GALLAGHER AMENDMENT REVISITED:

What's changed for residential and commercial real estate

and why it's important

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Discussion Paper – Subject to Revisions

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EXECUTIVE SUMMARY

This report revisits the intended and possibly unintended consequences of the Gallagher Amendment[1] as it relates to residential and commercial real estate properties in the State of Colorado. According to the State of Colorado, "…*the Gallagher amendment impacts how much Colorado homeowners pay in property taxes. Under the Gallagher Amendment, the portion of residential property that is subject to taxation (called the "assessed value") drops when residential property values statewide grow faster than nonresidential properties*"[2].

Public policies, regulations, and constitution amendments have intended consequences and expectations based on the best available analysis and information at the time. There are, however, unintended consequences that periodically occur due to unforeseen events and trends such as political, economic, business, and demographic changes. For example, education funding for K-12 declined after the passage in 1992 of the Taxpayers Bill of Rights (TABOR). Subsequently, Colorado voters passed Amendment 23 in 2000 to correct the unintended consequences of TABOR on education funding.

The question of the unintended consequences of the Gallagher amendment, given the direct and indirect impacts of TABOR and Amendment 23, was raised in 2001 by a Department of Local Affairs report:

> *Therefore, the operation of Gallagher has not only limited tax increases to residential property owners, as was its intent, but has also resulted in an increased relative burden of property tax to non-residential classes…Based upon this shift in tax burden, some members of the business community have begun to "question the direction of property taxation," and there has been some*

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[1] For more information on Colorado's property taxation regulations and policies, see State of Colorado, Department of Local Affairs (http://www.dola.state.co.us/index.html), or the Office of Legislative Legal Services to access the Colorado Revised Statutes (http://www.state.co.us/gov_dir/leg_dir/olls/colorado_revised_statutes.htm).

[2] See http://www.colorado.gov/cs/Satellite/Treasury/TR/1196935260080 [December 5, 2009]

discussion about the repeal of the Gallagher Amendment, or
elimination of property tax as a major source of local revenue.[3]

The Gallagher amendment's 20th birthday is approaching in 2012. Over the last two decades, the State of Colorado's residential and non-residential sectors have experienced several economic expansions and recessions, home price increases and the 'bursting' of housing bubbles, inflation and deflation pressures, energy prices rising and falling, population booms and slower in-migration flows, and positive and negative employment growth periods. Thus, it is reasonable and prudent to review the history and consequences of the Gallagher amendment based on empirical data and address the following questions:

- Have the original intentions surrounding the Gallagher amendment passed the test of time, particularly for residential home owners?
- Has the continued reduction in assessment rates for residential properties since passage of the Gallagher amendment had a negative effect on non-residential properties in the State of Colorado?
- If there are negative effects for non-residential properties in Colorado, do these effects impact the comparative advantages and competitiveness of Colorado's economy?
- If significant changes have occurred since 1982 to changes in the distribution of property valuations by various classifications, is there a 'fairness' to the approximate 45/55 split between residential and non-residential mandated by Gallagher?

This report presents empirical data and uses academically-sound and applied analysis to identify the intended and unintended consequences of the Gallagher amendment. Our objectives seek to provide the private and public sector with results that may: (1) challenge or confirm existing biases, (2) expand the

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[3] Source: TABOR, Gallagher and Mill Levies: Are Local Revenues Being Shortchanged? State of Colorado, Department of Local Affairs, November 26, 2001.

collective knowledge base with new research and analysis, and, (3) if needed, spawn creative yet reasonable solutions that reflect the reality of Colorado's dynamic economic base and changing distributions of residential and non-residential assets in the state of Colorado.

This report does not address property tax legislation for the state of Colorado or any other state, nor represent any legal expertise in the areas of Gallagher, TABOR, or Amendment 23. We focus our data collection[4] and analysis on regional economics at the state and county levels, and specifically on residential and commercial real estate[5].

SUMMARY OF FINDINGS

This is a discussion paper subject to revisions. We welcome comments and ideas for further research. At the present time, our research indicates the following:

- Since 1982, the economic base of many Colorado counties has changed, impacting demand and valuations of residential and non-residential assets
- Over the last 14 years, the distributions of property valuations by classifications have significantly changed, with the share of residential increasing for many Colorado counties and at the state level
- Residential price growth rates exceeded commercial real estate prices from 1982 to 2008
- Residential actual values account for 77% and non-residential 23% as of 2008, a significant change from 55% residential and 45% non-residential actual valuations in 1983
- Colorado's commercial property taxes, based on several benchmarks and tested with three independent sources, are generally higher than other Western states, specifically benchmarked by the ratio of total taxes to total income

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[4] All data collected is from industry and government established and credible sources.

[5] Commercial real estate includes the property tax categories of commercial and industrial as defined by the Department of Local Affairs.

- Expected residential devaluations for many heavily populated or second-home market counties impacted by the housing crises may place increase burden on non-residential assets over the next two to four years
- Non-residential assets, particularly commercial real estate properties, are more productive than residential assets potentially impacting future shifting of tax burdens to non-residential assets as population and households increase in Colorado over the next decade

REPORT STRUCTURE

The **Introduction** section of this report reviews national level economic and housing trends prior to the passage of Gallagher in 1982 and through 2008. A general theory of how property relates to economic growth and values is also discussed to highlight the importance of their linkages. The **Literature Review** section summarizes academic research on relevant property tax issues and applies lessons learned to the State of Colorado. The **State of Colorado** section analyzes changes in the economic base of Colorado's counties from 1982 through 2008 and examines changes of property distributions from 1994 to 2008. The **Commercial Real Estate** section evaluates and compares Colorado commercial real estate property taxes to a group of Western states and markets based on several industry-recognized real estate information providers. Our **Conclusion** section summarizes the results, limitations, and presents further research ideas.

INTRODUCTION

It is important to understand the national economy and housing markets as they existed prior to the enactment of the Gallagher amendment. Economic and business cycles affect firms, households, and

individuals. Recessions caused by the oil embargo and rising energy prices during the mid 1970s, quickly recovered through the late 1970s as real gross domestic product (GDP) increased to 5.6% in 1978[6]. Yet, the double-dip recessions from 1980 to 1982 quickly reminded the country of the tenuous nature of the economy. The volatility of peak and bottom periods of business, economic, or real estate cycles greatly influence short-term outlooks. What was the potential

> **Economics matter.**
>
> **This report analyzes national, state, and county changes in economics because economic changes alter real property demand and land uses.**

mindset of the policy-makers in the early 1980s given the events of the late 1970s and early 1980s? What short-term trends affected voters and homeowners in Colorado?

In short, the national economy and housing markets were tumultuous in the years prior to the passage of the Gallagher amendment. Interest rates skyrocketed; from 1976 to 1981 maturity rates for 10 year treasuries increased from 7.61% to 13.92%, and conventional 30 year mortgages almost doubled from 8.86% to 16.63%[7]. Exhibit 1 illustrates the rapid decline in U.S. housing completions and private residential construction put-in-place in the years preceding 1982 and the ensuing cyclical periods of housing booms and busts through 2008.

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[6] See http://www.bea.gov/national/index.htm#gdp [December 7, 2009]

[7] Source: Board of Governors, Federal Reserve

Exhibit 1 Housing Completions vs. Private Residential Put in Place
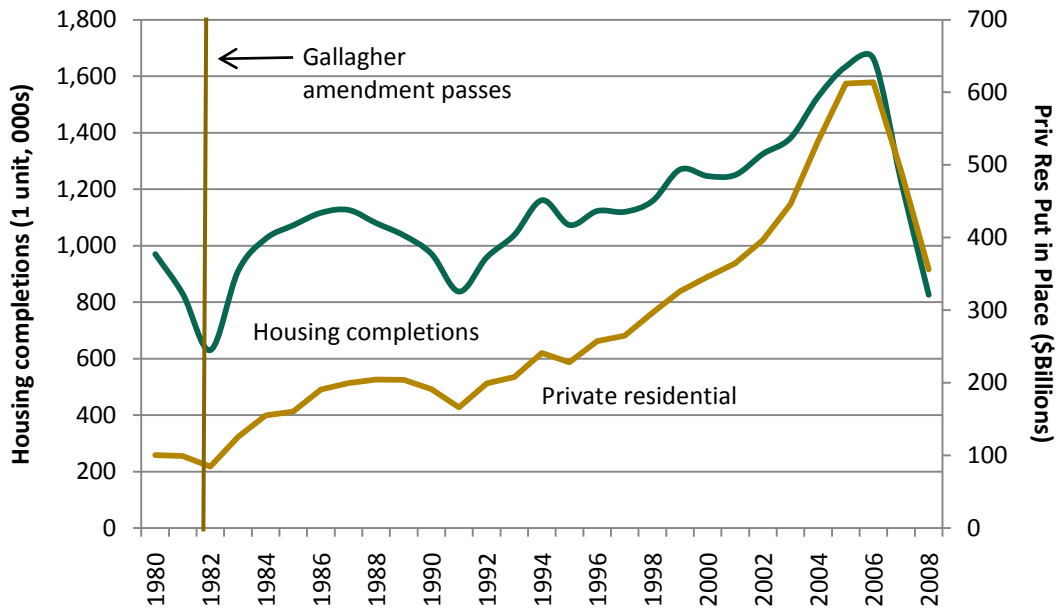
Source: U.S. Census Bureau

In addition to the rise of interest and mortgage rates, home prices increased and decreased during the late 1970s and early 1980s as shown in Exhibit 2. Home prices increased in the upper 13% during 1978 and 1979, dropping to lower single digits during the recession of the early 1980s.   As home prices subsequently increased from 1982 to 1989, Gallagher's reduction in the residential assessment rate clearly benefited homeowners and fulfilled an intended consequence.

Exhibit 2 U.S. Home Price Growth vs. Home Resales, 1976 to 2008
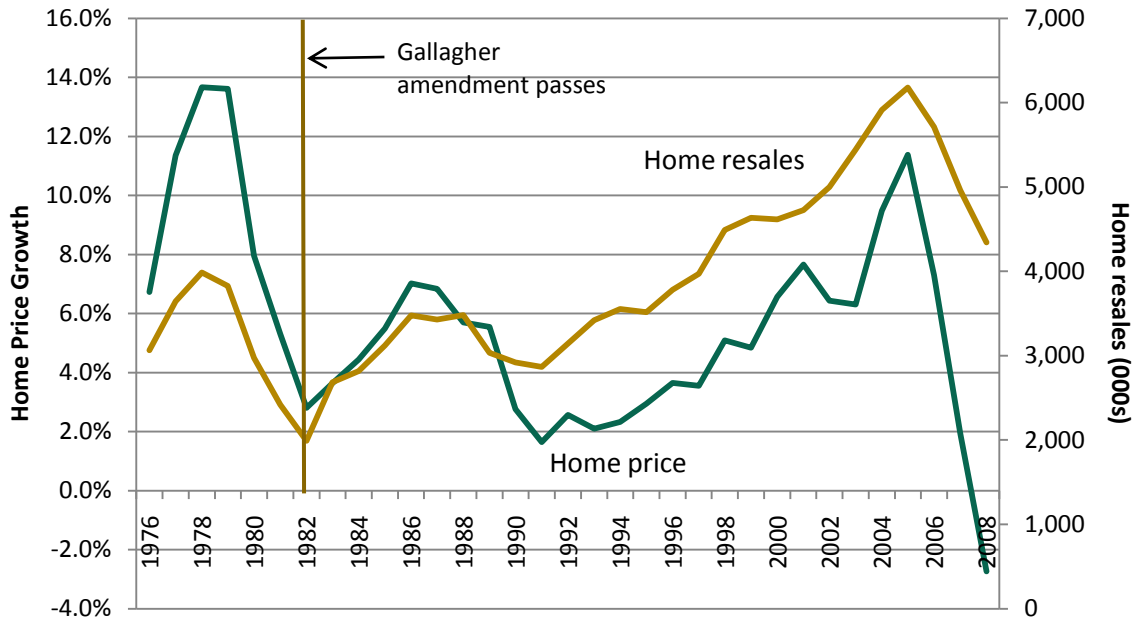
Source: National Association of Realtors, Federal Housing Finance Agency, Everitt Real Estate Center

REAL ESTATE AND GALLAGHER ASSUMPTIONS

The Gallagher amendment stipulates a ratio between residential and non-residential assessments. A recent report from the Division of Property Taxation indicates residential at 46.82% with an 8.85 assessment rate[8]. Using aggregated county-level actual valuations by property classifications, the report documents the Division of Property Taxation's calculations and methods to arrive at a final assessment rate for all counties.

There are, however, fundamental economic questions underpinning a top-down method to set assessment rates for individual counties. Do counties with higher non-residential value proportions of assets assessed at 29% with limited population have an advantage over counties with high residential valuations such as Eagle (65.66%) and Elbert (68.10%)? For example, in 2008 residential assets

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[8] Estimated Residential Assessment Rate for 2009-2010, Division of Property Taxation, Department of Local Affairs, April 15, 2009.

accounted for 2.29% and oil and gas assets 73.81% for Cheyenne County with a population of 1,749. Other examples of outlier proportions of property valuations in 2008 include Costilla County (81.83% vacant land), Kiowa County (39.03% agricultural), San Juan County (17.13% natural resources), and Sedgwick (61.02% state).

