	.3225622	.1125	2.87	0.004	.1018549	.5432695
Age	.0115744	.0011889	9.74	0.000	.0092419	.0139068
grosssquarefeet	3.07e-07	6.82e-08	4.50	0.000	1.73e-07	4.41e-07
nooffloors	-.007241	.0019085	-3.79	0.000	-.0109852	-.0034969
_cons	-2.648298	.1118601	-23.68	0.000	-2.86775	-2.428846
sigma_u	.24157242					
sigma_e	.47064775					
rho	.20851808	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1264) = 5.14 — Prob > F = **0.0000**

Tax Expense

Fixed-effects (within) regression — Number of obs = 1,231
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
within = **0.1237** — min = 12
between = **0.0173** — avg = 20.5
overall = **0.1135** — max = 29

F(5,1166) = 32.93
corr(u_i, Xb) = **-0.0221** — Prob > F = **0.0000**

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5345092	.0569709	9.38	0.000	.4227323	.6462862
leasepercent	.5791275	.1853692	3.12	0.002	.2154331	.9428219
Age	-.0017728	.0019537	-0.91	0.364	-.0056059	.0020603
grosssquarefeet	-1.47e-07	1.09e-07	-1.35	0.176	-3.61e-07	6.61e-08
nooffloors	.0131268	.0030554	4.30	0.000	.0071321	.0191215
_cons	-2.123084	.1842151	-11.53	0.000	-2.484514	-1.761654
sigma_u	.24438601					
sigma_e	.74128253					
rho	.09803372	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1166) = 1.89 — Prob > F = **0.0001**

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,216
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
within = 0.1510 — min = 11
between = 0.1664 — avg = 20.3
overall = 0.0586 — max = 29

F(5,1151) = 40.93
corr(u_i, Xb) = -0.1228 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4507766	.0357015	12.63	0.000	.3807292	.5208239
leasepercent	.2851305	.1164765	2.45	0.015	.0566004	.5136606
Age	.0008374	.0012138	0.69	0.490	-.0015442	.003219
grosssquarefeet	-3.83e-07	6.72e-08	-5.70	0.000	-5.15e-07	-2.51e-07
nooffloors	.0021893	.0018806	1.16	0.245	-.0015005	.0058791
_cons	-3.95721	.1158798	-34.15	0.000	-4.184569	-3.729851
sigma_u	.39972049					
sigma_e	.45948489					
rho	.43077716	(fraction of variance due to u_i)				

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,328
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
within = 0.3015 — min = 14
between = 0.2666 — avg = 22.1
overall = 0.2896 — max = 30

F(5,1263) = 109.03
corr(u_i, Xb) = 0.0488 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.835872	.0431939	19.35	0.000	.7511323	.9206117
leasepercent	.2227447	.1353071	1.65	0.100	-.0427068	.4881962
Age	.0063844	.0014344	4.45	0.000	.0035703	.0091985
grosssquarefeet	-2.39e-07	8.20e-08	-2.91	0.004	-3.99e-07	-7.77e-08
nooffloors	.0146007	.0022992	6.35	0.000	.01009	.0191115
_cons	-2.396171	.1345527	-17.81	0.000	-2.660142	-2.132199
sigma_u	.22169963					
sigma_e	.56550908					
rho	.1332174	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1263) = 3.16 — Prob > F = 0.0000

Austin

Total Expenses

```
Fixed-effects (within) regression               Number of obs      =       1,267
Group variable: Date                            Number of groups   =          60

R-sq:                                           Obs per group:
     within  = 0.4788                                         min =           8
     between = 0.1945                                         avg =        21.1
     overall = 0.4546                                         max =          32

                                                F(5,1202)          =      220.82
corr(u_i, Xb)  = -0.0248                        Prob > F           =      0.0000
```

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.6673403	.031213	21.38	0.000	.6061023	.7285783
leasepercent	.0252689	.085187	0.30	0.767	-.1418629	.1924007
Age	-.0006551	.0009512	-0.69	0.491	-.0025213	.001211
grosssquarefeet	4.52e-07	8.88e-08	5.09	0.000	2.78e-07	6.26e-07
nooffloors	.0187212	.0017935	10.44	0.000	.0152025	.0222399
_cons	-.2899843	.0859312	-3.37	0.001	-.458576	-.1213925
sigma_u	.151782					
sigma_e	.39077398					
rho	.13108856	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1202) = 2.67 Prob > F = 0.0000

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =       1,245
Group variable: Date                            Number of groups   =          60

R-sq:                                           Obs per group:
     within  = 0.1880                                         min =           8
     between = 0.0070                                         avg =        20.8
     overall = 0.1651                                         max =          32

