Assessment Limits

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Abstract

This paper discusses assessment limits which are a type tax expenditure that limits or places a cap on the amount a property can increase in assessed value for taxation each year. This paper describes assessment limits and some of the policy issues associated with this approach to providing property tax relief. That is followed by a discussion of methods used for estimating the foregone revenue resulting from such limits. Next, case studies of two counties in New Mexico are presented, San Juan County and Los Alamos. Using property valuation data, the foregone revenue due to the assessment limit and its impact on assessment uniformity and equity are estimated.

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Assessment Limits

Introduction

Assessment limits provide property tax relief to individual property owners by limiting the growth in assessed values to some specific percentage, e.g., assessments cannot grow more than 5 percent annually. Properties that experience growth in market values that exceed that percentage do not pay property taxes on the increase in value above the specified percentage. For example, if one residential property increases in market value by 7 percent and another by 10 percent and the assessment limit is 5 percent the first property does not pay property taxes on the 2 percent increase in value above the limit and the other property does not pay property taxes on the 5 percent increase in market value above the assessment limit.

Sexton (2009, Table 5.1) identifies 19 states and the District of Columbia as having some form of limitation on the growth in assessed values. According to Sexton (2009, Table 5.1) fifteen of the 19 states have statewide, uniform assessment limits, 3 states (Connecticut, Georgia, and Illinois) offer assessment limits as local option, and New York mandates assessment limits in New York City and Nassau County. Ten states enacted assessment limits as constitutional amendments: Arkansas, California, Colorado, Florida, Michigan, Oklahoma, Oregon, South Carolina, and Texas.

Assessment limits vary by state ranging from 2 percent in California to 15 percent in Minnesota. The assessment limits in other states include: 3 percent in Florida, Oregon, and New Mexico; 15 percent over 5 years in South Carolina; 5 percent in Arkansas, Michigan, and Oklahoma; a range of 6 to 8 percent in New York City; 7 percent in Cook County, IL; 10 percent in Arizona, District of Columbia, Maryland, and Texas. Georgia provides a local option of an assessment freeze, and 19 of 159 counties have frozen residential values. Unlike the other states, Iowa applies its 4 percent assessment limit to an aggregate base differentiated by classes of properties (residential, agricultural, and commercial) rather than to individual parcels. Colorado also applies an aggregate cap by limiting the residential part of the tax base to 45 percent of the total (Haveman and Sexton 2008, 8, 12–15 and Sexton, 2009, Table 5.1).

Some states apply assessment limitations to all property or to homestead property only. Maryland, Florida, Texas, and New Mexico limit assessments on homesteads only (Sjoquist and Pandey 2001, 2). Only three states have assessment limits without revenue or rate limitations (Connecticut, Maryland, and South Carolina). Nine states have levy limits and tax rate limits, one state has levy limits only, and seven have only rate limits (Anderson 2006, 688–689).

Most limits on assessed values include a provision called the acquisition value feature that recalibrates the assessed value to reflect market value when the property changes ownership. Of the 18 states that limit assessment value increases of individual parcels, only 3 states, Arizona, Minnesota, and Oregon, do not have the acquisition value feature (Haveman and Sexton 2008, 14).

Motivations for Assessment Limitations

In a 30-year review of assessment limitations and their effects on the property tax base, Haveman and Sexton (2008) explain the popularity of assessment limits as a response to rapid and large increases in property values that result in an unexpected rise in residents' property tax bills. Limits on assessments are perceived as a direct response to rising values of properties by providing predictability and stability in residents' tax bills. In his exploration of motivations behind property tax limits, Anderson (2006) argues that assessment limits provide insurance to taxpayers. The insurance benefit is eliminating the risk of an unexpected higher property tax bill in the future. If the government wants to receive the same amount of revenue after enacting the assessment limit as before, however, then it will increase the tax rate. A homeowner whose house appreciates less than the cap, and some slower growing properties under the cap, will pay more taxes with the assessment limit and increased tax rate policies than without this type of property tax relief mechanism. The homeowner's increased tax bill with the policies compared to without the policies is the cost of insuring against an unexpectedly high tax bill the next year if the house appreciates drastically. For example, if a homeowner did not benefit from the cap in 2010 and then benefited from the cap in 2011, the cost she pays of benefiting from the cap in 2011 is the increased tax she paid in 2010 due to the higher tax rate (Anderson 2006, 690).

The campaign to pass the Save Our Homes amendment that limits assessments in Florida centered its arguments on helping the elderly and low income residents who could not afford to stay in their homes because of unanticipated large tax increases as a result of property value increases (University of Florida 2007, 12–13). The University of Florida (2007) study's model of the percentage of yes votes on the amendment suggest that senior and minority voters viewed the amendment as benefiting wealthy homeowners. Furthermore, the percentage of yes votes increased 0.06 percent for every 1.0 percent increase in the county's average home value (page 15).

Interactions with Rate and Revenue Limits

Anderson (2006) explains why some states apply assessment limits in addition to revenue limits (of 29 states with revenue limits, 10 states also have assessment limits). Limiting total revenue without an assessment limit effectively restricts increases in individual property tax bills, but only if property values uniformly rise. If some property values appreciate dramatically and others do not, the former will still have unexpectedly higher tax bills (page 687).