How does the Gallagher amendment, the Taxpayers Bill of Rights (TABOR), or Amendment 23 recognize the following?

1. Distributions of property valuations differ for each county?

2. Distributions of employment and population differ for each county?

3. Differences in created and natural assets for each county and the economic evolution ?

4. Distributions and valuations of properties, employment, and population can change over time (since 1982)?

5. Differences in productivity over time of residential and non-residential property assets?

> **Economics and property matter.**
>
> **Property tax policies directly and indirectly assume relationships between people, land use, and created assets such as buildings, plants,**

Research shows that different industries require different types and amounts of real property for every worker they employ. Agricultural firms, for example require a great deal of land but relatively few workers. Administrative services firms, on the other hand, may allocate a large number of workers into a relatively small office (see Exhibit 3). Thus, we can expect that regions with different economic bases will have significant differences in the amount of non-residential property if for no other reason than employment variances.

Exhibit 3 Structure per Worker (000s)

Chart data (Structure per Worker, in thousands):

Sector	Value
UTILITIES	$2,452
MINING	$1,070
AGRICULTURE	$322
INFORMATION	$233
MANAGEMENT	$187
REAL ESTATE	$118
TRANSPORTATION	$113
EDUCATION	$102
FINANCE	$94
MANUFACTURING	$77
RECREATION	$48
RETAIL TRADE	$48
HEALTH	$44
OTHER	$43
ACCOM & FOOD SERVICE	$30
WHOLESALE TRADE	$28
ADMINISTRATION	$11
PROF & TECHNICAL	$10
CONSTRUCTION	$6
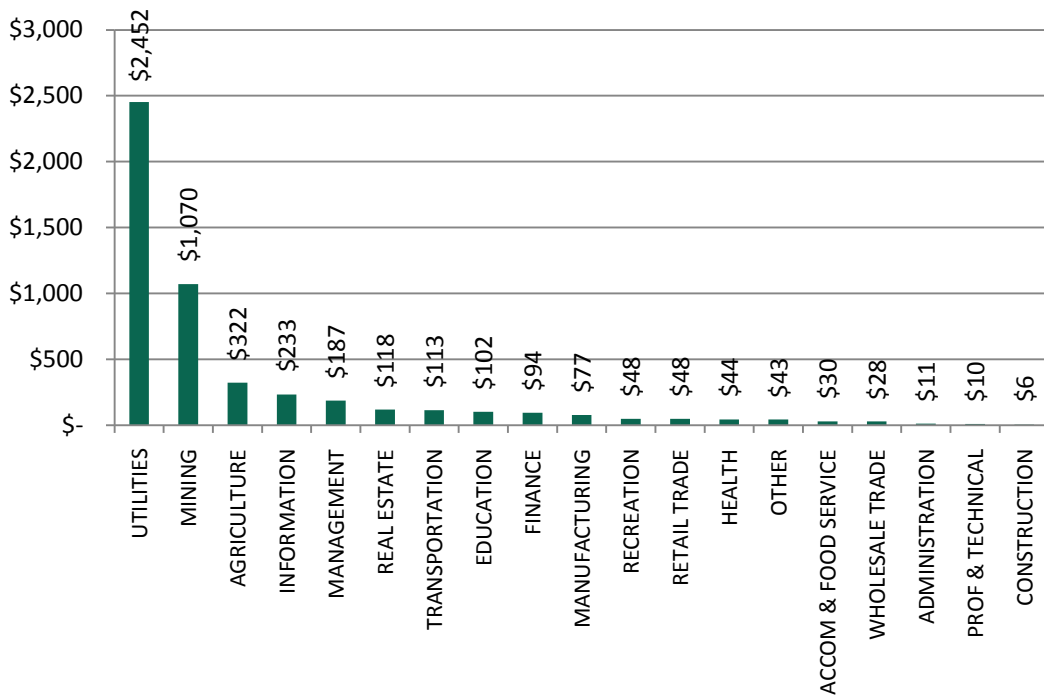
Source: Bureau of Economic Analysis, Everitt Real Estate Center

Since the demand for residential property, and hence in the long-run the amount of residential property present in the region, is roughly proportional to income, residential demand may not be greatly affected by the structure of the economic base in the region. Hence, a region in which the dominant sectors require relatively few workers (with relatively little wage income), and a great deal of real non-residential property will have a relatively large percentage of non-residential real property relative to total real property.

In addition, the economic base of the state of Colorado (as measured by location quotients) has not remained static since 1982, nor has the percentage of workers nationwide employed in different sectors. This can also have a significant impact on the division of real property in the state and nationwide between residential property and non-residential. We can expect a worker earning the same wage to want the same size home regardless of occupation, but not to use the same amount of non-residential property in that occupation.

Understanding the importance of economic, demographic, employment, and real estate linkages to the Gallagher amendment is vital in order to identify intended and unintended consequences. If a county has significant shifts in the distribution of asset by property classification over time, the Gallagher amendment assumes a theoretical relationship between residential and non-residential growth and asset valuations.

There are very few signification correlations between property classification value distributions for Colorado's 64 counties as shown in Exhibit 4. Correlations are based on the share of total valuation by property classification for all Colorado counties. Agricultural and oil and gas are the two classifications with several significant correlations particularly with vacant and residential classifications. Given a fixed amount of land within a county, the use of such land for example, can either be residential or agricultural at any one point in time. The belief that increased commercial is strongly associated with residential is diluted as the correlation is significant, but only 0.278. Thus, for counties with high residential does not necessarily translate into a pool of commercial and industrial properties available to be assessed at 29%.

Exhibit 4 Correlations of 2008 Property Value Distributions for Colorado Counties

Correlations

		Vacant %	Residential %	Commercial %	Industrial %	Agricultural %	Nat Resources %	Mining %	Oil and gas %	State %
Vacant %	Pearson Correlation	1	.186	-.211	-.233	-.312*	.134	-.016	-.305*	-.373**
	Sig. (2-tailed)		.140	.094	.064	.012	.292	.898	.014	.002
	N	64	64	64	64	64	64	64	64	64
Residential %	Pearson Correlation	.186	1	.278*	.098	-.508**	-.157	-.040	-.597**	-.525**
	Sig. (2-tailed)	.140		.026	.439	.000	.216	.753	.000	.000
	N	64	64	64	64	64	64	64	64	64
Commercial %	Pearson Correlation	-.211	.278*	1	.087	-.191	-.096	-.135	-.454**	-.223
	Sig. (2-tailed)	.094	.026		.493	.130	.451	.286	.000	.076
	N	64	64	64	64	64	64	64	64	64
Industrial %	Pearson Correlation	-.233	.098	.087	1	-.194	-.146	-.079	-.014	.007
	Sig. (2-tailed)	.064	.439	.493		.125	.250	.536	.912	.954
	N	64	64	64	64	64	64	64	64	64
Agricultural %	Pearson Correlation	-.312*	-.508**	-.191	-.194	1	-.072	-.128	.085	.484**
	Sig. (2-tailed)	.012	.000	.130	.125		.573	.313	.505	.000
	N	64	64	64	64	64	64	64	64	64
Nat Resources %	Pearson Correlation	.134	-.157	-.096	-.146	-.072	1	-.029	-.024	.084
	Sig. (2-tailed)	.292	.216	.451	.250	.573		.820	.849	.512
	N	64	64	64	64	64	64	64	64	64
Mining %	Pearson Correlation	-.016	-.040	-.135	-.079	-.128	-.029	1	-.096	-.102
	Sig. (2-tailed)	.898	.753	.286	.536	.313	.820		.451	.421
	N	64	64	64	64	64	64	64	64	64
Oil and gas %	Pearson Correlation	-.305*	-.597**	-.454**	-.014	.085	-.024	-.096	1	.038
	Sig. (2-tailed)	.014	.000	.000	.912	.505	.849	.451		.764
	N	64	64	64	64	64	64	64	64	64
State %	Pearson Correlation	-.373**	-.525**	-.223	.007	.484**	.084	-.102	.038	1
	Sig. (2-tailed)	.002	.000	.076	.954	.000	.512	.421	.764	
	N	64	64	64	64	64	64	64	64	64

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Department of Local Affairs, Everitt Real Estate Center

Examining the correlations for several major property categories confirms the nonlinearity for most of the categories. Exhibit 5 Scattergraph Matrix of Property Category Value DistributionsExhibit 5 is a visual depiction of the previous correlation matrix; each square includes dots that represent Colorado counties with the respective variables to the left and bottom of the exhibit.

Exhibit 5 Scattergraph Matrix of Property Category Value Distributions
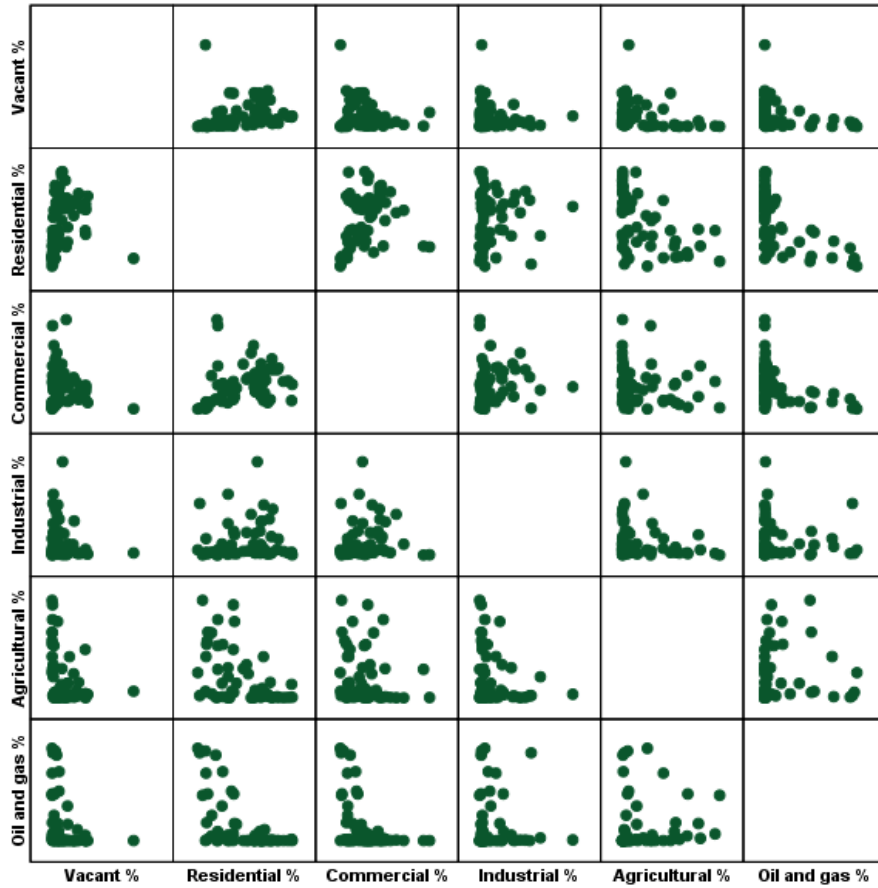
Source: Department of Local Affairs, Everitt Real Estate Center

Other scattergraphs are included in the appendix. The objective of these exhibits is to educate the public and government officials with empirical data and challenge existing assumptions regarding on property in the State of Colorado. Economics and property knowledge matters in the realm of public policy.

LITERATURE REVIEW

There are many findings from previous research directly relevant to an analysis of the Gallagher amendment. The first is that laws that restrict the increases in property taxes due to increases in house prices are common. There is an argument that such restrictions, although sensible from the government's perspective due to the 'unreliability' of property tax revenues, is misguided. Any analysis which assumes that voters consider themselves to be in control of local mill levies can explain such limitations as rational if and only if the purpose is to make property tax payments predictable in the face of wildly fluctuating house prices.

> **Economics and research matter.**
>
> **What can we learn from property tax research? What works? What doesn't and why?**

If the purpose of a law such as Gallagher is a tax subsidy to homeowners at the expense of owners and renters of business property and other, the economic literature also has much to say. First, that if it is possible to charge differential rates, the economically efficient tax policy is to charge a lower property tax rate on businesses – particularly primary industries which sell their goods outside the region. Local firms that export goods and services create jobs and they are more likely to leave and deprive the region of jobs and income if tax policies significantly impact profitability.

The negative effect of higher non-residential property tax rates on economic development is commonly found empirically, though it is smaller at the state level than at the town or county level, and may be smaller now than in past decades. Even given the positive effects of higher government spending, the possibility to create jobs by taxing and spending has been largely exhausted at the local level nationwide. Last, economic models have been used to estimate the 'revenue-maximizing' non-residential property tax rate and have found that it is often

exceeded in practice (particularly on the east coast) but not necessarily in Colorado. Exhibit 6 highlights a sample of academic articles relevant to the Gallagher amendment.