                                                F(5,1180)          =       54.64
corr(u_i, Xb)  = -0.0737                        Prob > F           =      0.0000
```

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.9979278	.0693475	14.39	0.000	.8618696	1.133986
leasepercent	-.1906609	.1896267	-1.01	0.315	-.5627039	.1813822
Age	.0009815	.0021191	0.46	0.643	-.0031762	.0051392
grosssquarefeet	3.87e-07	1.95e-07	1.99	0.047	5.00e-09	7.68e-07
nooffloors	.0048146	.0039569	1.22	0.224	-.0029488	.0125779
_cons	-2.278634	.1912109	-11.92	0.000	-2.653785	-1.903483
sigma_u	.37074053					
sigma_e	.86494131					
rho	.15520877	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1180) = 2.32 Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 1,139
Group variable: **Date** — Number of groups = 60

R-sq:
within = 0.3211
between = 0.1862
overall = 0.3053

Obs per group:
min = 6
avg = 19.0
max = 30

F(5,1074) = 101.61
corr(u_i, Xb) = 0.0175 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4706543	.0471843	9.97	0.000	.3780705	.5632381
leasepercent	.071464	.1294589	0.55	0.581	-.1825572	.3254851
Age	-.0056658	.0013886	-4.08	0.000	-.0083904	-.0029412
grosssquarefeet	5.23e-07	1.28e-07	4.10	0.000	2.73e-07	7.74e-07
nooffloors	.0241671	.00259	9.33	0.000	.0190851	.0292492
_cons	-1.080751	.1281885	-8.43	0.000	-1.33228	-.8292228
sigma_u	.23406787					
sigma_e	.55892441					
rho	.14921056	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1074) = 2.71 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,168
Group variable: **Date** — Number of groups = 60

R-sq:
within = 0.2557
between = 0.0279
overall = 0.2197

Obs per group:
min = 8
avg = 19.5
max = 31

F(5,1103) = 75.81
corr(u_i, Xb) = -0.0338 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5293669	.04412	12.00	0.000	.4427983	.6159354
leasepercent	.0461468	.1218724	0.38	0.705	-.1929811	.2852747
Age	-.0000962	.0013513	-0.07	0.943	-.0027476	.0025553
grosssquarefeet	2.81e-07	1.20e-07	2.34	0.020	4.50e-08	5.17e-07
nooffloors	.0171977	.0024457	7.03	0.000	.0123989	.0219965
_cons	-4.156555	.1206827	-34.44	0.000	-4.393349	-3.919762
sigma_u	.31458713					
sigma_e	.52825208					
rho	.26180172	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1103) = 4.06 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,250
Group variable: Date — Number of groups = 60

R-sq:
within = 0.2810
between = 0.2969
overall = 0.2707

Obs per group:
min = 8
avg = 20.8
max = 32

F(5,1185) = 92.61
corr(u_i, Xb) = 0.0551 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5516108	.041051	13.44	0.000	.4710701	.6321516
leasepercent	-.0461816	.1123587	-0.41	0.681	-.2666258	.1742626
Age	.0055125	.0012549	4.39	0.000	.0030503	.0079746
grosssquarefeet	5.84e-07	1.15e-07	5.07	0.000	3.58e-07	8.11e-07
nooffloors	.0134496	.0023468	5.73	0.000	.0088453	.018054
_cons	-1.813883	.1133965	-16.00	0.000	-2.036364	-1.591403
sigma_u	.26209193					
sigma_e	.51320843					
rho	.20685739	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1185) = 3.87 — Prob > F = 0.0000

Boston

Total Expenses

Fixed-effects (within) regression — Number of obs = 739
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1825
between = 0.1700
overall = 0.1788

Obs per group:
min = 6
avg = 12.3
max = 20

F(5,674) = 30.09
corr(u_i, Xb) = -0.1022 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	1.337998	.1243165	10.76	0.000	1.093903	1.582092
leasepercent	-.8344674	.3112578	-2.68	0.008	-1.445619	-.2233158
Age	-.0042462	.0014018	-3.03	0.003	-.0069986	-.0014939
grosssquarefeet	4.07e-07	1.83e-07	2.22	0.027	4.72e-08	7.66e-07
nooffloors	-.0199244	.0047897	-4.16	0.000	-.0293289	-.0105199
_cons	-.5041686	.4183885	-1.21	0.229	-1.32567	.3173329
sigma_u	.22291296					
sigma_e	.92762039					
rho	.05459442	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 674) = 0.67 — Prob > F = 0.9731

Utility Expense

Fixed-effects (within) regression — Number of obs = 709
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.1154 — min = 5
between = 0.0249 — avg = 11.8
overall = 0.0806 — max = 20

F(5,644) = 16.80
corr(u_i, Xb) = -0.1390 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	-.5168111	.0931071	-5.55	0.000	-.6996413	-.3339809
leasepercent	.3662205	.2177104	1.68	0.093	-.0612875	.7937286
Age	-.000195	.0009514	-0.21	0.838	-.0020633	.0016732
grosssquarefeet	-1.58e-07	1.24e-07	-1.28	0.202	-4.00e-07	8.49e-08
nooffloors	.0190973	.003318	5.76	0.000	.0125819	.0256127
_cons	.0142387	.2904996	0.05	0.961	-.5562022	.5846796
sigma_u	.27062485					
sigma_e	.62116414					
rho	.15953076	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 644) = 1.94 — Prob > F = 0.0001

Tax Expense

Fixed-effects (within) regression — Number of obs = 723
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.2031 — min = 6
between = 0.2545 — avg = 12.1
overall = 0.2183 — max = 20

F(5,658) = 33.54
corr(u_i, Xb) = 0.0717 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.7043355	.073772	9.55	0.000	.5594785	.8491925
leasepercent	-.5466067	.1690459	-3.23	0.001	-.8785412	-.2146722
Age	-.0016875	.0007584	-2.23	0.026	-.0031767	-.0001984
grosssquarefeet	2.05e-07	9.90e-08	2.07	0.039	1.06e-08	3.99e-07
nooffloors	.000875	.0026256	0.33	0.739	-.0042805	.0060305
_cons	-.5922838	.2320838	-2.55	0.011	-1.047998	-.1365696
sigma_u	.18148923					
sigma_e	.49932838					
rho	.11669207	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 658) = 1.35 — Prob > F = 0.0454

Insurance Expense

Fixed-effects (within) regression — Number of obs = 703
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1509
between = 0.2804
overall = 0.1458

Obs per group:
min = 6
avg = 11.7
max = 20

F(5,638) = 22.67
corr(u_i, Xb) = 0.0621 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4203559	.0808377	5.20	0.000	.2616158	.5790959
leasepercent	-.8813333	.1839012	-4.79	0.000	-1.242458	-.5202085
Age	.0002261	.0008244	0.27	0.784	-.0013927	.0018449
grosssquarefeet	8.12e-07	1.09e-07	7.45	0.000	5.98e-07	1.03e-06
nooffloors	-.0144946	.0029097	-4.98	0.000	-.0202085	-.0087808
_cons	-2.852745	.2530717	-11.27	0.000	-3.349699	-2.355791
sigma_u	.39354875					
sigma_e	.53935816					
rho	.34743124	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 638) = 4.55 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 709
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1987
between = 0.0303
overall = 0.1745

Obs per group:
min = 5
avg = 11.8
max = 20

F(5,644) = 31.93
corr(u_i, Xb) = -0.1029 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.6292687	.0692979	9.08	0.000	.4931916	.7653458
leasepercent	.1570091	.1620052	0.97	0.333	-.1611131	.4751312
Age	-.0033621	.0007091	-4.74	0.000	-.0047546	-.0019696
grosssquarefeet	2.69e-07	9.20e-08	2.92	0.004	8.82e-08	4.49e-07
nooffloors	-.0169857	.002469	-6.88	0.000	-.021834	-.0121375
_cons	-1.618609	.2162507	-7.48	0.000	-2.043251	-1.193968
sigma_u	.15618306					
sigma_e	.46223143					
rho	.10247024	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 644) = 1.27 — Prob > F = 0.0896

Cambridge

Total Expense

Fixed-effects (within) regression — Number of obs = 304
Group variable: Date — Number of groups = 55

R-sq:
within = 0.2882
between = 0.0911
overall = 0.2830

Obs per group:
min = 1
avg = 5.5
max = 10

F(5,244) = 19.76
corr(u_i, Xb) = 0.1266 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.758979	.0971613	7.81	0.000	.567597	.9503609
leasepercent	-.0341325	.2813941	-0.12	0.904	-.5884039	.520139
Age	-.0067127	.0022099	-3.04	0.003	-.0110656	-.0023598
grosssquarefeet	3.06e-07	2.60e-07	1.17	0.241	-2.07e-07	8.19e-07
nooffloors	.035767	.0123132	2.90	0.004	.0115133	.0600207
_cons	-.63965	.3417381	-1.87	0.062	-1.312783	.0334831
sigma_u	.45862042					
sigma_e	.72794472					
rho	.28414267	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 244) = 2.50 — Prob > F = 0.0000

Utility Expense

Fixed-effects (within) regression — Number of obs = 288
Group variable: Date — Number of groups = 55

R-sq:
within = 0.3767
between = 0.5998
overall = 0.4204

Obs per group:
min = 1
avg = 5.2
max = 8

F(5,228) = 27.56
corr(u_i, Xb) = 0.2328 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5794545	.0575913	10.06	0.000	.4659752	.6929338
leasepercent	.0367185	.1665971	0.22	0.826	-.2915482	.3649852
Age	-.0006509	.0013404	-0.49	0.628	-.003292	.0019902
grosssquarefeet	-6.29e-07	1.57e-07	-4.00	0.000	-9.38e-07	-3.19e-07
nooffloors	-.0254299	.0076459	-3.33	0.001	-.0404955	-.0103642
_cons	-1.20935	.2011611	-6.01	0.000	-1.605723	-.812978
sigma_u	.3119522					
sigma_e	.43387853					
rho	.34077796	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 228) = 2.12 — Prob > F = 0.0001

Tax Expense

Fixed-effects (within) regression — Number of obs = 289
Group variable: **Date** — Number of groups = 55

R-sq: — Obs per group:
within = **0.5286** — min = 1
between = **0.4413** — avg = 5.3
overall = **0.5194** — max = 8

F(5,229) = **51.36**
corr(u_i, Xb) = **-0.0006** — Prob > F = **0.0000**

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4398758	.0316773	13.89	0.000	.3774595	.502292
leasepercent	.0668917	.0916002	0.73	0.466	-.1135952	.2473787
Age	-.000605	.0007372	-0.82	0.413	-.0020576	.0008475
grosssquarefeet	4.99e-08	8.64e-08	0.58	0.564	-1.20e-07	2.20e-07
nooffloors	-.0280363	.0042054	-6.67	0.000	-.0363225	-.0197501
_cons	-.5420553	.1106487	-4.90	0.000	-.7600749	-.3240357
sigma_u	.11226122					
sigma_e	.23865107					
rho	.18118374	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 229) = 1.01 — Prob > F = 0.4668

Insurance Expense

Fixed-effects (within) regression — Number of obs = 296
Group variable: **Date** — Number of groups = 55

R-sq: — Obs per group:
within = **0.2164** — min = 1
between = **0.2552** — avg = 5.4
overall = **0.1911** — max = 9

F(5,236) = **13.04**
corr(u_i, Xb) = **0.0489** — Prob > F = **0.0000**

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4436579	.0585825	7.57	0.000	.3282464	.5590694
leasepercent	-.2905348	.1719619	-1.69	0.092	-.6293113	.0482416
Age	-.0015052	.001363	-1.10	0.271	-.0041905	.00118
grosssquarefeet	-7.48e-08	1.61e-07	-0.47	0.642	-3.91e-07	2.42e-07