Binding assessment limits (when the threshold is lower than the increase in market value) narrow the tax base and will either result in decreased revenue or an increase in tax rates (Sjoquist and Pandey 2001, 2). If a government wants to maintain a constant level of revenue after assessment limits are imposed it increases the tax rate, which results in larger tax bills for properties that appreciate less than the cap than they would otherwise pay without the cap program. Thus, rate limits often accompany assessment limits (in 16 out of the 20 states, including District of Columbia, with assessment limits).

Often governments do increase the tax rate in order to maintain the same level of revenue after an assessment limit is imposed. For example, Cook County increased the tax rate by 4.5 percent and the school districts increased their rates by 5 percent in 2005 in order to maintain revenues under the 7 percent assessment limit. Dye et al (2006a) and (2006b) explain that some homeowners benefiting from the assessment limit, i.e. those whose properties' assessed values were reduced because the market value appreciated more than allowed by the limit, still paid higher tax bills than they would without the limit because of the increased tax rates.

Under policies that limit the assessment increase but not the rate, the tax burden shifts to properties ineligible for the assessment limit and from eligible properties with rapid growth to eligible properties with slow growth. Nonresidential properties and residential properties with appreciations less than the assessment limit could end up paying a higher property tax than if the assessment limit did not exist (Haveman and Sexton 2008, 22). To bar local governments from increasing the tax rate on the narrower tax base due to the 2 percent limit on assessment value increase, California limits the tax rate to 1 percent.

Preston and Ichniowski (1991) estimated the impact of various state limitations on the growth of property tax revenues. The study showed that combining assessment limits with rate limits constrained growth in property tax revenue much more effectively than rate limits alone or a property levy growth limit.[1] The authors used municipality data from 1977 to 1986.

Though Preston and Ichniowski's (1991) data were old, all authors reviewed here argued the efficacy of enacting both an assessment limit and tax rate limit on limiting the government's capacity to raise revenue from property taxes as well as on preventing unexpected large increases in property tax bills (Haveman and Sexton 2008; Anderson 2006; Dye et al 2006a and 2006b; and Sjoquist and Pandey 2001). The discussion suggests that when considering limits on property taxation, interested parties should consider implications for shifts in the tax burden among taxpayers, local government spending, and intergovernmental aid. The next two sections review literature that explores the implications of assessment limits on horizontal equity (i.e. similar properties pay similar taxes) and on homeowner mobility.

Impact of the Acquisition Value Feature on Equity

Resetting values to reflect market values when a property is sold, or the acquisition value feature of assessment limit programs, undermines uniformity and, therefore, horizontal equity. Assessment uniformity results in property tax systems where similar tax burdens are produced for similar properties. Under a system with the acquisition value feature, long-time owners are taxed less than new owners of properties with similar market value (Haveman and Sexton 2008, 26). O'Sullivan, Sexton, and Sheffrin (1995a) calculate that the new owner of a Los Angeles property sold in 1991 would pay 5 times more in property taxes than an owner of an identical property who has lived there since 1975, the base assessment value that increases 2 percent each year as a result of Proposition 13. Sheffrin and Sexton (1998) found that one third of the

[1] Not enough municipalities imposed assessment limits without rate limits to estimate the impact of assessment limits alone.

homeowners in Los Angeles County paid property taxes in 1996 on the 1975 assessed value increased by two percent annually, and 3.9 percent of homeowners paid taxes based on the market value in 1996. The ratio of actual market value of a property to its assessed value (disparity ratio) in 1996 for property purchased in 1975 was 3.84.

Another study by the same authors explores the type of homeowners that benefit most from the acquisition value feature of California's assessment limit program. In a study of four counties (Alameda, Los Angeles, San Bernardino, and San Mateo) O'Sullivan, Sexton, and Sheffrin (1994) find that California's acquisition value system benefited lower income homeowners and elderly on average relative to other homeowners because they tended to move less often.

Impact of the Acquisition Value Feature on Mobility

The acquisition value feature creates a disincentive for people to move because property owners lose their tax break when they sell and buy a new place. The longer an owner stays, the larger his or her tax benefits. Property tax liabilities can increase drastically when the homeowner moves to another house, even if the resident moves to a home of equal or even lesser value. Faced with a large increase in property taxes, growing families may not move to a larger house putting pressure on the entry level housing market. Seniors may not downsize to a smaller house. Homeowners may not relocate for a job or deal with a long commute. The disincentive to move is called the lock-in effect (Sexton 2008).

The movement for Proposition 13 in 1978 centered on the problem that senior citizens felt forced to sell their homes because they could not afford the rising property rates. By the mid 1980s the problem had morphed into another: seniors could not downsize to smaller homes because they could not afford to lose their tax benefit and pay taxes on the market value of the new home. California passed Proposition 60 in 1986 that allowed homeowners 55 years and older to transfer the assessed value of their former home to a new home of equal or lesser value in the same county. This proposition allows use of this portability feature once in a lifetime. Proposition 90 in 1988 allowed senior homeowners to transfer the assessed value to a new home in a different county if the receiving county agrees (Sexton 2008).