Exhibit 6 Literature review discussion

Author (year)	Commentary
Anderson (2006)	Reviews property tax limitations across the United States and suggests that their prevalence suggests either that local voters do not consider themselves to have adequate control over tax rates, or that property tax limitations are rational as an insurance policy against volatility in housing prices.
Giertz (2006)	Argues that property tax limitations cannot be explained on the basis of the 'inferiority' of the property tax relative to other taxes in terms of equity, efficiency or stability as a revenue source and that an efficient mix of local taxes would focus more heavily on property taxes and less heavily on income taxes than is generally the case.
McDonald (2008)	Constructs a model to derive the 'revenue maximizing' non-residential property tax rate in the presence of capital mobility and finds that given realistic estimates of the elasticity of substitution between land in different jurisdictions the optimal tax rate is no more than 3% and is often exceeded in practice.
Church (1981)	In an empirical study of industrial MSAs finds that property tax rates discourage investment and construction while improved government services encourage investment. For the average city the net benefits of increasing taxation in order to provide additional government services are close to zero.
Lutz (2008)	Using national data, finds that on average there is a lag between appreciation in actual property values and increases in property tax payments and that on average only 40% of increases in residential property prices carries over into increased property tax payments.
Faulk (2006)	In an analysis of property tax abatement in Indiana counties between 1998 and 2001, finds that property tax abatement is positively related to growth in non-farm employment. Property tax abatement, like any marginal difference in property tax rates, can be expected to have a greater impact between neighboring counties than between states.
Rainey & McNamara (1999)	Also using data from Indiana counties, Rainey and McNamara improve on previous inconclusive work regarding the effect of taxes on firms location decisions by constructing a more accurate measure of the true tax burden. Using the county 'minimum' property tax rate, which is taken to more accurately reflect the conditions faced by the most location-sensitive firms they find that a higher property tax rate does deter firms from locating in that county.
Wassmer (1993)	Finds that in the long run higher than average property taxes tend to decrease the total amount of capital in a region, consistent with an effect

Author (year)	Commentary
	of deterring investment in new construction. This is taken to support the 'New View' of property taxation as a progressive capital tax, which will tend to fall on all owners of capital around the country (to some degree) regardless of where the tax is initially levied. He also finds that higher than average property taxes are correlated with lower than average local incomes, implying that the property tax is regressive in some sense.
Wilson (1985)	Constructs a mathematical model of a region with the ability to charge differential property tax rates on export-oriented non-residential property and non-residential property oriented toward the production of goods for domestic consumption. He finds that in such a case property tax rates should be lower for those firms which are export-oriented. Given plausible estimates for production elasticities, he finds that property taxes should be higher on residential property than non-residential property.
Wheaton (1984)	Using data from the Boston metropolitan area, Wheaton tests the effect of intra-metropolitan differences in local property taxation on commercial rents. He finds that rents do not increase as taxes increase and interprets this to mean that property owners bear the burden of property taxation rather than property users. However, both taxation and rent are measured per square foot and not as a proportion of the market value of the property.
Dalehite, Mikesell & Zorn (2005)	In a review of the literature on property tax abatement programs across the U.S., the authors find that assessments of the effectiveness of local property tax abatement programs varies tremendously based on restrictive assumptions and how 'effectiveness' is measured. In the aggregate they determine that property tax abatement programs are only 'partially, temporarily or conditionally effective' with the most important condition being the ability to offer abatements only to those firms which would locate elsewhere without them. Broad-based abatement programs which more closely mimic the impact of a reduced non-residential property tax rate are effective – from the perspective of the town government – only if the lost revenues are subsidized by the state.
Dalenberg & Partridge (1995)	Using data for 28 U.S. metropolitan areas, Dalenberg and Partridge analyze the effects of inter-city differences in rates of taxation and government services on employment. They find that higher taxes are negatively related to local employment levels and that only certain kinds of public services, such as education, have an offsetting effect. Their urban policy prescription is to reduce taxes and infrastructure spending while increasing spending on education.
Wasylenko (1997)	In a review of the impact of taxation on economic development, finds that interregional differences in taxation have a relatively small, but statistically significant negative impact on economic development. The effects are determined to be four times greater for intra-regional differences in tax rates (such as townships within an MSA or counties within a state) than for inter-regional differences such as those between states.
Carroll & Wasylenko (1994)	Using econometric analysis on data for U.S. states, Carrol and Wasylenko determine that the impact of fiscal variables such as tax rates on economic development was much greater in the 1970s than in the 1980s. This contradicts previous findings, using data from the 1970s, that tended to

| Author (year)	Commentary
	find significant impacts. This may be due to international competition, causing firms to leave the US entirely rather than switch states.

STATE OF COLORADO

Colorado is a diverse economy with diverse natural and created assets. As previously illustrated, valuations by property classifications vary for Colorado's counties with limited correlations within the state. This section analyzes state and county economics – what's changed since 1982 and how is it important.

Exhibit 7 highlights two important phenomena; first that the pace of growth in the number of 'households' has been outpacing the growth in population in the state of Colorado. This has many demographic causes, but the net effect is to increase the per capita housing demand in the state. Second, we see that growth in the number of housing units roughly tracks the growth in the

Regional economics and demographics matter.

Population and employment booms and busts periodically impact Colorado.

number of households, except during the extended aftermath of a construction booms, e.g., from 1982 to 1992, and 2002 to 2008. The gap between households and housing units exhibits surprising endurance over time and may represent an excess stock of unsold homes (suggesting that house prices will stagnate or fall), or the extensive second-home market found in several Colorado counties.

Exhibit 7 Colorado Population, Households, and Household Units, 1980 to 2008
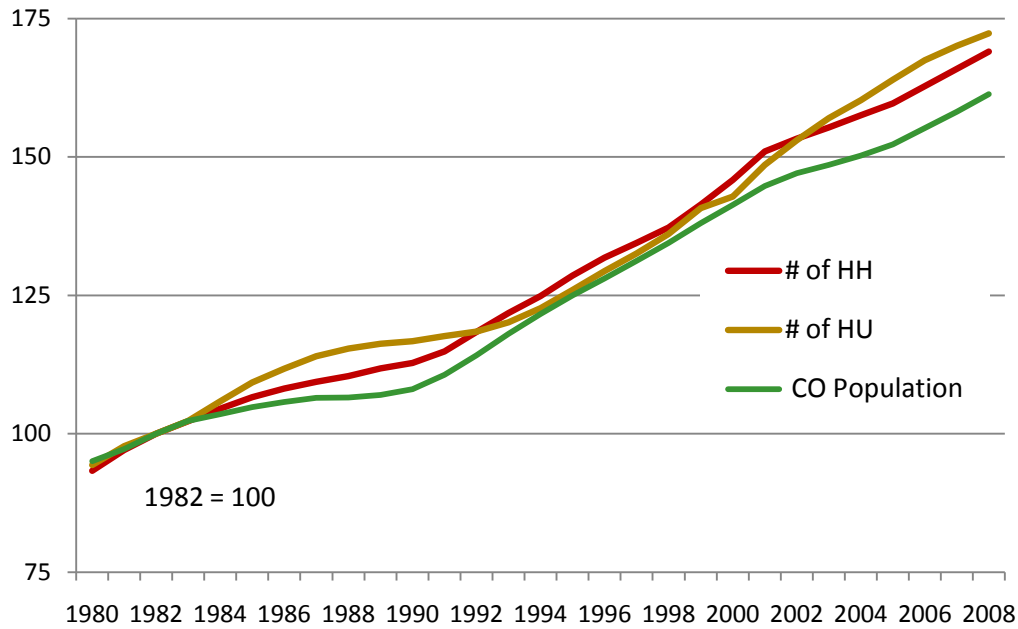
Source: U.S. Census Bureau, Everitt Real Estate Center

Exhibit 8 confirms that the rate of population growth beginning in 1990 in the state of Colorado has been far greater than the rate of population growth in the nation as a whole. More people demand more homes – however, since they also work, this also suggests a greater increase in non-residential property demand although not in the same proportion. For the U.S. and Colorado, there is also the trend for total employment to increase more rapidly than the population.

## Exhibit 8 Colorado vs. U.S., Population and Employment, 1980 to 2008
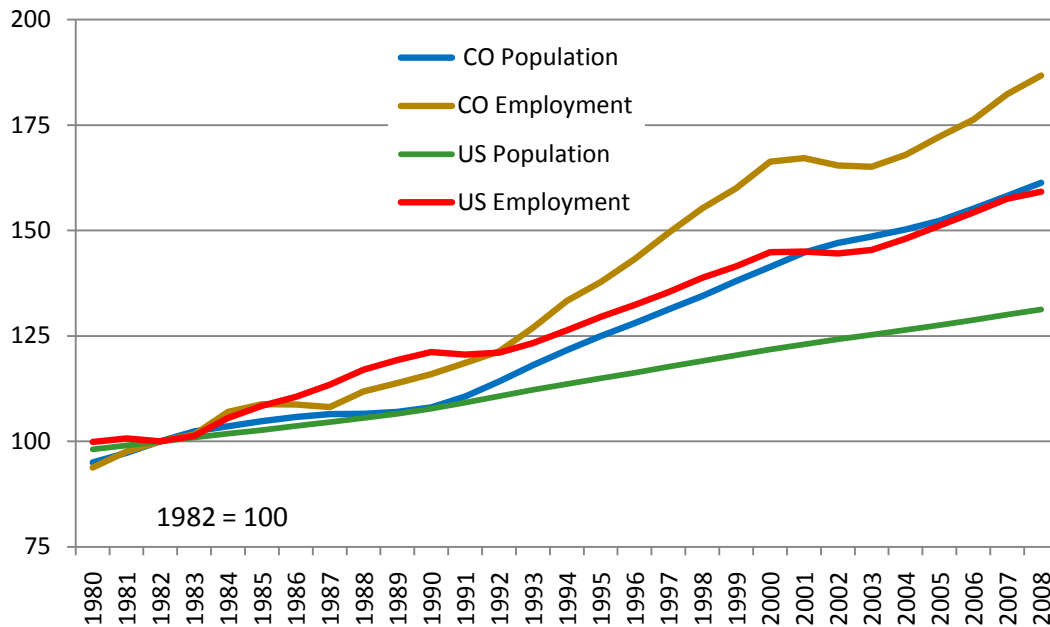
Source: U.S. Census Bureau, Bureau of Labor Statistics, Everitt Real Estate Centers

If it were the case that demand for housing and demand for workspace both increased proportionally with an increase in total employment, this has no implications for analysis of the Gallagher amendment. However, as we see below, this has not been the case. In real terms the amount of private non-residential real property per worker nationwide has been almost stagnant, while the amount of residential real property per worker has risen by over 20 percent. This suggests that population and employment growth nationwide has led to a shift in the division of total real property between residential and non-residential and that the relatively faster population and employment growth in Colorado have led to a greater skewing of the property base towards residential property. From an economic standpoint this is understandable; productivity per worker has increased over this span. As incomes rise, consumers will maximize utility by buying larger homes. It does not necessarily hold that it will also maximize profitability for firms to increase the size of the average worker's office as he or she becomes more productive, indeed it could be the opposite.

Productivity of residential and non-residential assets is not uniform across geographies and time periods. Exhibit 9 clearly shows similar productivity gains from 1982 to 1992, but as the housing boom accelerated in the mid- to late-1990s, previous similarities dissipated. Thus, non-residential assets maintained a continual range of assets per worker while residential increased approximately 20% by 2008 compared to 1982 levels.