nooffloors	-.002872	.0077167	-0.37	0.710	-.0180745	.0123305
_cons	-3.66487	.2056411	-17.82	0.000	-4.069997	-3.259744
sigma_u	.30302944					
sigma_e	.44760756					
rho	.31428243	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 236) = 2.01 — Prob > F = 0.0002

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 289
Group variable: **Date** — Number of groups = 55

R-sq:
within = 0.2770
between = 0.2020
overall = 0.2675

Obs per group:
min = 1
avg = 5.3
max = 8

F(5,229) = 17.54
corr(u_i, Xb) = 0.0414 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.1846982	.0568527	3.25	0.001	.0726769	.2967196
leasepercent	.9433939	.1643992	5.74	0.000	.6194655	1.267322
Age	-.0021911	.0013231	-1.66	0.099	-.0047981	.0004159
grosssquarefeet	-8.45e-07	1.55e-07	-5.45	0.000	-1.15e-06	-5.40e-07
nooffloors	.0351481	.0075476	4.66	0.000	.0202765	.0500196
_cons	-1.392528	.1985863	-7.01	0.000	-1.783818	-1.001238
sigma_u	.19940047					
sigma_e	.42831828					
rho	.178125	(fraction of variance due to u_i)				

F test that all u_i=0: F(54, 229) = 1.02 — Prob > F = 0.4527

Chicago

Total Expenses

Fixed-effects (within) regression — Number of obs = 915
Group variable: **Date** — Number of groups = 60

R-sq:
within = 0.2275
between = 0.0733
overall = 0.2174

Obs per group:
min = 7
avg = 15.2
max = 23

F(5,850) = 50.07
corr(u_i, Xb) = -0.0027 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4557966	.0382384	11.92	0.000	.3807439	.5308492
leasepercent	.0693216	.1233588	0.56	0.574	-.172802	.3114451
Age	-.004752	.0006116	-7.77	0.000	-.0059523	-.0035516
grosssquarefeet	-8.01e-08	5.25e-08	-1.53	0.127	-1.83e-07	2.28e-08
nooffloors	.0012396	.0013852	0.89	0.371	-.0014792	.0039585
_cons	.6004844	.1206815	4.98	0.000	.3636158	.8373531
sigma_u	.10551193					
sigma_e	.37758198					
rho	.07243136	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 850) = 1.23 — Prob > F = 0.1222

Utility Expense

Fixed-effects (within) regression — Number of obs = 987
Group variable: **Date** — Number of groups = 60

R-sq:
- within = **0.1884**
- between = **0.0977**
- overall = **0.1776**

Obs per group: min = 7, avg = 15.1, max = 22

F(5,842) = 39.10
corr(u_i, Xb) = **0.0162** — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.6767968	.0567344	11.93	0.000	.5654394	.7881543
leasepercent	-.4807718	.1917387	-2.51	0.012	-.8571137	-.1044299
Age	.0004709	.0009487	0.50	0.620	-.0013911	.0023329
grosssquarefeet	-4.37e-08	8.11e-08	-0.54	0.590	-2.03e-07	1.15e-07
nooffloors	.0074549	.0021477	3.47	0.001	.0032395	.0116703
_cons	-2.0829	.189076	-11.02	0.000	-2.454016	-1.711785
sigma_u	.22034023					
sigma_e	.58618933					
rho	.1237986	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 842) = 1.99 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 874
Group variable: **Date** — Number of groups = 60

R-sq:
- within = **0.0809**
- between = **0.0168**
- overall = **0.0774**

Obs per group: min = 7, avg = 14.6, max = 22

F(5,809) = 14.24
corr(u_i, Xb) = **-0.0186** — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4686357	.0841447	5.57	0.000	.303468	.6338033
leasepercent	.165357	.2678969	0.62	0.537	-.360498	.6912119
Age	-.0073653	.0013169	-5.59	0.000	-.0099503	-.0047803
grosssquarefeet	7.07e-08	1.13e-07	0.63	0.532	-1.51e-07	2.93e-07
nooffloors	-.0060485	.0030201	-2.00	0.046	-.0119767	-.0001204
_cons	-.2185881	.2620907	-0.83	0.405	-.7330462	.29587
sigma_u	.17689092					
sigma_e	.80180386					
rho	.04641254	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 809) = 0.69 — Prob > F = 0.9623

Insurance Expense

Fixed-effects (within) regression — Number of obs = 882
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.1377 — min = 6
between = 0.0063 — avg = 14.7
overall = 0.1127 — max = 22

F(5,817) = 26.09
corr(u_i, Xb) = -0.0048 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5432059	.0555409	9.78	0.000	.4341862	.6522256
leasepercent	.156766	.1891483	0.83	0.407	-.2145079	.5280399
Age	-.0040875	.0009419	-4.34	0.000	-.0059363	-.0022387
grosssquarefeet	7.21e-08	7.93e-08	0.91	0.364	-8.36e-08	2.28e-07
nooffloors	.00145	.0021247	0.68	0.495	-.0027206	.0056205
_cons	-3.910312	.1861121	-21.01	0.000	-4.275626	-3.544997
sigma_u	.37520036					
sigma_e	.5707189					
rho	.30177214	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 817) = 4.04 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 912
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.1193 — min = 7
between = 0.0000 — avg = 15.2
overall = 0.0983 — max = 23

F(5,847) = 22.95
corr(u_i, Xb) = -0.0113 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3724558	.0450542	8.27	0.000	.2840248	.4608869
leasepercent	.0345349	.1548597	0.22	0.824	-.269419	.3384887
Age	-.0024607	.000771	-3.19	0.001	-.003974	-.0009474
grosssquarefeet	-1.78e-07	6.56e-08	-2.72	0.007	-3.07e-07	-4.94e-08
nooffloors	.0047098	.0017347	2.71	0.007	.0013049	.0081147
_cons	-.8435707	.1518533	-5.56	0.000	-1.141624	-.5455177
sigma_u	.23142776					
sigma_e	.47305152					
rho	.19311847	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 847) = 3.35 — Prob > F = 0.0000

Dallas

Total Expenses

Fixed-effects (within) regression — Number of obs = 979
Group variable: Date — Number of groups = 60

R-sq:
within = 0.2824
between = 0.3056
overall = 0.2811

Obs per group:
min = 9
avg = 16.3
max = 25

F(5,914) = 71.93
corr(u_i, Xb) = 0.0020 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.8479934	.0493604	17.18	0.000	.7511206	.9448663
leasepercent	-.1437768	.1502676	-0.96	0.339	-.4386864	.1511327
Age	.0011291	.0027053	0.42	0.677	-.0041802	.0064383
grosssquarefeet	-1.07e-07	7.48e-08	-1.43	0.152	-2.54e-07	3.96e-08
nooffloors	.0118606	.0025502	4.65	0.000	.0068557	.0168656
_cons	-.5267012	.1616328	-3.26	0.001	-.8439157	-.2094868
sigma_u	.16720888					
sigma_e	.66465974					
rho	.05952085	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 914) = 0.94 — Prob > F = 0.5962

Utility Expense

Fixed-effects (within) regression — Number of obs = 959
Group variable: Date — Number of groups = 60

R-sq:
within = 0.2965
between = 0.0935
overall = 0.2582

Obs per group:
min = 9
avg = 16.0
max = 24

F(5,894) = 75.37
corr(u_i, Xb) = -0.1282 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.675167	.0405628	16.64	0.000	.5955576	.7547765
leasepercent	-.4540311	.1240366	-3.66	0.000	-.697468	-.2105942
Age	.0266202	.0021901	12.15	0.000	.0223219	.0309186
grosssquarefeet	-1.70e-07	6.06e-08	-2.81	0.005	-2.89e-07	-5.13e-08
nooffloors	.0023112	.002065	1.12	0.263	-.0017416	.006364
_cons	-2.056258	.1325943	-15.51	0.000	-2.316491	-1.796026
sigma_u	.22930204					
sigma_e	.53681151					
rho	.15430679	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 894) = 2.93 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 955
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
within = **0.4079** — min = 9
between = **0.1361** — avg = 15.9
overall = **0.3907** — max = 24

F(5,890) = 122.65
corr(u_i, Xb) = **-0.0089** — Prob > F = **0.0000**

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.7742678	.0440702	17.57	0.000	.6877741	.8607614
leasepercent	.8888416	.1317658	6.75	0.000	.6302336	1.14745
Age	-.0135031	.0023114	-5.84	0.000	-.0180395	-.0089668
grosssquarefeet	-1.40e-07	6.37e-08	-2.19	0.029	-2.65e-07	-1.45e-08
nooffloors	.0122357	.0021716	5.63	0.000	.0079736	.0164978
_cons	-2.131876	.1412806	-15.09	0.000	-2.409158	-1.854594
sigma_u	.19902595					
sigma_e	.56417132					
rho	.1106769	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 890) = 1.54 — Prob > F = **0.0068**

Insurance Expense

Fixed-effects (within) regression — Number of obs = 956
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
within = **0.2576** — min = 9
between = **0.0141** — avg = 15.9
overall = **0.2052** — max = 24

F(5,891) = 61.82
corr(u_i, Xb) = **-0.0431** — Prob > F = **0.0000**

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3521511	.0385978	9.12	0.000	.2763979	.4279042
leasepercent	.6299459	.1169044	5.39	0.000	.4005058	.8593861
Age	-.012369	.0020996	-5.89	0.000	-.0164897	-.0082482
grosssquarefeet	-9.56e-08	5.97e-08	-1.60	0.110	-2.13e-07	2.16e-08
nooffloors	.0168575	.0019929	8.46	0.000	.0129462	.0207688
_cons	-4.240884	.1251399	-33.89	0.000	-4.486487	-3.995281
sigma_u	.3196088					
sigma_e	.51251638					
rho	.27999834	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 891) = 4.13 — Prob > F = **0.0000**

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 969
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
within = **0.2710** — min = 9
between = **0.6752** — avg = 16.1
overall = **0.3137** — max = 24

F(5,904) = 67.22
corr(u_i, Xb) = **0.1826** — Prob > F = **0.0000**

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5147431	.0375097	13.72	0.000	.441127	.5883593
leasepercent	.1029074	.1133131	0.91	0.364	-.1194799	.3252947
Age	.0126844	.0020295	6.25	0.000	.0087012	.0166675
grosssquarefeet	-2.51e-07	5.60e-08	-4.48	0.000	-3.61e-07	-1.41e-07
nooffloors	.0183363	.001915	9.58	0.000	.014578	.0220946
_cons	-1.955073	.1211089	-16.14	0.000	-2.19276	-1.717386
sigma_u	.13540199					
sigma_e	.49837088					
rho	.06874091	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 904) = 1.04 — Prob > F = **0.3974**

Denver

Total expenses

Fixed-effects (within) regression — Number of obs = 703
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
within = **0.2607** — min = 2
between = **0.3520** — avg = 11.7
overall = **0.2968** — max = 22

F(5,638) = 45.01
corr(u_i, Xb) = **0.1885** — Prob > F = **0.0000**

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.1955412	.0259352	7.54	0.000	.1446125	.2464699
leasepercent	.6918204	.0828626	8.35	0.000	.5291039	.8545368
Age	-.0006561	.0009667	-0.68	0.498	-.0025544	.0012422
grosssquarefeet	-2.27e-07	9.98e-08	-2.27	0.023	-4.23e-07	-3.07e-08
nooffloors	.0052425	.0023247	2.26	0.024	.0006776	.0098075
_cons	-.0042894	.071903	-0.06	0.952	-.1454845	.1369057
sigma_u	.14772209					
sigma_e	.21114574					
rho	.32862033	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 638) = 3.99 — Prob > F = **0.0000**

Utility Expense