Except for homeowners over the age of 55, the lock-in effect has a significantly negative effect on mobility in California. O'Sullivan, Sexton, and Sheffrin (1995b) estimate an 18 percent increase in the median length of residency using a mathematical model assuming a 3 percent tax rate and property appreciation of 6 percent. Wasi and White (2005) estimate that from 1970 to 2000 California homeowners increased their average length of stay by 0.66 years. Since California passed Proposition 60 allowing homeowners 55 and older to take their limited assessed value with them, Ferreira (2004) found that in 1990 55 year olds are 25 percent more likely to move than 54 year olds in California. Ferreira's (2004) study provides strong empirical evidence of a lock-in effect for those looking to downsize homes in California.

Studies in Florida and Georgia, however, did not find a significant lock-in effect (Sexton 2008). For example, unlike the studies of California, Sjoquist and Pandey (2001) found that the zero assessed value limit in Muscogee County, Georgia did not have a significant effect on mobility.

Sexton (2008) and (O'Sullivan et al 1995a) argue that acquisition value property taxes add another transaction cost to moving. It creates a loss in economic well-being from "suboptimal housing consumption, inefficient labor market outcomes, longer commutes with associated environmental and congestion costs, a reduction in the supply of smaller homes for young and old home buyers, and reduced incentives for households to vote with their feet, thereby impeding the efficient provision of local public goods" (Sexton 2008).

Estimating Foregone Revenue Resulting from Assessment Limits

This section reviews methods for estimating foregone revenue due to assessment limits; explaining in some detail methods used in Michigan and Florida to estimate the foregone revenue due to assessment limits. Next, this section reviews academic studies that measure foregone revenue due to assessment limits.

Michigan and Florida are two of the four states that estimate foregone property tax revenues as a result of assessment limitations. Michigan has one of the most comprehensive tax expenditure reports. In 2010, local governments in Michigan "spent" approximately $3.4 billion in property tax revenues because of assessment limits—the highest estimate of foregone revenues of the four states with such estimates. These estimates are produced annually by the Office of Revenue and Tax Analysis (ORTA) within the Tax Analysis Division of the Department of Revenue (Michigan 2009).

In Michigan, each taxing jurisdiction responsible for valuing property for tax purposes calculates two values for each property—the State Equalized Value (which is 50 percent of true cash value, or market value) and Taxable Value, which is the assessed value used to determine property tax bills. In 1994, the first year the assessment cap was in place, the state equalized value (SEV) equaled taxable value (TV). In each subsequent year, SEV is determined for each property based on the estimated market value of that property using computer assisted mass appraisal techniques with appropriate adjustments based on assessment/sales ratios for that community. Taxable Value is determined by applying the applicable assessment cap, which is 5 percent or the rate of inflation whichever is lower, to the assessments of individual properties.[2]

Each jurisdiction prepares a report for the state, which includes aggregate estimates of the SEV and TV for properties on their property tax rolls. Those reports are aggregated by county and then for the state. A statewide discrepancy between SEV and TV is determined and then an average statewide mileage rate is applied to that difference to produce the estimate of foregone revenues.[3]

Florida also estimates significant property tax losses as a result of assessment limits. Of particular interest here is the assessment limit approved by voters in 1992, popularly known as "Save Our Homes." Increases in assessed values for owner occupied residential homesteads are limited to 3 percent per year or the increase in the Consumer Price Index, which ever is lower.

[2] Phone interview with Economist Andrew Lockwood, a preparer of the Michigan's Tax Expenditure Report, at Michigan's Office of Revenue and Tax Analysis, February 24, 2011.

[3] *ibid*

After a change in ownership or other termination of the homestead the property is reassessed at just value, which is market value minus transaction costs.

As a result of Save Our Homes, there is an increasing divergence in the just value and the actual assessed value used for tax purposes. Just value, the base of the state property tax, is estimated annually to reflect changes in market values, while assessed value, the base of the local property tax, is limited by assessment limits imposed in 1992. Both of these estimates are made by the local taxing jurisdiction and then collected by the state government to annually estimate foregone property tax revenues by applying statutory property tax rates for each jurisdiction to the difference between assessed values and just values for each parcel.[4]

Table 1 summarizes the trends in just value, assessed value and taxable value (net of all exemptions) over the last 8 years. Assessed values, constrained by the 3 percent limit in the growth of assessed values, decreased as a share of just value from 2004 through 2006. While there was only a marginal change in the ratio in 2007, the ratio has grown every year since 2007, increasing from 62.7 percent to an estimated 89.4 percent in 2011. Haveman and Sexton (2008) explain that

> "Even assessment limits adopted in times of rising house values can contribute to taxpayer discontent as residential prices fall. By breaking the link between market values and assessments, these limits may result in assessed values that rise by a given percentage amount annually, even as owners observe a precipitous drop in their housing wealth." [p. 9]

Table 1: Florida Homestead Properties

Year	Just Value	Assessed Value	Taxable Value*	Assess/Just	Taxable/Just
		(In billions of dollars)			
2004	$ 675	$ 508	$ 398	75.2%	59.0%
2005	$ 822	$ 573	$ 460	69.7%	56.0%
2006	$ 1,067	$ 658	$ 543	61.7%	50.9%
2007	$ 1,166	$ 733	$ 613	62.9%	52.6%
2008	$ 1,082	$ 764	$ 546	70.7%	50.5%
2009	$ 881	$ 709	$ 494	80.4%	56.1%
2010	$ 751	$ 662	$ 453	88.2%	60.3%
2011 est.	$ 726	$ 649	$ 438	89.4%	60.3%

* Next of homestead and other exemptions.