Exhibit 9 National Fixed Assets per Worker
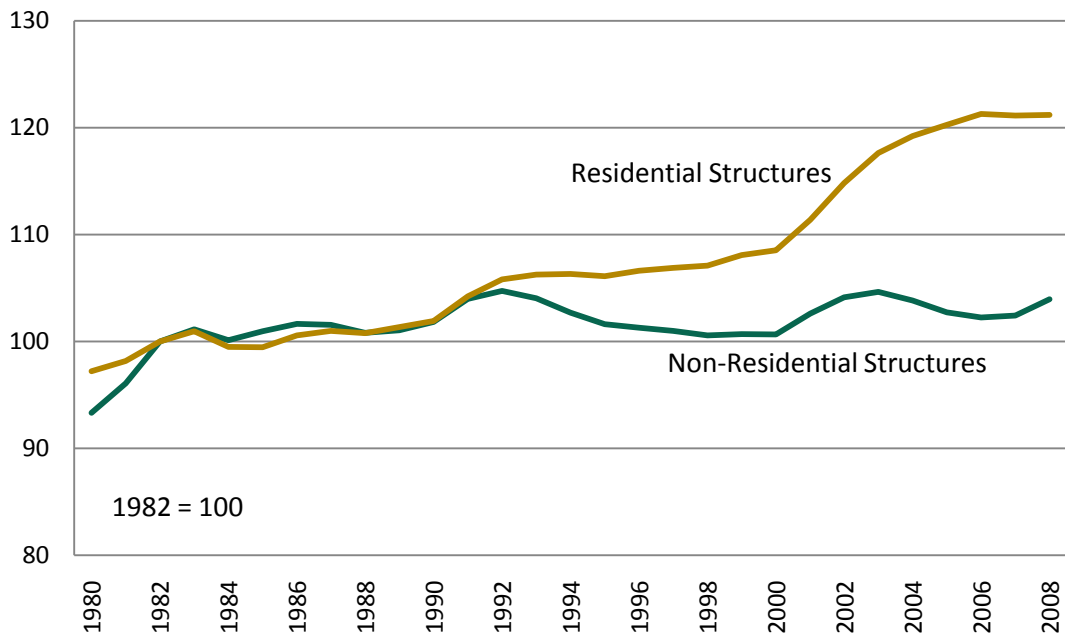
Source: Bureau of Economic Analysis, Everitt Real Estate Center

The disparity between residential and non-residential productivity leads us to expect a fair amount of variation across cities and states in the percentage of non-residential real property because of local variation in the industry structure of the economic base. However, the economic base of a region is not necessarily static over time. To illustrate this we use the concept of the 'Location Quotient' or LQ, which measures the prevalence of a specific industry (as defined by SIC or

NAICS[9]) in a region relative to the national average. The LQ is calculated by dividing the percentage of total employment in a region by a specific industry by the percentage of total employment in the US by the same industry. For example, if Colorado has 4% of its labor force employed in agriculture compared to a national average of 1% the agriculture LQ for Colorado is 4.

Exhibit 10 shows the distribution of LQs for all Colorado counties in 1982, whereas Exhibit 11 shows the distributions of LQs in 2000. The first obvious change is the mining sector's LQ, decreasing from 1982 to 2000. Based on statistical analysis, other significant changes occurred in the Farm, Manufacturing, Transportation, Wholesale, Retail, and State Government sectors (see Appendix 3 exhibit for statistical support).

Exhibit 10 Distribution of LQs by Counties, 1982
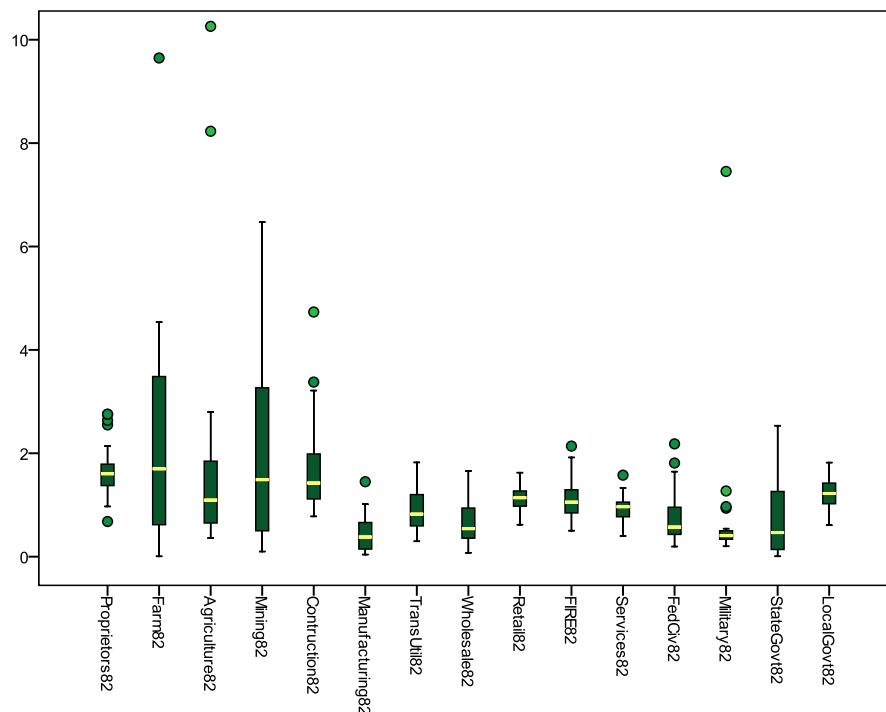
Source: Bureau of Economic Analysis, Everitt Real Estate Center

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[9] For more information see http://www.census.gov/epcd/www/naicstab.htm [December 10, 2009]

Exhibit 11 Distribution of LQs by Counties, 2000
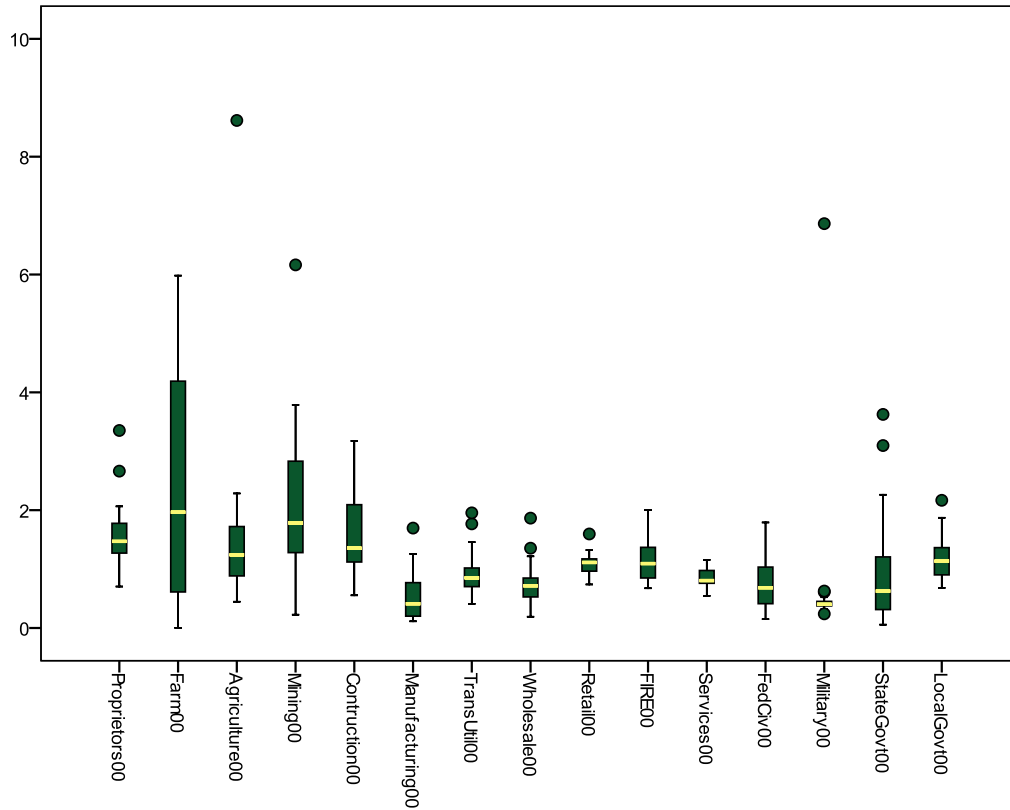
Source: Bureau of Economic Analysis, Everitt Real Estate Center

Exhibit 12 shows the time trends in LQs between 1982 and 2000. The 'constant' is roughly the equivalent of the 1982 Colorado LQ. The 'coefficient' refers to the estimated annual change in the LQ over that span, the standard error (SE) and the T-statistic refer to the reliability of that estimate given the year-on-year white noise, and the P-value is the estimated probability that the LQ did not change between 1982 and 2000.

Exhibit 12 Testing Colorado's Location Quotients 1982 to 2000

1982 - 2000		Colorado LQs			
	Constant	Coefficient	SE	T-statistic	P-value
AGRICULTURE	1.003736	-0.00109	0.001901	-0.57	0.574
MINING	2.386814	-0.04647	0.001787	-26.01	**0.000**
CONSTRUCTION	1.140824	0.00249	0.006974	0.36	0.726
MANUFACTURING	0.658562	-0.0001	0.000551	-0.19	0.853
TRANSPORTATION	1.066922	0.003408	0.000705	4.83	**0.000**
WHOLESALE	0.922151	-0.0002	0.000693	-0.29	0.779
RETAIL	1.021477	0.000586	0.000552	1.06	0.303
FINANCE	1.235942	-0.0033	0.003130	-1.05	0.306
SERVICES	1.035702	0.000353	0.001048	0.34	0.741
FEDERAL,	1.179241	-0.0025	0.001861	-1.34	0.196
MILITARY	1.380665	-0.01189	0.001672	-7.11	**0.000**

The common convention is to take a probability of change of less than 5% or 10% to be insufficient evidence that a change has, in fact, occurred. In such a case it might just as easily be the case that what looks like a structural shift in the economic base is just noise.   So we can consider ourselves relatively certain only that the prevalence of the 'mining' sector (which includes oil & gas) in Colorado had greatly diminished between 1982 and 2000. Also significant are a decrease in Military employment and an increase in transportation employment. A large fall in the prevalence of the 'mining' sector can, in fact, be expected to have a large impact on the relative proportions of residential and non-residential property in Colorado because the mining sector requires more real property per worker than almost any other sector.

This, however, is only half the story. Between 1982 and 2000 most of Colorado's location quotients did not change enough as to be indistinguishable from the year-on-year noise. However, the LQ measures only the relative importance of that sector in Colorado compared to the national average. What we see, in fact, is that the national averages have changed a great deal.

The 'coefficient' in Exhibit 13 refers to the annual trend in the percentage of the U.S. labor force employed in each standard industrial classification (SIC) industry. The SEs, T-statistics and P-values have the same implications as before. Of the SIC industries, the only one which did not display a noticeable upward or downward trend from 1969 to 2000 was wholesale trade. As an example, the coefficient of -0.0034 for the manufacturing sector indicates that over a ten-year span the percentage of US workers employed by the manufacturing sector declines by approximately 3.4 percentage points. No change in the Colorado LQ simply means that Colorado has been tracking national trends closely. Nationwide we had experience drops in the relative importance of agriculture, mining, manufacturing and transportation combined with increases in the relative importance of construction, finance, retail and other services. Since the sectors on the decline tend to use more real property per worker than the sectors on the rise, we can expect a decrease nationally in the ratio of non-residential property to residential property.

Exhibit 13 Testing U.S. Employment Trends, 1969 to 2000

National Trend 1969 - 2000				
	Coefficient	SE	T-statistic	P-value
AGRICULTURE	0.0002165	5.03E-06	43.04	0.000
MINING	-0.0001285	3.75E-05	-3.43	0.002
CONSTRUCTION	0.0001792	3.89E-05	4.61	0.000
MANUFACTURING	-0.0034261	8.03E-05	-42.69	0.000
TRANSPORTATION	-0.0001443	2.53E-05	-5.71	0.000

National Trend 1969 - 2000				
	Coefficient	SE	T-statistic	P-value
WHOLESALE	-0.0000285	3.11E-05	-0.92	0.367
RETAIL	0.0005617	3.78E-05	14.87	0.000
FINANCE	0.0002264	5.47E-05	4.14	0.000
SERVICES	0.0046322	8.46E-05	54.73	0.000
FEDERAL,	-0.0006261	4.11E-05	-15.22	0.000
MILITARY	-0.0004511	1.27E-05	-35.49	0.000

Source: Bureau of Economic Analysis, Everitt Real Estate Center

An examination of Colorado's economy since 2001, when the government statisticians switched from categorizing industries using SIC codes to using the more precise North American Industry Classification System (NAICS) codes, there has also been a noticeable shift in the economic base of Colorado relative to the U.S. and in relative employment intensities for the nation as a whole. Note that even over a short time span, more of Colorado's LQs have changed than have not. In particular mining has rebounded while construction, information and real estate have fallen. Since mining is so 'capital-intensive' in the sense that it requires a great deal of property per worker, this suggests that we might expect to see a rise in the ratio of non-residential to residential property.   And in fact despite the nationwide house price inflation over this period (since much of the declines during the recession do not show up in 2008 data), we do see a slight rise in the proportion of non-residential property in Colorado.

Exhibit 14 Testing Colorado LQs, 2001 to 2008

2001 -2008	Colorado LQs				
	Constant	Coefficient	SE	T-stat	P-value
Forestry	0.616	0.012	0.002	5.440	0.002
Mining	1.569	0.091	0.008	12.050	0.000
Utilities	0.782	0.009	0.003	3.300	0.016
Construction	1.332	-0.019	0.004	-4.320	0.005
Manufacturing	0.637	-0.003	0.001	-4.400	0.005
Wholesale	0.972	-0.005	0.001	-3.750	0.010
Retail	0.954	0.001	0.001	1.050	0.332
Transportation	0.877	-0.008	0.001	-8.410	0.000
Information	1.597	-0.033	0.005	-6.160	0.001
Finance	1.129	0.002	0.002	1.040	0.337
Real Estate	1.402	-0.021	0.001	-15.380	0.000
Professional	1.263	0.004	0.001	2.520	0.045
Management	0.653	0.037	0.006	6.260	0.001
Administration	1.012	-0.002	0.003	-0.750	0.482
Education	0.738	0.011	0.002	4.620	0.004
Health	0.816	-0.001	0.001	-1.890	0.108
Recreation	1.287	-0.003	0.002	-1.270	0.250
Restaurants & Lodging	1.138	-0.006	0.001	-6.910	0.000
Other Services	0.915	-0.005	0.002	-2.630	0.039
Federal, Civilian	1.082	-0.005	0.002	-1.960	0.097
Military	1.152	0.010	0.003	2.820	0.030

Source: Bureau of Labor Statistics, Everitt Real Estate Center (red=no significant change)

We see a similar story when looking at the trends in national employment since 2001. Even over so short a span most industries have had a significant upward

or downward trend, they do not remain the same over time. In particular we notice strong upward trends in health and real estate helping to balance the continued decline in manufacturing.