```
Fixed-effects (within) regression               Number of obs      =       698
Group variable: Date                            Number of groups   =        60

R-sq:                                           Obs per group:
     within  = 0.2448                                         min =         2
     between = 0.4914                                         avg =      11.6
     overall = 0.2861                                         max =        22

                                                F(5,633)           =     41.04
corr(u_i, Xb)  = 0.1752                         Prob > F           =    0.0000
```

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.117992	.039589	2.98	0.003	.0402503	.1957337
leasepercent	.9782556	.1272145	7.69	0.000	.7284422	1.228069
Age	.0114765	.0014928	7.69	0.000	.008545	.014408
grosssquarefeet	-1.07e-06	1.53e-07	-7.01	0.000	-1.37e-06	-7.70e-07
nooffloors	.0165695	.0035502	4.67	0.000	.009598	.0235411
_cons	-2.030226	.1096	-18.52	0.000	-2.245449	-1.815002
sigma_u	.18899886					
sigma_e	.32025061					
rho	.25831866	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 633) = 3.08 — Prob > F = 0.0000

Tax Expense

```
Fixed-effects (within) regression               Number of obs      =       695
Group variable: Date                            Number of groups   =        60

R-sq:                                           Obs per group:
     within  = 0.2090                                         min =         2
     between = 0.0000                                         avg =      11.6
     overall = 0.1529                                         max =        22