Source: "Background Material," Florida's Revenue Estimating Conference; Ad Valorem Assessments, March 7, 2011, http://edr.state.fl.us/Content/conferences/advalorem/index.cfm

[4] Phone interview with Adam Shamy, Ad Valorem Tax Specialist at Florida's Office of Economic and Demographic Research, February 8, 2011.

Other Efforts to Estimate the Consequences of Assessment Limits

While not many states estimate the foregone property tax revenues that result from assessment limits in their tax expenditure reports, a few academic studies and state publications estimate the consequences of assessment limits in California, Minnesota, Florida, and Georgia. Haveman and Sexton (2008) review studies that estimate the impact of assessment limits on the tax base and on the amount of revenue collected. Some studies also discuss how tax rates can interact with assessment limits. Impacts of assessment limits depend on the level of the cap, appreciation in properties' market values, the longevity of the cap, and other issues specific to the law in each state. The University of Florida (2007) report details variables such as these that the authors considered when estimating effects of the assessment limit.

The University of Florida (2007) report argues that the impact of the "Save Our Homes" amendment on local property tax revenues depends on five variables. 1) "The size of the gap between the rate of appreciation and any binding assessment cap"—the larger the difference between market value and assessed value, the larger the homestead benefits from the assessment limit. Communities with constrained homesteads miss out on tax dollars whereas a community with homesteads appreciating less than the cap do not. 2) "The percentage of properties that are homesteaded in a community"—the amendment will likely affect local property tax revenues of communities with more homesteads than those with fewer homesteads. 3) "The frequency of sales "turnover" in the taxing jurisdiction"—assessed property values reset to market value when sold. 4) "New construction activity"—because of the acquisition value feature, buyers of new construction pay property taxes on the market value of the homestead. New construction would counteract the impact of assessment limits on the city or county's property tax revenue. 4) "The millage rate which is unconstrained by the amendment"—the amendment will affect local revenue less if the local entity increases the millage rate (University of Florida 2007, 18).

Studies estimate that the assessment limits erode the tax base, which means less property value is taxable, in California, Minnesota, Florida, and Georgia. In California, O'Sullivan, Sexton and Sheffrin (1995a) estimate the effects of Proposition 13 on the tax base and revenue by comparing assessed values to market values of properties that actually sold in 1992. The study found that the 2 percent assessment cap reduced the tax base by 44 percent that year, from $2.9 trillion to $1.6 trillion. Studies in Minnesota and Florida also report a shrinking of the tax base due to assessment limits. The Minnesota Revenue Department (2006) reported a tax base loss of $32.5 billion in 2006 due to the Limited Market Value law, which amounted to an 8 percent reduction in the base. In Florida, Hawkins (2006) finds that the tax base loss due to Florida's Save Our Homes 3 percent assessment limit exceeded $160 billion in 2004. The University of Florida (2007) reports a tax base loss of $398 billion in 2006, more than 17 percent of the market value of all property that year (page 36). Before the real estate market downturn, these studies showed assessment limits constrained the property value from which government could tax.

For Muscogee County, Georgia, Sjoquist and Pandey (2001) estimated the effect of an assessment freeze on the tax base of residential properties. They compared local assessed values subject to the cap with state assessed values, which were 100 percent of market value. While only homestead properties were eligible to have their assessments frozen, Sjoquist and Pandey estimated that 95 percent of the difference between the total gross state and local property tax

base was accounted for by differences in the residential property tax base. For 1997, they estimated the difference between the state and local residential property tax base as 15.7 percent (page 8). The freeze had differential impacts across residential properties depending, in part, on housing turnover rates and the differential growth in housing values. In 1997, 54 percent of parcels in Muscogee County had ratios of local to state assessed values of 80 percent or more. The assessment freeze severely restricted the tax base in Muscogee County in the 1990s (Sjoquist and Pandey 2001, 8–9).

Two studies in Florida estimated foregone revenue due to the assessment limit. Hawkins (2006) estimated $1.82 billion (or 10.6 percent) in forgone property tax revenue for counties and schools in 2004 in Florida (pages 8–9). The University of Florida (2007) estimated nearly $8 billion in foregone tax revenue in 2006, assuming a tax rate of 2 percent (page 36).