When examining the effects of a law such as the Gallagher amendment it is important to bear in mind that even over relatively short periods of time the relative importance of different industries in Colorado will change and with it demand for non-residential property relative to residential property. If we, as a state, make decisions based on the assumptions that the structure of the economy will remain static in the future, most likely we will err.

Exhibit 15 Testing U.S. Employment Shifts, 2001 to 2008

National Trends 2001 - 2008				
	Coefficient	SE	T-stat	P-value
Forestry	-3.2E-05	0.0000168	-1.92	0.103
Mining	0.000208	0.0000575	3.61	0.011
Utilities	-7.4E-05	9.79E-06	-7.59	0.000
Construction	0.00069	0.0002727	2.53	0.045
Manufacturing	-0.00321	0.0002946	-10.9	0.000
Wholesale	-0.00013	0.000048	-2.78	0.032
Retail	-0.00091	0.0001085	-8.43	0.000
Transportation	6.75E-05	0.0000681	0.99	0.360
Information	-0.00064	0.0000882	-7.24	0.000
Finance	0.000269	0.0000881	3.05	0.022
Real Estate	0.00182	0.0000951	19.13	0.000
Professional	0.000865	0.0001392	6.22	0.001
Management	0.000017	0.0000186	0.91	0.396
Administration	0.000501	0.000103	4.86	0.003
Education	0.000388	0.0000467	8.31	0.000

National Trends 2001 - 2008				
	Coefficient	SE	T-stat	P-value
Health	0.001177	0.0001643	7.16	0.000
Recreation	0.000241	0.0000353	6.81	0.000
Restaurants & Lodging	0.000356	0.0000872	4.08	0.007
Other Services	9.84E-05	0.0001398	0.7	0.508
Federal, Civilian	-0.0002	0.0000476	-4.12	0.006
Military	-0.00022	0.0000369	-5.88	0.001

Source: Bureau of Labor Statistics, Everitt Real Estate Center

Employment concentrations at the county level can change over time thus altering demand for residential and non-residential properties. For example, Exhibit 16 is a scattergraph of finance, insurance, and real estate (FIRE) LQs for all Colorado counties in 1982 and 2000. Each dot represents a county and if the dot is close to the 45 degree dotted line, then there is no change in FIRE LQs from 1982 to 2000. There are, however, several counties that significantly moved above and below the diagonal line. Counties above the diagonal show decreased FIRE employment concentration and counties below the diagonal increased FIRE employment over the 18 years.

Significant changes in employment affect property distributions and values. If a county increased FIRE employment from 1982 to 2000, then the stock and value of office buildings within that county most likely increased too. If a county experienced decreased FIRE employment, then demand for office buildings declined potentially reducing values.

Exhibit 16 Colorado Counties FIRE LQs, 1982 to 2000
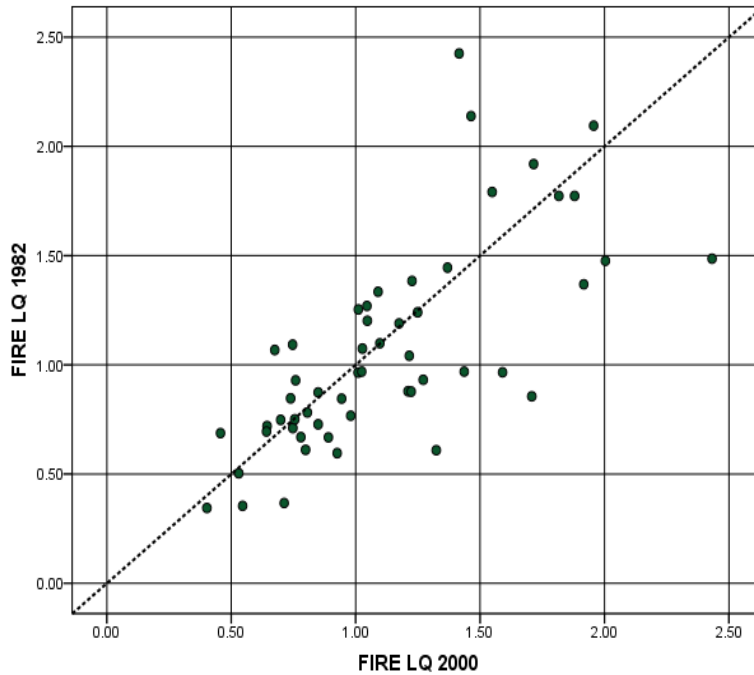
Source: Bureau of Economic Analysis, Everitt Real Estate Center

Colorado Property Changes

Changes in the economic base and demographics change real estate demand.
If population increases within a fixed location such as a county, demand for
housing increases. If housing demand increases at a greater rate than new
supply of housing, home prices rise. Alternatively, if housing demand decreases
relative to new supply, or even if the stock of housing is constant, then home
prices decline. The current housing crisis, complete with delinquencies and
foreclosures, partially explains why Colorado's homeownership rates have
declined from 72.1% during the 1st quarter 2005 to 67.4% as of the 3rd quarter
2009.[10] Adverse impacts to the housing market eventually result in declining

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[10] Source: U.S. Census Bureau

residential values, potentially impacting county level actual and assessed valuations.

The distributions of actual values by property classifications change over time. Exhibit 17 compares distributions of actual values by property classifications for 1994 and 2008. The exhibit highlights that residential accounts for more than the 45% assessment target rate mandated by Gallagher, and that all other categories of taxable property have declined in relative terms aside from residential property and natural resources. The dominant class of property within non-residential property is Commercial property, accounting for more than 50% of the total in 1994 and 2008 despite its decline relative to natural resources.

Exhibit 17 Distributions of Actual Appraised Values, 1994 vs. 2008
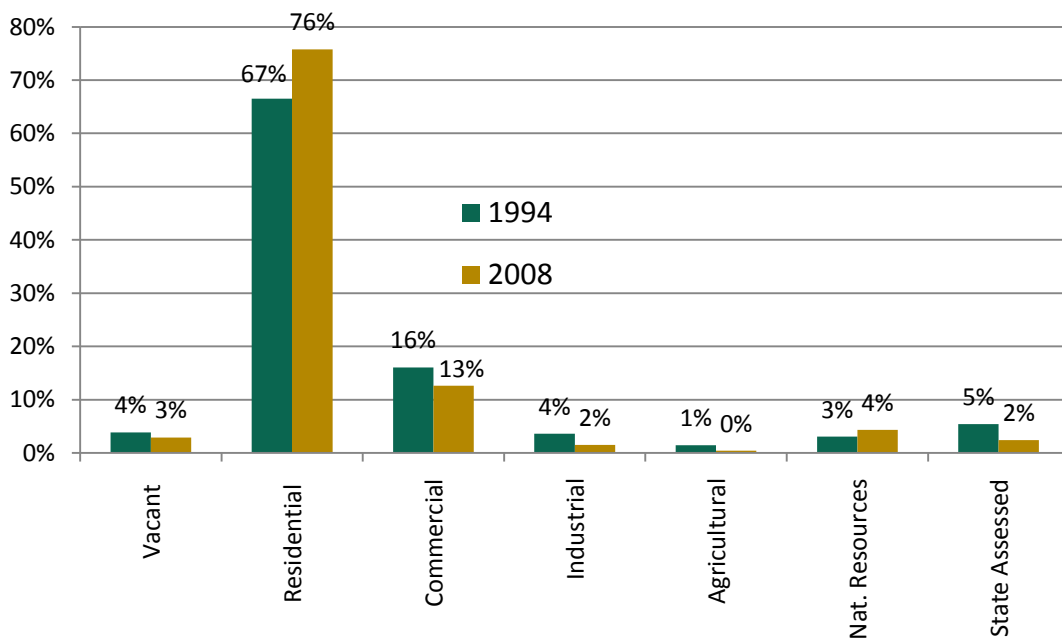
Source: Department of Local Affairs, Everitt Real Estate Center

Although the assessment ratios of different types of non-residential property are all fixed at 29%, the average tax rates across the state will vary based on the distribution of classes between counties (see Exhibit 18). It is notable that the average tax rates on all classes of non-residential property are higher than the

average tax rate on residential property despite the fact that most residential property is located in relatively high tax counties.

Exhibit 18 Average Tax Rate as a % of Actual Value, 1994 vs. 2008
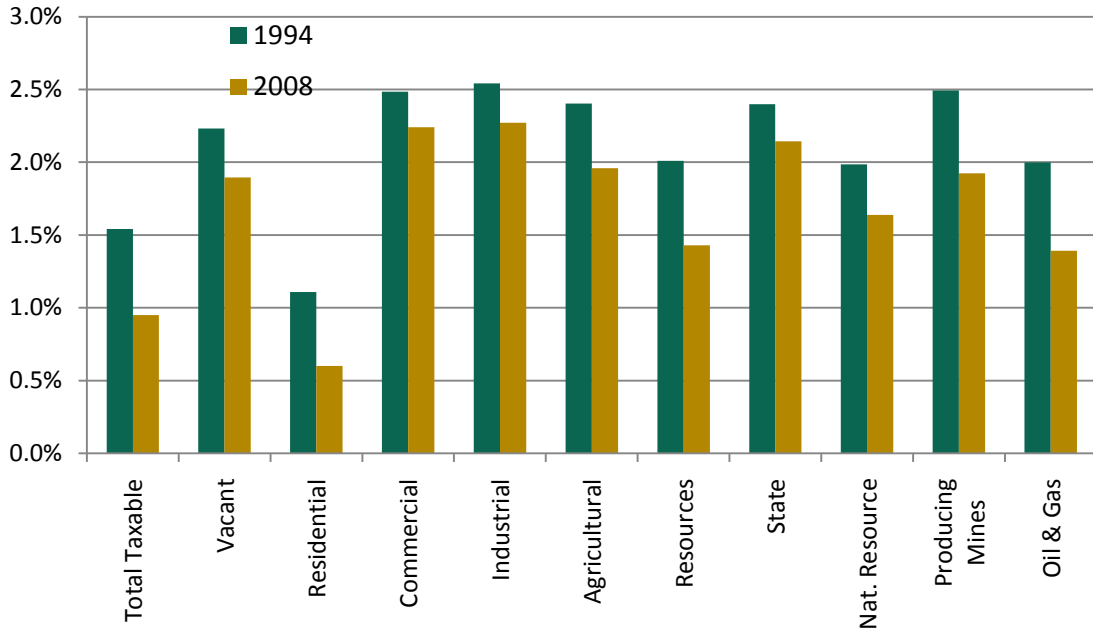
Source: Department of Local Affairs, Everitt Real Estate Center

Empirical analysis shows changes in the proportions of property classifications from 1994 to 2008. Exhibit 19 illustrates the results of a paired T-test comparing the proportions of property classifications in 1994 to 2008 for all Colorado counties. A paired T-test subtracts the 1994 proportion of value distribution by each property classification and for each county from the 2008 proportion. For example, if vacant land for County A was 5.5% in 2008 and 3.5% in 1994, then the difference is 2.0%. The difference for each county is first calculated and then the mean of all the differences for all counties is calculated. If there is no significant change, the mean of the differences will not be significantly different from zero. The exhibit shows that only the oil and gas property classification shows no differences from 1994 to 2008, while all others are different at the 10% level.

Exhibit 19 Changes in Property Classifications, 1994 to 2008

Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Vacant 2008 - Vacant 1994	-.0126340	.0509606	.0064204	-.0254682	.0002003	-1.968	62	**.054**
Pair 2	Residential 2008 - Residential 1994	.1023650	.0958406	.0120748	.0782279	.1265022	8.478	62	**.000**
Pair 3	Commercial 2008 - Commercial 1994	-.0154693	.0641298	.0080796	-.0316201	.0006816	-1.915	62	**.060**
Pair 4	Industrial 2008 - Industrial 1994	-.0105955	.0292420	.0037441	-.0180847	-.0031063	-2.830	60	**.006**
Pair 5	Agricultural 2008 - Agricultural 1994	-.0465062	.0604095	.0076109	-.0617201	-.0312922	-6.110	62	**.000**
Pair 6	Nat. Resource 2008 - Nat. Resource 1994	-.0073201	.0148076	.0018806	-.0110805	-.0035597	-3.892	61	**.000**
Pair 7	Producing Mines 2008 - Producing Mines 1994	.0304986	.0785420	.0248372	-.0256870	.0866841	1.228	9	.251
Pair 8	State 2008 - State 1994	-.0325917	.0709066	.0089334	-.0504493	-.0147341	-3.648	62	**.001**

Source: Department of Local Affairs, Everitt Real Estate Center

In summary, this section empirical tested and confirmed significant changes in the economic base of Colorado counties, changes in the distribution of property values by classification, and provided an example of change of employment within counties. How do these facts relate to the Gallagher amendment and intended or unintended consequences?