                                                F(5,630)           =     33.29
corr(u_i, Xb)  = -0.0057                        Prob > F           =    0.0000
```

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2518147	.053587	4.70	0.000	.1465841	.3570454
leasepercent	.2822921	.1729237	1.63	0.103	-.0572844	.6218687
Age	-.0199042	.0020006	-9.95	0.000	-.0238328	-.0159755
grosssquarefeet	-5.65e-07	2.06e-07	-2.74	0.006	-9.69e-07	-1.60e-07
nooffloors	.015582	.0047946	3.25	0.001	.0061666	.0249973
_cons	-.6122693	.1496629	-4.09	0.000	-.9061679	-.3183708
sigma_u	.31022083					
sigma_e	.43531124					
rho	.3368075	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 630) = 4.63 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 696
Group variable: Date — Number of groups = 60

R-sq:
within = 0.0759
between = 0.1630
overall = 0.0844

Obs per group:
min = 2
avg = 11.6
max = 22

F(5,631) = 10.36
corr(u_i, Xb) = 0.0669 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2148455	.0574979	3.74	0.000	.1019351	.3277559
leasepercent	.2280634	.1851705	1.23	0.219	-.1355617	.5916885
Age	.0026561	.0021673	1.23	0.221	-.0016	.0069122
grosssquarefeet	2.79e-07	2.21e-07	1.26	0.207	-1.55e-07	7.14e-07
nooffloors	-.0150805	.0051546	-2.93	0.004	-.0252028	-.0049582
_cons	-3.602444	.1595353	-22.58	0.000	-3.915728	-3.28916
sigma_u	.34456072					
sigma_e	.46481272					
rho	.35463465	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 631) = 3.48 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 702
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1830
between = 0.3464
overall = 0.2152

Obs per group:
min = 2
avg = 11.7
max = 22

F(5,637) = 28.53
corr(u_i, Xb) = 0.0936 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.266003	.047225	5.63	0.000	.1732674	.3587386
leasepercent	1.031522	.1513824	6.81	0.000	.7342531	1.328791
Age	.0068102	.0017537	3.88	0.000	.0033664	.010254
grosssquarefeet	4.16e-07	1.81e-07	2.30	0.022	6.07e-08	7.72e-07
nooffloors	-.0087624	.0042174	-2.08	0.038	-.0170441	-.0004806
_cons	-1.819311	.1325452	-13.73	0.000	-2.079589	-1.559033
sigma_u	.15458934					
sigma_e	.38291246					
rho	.14014714	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 637) = 1.50 — Prob > F = 0.0110

Houston

Total Expense

Fixed-effects (within) regression — Number of obs = 1,209
Group variable: **Date** — Number of groups = 60

R-sq:
within = **0.3481**
between = **0.8061**
overall = **0.3917**

Obs per group:
min = 13
avg = 20.1
max = 27

F(5,1144) = 122.19
corr(u_i, Xb) = **0.2413** — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.483786	.0232756	20.79	0.000	.4381183	.5294538
leasepercent	.1734503	.0665132	2.61	0.009	.0429488	.3039517
Age	-.0036431	.0009128	-3.99	0.000	-.005434	-.0018522
grosssquarefeet	1.40e-07	1.98e-08	7.07	0.000	1.01e-07	1.79e-07
nooffloors	.0013658	.0007229	1.89	0.059	-.0000525	.0027841
_cons	.0420122	.0695386	0.60	0.546	-.0944254	.1784497
sigma_u	.12463752					
sigma_e	.2815792					
rho	.16382925	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1144) = 3.85 — Prob > F = 0.0000

Utility Expense

Fixed-effects (within) regression — Number of obs = 1,205
Group variable: **Date** — Number of groups = 60

R-sq:
within = **0.2467**
between = **0.1531**
overall = **0.2221**

Obs per group:
min = 13
avg = 20.1
max = 27

F(5,1140) = 74.67
corr(u_i, Xb) = **0.0228** — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4188804	.0303235	13.81	0.000	.3593843	.4783765
leasepercent	.5260891	.0850734	6.18	0.000	.3591711	.6930072
Age	.0072146	.0011649	6.19	0.000	.004929	.0095002
grosssquarefeet	-9.52e-08	2.53e-08	-3.76	0.000	-1.45e-07	-4.55e-08
nooffloors	-.0065182	.0009239	-7.06	0.000	-.0083308	-.0047055
_cons	-1.869504	.0890201	-21.00	0.000	-2.044166	-1.694843
sigma_u	.17787775					
sigma_e	.35966458					
rho	.19652591	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1140) = 4.75 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 1,193
Group variable: **Date** — Number of groups = 60

R-sq:
within = **0.4025**
between = **0.6508**
overall = **0.4013**

Obs per group:
min = 13
avg = 19.9
max = 26

F(5,1128) = 152.00
corr(u_i, Xb) = **0.2006** — Prob > F = **0.0000**

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4666014	.0298705	15.62	0.000	.4079934	.5252093
leasepercent	.6507476	.0842276	7.73	0.000	.4854871	.8160081
Age	-.015311	.0011554	-13.25	0.000	-.0175779	-.013044
grosssquarefeet	2.13e-07	2.50e-08	8.52	0.000	1.64e-07	2.62e-07
nooffloors	.0040582	.0009104	4.46	0.000	.0022718	.0058445
_cons	-1.43712	.0881785	-16.30	0.000	-1.610132	-1.264108
sigma_u	.23679288					
sigma_e	.35423403					
rho	.30884087	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1128) = 9.13 — Prob > F = **0.0000**

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,199
Group variable: **Date** — Number of groups = 60

R-sq:
within = **0.1503**
between = **0.2381**
overall = **0.1375**

Obs per group:
min = 13
avg = 20.0
max = 27

F(5,1134) = 40.10
corr(u_i, Xb) = **0.1063** — Prob > F = **0.0000**

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3579548	.0522386	6.85	0.000	.2554597	.4604499
leasepercent	-.5566057	.1377273	-4.04	0.000	-.8268347	-.2863768
Age	-.0092976	.0018838	-4.94	0.000	-.0129938	-.0056014
grosssquarefeet	1.38e-08	4.13e-08	0.33	0.739	-6.72e-08	9.47e-08
nooffloors	.012226	.0014974	8.16	0.000	.0092879	.0151641
_cons	-2.713376	.1454732	-18.65	0.000	-2.998803	-2.427949
sigma_u	.5024778					
sigma_e	.5804456					
rho	.42837377	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1134) = 13.32 — Prob > F = **0.0000**

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,203
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1166
between = 0.4178
overall = 0.1389

Obs per group:
min = 13
avg = 20.1
max = 27

F(5,1138) = 30.04
corr(u_i, Xb) = 0.1339 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3879824	.038699	10.03	0.000	.312053	.4639118
leasepercent	.0472105	.1062691	0.44	0.657	-.1612949	.2557159
Age	-.0006877	.001455	-0.47	0.637	-.0035426	.0021671
grosssquarefeet	-4.33e-08	3.17e-08	-1.37	0.171	-1.05e-07	1.88e-08
nooffloors	.0054084	.0011534	4.69	0.000	.0031455	.0076714
_cons	-1.244631	.1113844	-11.17	0.000	-1.463173	-1.026089
sigma_u	.17181736					
sigma_e	.44885374					
rho	.12780247	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1138) = 2.81 — Prob > F = 0.0000

Los Angeles

Total Expenses

Fixed-effects (within) regression — Number of obs = 626
Group variable: Date — Number of groups = 60

R-sq:
within = 0.5443
between = 0.6168
overall = 0.5383

Obs per group:
min = 2
avg = 10.4
max = 15

F(5,561) = 134.00
corr(u_i, Xb) = 0.1350 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5632878	.0239339	23.54	0.000	.5162768	.6102988
leasepercent	.299285	.0987235	3.03	0.003	.1053723	.4931978
Age	-.0043245	.0011874	-3.64	0.000	-.0066569	-.0019922
grosssquarefeet	3.98e-08	2.47e-08	1.61	0.108	-8.78e-09	8.84e-08
nooffloors	.0077125	.0012721	6.06	0.000	.0052139	.0102111
_cons	-.2060898	.1020181	-2.02	0.044	-.4064738	-.0057057
sigma_u	.12782289					
sigma_e	.2677814					
rho	.18557085	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 561) = 1.93 — Prob > F = 0.0001

Utility Expense

Fixed-effects (within) regression — Number of obs = 622
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.3028 — min = 2
between = 0.0476 — avg = 10.4
overall = 0.2862 — max = 15

F(5,557) = 48.39
corr(u_i, Xb) = -0.0770 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.7335908	.0527598	13.90	0.000	.6299583	.8372233
leasepercent	-.652278	.2179251	-2.99	0.003	-1.080334	-.2242225
Age	-.0104321	.002616	-3.99	0.000	-.0155706	-.0052936
grosssquarefeet	1.29e-07	5.45e-08	2.36	0.019	2.16e-08	2.36e-07
nooffloors	.0064655	.0028106	2.30	0.022	.0009448	.0119862
_cons	-1.570111	.2251526	-6.97	0.000	-2.012363	-1.127859
sigma_u	.18558649					
sigma_e	.58975026					
rho	.09010478	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 557) = 0.83 — Prob > F = 0.8045

Tax Expense

Fixed-effects (within) regression — Number of obs = 621
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.4389 — min = 2
between = 0.5869 — avg = 10.3
overall = 0.4190 — max = 15

F(5,556) = 86.97
corr(u_i, Xb) = 0.1365 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.645292	.0325814	19.81	0.000	.5812942	.7092897
leasepercent	.4588256	.1342733	3.42	0.001	.1950807	.7225704
Age	-.0073345	.0018058	-4.06	0.000	-.0108814	-.0037875
grosssquarefeet	-2.17e-07	3.33e-08	-6.50	0.000	-2.82e-07	-1.51e-07
nooffloors	.0115277	.0017587	6.55	0.000	.0080731	.0149823
_cons	-1.898868	.1380233	-13.76	0.000	-2.169979	-1.627757
sigma_u	.25533947					
sigma_e	.35981751					
rho	.33492211	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 556) = 3.17 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 625
Group variable: Date — Number of groups = 60

R-sq:
within = 0.5595
between = 0.4533
overall = 0.5064

Obs per group:
min = 2
avg = 10.4
max = 15

F(5,560) = 142.24
corr(u_i, Xb) = 0.0829 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.7401551	.0326379	22.68	0.000	.6760475	.8042626