Assessment limits may not reduce revenue from property taxes if the jurisdiction raises the property tax rate to compensate for limited growth in assessments. Raising the tax rate to maintain the level of revenue in response to an assessment limit shifts the tax burden to other properties. For example, the Minnesota Revenue Department (2006) report found the increased tax rate in response to the assessment limit reduced the tax liability an average of $273 per parcel for 22 percent of residential properties, but increased tax liability an average of $96 per parcel for 78 percent of residential properties (page 12). Similarly Cook County, increased tax rates to compensate for the decline in tax base from the 7 percent assessment limit in 2005, as did the school district, city of Chicago, and its suburbs (Dye et al (2006a) and (2006b). In response to the possibility of local governments increasing the tax rate, 15 of the 19 states with assessment limits also place an upper bound on the property tax rate (Sexton, 2009, 127).

Haveman and Sexton (2008) explain that a low assessment limit coupled with a tax rate limit does not ensure the distribution of the tax base will remain unchanged because of the acquisition value feature. The acquisition value feature refers to properties eligible for the assessment limit that reset to market value when the property changes ownership. The assessment limit reapplies in the years following new ownership. Since residential properties exchange ownership more often than businesses, the acquisition value system shifts the tax burden towards residential property (page 22). Brunori (2010) points out that a change in ownership of corporate property can transpire through a merger or acquisition of stock, which is not tracked as a sale of individual parcels of real estate by the government and thus, property is never reassessed to catch up with market values (Brunori 2010, 525).

Case Study for Estimating Consequences of Assessment Limits

The purpose of this section is to present a framework to analyze the consequences of assessment limits for selected jurisdictions that do not currently produce tax expenditure budgets for property taxes. The first issue to address in a tax expenditure budget for property taxes is to estimate the revenues foregone because of a tax relief mechanism, in this case assessment limits. This is a straight forward exercise based on the difference between estimated market value and assessed value for tax purposes under the assessment limit, assuming there is no change in the tax rate as a result of the assessment limit.

A tax expenditure budget treats these foregone revenues as expenditures so a number of other consequences need to be identified and discussed. For example, in the case of assessment limits, there is an issue of their impact on the uniformity, and fairness, of the property tax. Standard metrics to evaluate the uniformity and fairness of the property tax can be employed to analyze the impact of assessment limits on uniformity and fairness.

In addition, there may be distributional consequences that follow from assessment limits since they will not impact all homeowners the same. For example, to the extent the data allows, one might estimate the shift in property tax burden from those that benefit from the assessment cap to those that do not, both within the preferred property class, as well as across property classes. This should be done on an equal yield basis of comparing the distribution of tax liabilities across properties using market values and then again using values limited by the assessment cap.

After canvassing states with assessment limits that do not estimate resulting foregone revenue, New Mexico was selected as the demonstration state for this exercise based on data availability. The New Mexico state legislature enacted the "Limitation on increases in valuation of residential property" law in 2001. Since 2001, the increase in an individual residential property value has been limited to 3 percent from one year to the next for taxation purposes. The cap applies to all residential property, including property in which the owner does not reside.

The assessment limit in New Mexico does not apply to:

- A residential property in the first tax year that it is valued for property tax purposes;
- Any physical improvements, except for solar energy systems, made to the property during the year immediately prior to the tax year or omitted in a prior tax year; or
- Valuation of a residential property in any tax year in which:
    a) a change of ownership of the property occurred in the year immediately prior to the tax year for which the value of the property for property taxation is being determined; or
    b) the use or zoning of the property has changed in the year prior to the tax year. (Property Tax Code 7-36-21.2).

When a change in ownership of the property takes place in the year prior to the tax year for which the value of the property is being determined for property tax purposes, the value of the property shall be its current and correct value. In other words, the property's value resets to market value if the property is sold (Property Tax Code 7-36-21.2).

New Mexico's assessment limit applies to all residential property. In New Mexico, mobile homes are considered residential property. Mobile homes in mobile home parks are considered to be permanently attached to the ground and are treated as improved real property in this analysis. Alternatively, mobile homes not in a mobile home park and not permanently attached to the ground are considered personal property in this analysis. Most often, the value of a mobile home

treated as personal property is determined on the cost basis using Marshall & Swift cost factors and then depreciated. As a result, most such mobile homes are not affected by the cap.[5] For example, in 2011 San Juan County had 10,849 mobile homes not permanently attached to the ground treated as personal property. The difference between estimated market value and limited value for each mobile home was calculated by the local assessor. The difference between estimated market and limited value for all 10,849 mobile homes in San Juan County treated as personal property was less than one percent. Out of more than 7,000 residential properties in Los Alamos County, the number of mobile homes considered personal property that the cap limited amounted to only a couple of dozen. The focus of the empirical analysis below is on improved residential real estate.

Many states do not have the data needed to estimate the consequences of assessment limits. As states improve their databases, they should maintain estimated market values for each property, limited values, and net assessed values including all exemptions. If the state cannot collect these data from all counties, the state can maintain a list of what data each county collects. States that only have a few counties that collect these data can begin estimating the consequences of assessment limits in tax expenditure reports for only these counties. The Chief of the Appraisal Bureau at New Mexico's Taxation and Revenue Department suggested specific counties in New Mexico that would have the data capabilities necessary for this study. Two counties in New Mexico provided data for this study, San Juan County and Los Alamos County.