How do changes in economic base sectors and property distributions relate to the Gallagher amendment?

In the next section we review industry data comparing commercial real estate properties in Colorado to various other Western states. One of the unintended consequences of the Gallagher amendment's shift of property taxes to non-residential properties regardless of the change in value or stock of residential properties is the comparative advantages of the state.

COMMERCIAL REAL ESTATE

Commercial real estate has experienced several boom and bust cycles in Colorado's history, especially during the 1980s and most recently since the recession started in the 4th quarter of 2007. It was once mentioned that the state bird for Colorado was the construction crane as developers built new commercial properties throughout the Front Range, mountain towns, and Western Slopes in various cities and towns.

> **Economics and commercial real estate matter.**
>
> **Has the Gallagher amendment, coupled with TABOR and Amendment 23, negatively impacted non-residential properties in Colorado over the last two decades, specifically commercial real estate properties?**

Today, vacancy rates are rising, a number of retail properties transition to empty buildings as retail bankruptcies increase, and demand for industrial warehouses contracts with the timid passage of inventory movements and international trade. The current economic recession, credit crises, and negative employment growth have combined to create a perfect storm that result in decreases in occupancies and rents, reduced sale transactions, increasing capitalization rates, and precipitous values declines. Regardless of building occupancies and lags between revised assessments and actual market values, property taxes remain a constant cost of doing business.

In order to determine if Colorado's competiveness and comparative advantages are impacted by property taxes, commercial real estate data for Colorado and other Western states was collected from three industry-recognized real estate information providers. The three data providers included:

1. National Council of Real Estate Investment Fiduciaries (NCREIF)[11] – a database of institutional investor commercial real estate property holdings, primarily public and private pension funds, insurance companies.

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[11] See http://www.ncreif.com for more information.

2. Building Owners and Management Association International (BOMA)[12] – an industry association of building owners that survey and collect detailed revenue and expense data on actual buildings throughout the U.S.

3. CoStar Group, Inc. (CoStar) – a commercial real estate information provider with over 1,400 researchers collecting and analyzing data for the top U.S. real estate markets. CoStar's database includes extensive assessor and tax data for commercial properties.

NCREIF analysis

We collected income and expenses data at the state level for office, retail, apartments, and industrial for Colorado, Arizona, Utah, New Mexico, Oregon, Washington, and California. Data was collected quarterly from the 4th quarter 2000 through 3rd quarter 2009. There were slight variances in the sample size and market values by state and over time, but the data is statistically sufficient for comparative analysis.

Specific data collected included total expenses, total income, total square footage, and total taxes. Based on the original data collected, two new variables were calculated: (1) total taxes as percent of total expenses, and (2) total taxes as percent of total income. In order to smooth out the time series and to account for different quarters within a year when taxes were paid, we used moving summations of the previous four-quarters to smooth the data.

Exhibit 20 is a box plot that shows the distribution of total taxes as a percent of total income for office properties for the selected Western states. The bottom and top of the box plot are the 25% and 75% percentile frequencies with the mean the horizontal line in the box plot. Outliers are shown as circles above and below the box plot. The exhibit clearly shows Colorado and Arizona at the high range for the sample states.

[12] See http://www.boma.org for more information.

Exhibit 20 Property Taxes as % Total Income, Office Properties
Rolling four quarters, 2000Q4 to 2009Q3
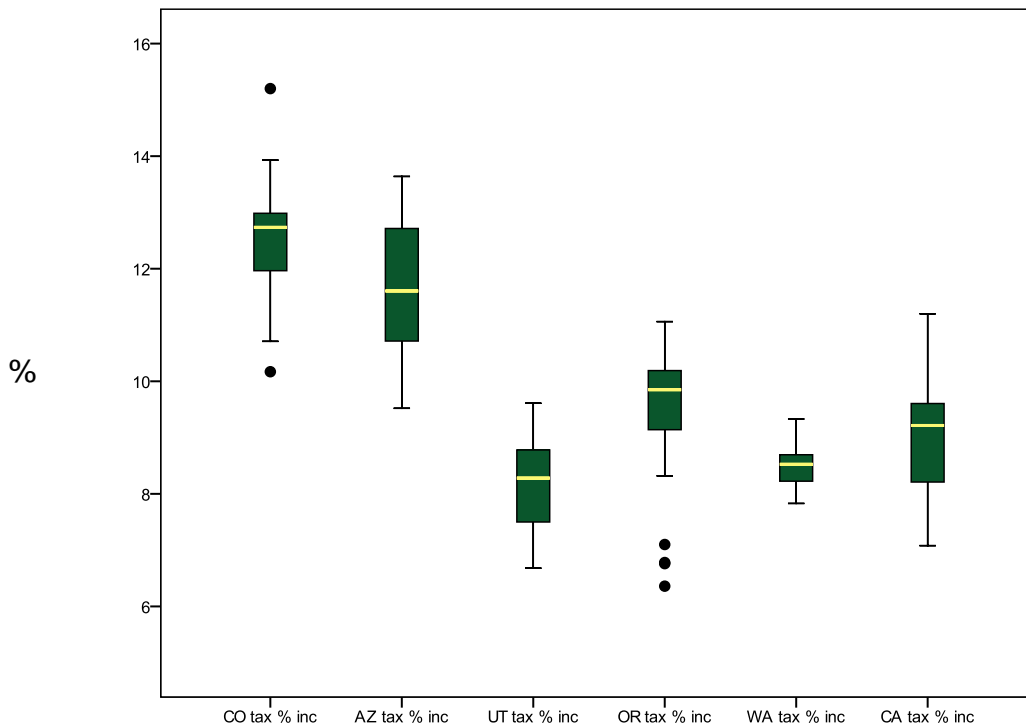
Source: NCREIF, Everitt Real Estate Center

Exhibit 21 compares total tax as a percent of total expenses for the six Western states. Once again, Colorado and Arizona rank are higher than the other states at 29.8% and 31.2% respectively. At 23%, Utah ranks lowest in total tax as a percent of total expenses.

Exhibit 21 NCREIF Office Analysis – Tax % Total Expenses, 2000Q4 to 2009Q3
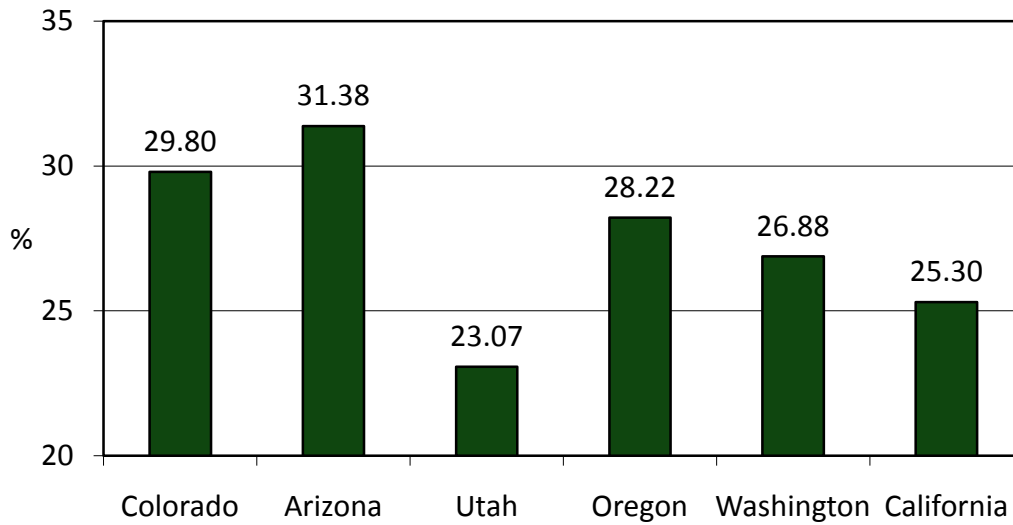
Source: NCREIF, Everitt Real Estate Center

A negative trend for Colorado is a recent trend in rising share of total taxes as a percent of total income, particularly since the beginning of the recession during the 4th quarter 2007. Explaining the recent rise is a most likely a combination of lower incomes and higher taxes.

Exhibit 22 Total Tax % Total Income, NCREIF Office, 2000Q4 to 2009Q3
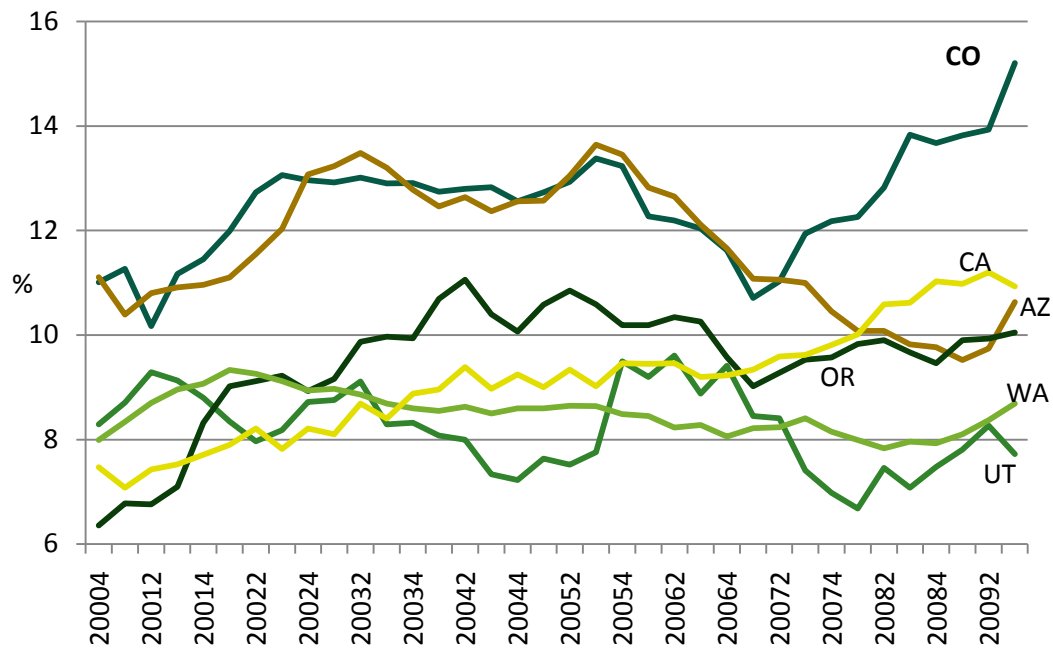
Source: NCREIF, Everitt Real Estate Center

Exhibit 23 compares Colorado's total tax as a percent of total expenses and total tax as a percent of total income to the other Western states. Arizona and Colorado rank 1st and 2nd respectively for total tax as percent of total expenses, but Colorado ranks 1st in the total tax as a percent of income similar to office properties.