leasepercent	.46192	.1254379	3.68	0.000	.2155338	.7083063
Age	-.0048266	.0015069	-3.20	0.001	-.0077864	-.0018668
grosssquarefeet	3.80e-08	3.14e-08	1.21	0.227	-2.37e-08	9.97e-08
nooffloors	.0136099	.0016164	8.42	0.000	.0104349	.0167848
_cons	-3.340253	.1312716	-25.45	0.000	-3.598098	-3.082408
sigma_u	.27413596					
sigma_e	.3401936					
rho	.39370103	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 560) = 4.18 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 627
Group variable: Date — Number of groups = 60

R-sq:
within = 0.3091
between = 0.1636
overall = 0.2912

Obs per group:
min = 2
avg = 10.4
max = 15

F(5,562) = 50.28
corr(u_i, Xb) = 0.0083 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.6109905	.0438771	13.93	0.000	.5248073	.6971736
leasepercent	-.1034559	.1809754	-0.57	0.568	-.4589267	.252015
Age	-.0133155	.002174	-6.13	0.000	-.0175856	-.0090454
grosssquarefeet	1.65e-07	4.53e-08	3.63	0.000	7.57e-08	2.54e-07
nooffloors	.0010012	.0023325	0.43	0.668	-.0035802	.0055826
_cons	-1.013786	.1870457	-5.42	0.000	-1.38118	-.6463918
sigma_u	.1966367					
sigma_e	.4910035					
rho	.13821603	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 562) = 1.42 — Prob > F = 0.0262

Admin Expense

Fixed-effects (within) regression — Number of obs = 606
Group variable: **Date** — Number of groups = 60

R-sq:
- within = 0.1952
- between = 0.4109
- overall = 0.2131

Obs per group: min = 2, avg = 10.1, max = 14

F(5,541) = 26.25
corr(u_i, Xb) = 0.0814 — Prob > F = 0.0000

lgadmin	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.7790341	.0760432	10.24	0.000	.6296581	.9284102
leasepercent	-.0223422	.3080638	-0.07	0.942	-.6274899	.5828056
Age	.005621	.0036738	1.53	0.127	-.0015957	.0128377
grosssquarefeet	-1.05e-07	7.57e-08	-1.38	0.167	-2.53e-07	4.39e-08
nooffloors	.0155662	.0039391	3.95	0.000	.0078285	.0233039
_cons	-3.152994	.3224604	-9.78	0.000	-3.786421	-2.519566
sigma_u	.30306636					
sigma_e	.81268064					
rho	.12209137	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 541) = 0.90 — Prob > F = 0.6875

Miami

Total Expense

Fixed-effects (within) regression — Number of obs = 706
Group variable: **Date** — Number of groups = 60

R-sq:
- within = 0.6012
- between = 0.7095
- overall = 0.6198

Obs per group: min = 5, avg = 11.8, max = 23

F(5,641) = 193.28
corr(u_i, Xb) = 0.0815 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5633014	.0296322	19.01	0.000	.5051134	.6214894
leasepercent	.8104273	.0995132	8.14	0.000	.6150161	1.005839
Age	.0032663	.0011373	2.87	0.004	.001033	.0054996
grosssquarefeet	-1.86e-07	4.92e-08	-3.78	0.000	-2.82e-07	-8.92e-08
nooffloors	.0094093	.0010346	9.09	0.000	.0073777	.0114408
_cons	-.8131982	.1021652	-7.96	0.000	-1.013817	-.6125792
sigma_u	.10665856					
sigma_e	.29434176					
rho	.11606659	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 641) = 1.27 — Prob > F = 0.0939

Utility Expense

Fixed-effects (within) regression — Number of obs = 701
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.3369 — min = 6
between = 0.3339 — avg = 11.7
overall = 0.3408 — max = 23

F(5,636) = 64.63
corr(u_i, Xb) = -0.0223 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.85649	.0629743	13.60	0.000	.7328272	.9801527
leasepercent	1.571486	.2171826	7.24	0.000	1.145004	1.997967
Age	.0061247	.0024345	2.52	0.012	.0013441	.0109054
grosssquarefeet	6.00e-08	1.04e-07	0.58	0.562	-1.43e-07	2.63e-07
nooffloors	-.0016108	.0021788	-0.74	0.460	-.0058893	.0026676
_cons	-3.772086	.2227247	-16.94	0.000	-4.20945	-3.334721
sigma_u	.23398331					
sigma_e	.62760081					
rho	.12203391	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 636) = 1.30 — Prob > F = 0.0700

Tax expense

Fixed-effects (within) regression — Number of obs = 697
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.5645 — min = 6
between = 0.4627 — avg = 11.6
overall = 0.5443 — max = 22

F(5,632) = 163.81
corr(u_i, Xb) = -0.0002 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5416561	.037181	14.57	0.000	.4686429	.6146693
leasepercent	.4616984	.1250978	3.69	0.000	.2160408	.7073559
Age	-.0035532	.0014167	-2.51	0.012	-.0063352	-.0007711
grosssquarefeet	-2.62e-07	5.99e-08	-4.38	0.000	-3.80e-07	-1.45e-07
nooffloors	.0181818	.0012659	14.36	0.000	.0156959	.0206676
_cons	-1.819162	.1287383	-14.13	0.000	-2.071969	-1.566356
sigma_u	.16424909					
sigma_e	.36302267					
rho	.16992451	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 632) = 2.43 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 704
Group variable: Date — Number of groups = 60

R-sq:
within = 0.5673
between = 0.8182
overall = 0.6070

Obs per group:
min = 6
avg = 11.7
max = 24

F(5,639) = 167.56
corr(u_i, Xb) = 0.2603 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.7833078	.0529905	14.78	0.000	.6792512	.8873644
leasepercent	-.307795	.1816026	-1.69	0.091	-.664405	.0488149
Age	.0252507	.00204	12.38	0.000	.0212449	.0292565
grosssquarefeet	-5.72e-07	8.71e-08	-6.57	0.000	-7.43e-07	-4.01e-07
nooffloors	.0139489	.001834	7.61	0.000	.0103475	.0175503
_cons	-3.427186	.1866263	-18.36	0.000	-3.793661	-3.060711
sigma_u	.34105653					
sigma_e	.5283644					
rho	.29411616	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 639) = 3.14 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 705
Group variable: Date — Number of groups = 60

R-sq:
within = 0.4748
between = 0.3779
overall = 0.4612

Obs per group:
min = 6
avg = 11.8
max = 23

F(5,640) = 115.70
corr(u_i, Xb) = -0.0165 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5112045	.0515879	9.91	0.000	.4099025	.6125064
leasepercent	.4087699	.1768217	2.31	0.021	.0615491	.7559907
Age	.0195972	.0019898	9.85	0.000	.0156899	.0235045
grosssquarefeet	2.78e-07	8.47e-08	3.28	0.001	1.11e-07	4.44e-07
nooffloors	.0087189	.0017845	4.89	0.000	.0052146	.0122232
_cons	-2.440136	.1815154	-13.44	0.000	-2.796574	-2.083698
sigma_u	.22956844					
sigma_e	.51422303					
rho	.16618474	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 640) = 1.92 — Prob > F = 0.0001

New York

Total Expenses

Fixed-effects (within) regression — Number of obs = 1,199
Group variable: Date — Number of groups = 60

R-sq:
within = 0.5168
between = 0.8782
overall = 0.5519

Obs per group:
min = 5
avg = 20.0
max = 37

F(5,1134) = 242.61
corr(u_i, Xb) = 0.1887 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.8392699	.0267814	31.34	0.000	.7867231	.8918166
leasepercent	.2266936	.0892487	2.54	0.011	.0515824	.4018048
Age	-.0020795	.0004163	-5.00	0.000	-.0028962	-.0012627
grosssquarefeet	1.06e-07	1.82e-08	5.83	0.000	7.04e-08	1.42e-07
nooffloors	-.0035714	.0010128	-3.53	0.000	-.0055586	-.0015841
_cons	-.3805013	.1071814	-3.55	0.000	-.5907974	-.1702051
sigma_u	.12476993					
sigma_e	.3156889					
rho	.13510317	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1134) = 1.73 — Prob > F = 0.0006

Utility Expense

Fixed-effects (within) regression — Number of obs = 1,185
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1552
between = 0.0922
overall = 0.1350

Obs per group:
min = 5
avg = 19.8
max = 35

F(5,1120) = 41.17
corr(u_i, Xb) = -0.0086 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3616222	.0475221	7.61	0.000	.2683799	.4548646
leasepercent	.4652839	.1373141	3.39	0.001	.1958621	.7347058
Age	-.0021143	.0006432	-3.29	0.001	-.0033763	-.0008523
grosssquarefeet	2.97e-07	2.81e-08	10.57	0.000	2.42e-07	3.52e-07
nooffloors	-.0063625	.0015647	-4.07	0.000	-.0094326	-.0032925
_cons	-1.307625	.1760272	-7.43	0.000	-1.653005	-.9622449
sigma_u	.22989928					
sigma_e	.48415856					
rho	.18399043	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1120) = 3.85 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 1,168
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
within = **0.3764** — min = 5
between = **0.5917** — avg = 19.5
overall = **0.3986** — max = 35

F(5,1103) = 133.16
corr(u_i, Xb) = **0.1172** — Prob > F = **0.0000**

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.9821797	.0451546	21.75	0.000	.8935811	1.070778
leasepercent	.3909561	.1369631	2.85	0.004	.1222184	.6596939
Age	-.0024303	.0006401	-3.80	0.000	-.0036861	-.0011744
grosssquarefeet	7.14e-08	2.79e-08	2.56	0.011	1.66e-08	1.26e-07
nooffloors	.0014988	.001559	0.96	0.337	-.0015602	.0045578
_cons	-1.900222	.1714981	-11.08	0.000	-2.236721	-1.563723
sigma_u	.16748194					
sigma_e	.48287086					
rho	.1073838	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1103) = 1.87 — Prob > F = **0.0001**

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,158
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
within = **0.0331** — min = 5
between = **0.4825** — avg = 19.3
overall = **0.0489** — max = 35

F(5,1093) = 7.49
corr(u_i, Xb) = **0.1192** — Prob > F = **0.0000**

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2284926	.0751421	3.04	0.002	.0810536	.3759316
leasepercent	-.204117	.2446516	-0.83	0.404	-.6841569	.2759229
Age	.0016301	.0011493	1.42	0.156	-.000625	.0038852
grosssquarefeet	1.48e-07	4.99e-08	2.96	0.003	4.99e-08	2.46e-07