To analyze the impact of the assessment limit on property taxes in New Mexico case studies in Los Alamos and San Juan counties were conducted. Both counties include two values for each improved residential parcel—an annual estimate of market value and the limited value resulting from the assessment cap. If the assessment cap does not affect the property, the estimated market value equals the limited value.

Case Study: Los Alamos County

Los Alamos County, New Mexico has a unique history. In 1943, the federal government established exclusive jurisdiction over the area of Los Alamos for the purpose of studying atomic energy. The federal governments founded Los Alamos National Laboratory as part of the Manhattan Project. The federal government returned the land to New Mexico in 1949 and the state legislature created Los Alamos County.[6]

The smallest county in New Mexico, Los Alamos has an area of 109 square miles with a population of 17,950 in 2010.[7] Most residents live in the town of Los Alamos or a slightly smaller community, White Rock. The population is predominately white (87.8 percent). As of 2010, the county had 8,354 housing units, 92 percent of which were occupied (7,667). Los Alamos County experienced some population decline since 2000 (-2.1 percent).[8]

[5] E-mail correspondence from Jimmy Voita, Chief Deputy Assessor, San Juan County, May 20, 2011.

[6] Los Alamos County (2011); BBC H2G2 (2001); USGenWeb Project (2011)

[7] U.S. Census Bureau (2011)

[8] U.S. Census Bureau American Factfinder (2010); U.S. Census Bureau. 2005–2009 American Community Survey 5 year Estimates, Table S1501. Educational Attainment; Los Alamos County (2011)

The largest employer in Los Alamos County is the National Laboratory, with an annual budget of $2.2 billion mainly funded by the U.S Department of Energy, 9,000 employees, and 650 contractors.[9] Once shrouded in secrecy, the Lab opened to the public in 1966 and entered the National Register of Historic Places. The level of educational attainment in Los Alamos County far exceeds the statewide average. In Los Alamos County, 98.8 percent of the population 25 years and older have a high school degree or higher, 63.4 percent have a bachelor's degree or higher, and 37 percent have a graduate or professional degree. In New Mexico, 82.1 percent of the population 25 years and older have a high school degree or higher, 25.1 percent have bachelor's degree, and 10.6 percent have a graduate or professional degree.[10]

Forbes magazine deemed Los Alamos County one of the 10 richest counties in the U.S., the only county on the list not on the east coast.[11] The median household income is $100,423 compared to the national median of $51,425. The poverty rate of Los Alamos County is 3.2 percent compared to New Mexico's poverty rate of 18.1 percent.[12]

The U.S Chamber of Commerce recognized Los Alamos County as the most sustainable small community in 2009, with a free bus service, green buildings, and renewable energy among other environmentally friendly efforts.[13]

Empirical Analysis

Los Alamos provided two sets of data for all years 2001–2011 except 2002: the tax roll and a report on the difference in valuation due to the cap. The tax roll for each year is created in October, the notice of values (NOV) is sent out by April 1, and the final tax roll values are finalized in November after appeals. Los Alamos provided the final tax roll for all years since 2001 except 2011, for which we have April NOV values.[14] The second data file, called difference reports, provided by Los Alamos for each year except 2002 includes only residential properties affected by the cap. The difference reports provide estimated market values as well as the limited values of the properties subject to the 3 percent cap. These difference reports are run before April 1. The difference reports and the tax rolls were merged for each year 2001–2011, except for 2002. The merged file includes the following variables: the unique identifier for each property; the area id, which indicates if a property is residential or commercial; the account type which indicates if the property is a mobile home, single family home, condos, or townhouses; the mill levy for that year, the estimated market value, limited value, and net assessed value for each year. The property values in the raw data files were separated into land and building values. We combined these values into total property values.

[9] Los Alamos National Laboratory (2010–2011)

[10] U.S. Census Bureau American Factfinder (2010); U.S. Census Bureau. 2005–2009 American Community Survey 5 year Estimates Table S1701. Poverty Status in the Last 12 Months

[11] Vardi, Nathan (2011)

[12] U.S. Census Bureau. 2005–2009 American Community Survey 5 year Estimates

[13] U.S. Chamber of Commerce (2009)

[14] For example, the tax roll for 2011 was created in October 2010, the notice of values distributed in April 2011, and in November 2011 the tax roll values would be finalized. Since the data was collected in the spring of 2011, the county provided April NOV data.

To estimate foregone revenue and analyze the consequences of the cap on the tax base, we need the estimated market value and the limited value for each property. The estimated market value is an estimate of fair market value before any exemptions or adjustments. The limited value is the value limited to a 3 percent increase from the previous year's value. The limited value differs from the estimated market value only when the property's value increases by more than 3 percent from one year to the next. When an estimated market value increases less than 3 percent or decreases, the estimated market value determines the limited value. In the data sets, the estimated market value equals the limited values for properties not affected by the cap. The data sets also include a net assessed value for each property that incorporates the cap and other exemptions and adjustments.