Exhibit 23 NCREIF Retail Properties Tax % total income and tax % total expenses 2000Q4 to 2009Q3
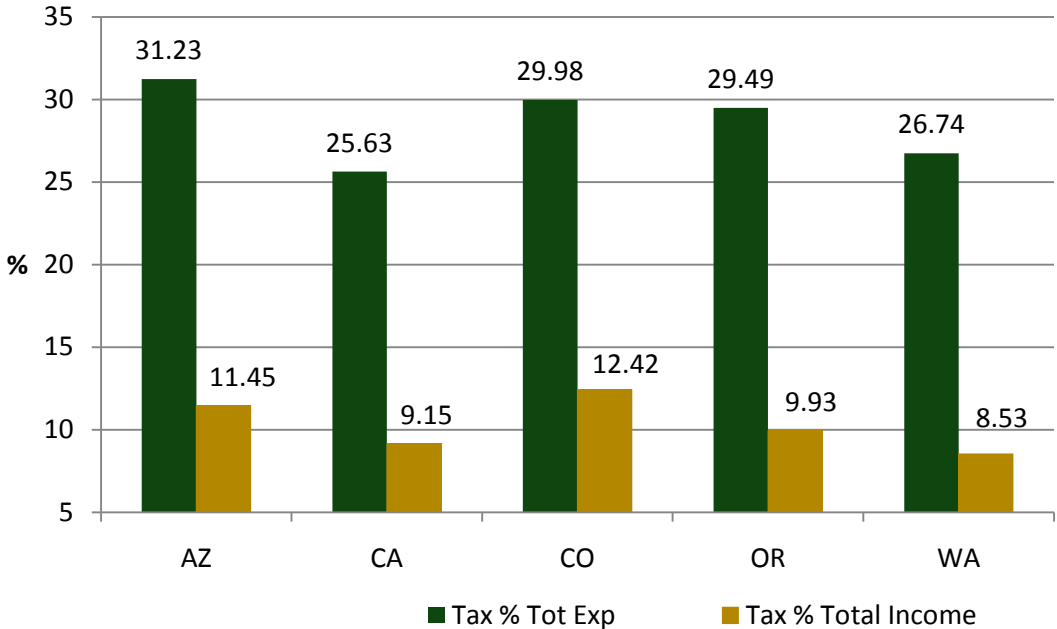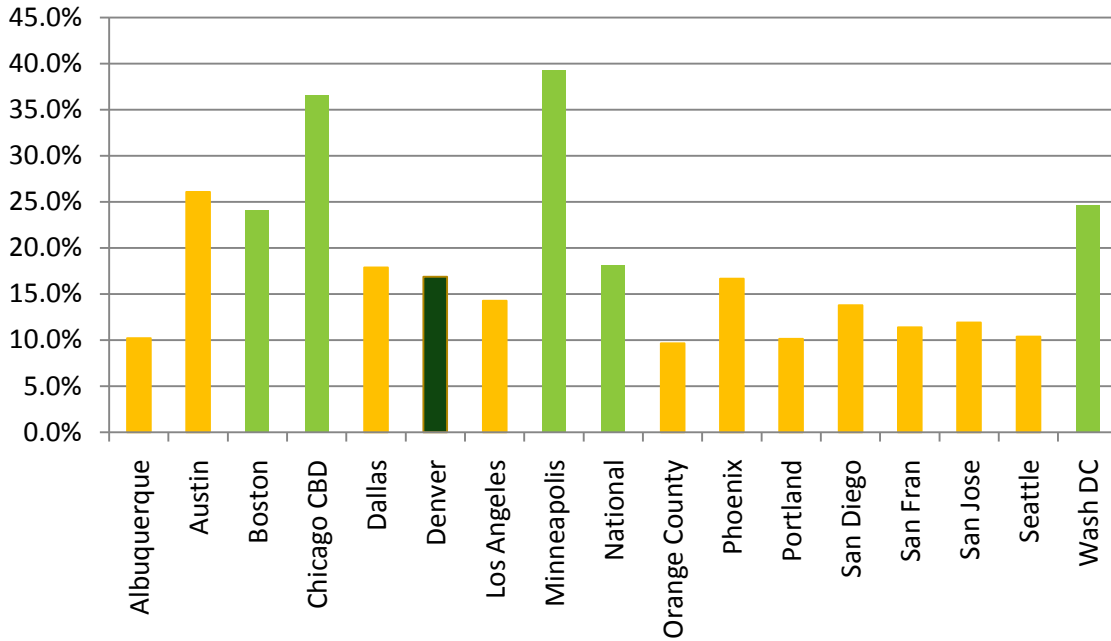

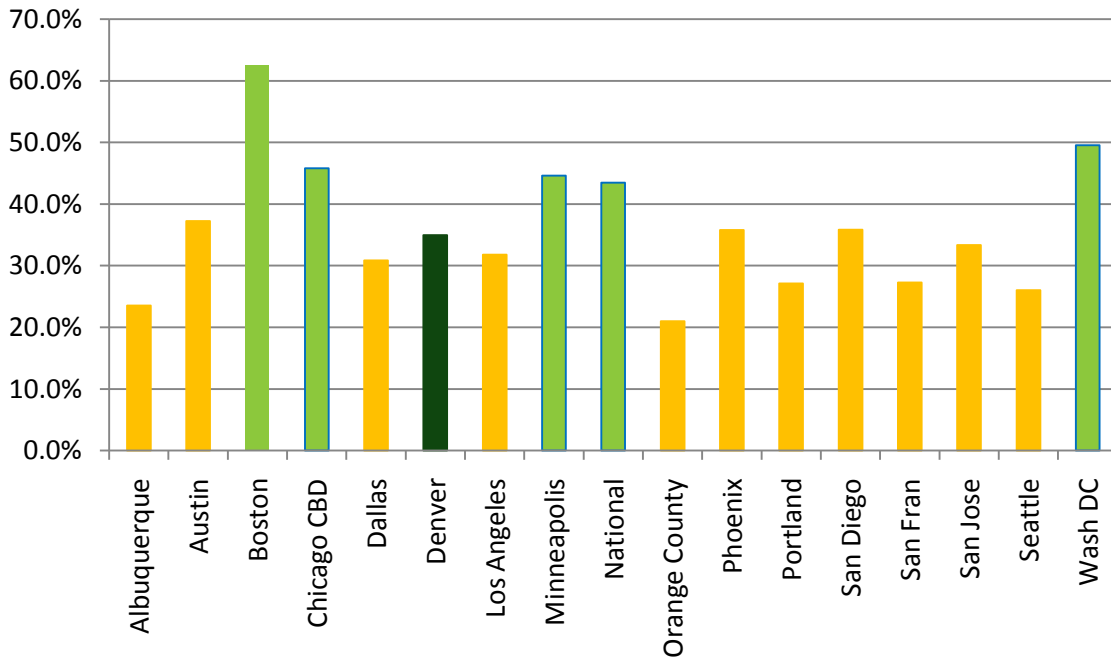Source: NCREIF, Everitt Real Estate Center

BOMA Analysis

BOMA's original 2008 data is for individual cities and included average size of office property, private properties (no public buildings included), detailed information on average income and expenses per square foot, and a separate category on real estate taxes per square foot. Similar to NCREIF calculations, we produced tax as a percent of total expenses and tax as a percent of income. Exhibit 24 and Exhibit 25 compare Denver (proxy for Colorado) to other Western cities and several non-Western cities. Denver is higher than most other Western cities, with the exception of Austin, Dallas, and Phoenix depending on the benchmark.

Exhibit 24 BOMA Office Analysis – Real estate tax % of rent

Source: BOMA, Everitt Real Estate Center

Exhibit 25 BOMA Office Analysis – Real estate tax % of total operating and fixed expenses

Source: BOMA, Everitt Real Estate Center

CoStar Analysis

A sample of 25 office buildings for Arizona, Colorado, New Mexico, and Utah were randomly selected based on the following criteria:

- Total square footage between 25,000 square feet to 50,000 square feet
- Tax and assessment data for year 2008 available
- Occupancy less than 100%

The decision rules were flexible to include geographic, age, and class of building diversity. Colorado cities included Boulder, Colorado Springs, Grand Junction, Broomfield, Loveland, Fort Collins, Denver, Aurora, Englewood, Castle Rock, and Highlands Ranch. Exhibit 26 includes descriptives such as minimum, maximum, mean, and standard deviations for tax per square foot (sq ft), tax per square foot to asking rent ratio, value per square foot, and total taxes as a percent of total value by each state..

Exhibit 26 CoStar Office Sample Descriptives

State		N	Minimum	Maximum	Mean	Std. Deviation
AZ	Tax per sq ft	25	$.33	$7.73	$2.7076	$1.52468
	Tax / Asking ratio	25	2.36	45.63	15.7456	8.55357
	Value sq ft	25	$20.17	$405.53	$163.6280	$84.82311
	Tax % value	25	.94	2.45	1.6952	.44361
	Valid N (listwise)	25				
CO	Tax per sq ft	25	$.80	$6.93	$2.5780	$1.56216
	Tax / Asking ratio	25	4.56	47.37	17.3184	10.87183
	Value sq ft	25	$43.84	$244.42	$117.1380	$54.42101
	Tax % value	25	.53	3.96	2.1956	.67381
	Valid N (listwise)	25				
NM	Tax per sq ft	25	$.30	$3.82	$1.2288	$.70237
	Tax / Asking ratio	25	2.38	23.96	8.1416	4.55464
	Value sq ft	25	$23.98	$195.64	$81.9484	$42.60064
	Tax % value	25	.15	2.91	1.5772	.41045
	Valid N (listwise)	25				
UT	Tax per sq ft	25	$.45	$3.21	$1.2852	$.64822
	Tax / Asking ratio	25	2.98	26.00	8.3848	4.95501
	Value sq ft	25	$31.76	$299.48	$126.5720	$56.59549
	Tax % value	25	.28	1.94	1.0700	.35405
	Valid N (listwise)	25				

Source: CoStar, Everitt Real Estate Center

Exhibit 27 uses box plots by each state to compare tax per square foot distributions for office properties. Arizona and Colorado rank significantly higher than New Mexico and Utah.

Exhibit 27 Colorado vs. Western States Office Properties – Tax per sq ft distributions
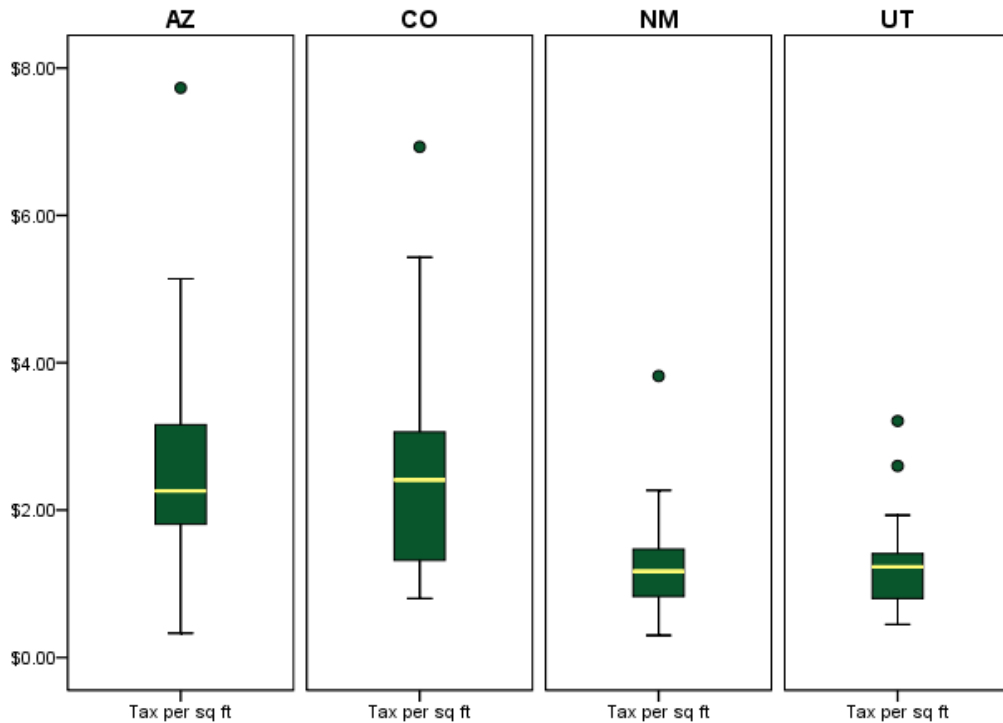
Source: CoStar, Everitt Real Estate Center

A unique calculation available with CoStar is the ratio of tax per square foot to asking rents. Since all 100 office properties in the random sample included properties less than 100% occupancy, asking rents reflect current market conditions regardless of taxes per square foot. Colorado's variance is clearly wider than Arizona and the distribution higher than New Mexico and Utah (see Exhibit 28). This indirectly confirms the NCREIF trend of increasing ratios of total taxes as a percentage of total income trends.

Exhibit 28 Colorado vs. Western States – Tax per sq ft to asking rent ratio distributions
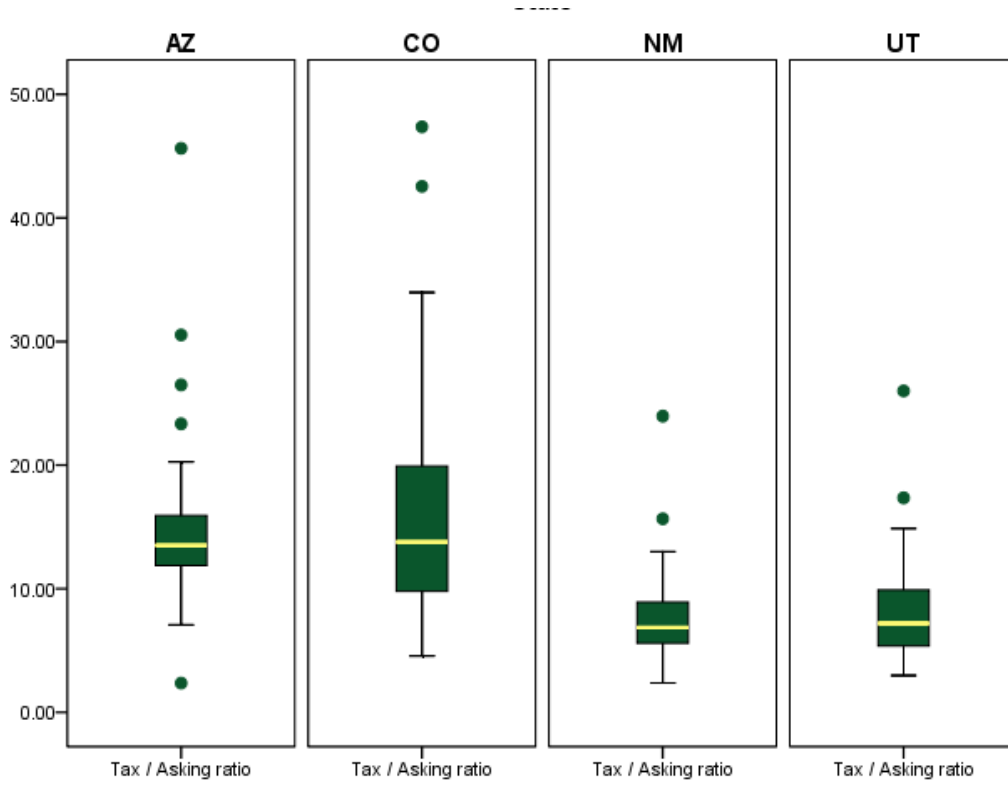
Source: CoStar, Everitt Real Estate Center

CONCLUSIONS

This research is still evolving; we recommend that readers review the material carefully and assess the long term economic and property changes in the State of Colorado. Residential and non-residential value distributions have changed; so

> **Further research and dialogue matter.**
>
> **This discussion paper is a first step in the evolution of empirical data analysis supporting educated worldviews on the complicated issues surrounding the Gallagher amendment.**

to Colorado's economic base that drives demand and ultimately value for properties in the state.