nooffloors	.0063239	.0027848	2.27	0.023	.0008597	.0117881
_cons	-3.037764	.2960118	-10.26	0.000	-3.61858	-2.456949
sigma_u	.50577556					
sigma_e	.86114935					
rho	.25647907	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1093) = 3.47 — Prob > F = **0.0000**

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,196
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1493
between = 0.7821
overall = 0.1752

Obs per group:
min = 5
avg = 19.9
max = 37

F(5,1131) = 39.69
corr(u_i, Xb) = 0.1588 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5994295	.0526349	11.39	0.000	.4961565	.7027025
leasepercent	.0736142	.1688033	0.44	0.663	-.2575887	.404817
Age	-.0030958	.0007882	-3.93	0.000	-.0046423	-.0015493
grosssquarefeet	-2.07e-08	3.44e-08	-0.60	0.548	-8.82e-08	4.68e-08
nooffloors	-.0007199	.0019189	-0.38	0.708	-.0044849	.003045
_cons	-1.356465	.2063429	-6.57	0.000	-1.761323	-.9516075
sigma_u	.14806837					
sigma_e	.59681605					
rho	.05798321	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1131) = 0.68 — Prob > F = 0.9708

Philadelphia

Total Expenses

Fixed-effects (within) regression — Number of obs = 167
Group variable: Date — Number of groups = 59

R-sq:
within = 0.2790
between = 0.0497
overall = 0.2179

Obs per group:
min = 1
avg = 2.8
max = 5

F(5,103) = 7.97
corr(u_i, Xb) = -0.0633 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4463018	.1237567	3.61	0.000	.2008597	.6917439
leasepercent	.9370092	.2798098	3.35	0.001	.3820724	1.491946
Age	-.004504	.0014583	-3.09	0.003	-.0073961	-.0016119
grosssquarefeet	1.97e-08	1.75e-07	0.11	0.911	-3.28e-07	3.68e-07
nooffloors	-.0189516	.0057645	-3.29	0.001	-.0303841	-.0075192
_cons	.1039031	.3507406	0.30	0.768	-.5917081	.7995144
sigma_u	.16946525					
sigma_e	.29452583					
rho	.24872244	(fraction of variance due to u_i)				

F test that all u_i=0: F(58, 103) = 0.92 — Prob > F = 0.6311

Utility Expense

Fixed-effects (within) regression — Number of obs = 167
Group variable: Date — Number of groups = 59

R-sq: — Obs per group:
within = 0.1485 — min = 1
between = 0.0002 — avg = 2.8
overall = 0.0790 — max = 5

F(5,103) = 3.59
corr(u_i, Xb) = -0.1466 — Prob > F = 0.0049

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2556078	.1385558	1.84	0.068	-.019185	.5304007
leasepercent	-.1988277	.3132703	-0.63	0.527	-.8201256	.4224701
Age	.0026728	.0016326	1.64	0.105	-.0005652	.0059107
grosssquarefeet	-5.67e-07	1.96e-07	-2.89	0.005	-9.56e-07	-1.77e-07
nooffloors	.0053577	.0064538	0.83	0.408	-.0074419	.0181573
_cons	-.6651207	.3926832	-1.69	0.093	-1.443915	.1136738
sigma_u	.204849					
sigma_e	.3297461					
rho	.27846275	(fraction of variance due to u_i)				

F test that all u_i=0: F(58, 103) = 0.96 — Prob > F = 0.5623

Tax Expense

Fixed-effects (within) regression — Number of obs = 167
Group variable: Date — Number of groups = 59

R-sq: — Obs per group:
within = 0.4137 — min = 1
between = 0.2161 — avg = 2.8
overall = 0.3582 — max = 5

F(5,103) = 14.54
corr(u_i, Xb) = -0.2159 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.7998322	.1382166	5.79	0.000	.5257121	1.073952
leasepercent	1.637752	.3125034	5.24	0.000	1.017976	2.257529
Age	-.0026225	.0016286	-1.61	0.110	-.0058525	.0006075
grosssquarefeet	2.32e-07	1.96e-07	1.19	0.238	-1.56e-07	6.21e-07
nooffloors	-.0043481	.006438	-0.68	0.501	-.0171163	.0084202
_cons	-3.143092	.3917218	-8.02	0.000	-3.91998	-2.366204
sigma_u	.17430194					
sigma_e	.32893883					
rho	.21922893	(fraction of variance due to u_i)				

F test that all u_i=0: F(58, 103) = 0.77 — Prob > F = 0.8574

Insurance Expense

Fixed-effects (within) regression — Number of obs = 147
Group variable: Date — Number of groups = 58

R-sq: — Obs per group:
within = 0.1962 — min = 1
between = 0.3292 — avg = 2.5
overall = 0.2677 — max = 5

F(5,84) = 4.10
corr(u_i, Xb) = 0.1840 — Prob > F = 0.0022

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	-.2738711	.1831293	-1.50	0.139	-.6380437	.0903015
leasepercent	-.3967486	.4529806	-0.88	0.384	-1.29755	.5040531
Age	-.0037352	.0020256	-1.84	0.069	-.0077633	.0002929
grosssquarefeet	7.17e-07	2.47e-07	2.91	0.005	2.27e-07	1.21e-06
nooffloors	-.0281258	.0081917	-3.43	0.001	-.0444159	-.0118358
_cons	-1.530079	.5264085	-2.91	0.005	-2.5769	-.4832578
sigma_u	.23747706					
sigma_e	.39986058					
rho	.26074696	(fraction of variance due to u_i)				

F test that all u_i=0: F(57, 84) = 0.91 — Prob > F = 0.6523

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 166
Group variable: Date — Number of groups = 59

R-sq: — Obs per group:
within = 0.2137 — min = 1
between = 0.0186 — avg = 2.8
overall = 0.0506 — max = 4

F(5,102) = 5.54
corr(u_i, Xb) = -0.2880 — Prob > F = 0.0001

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2803833	.1490468	1.88	0.063	-.0152502	.5760169
leasepercent	.0106772	.3326546	0.03	0.974	-.6491417	.6704961
Age	-.0020694	.0016998	-1.22	0.226	-.0054409	.0013021
grosssquarefeet	-5.16e-07	2.04e-07	-2.53	0.013	-9.20e-07	-1.12e-07
nooffloors	.0112694	.0068128	1.65	0.101	-.0022437	.0247826
_cons	-.4750909	.4175989	-1.14	0.258	-1.303396	.3532146
sigma_u	.35655947					
sigma_e	.34218965					
rho	.52055637	(fraction of variance due to u_i)				

F test that all u_i=0: F(58, 102) = 1.69 — Prob > F = 0.0100

San Francisco

Total Expenses

Fixed-effects (within) regression — Number of obs = 1,333
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1458
between = 0.3361
overall = 0.1591

Obs per group:
min = 11
avg = 22.2
max = 40

F(5,1268) = 43.28
corr(u_i, Xb) = 0.0977 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3457486	.0274642	12.59	0.000	.2918684	.3996289
leasepercent	.1726654	.1107071	1.56	0.119	-.0445239	.3898548
Age	-.0015552	.0004649	-3.35	0.001	-.0024673	-.0006432
grosssquarefeet	-3.16e-07	5.50e-08	-5.75	0.000	-4.24e-07	-2.08e-07
nooffloors	.0065844	.0012343	5.33	0.000	.0041628	.0090059
_cons	.4912767	.1196271	4.11	0.000	.2565879	.7259655
sigma_u	.12239776					
sigma_e	.39181185					
rho	.08891045	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1268) = 2.01 — Prob > F = 0.0000

Utility Expense

Fixed-effects (within) regression — Number of obs = 1,311
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1399
between = 0.2769
overall = 0.1471

Obs per group:
min = 10
avg = 21.9
max = 40

F(5,1246) = 40.54
corr(u_i, Xb) = 0.0669 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4653367	.0414498	11.23	0.000	.3840175	.5466559
leasepercent	.1244848	.1643457	0.76	0.449	-.1979401	.4469096
Age	.0031394	.0006854	4.58	0.000	.0017947	.0044841
grosssquarefeet	-4.44e-07	8.01e-08	-5.55	0.000	-6.01e-07	-2.87e-07
nooffloors	.0109262	.0017929	6.09	0.000	.0074088	.0144437
_cons	-1.907562	.1775234	-10.75	0.000	-2.255839	-1.559284
sigma_u	.18106403					
sigma_e	.56900228					
rho	.09194892	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1246) = 2.06 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 1,247
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
- within = **0.0209** — min = 11
- between = **0.4085** — avg = 20.8
- overall = **0.0369** — max = 40

F(5,1182) = 5.04
corr(u_i, Xb) = **0.1571** — Prob > F = **0.0001**

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2371397	.0575235	4.12	0.000	.1242802	.3499992
leasepercent	.4361326	.2356746	1.85	0.064	-.0262546	.8985199
Age	.001507	.0009876	1.53	0.127	-.0004307	.0034447
grosssquarefeet	-1.73e-07	1.16e-07	-1.49	0.138	-4.01e-07	5.55e-08
nooffloors	.0054608	.002685	2.03	0.042	.0001929	.0107287
_cons	-1.085742	.2554123	-4.25	0.000	-1.586854	-.5846304
sigma_u	.29326525					
sigma_e	.81896273					
rho	.11365667	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1182) = 2.54 — Prob > F = **0.0000**

Insurance Expense

Fixed-effects (within) regression — Number of obs = 1,211
Group variable: **Date** — Number of groups = 60

R-sq: — Obs per group:
- within = **0.0705** — min = 11
- between = **0.2743** — avg = 20.2
- overall = **0.0804** — max = 37

F(5,1146) = 17.37
corr(u_i, Xb) = **0.0948** — Prob > F = **0.0000**

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2565759	.0544362	4.71	0.000	.14977	.3633817
leasepercent	-.7799166	.2164278	-3.60	0.000	-1.204556	-.3552775
Age	-.003534	.0009261	-3.82	0.000	-.0053512	-.0017169
grosssquarefeet	-2.12e-07	1.06e-07	-2.00	0.045	-4.20e-07	-4.52e-09
nooffloors	.0107415	.0024848	4.32	0.000	.0058663	.0156167
_cons	-1.204614	.2373943	-5.07	0.000	-1.67039	-.7388379
sigma_u	.3814236					
sigma_e	.74219935					
rho	.20892547	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1146) = 4.30 — Prob > F = **0.0000**

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 1,319
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1258
between = 0.2966
overall = 0.1357

Obs per group:
min = 11
avg = 22.0
max = 40

F(5,1254) = 36.08
corr(u_i, Xb) = 0.0912 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.240071	.0399341	6.01	0.000	.1617259	.318416
leasepercent	.4594782	.1610595	2.85	0.004	.1435024	.7754541
Age	-.0062705	.0006758	-9.28	0.000	-.0075964	-.0049446
grosssquarefeet	-4.51e-07	7.95e-08	-5.66	0.000	-6.07e-07	-2.95e-07