Some properties were deleted from the data set prior to analysis. This study focuses on residential property, therefore only properties demarcated as residential in the data set were considered in this analysis. Mobile homes outside of mobile parks and the land on which they reside were considered personal property in this analysis and deleted. In addition, properties with a zero land value and/or building value were deleted. Mostly, the latter deleted properties defined as commons areas for condos. Deleting zero values also rid the data of a few properties with data errors (account types include vacant residence, single family home, and townhouse). One property in 2007 was deleted as a data error because it was categorized as a non-residential property yet the cap applied to it. Properties with a higher limited value than estimated market value were deleted as well.[15]

Table 2 shows the number of residential properties by type of property for ten years. Mobile parks are considered real property because the mobile homes are attached to the land. The majority of residential properties are single-family homes.

[15] The Chief Deputy Assessor at Los Alamos explained why properties may have a higher limited value than market value in email correspondence on July 5, 2011. Since the data come from two data sets, one before appeals and one after appeals, these properties likely had an appeal. The market values for these properties were generated at the time of notice of value (March or April) in the report on the difference. The limited values used for this analysis came from the tax roll generated in November. The limited values of these properties in the report (March or April) differed from the limited values in the tax roll, which were generated after appeals in November. The limited value in the tax roll is correct, not the limited value in the report. A new market value after the appeal was not generated. Therefore these properties are not included in the analysis.

Table 2: Improved Residential Properties, Los Alamos County, New Mexico

Property Type	2001	2003	2004	2005	2006	2007	2008	2009	2010	2011
Single Family	4,668	4,947	5,031	5,105	5,145	5,192	5,209	5,210	5,212	5,219
Townhouse	1,370	1,475	1,517	1,537	1,562	1,364	1,370	881	882	880
Condo	75	81	106	173	180	384	392	757	757	758
Duplex	0	0	0	0	0	0	0	112	112	112
Apartment	3	37	37	36	36	34	33	31	31	31
Xplex	0	0	0	0	0	0	0	16	16	16
Bed & Breakfast	1	1	1	1	6	5	6	6	6	6
Mobile Park	2	2	2	2	2	2	2	2	2	2
Building Residential	34	0	0	0	0	0	0	0	0	0
Total Residential Parcels	6,153	6,543	6,694	6,854	6,931	6,981	7,012	7,015	7,018	7,024
Affected by Cap	5,137	5,664	5,971	6,190	5,830	5,570	3,870	2,871	1,926	1,964
Pct Affected by Cap	83.49%	86.57%	89.20%	90.31%	84.11%	79.79%	55.19%	40.93%	27.44%	27.96%

Impact of the Assessment Limit on the Property Tax Base and Revenue

In order to estimate the foregone revenue, we calculated the fractional assessment of the estimated market values and the limited values. In New Mexico, assessors use 33.3333% as the fractional assessment. For this study, we use one-third by dividing both estimated market values and limited values by 3. Estimated market values divided by 3 will be referred to as taxable estimated market values, and limited values divided by 3 will be referred to as taxable limited values. These are gross assessed values, meaning they do not reflect any exemptions. Net assessed values include exemptions. Using net assessed values to calculate the difference in taxation due to the cap would be misleading, as some difference would be due to exemptions and adjustments rather than solely the cap (Sjoquist and Pandey 2001, 8–9). The difference between taxable estimated market values and taxable limited values is solely due to the cap.

The taxable estimated market values represent the counterfactual to the cap: the taxable value if the cap were not in place. The limited values represent the taxable value with the cap in place. Holding all else constant in this comparison is standard practice in tax expenditure reports (e.g. Florida 2010, Michigan 2009, Minnesota 2010, Kentucky 2010). Certain exemptions or other tax relief mechanism would possibly change if the cap were repealed. The estimation of foregone revenue does not estimate tax revenue if the cap were repealed. Rather, foregone revenue measures the amount of revenue limited by the cap under current policies and circumstances.

Table 3 shows estimates of foregone revenue due to the cap for all years since the cap went into place, except for 2002. We calculated foregone revenue by first finding the difference between the market and limited values, “reduction in assessed value due to cap,” then multiplying that number by the mill levy for that year. The limited values in the table do not include tax deductions, such as the homestead deduction, or other tax credits, thus the table shows foregone revenues due only to the cap. From 2001 until 2007, Los Alamos County forewent around $1.7 million each year due to the assessment limit. From 2008 to 2011, the cap constrained revenues less as the real estate market declined.

Table 3: Impact of Assessment Limit on Improved Residential Real Property Tax Base in Los Alamos County (in millions)

Year	Taxable Estimated Market Value	Taxable Limited Value	Reduction in taxable value due to cap	Percent reduction due to cap	Tax rate*	Foregone revenue
2001	489.24	397.77	91.46	18.7%	0.019351	1.77
2003	552.23	475.61	76.62	13.9%	0.01811	1.39
2004	620.95	523.41	97.54	15.7%	0.016883	1.65
2005	675.18	563.87	111.30	16.5%	0.016788	1.87
2006	695.81	596.40	99.41	14.3%	0.016917	1.68
2007	731.09	628.91	102.18	14.0%	0.01649	1.69
2008	702.62	637.34	65.29	9.3%	0.016895	1.10
2009	656.03	620.95	35.09	5.3%	0.023036	0.81
2010	621.63	602.33	19.30	3.1%	0.021636	0.42
2011	630.19	612.67	17.52	2.8%	0.021544	0.38

* The tax rate includes rates from the state, county, and municipal governments, the school district, and the University of New Mexico Los Alamos Branch.