The 'fairness' debate on residential versus non-residential property taxes is not unique to Colorado. According to the Canadian Federation of Independent Businesses, businesses in British Columbia pay 2.97 more than residential in average municipal taxes and in Nova Scotia 3.42 times more in Halifax[13]. The State of California continues to review a '*split roll*' tax policy[14] where commercial property is taxed higher than residential property. Until the economy recovers on a sustained path, most state and local governments will search out revenue streams to augment declining tax collections – residential and non-residential properties are large targets. The Everitt Real Estate Center has collected additional data on industrial and apartment properties located in Western states; this data has not been thoroughly analyzed at this point in time. We welcome comments and suggestions for further research. Please forward to:

Steven Laposa, PhD, Director
Everitt Real Estate Center
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[13] See http://www.cfib-fcei.ca/english/index.html for more information [December 9, 2009]

[14] See www.cbpa.com/documents/**split_roll**_final_report.pdf [December 9, 2009]

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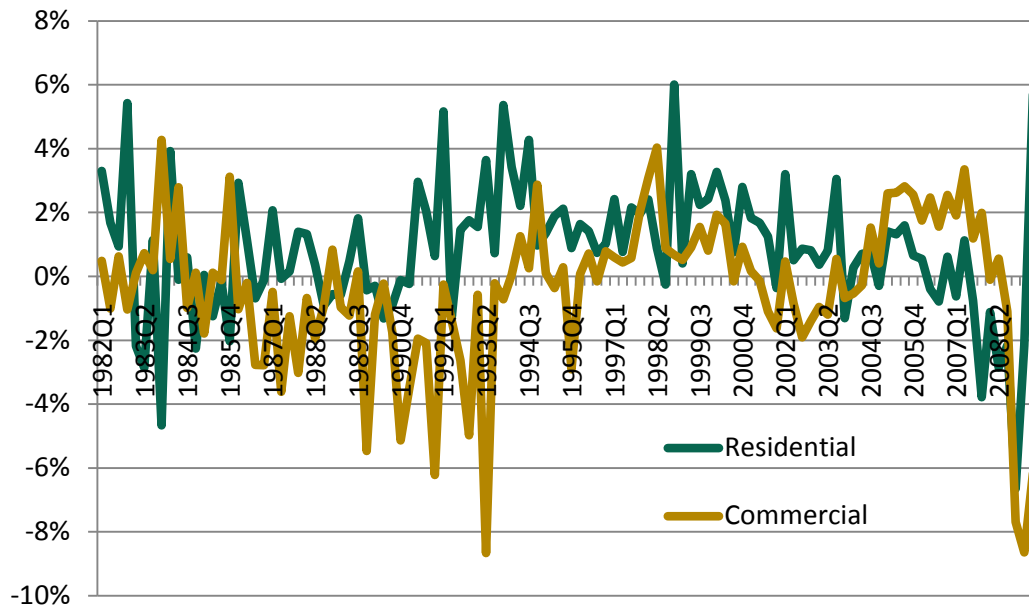
Appendix Material
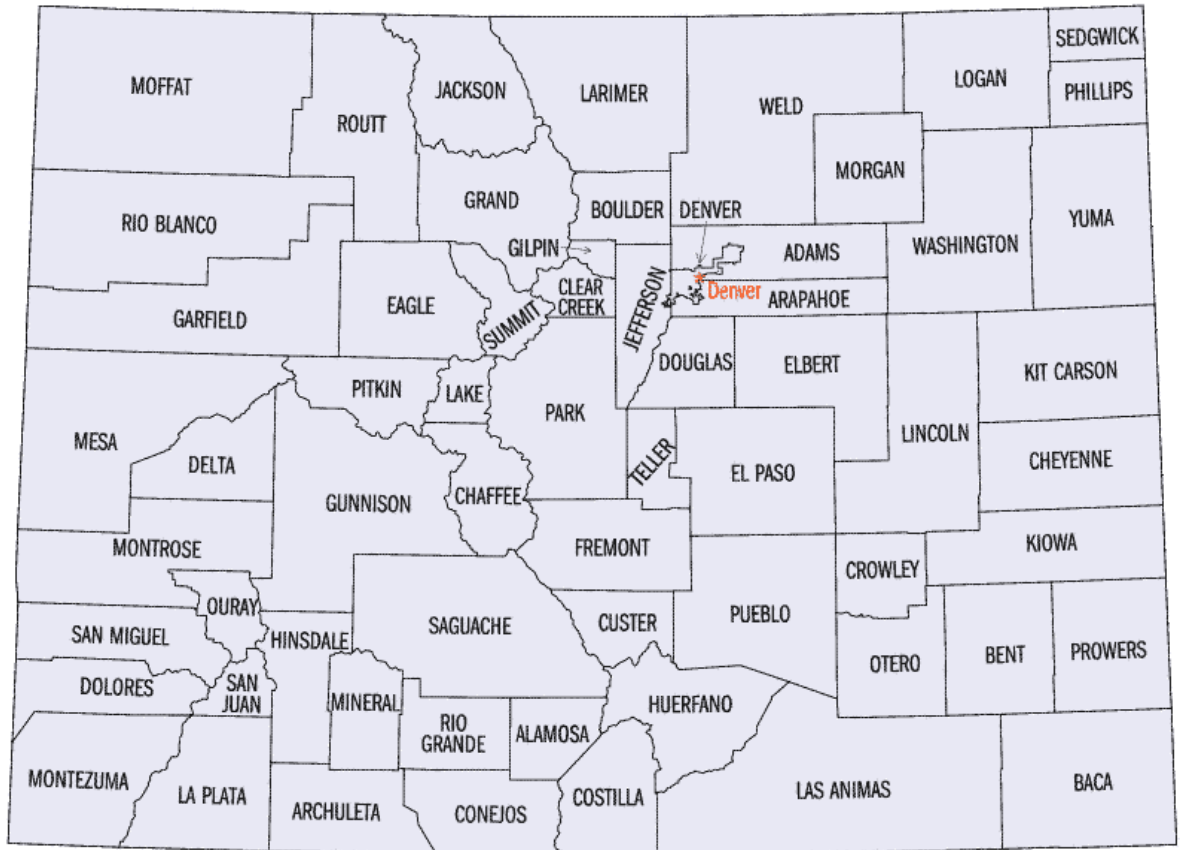
Appendix 1 Population levels vs. Commercial % vs. Residential %, Colorado counties 2008
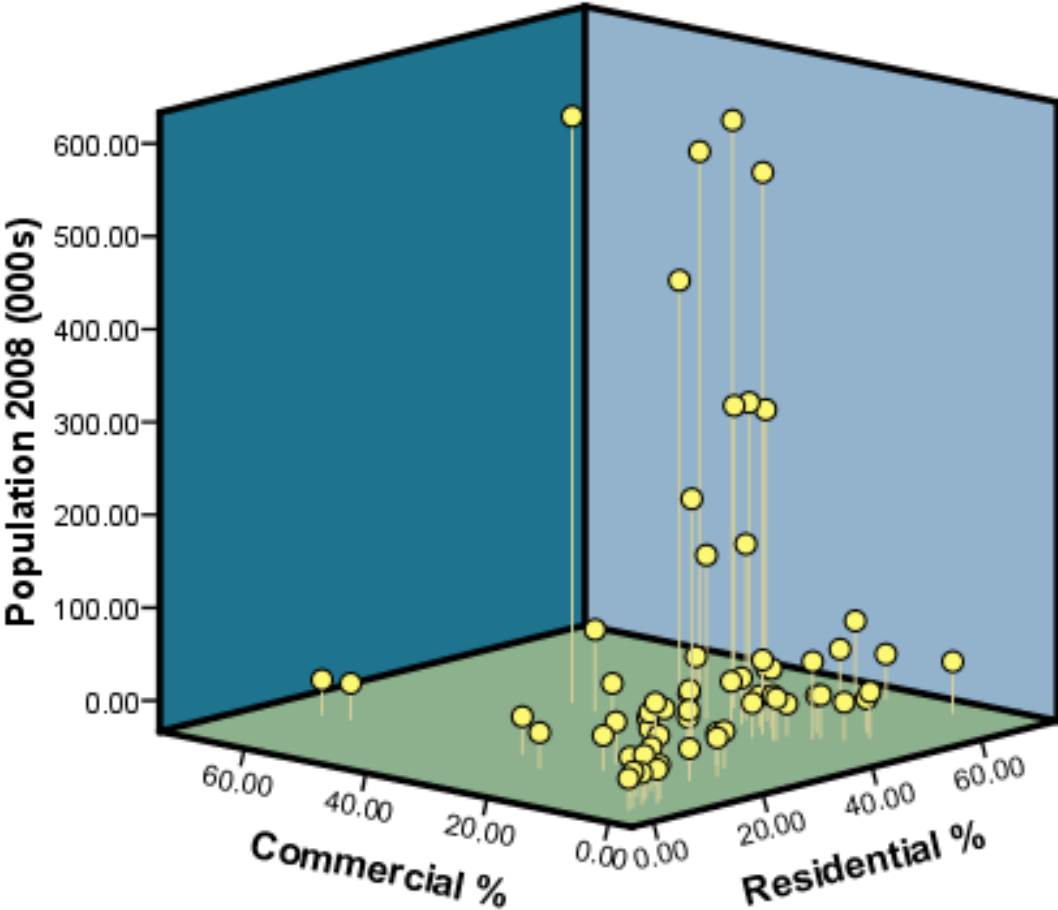
Appendix 2 State of Colorado

Residential vs. Commercial Price Growth Rates (Yr/Yr), 1982Q1 to 2009Q2

Source: NCREIF, Moody's Economy.com, Everitt Real Estate Center

Appendix 3 Paired T Test, Colorado LQs 1982 to 2000

Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Proprietors82 - Proprietors00	.07667	.51919	.06541	-.05408	.20743	1.172	62	.246
Pair 2	Farm82 - Farm00	-.90731	2.63686	.34329	-1.59448	-.22014	-2.643	58	.011
Pair 3	Agriculture82 - Agriculture00	.08641	1.53476	.26321	-.44909	.62191	.328	33	.745
Pair 4	Mining82 - Mining00	.69741	6.98850	1.27592	-1.91214	3.30696	.547	29	.589
Pair 5	Contruction82 - Contruction00	-.00241	.76794	.10262	-.20807	.20324	-.024	55	.981
Pair 6	Manufacturing82 - Manufacturing00	-.06962	.19722	.02735	-.12452	-.01471	-2.546	51	.014
Pair 7	TransUtil82 - TransUtil00	.10529	.36087	.05004	.00482	.20575	2.104	51	.040
Pair 8	Wholesale82 - Wholesale00	-.08054	.26754	.03945	-.15999	-.00109	-2.042	45	.047
Pair 9	Retail82 - Retail00	.09697	.36687	.04622	.00458	.18937	2.098	62	.040
Pair 10	FIRE82 - FIRE00	-.06055	.34405	.04726	-.15538	.03429	-1.281	52	.206
Pair 11	Services82 - Services00	-.01102	.31643	.04155	-.09422	.07218	-.265	57	.792
Pair 12	FedCiv82 - FedCiv00	-.10299	.49196	.06405	-.23119	.02522	-1.608	58	.113
Pair 13	Military82 - Military00	.04757	.19199	.02637	-.00535	.10049	1.804	52	.077
Pair 14	StateGovt82 - StateGovt00	-.39355	.71234	.12794	-.65483	-.13226	-3.076	30	.004
Pair 15	LocalGovt82 - LocalGovt00	-.01446	.51171	.07237	-.15989	.13097	-.200	49	.842

Source: Bureau of Economic Analysis, Everitt Real Estate Center