nooffloors	.0089754	.0017838	5.03	0.000	.0054758	.012475
_cons	-.8074731	.1727358	-4.67	0.000	-1.146356	-.46859
sigma_u	.16876526					
sigma_e	.56634006					
rho	.08155743	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 1254) = 1.95 — Prob > F = 0.0000

Seattle

Total Expenses

Fixed-effects (within) regression — Number of obs = 830
Group variable: Date — Number of groups = 60

R-sq:
within = 0.3479
between = 0.2807
overall = 0.3469

Obs per group:
min = 3
avg = 13.8
max = 27

F(5,765) = 81.64
corr(u_i, Xb) = -0.0520 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.5030086	.0280072	17.96	0.000	.4480286	.5579887
leasepercent	.0956925	.0949777	1.01	0.314	-.0907554	.2821404
Age	-.0015218	.0005783	-2.63	0.009	-.0026571	-.0003864
grosssquarefeet	-2.83e-07	1.04e-07	-2.71	0.007	-4.87e-07	-7.82e-08
nooffloors	.0067544	.0020481	3.30	0.001	.0027337	.010775
_cons	-.1025559	.09321	-1.10	0.272	-.2855336	.0804219
sigma_u	.10793569					
sigma_e	.34272473					
rho	.09023376	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 765) = 1.01 — Prob > F = 0.4586

Utility Expense

Fixed-effects (within) regression — Number of obs = 821
Group variable: Date — Number of groups = 60

R-sq:
- within = 0.3779
- between = 0.2012
- overall = 0.3651

Obs per group: min = 3, avg = 13.7, max = 27

F(5,756) = 91.85
corr(u_i, Xb) = -0.0382 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.6261175	.0378629	16.54	0.000	.5517885	.7004464
leasepercent	.2409507	.127458	1.89	0.059	-.0092631	.4911644
Age	.0051562	.0007791	6.62	0.000	.0036267	.0066857
grosssquarefeet	1.54e-07	1.39e-07	1.10	0.270	-1.19e-07	4.27e-07
nooffloors	-.0097689	.002736	-3.57	0.000	-.0151399	-.0043979
_cons	-2.338717	.1242015	-18.83	0.000	-2.582538	-2.094896
sigma_u	.1554328					
sigma_e	.45617723					
rho	.10401991	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 756) = 1.21 — Prob > F = 0.1361

Tax Expense

Fixed-effects (within) regression — Number of obs = 809
Group variable: Date — Number of groups = 60

R-sq:
- within = 0.2890
- between = 0.1040
- overall = 0.2510

Obs per group: min = 3, avg = 13.5, max = 26

F(5,744) = 60.49
corr(u_i, Xb) = -0.1029 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3807116	.0310938	12.24	0.000	.3196695	.4417536
leasepercent	.2352774	.1051481	2.24	0.026	.0288551	.4416997
Age	-.0052326	.0006408	-8.17	0.000	-.0064905	-.0039747
grosssquarefeet	-3.26e-07	1.14e-07	-2.85	0.004	-5.50e-07	-1.01e-07
nooffloors	.0105562	.0022504	4.69	0.000	.0061382	.0149741
_cons	-1.537092	.1024591	-15.00	0.000	-1.738235	-1.335949
sigma_u	.15814898					
sigma_e	.37492019					
rho	.15105487	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 744) = 2.60 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 819
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.0581 — min = 3
between = 0.1618 — avg = 13.7
overall = 0.0450 — max = 27

F(5,754) = 9.31
corr(u_i, Xb) = -0.1657 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.0647226	.0797258	0.81	0.417	-.0917883	.2212336
leasepercent	.4066811	.2590838	1.57	0.117	-.1019303	.9152925
Age	-.0047382	.0015674	-3.02	0.003	-.0078151	-.0016613
grosssquarefeet	-1.31e-06	2.83e-07	-4.63	0.000	-1.87e-06	-7.56e-07
nooffloors	.0329209	.005553	5.93	0.000	.0220198	.043822
_cons	-3.333001	.254492	-13.10	0.000	-3.832598	-2.833403
sigma_u	.33528532					
sigma_e	.92430942					
rho	.11628094	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 754) = 0.83 — Prob > F = 0.8110

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 826
Group variable: Date — Number of groups = 60

R-sq: — Obs per group:
within = 0.1343 — min = 3
between = 0.5327 — avg = 13.8
overall = 0.1525 — max = 27

F(5,761) = 23.62
corr(u_i, Xb) = 0.0960 — Prob > F = 0.0000

lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3952963	.0449289	8.80	0.000	.3070969	.4834956
leasepercent	.2412781	.1528124	1.58	0.115	-.0587058	.541262
Age	.0045957	.0009272	4.96	0.000	.0027754	.0064159
grosssquarefeet	1.07e-07	1.67e-07	0.64	0.521	-2.21e-07	4.35e-07
nooffloors	.0007864	.0032795	0.24	0.811	-.0056515	.0072243
_cons	-1.457791	.149554	-9.75	0.000	-1.751379	-1.164204
sigma_u	.10454344					
sigma_e	.54814104					
rho	.03509876	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 761) = 0.47 — Prob > F = 0.9998

Washington DC

Total Expenses

Fixed-effects (within) regression — Number of obs = 2,158
Group variable: Date — Number of groups = 60

R-sq:
within = 0.2309
between = 0.8062
overall = 0.2838

Obs per group:
min = 24
avg = 36.0
max = 51

F(5,2093) = 125.70
corr(u_i, Xb) = 0.2433 — Prob > F = 0.0000

lgexpense	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.4686781	.0231627	20.23	0.000	.4232538	.5141025
leasepercent	.4178413	.0922068	4.53	0.000	.2370147	.5986678
Age	.0016622	.0006282	2.65	0.008	.0004302	.0028942
grosssquarefeet	-6.29e-08	6.73e-08	-0.93	0.351	-1.95e-07	6.92e-08
nooffloors	.0605256	.0056336	10.74	0.000	.0494775	.0715737
_cons	-.7091215	.1117437	-6.35	0.000	-.9282618	-.4899812
sigma_u	.1828359					
sigma_e	.51290775					
rho	.11274399	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 2093) = 3.70 — Prob > F = 0.0000

Utility Expense

Fixed-effects (within) regression — Number of obs = 2,122
Group variable: Date — Number of groups = 60

R-sq:
within = 0.2259
between = 0.0777
overall = 0.1916

Obs per group:
min = 22
avg = 35.4
max = 51

F(5,2057) = 120.08
corr(u_i, Xb) = 0.0197 — Prob > F = 0.0000

lgutility	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2794606	.0173389	16.12	0.000	.2454569	.3134643
leasepercent	.7697365	.0704638	10.92	0.000	.6315487	.9079244
Age	.0002727	.000481	0.57	0.571	-.0006707	.0012161
grosssquarefeet	-5.79e-07	5.17e-08	-11.19	0.000	-6.80e-07	-4.77e-07
nooffloors	.0022265	.0044514	0.50	0.617	-.0065033	.0109562
_cons	-1.668186	.0870734	-19.16	0.000	-1.838947	-1.497425
sigma_u	.22110588					
sigma_e	.39076398					
rho	.24251795	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 2057) = 9.98 — Prob > F = 0.0000

Tax Expense

Fixed-effects (within) regression — Number of obs = 2,112
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1531
between = 0.7318
overall = 0.1986

Obs per group:
min = 22
avg = 35.2
max = 50

F(5,2047) = 74.02
corr(u_i, Xb) = 0.2219 — Prob > F = 0.0000

lgtax	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.3733553	.0261317	14.29	0.000	.3221079	.4246027
leasepercent	.5461675	.0990841	5.51	0.000	.3518514	.7404837
Age	-.0004955	.0006746	-0.73	0.463	-.0018184	.0008275
grosssquarefeet	2.03e-07	7.23e-08	2.81	0.005	6.13e-08	3.45e-07
nooffloors	.0566318	.0062299	9.09	0.000	.0444143	.0688493
_cons	-1.546319	.123605	-12.51	0.000	-1.788724	-1.303915
sigma_u	.33003911					
sigma_e	.54827611					
rho	.265976	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 2047) = 9.77 — Prob > F = 0.0000

Insurance Expense

Fixed-effects (within) regression — Number of obs = 2,081
Group variable: Date — Number of groups = 60

R-sq:
within = 0.0669
between = 0.2190
overall = 0.0743

Obs per group:
min = 23
avg = 34.7
max = 50

F(5,2016) = 28.91
corr(u_i, Xb) = 0.0707 — Prob > F = 0.0000

lginsurance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2784572	.0266988	10.43	0.000	.226097	.3308174
leasepercent	.0935901	.1115609	0.84	0.402	-.1251967	.3123769
Age	.0043143	.0007605	5.67	0.000	.0028228	.0058058
grosssquarefeet	3.95e-07	8.16e-08	4.84	0.000	2.35e-07	5.55e-07
nooffloors	-.0170346	.0069171	-2.46	0.014	-.0305999	-.0034692
_cons	-3.725102	.1359447	-27.40	0.000	-3.991709	-3.458495
sigma_u	.32247396					
sigma_e	.6128052					
rho	.21686171	(fraction of variance due to u_i)				

F test that all u_i=0: F(59, 2016) = 7.73 — Prob > F = 0.0000

Maintenance Expense

Fixed-effects (within) regression — Number of obs = 2,121
Group variable: Date — Number of groups = 60

R-sq:
within = 0.1972
between = 0.2561
overall = 0.1950

Obs per group:
min = 22
avg = 35.4
max = 51

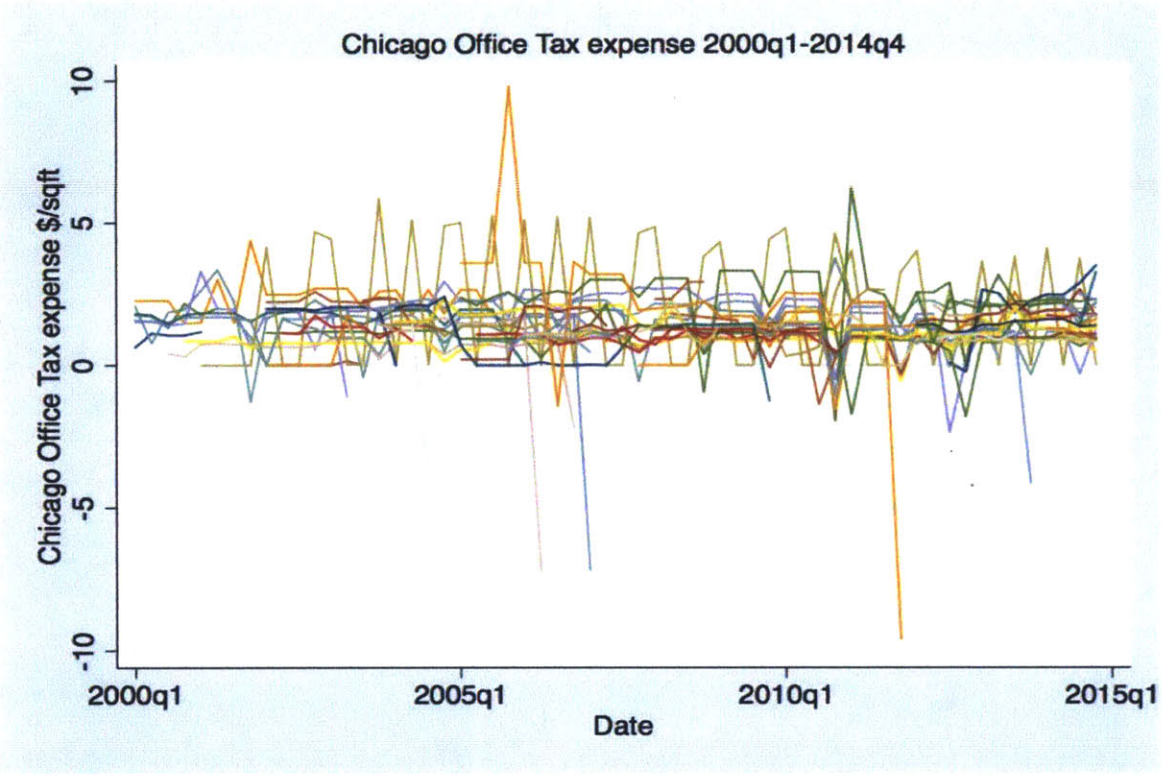
F(5,2056) = 100.99
corr(u_i, Xb) = 0.0499 — Prob > F = 0.0000

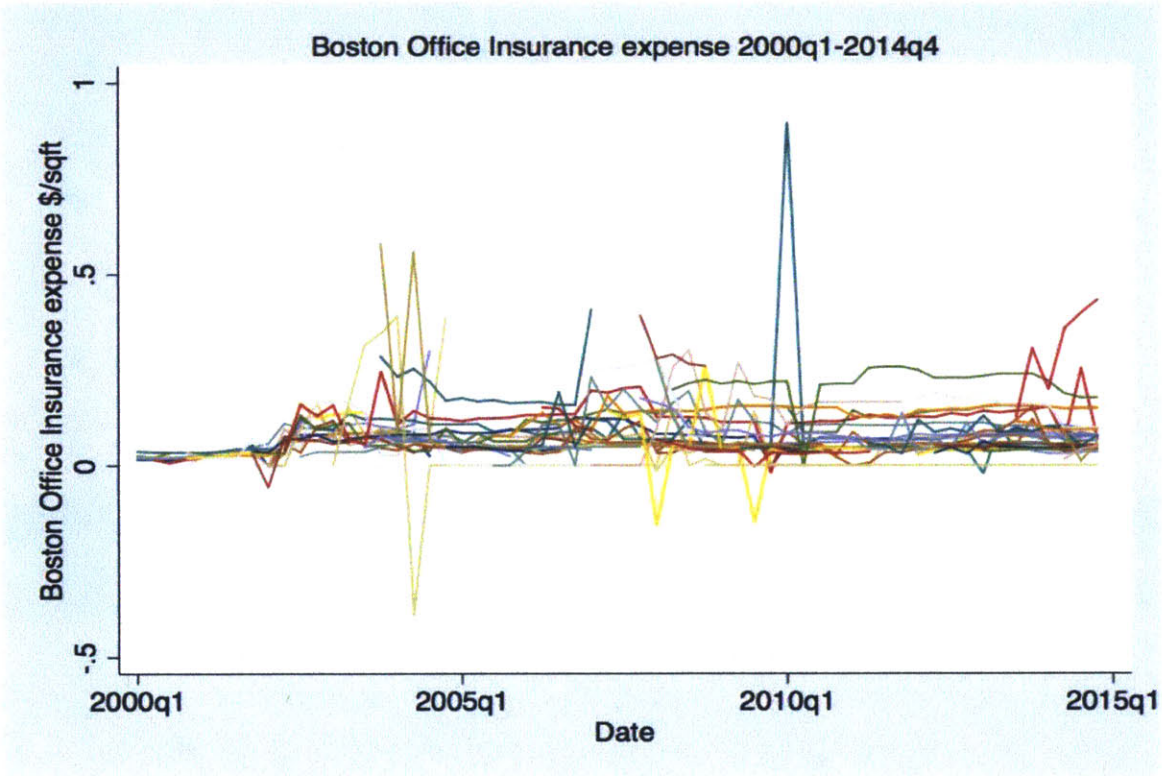
lgmaintenance	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgexpbase	.2800134	.0220983	12.67	0.000	.2366761	.3233507
leasepercent	.3893826	.089797	4.34	0.000	.21328	.5654852
Age	.0012641	.0006135	2.06	0.039	.000061	.0024672
grosssquarefeet	-9.49e-07	6.59e-08	-14.41	0.000	-1.08e-06	-8.20e-07
nooffloors	.0127056	.0056703	2.24	0.025	.0015855	.0238256
_cons	-1.207941	.110953	-10.89	0.000	-1.425533	-.9903494
sigma_u	.16023597					
sigma_e	.49802705					
rho	.09380692	(fraction of variance due to u_i)				

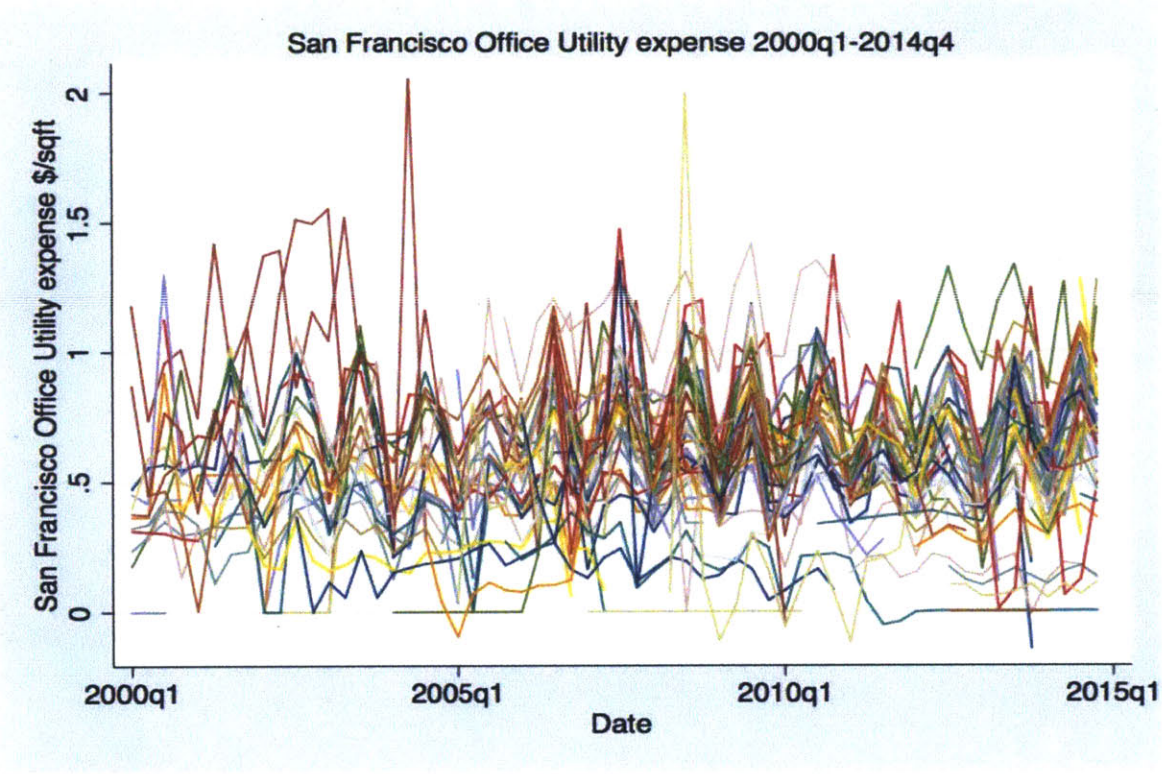
F test that all u_i=0: F(59, 2056) = 3.04 — Prob > F = 0.0000

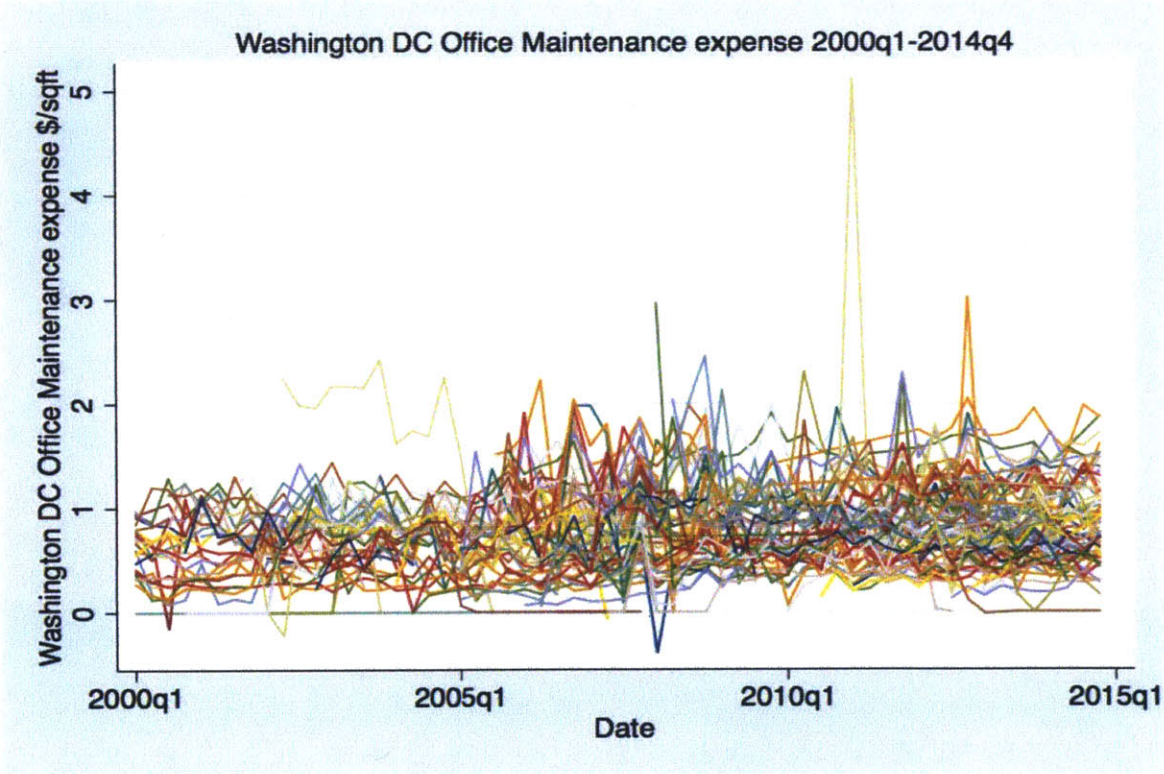
APPENDIX 3

Sample MSA Expense Graphs - STATA Output






San Francisco Office Utility expense 2000q1-2014q4
San Francisco Office Utility expense $/sqft
0
.5
1
1.5
2
2000q1
2005q1
2010q1
2015q1
Date


Washington DC Office Maintenance expense 2000q1-2014q4
Washington DC Office Maintenance expense $/sqft
0
1
2
3
4
5
2000q1
2005q1
2010q1
2015q1
Date