Table 3 also shows the impact of the cap on the residential tax base, i.e. the collective value of taxable assets, in Los Alamos County. The table compares values under the provision of the cap, the taxable limited values, to the values we assume would be used without the provision, the taxable estimated market values. The column, "Percent reduction due to the cap" shows that in 2001, the total taxable value with the cap was 18.7 percent less than the taxable value would have been without the cap, assuming no secondary or interactive effects. The impact of the cap on the residential tax base decreases over the years: in 2011 the cap only reduces the tax base by 2.8 percent. As Haveman and Sexton (2008) explain, the gap between the limited and market value "will grow overtime if appreciation continues to outpace the annual assessment limit" (page 26). If appreciation does not outpace the assessment limit, the gap will not increase, or can decrease such as in Los Alamos 2001–2011. The gap between limited and market values can also decrease if the rate of property turnover increases because properties reset to market value upon sale (Haveman and Sexton 2008). Under New Mexico's provision, improvements to properties or zoning changes could also contribute to a decrease.

For Los Alamos, the gap between limited and market values likely declined from 2001–2011 because appreciation of market values likely slowed, as did market values in most real estate markets across the country. Variation in property turnover rates across years can contribute to a decline or increase in the difference between the market values and the limited values over the years. Sales data show an annual increase from 2001 to 2006, then decreased in 2007 and fluctuated through 2011. Sales data do not show drastic increases from year to year: 2001 (312 homes sold); 2002 (404); 2003 (444); 2005 (490); 2006 (498); 2007 (383); 2008 (373); 2009 (458); 2010 (551); 2011 (151). Rather, the decline in the gap in recent years can be explained largely by the decline in both the number of residential properties that appreciated more than 3 percent each year and the extent beyond 3 percent that properties appreciated.

From 2008 to 2009, the mill levy jumped from 16.895 to 23 because of a successful General Obligation bond for the Los Alamos schools. After the 2009 increase in mill rate, the county decided to reduce property tax revenue by $1,500,000 in 2010 by decreasing the 2010 mill levy to 21.[16]

To place foregone revenue in perspective, the total revenue raised from residential property taxes in 2010 was $12,882,388. In 2010, Los Alamos County, the municipality, the school districts, and community colleges experienced foregone revenues of $420,000 due to the assessment limit, which amounted to 3.3 percent of total revenue raised.[17]

States can conclude their tax expenditure reports with estimates of foregone revenue. Analysis of the impact on uniformity of the property tax, however, provides a fuller understanding of the impact of the cap.

Impact of Assessment Cap on Uniformity

Limits such as New Mexico's cap are criticized for their impact on horizontal uniformity. Since the cap on a home is removed upon sale, two homes can have equal fair market values, but the one owned since 2000 pays lower taxes than the other identical home purchased in 2011. The property with the same owner since 2000 will be valued less for tax purposes than a home of equal value purchased in 2011 because of the assessment limitation.

Assessment uniformity reflects the fair and equitable treatment of individual properties. Uniformity results when individual properties are assessed at the same percentage of market value. This ensures that property tax liabilities are distributed across individual properties, and types of properties, in relation to their share of the total value of the tax base. Systematic differences in assessed values relative to market values can lead to both horizontal and vertical inequities. (Eckert, p. 516)

Two measures are used to evaluate the uniformity of assessments. The coefficient of dispersion measures the horizontal uniformity of assessments. Low coefficients of dispersion tend to be associated with good assessment uniformity. (Eckert, p. 534) The price-related differential measures the vertical uniformity of assessments. A price-related differential greater than 1 indicates that high-valued properties are under-valued, while a price-related differential less than 1 indicates that low-valued properties are under-valued. (Eckert, p. 539–40)

The coefficient of dispersions are reported in Table 4. In earlier years uniformity of the administration of the property tax was undermined by the assessment cap resulting in relatively high CDs. In more recent years horizontal uniformity in Los Alamos has been restored to a large extent because the cap affects fewer homes in the real estate market downturn.

[16] Email correspondence from the Chief Deputy Assessor at Los Alamos on July 5, 2011.

[17] The Chief Deputy Assessor of Los Alamos County provided the amount of revenue raised from residential property taxes in 2010, including mobile homes, in a telephone conversation on July 25, 2011. The authors calculations of foregone revenue excluded mobile homes.

Table 4: Impact of Assessment Limit on Uniformity of Assessments in Los Alamos County

Year	CD	PRD	No. of Properties	Median limited-market value ratio
2001	24.7%	1.01	6153	0.79
2003	16.8%	1.01	6543	0.86
2004	19.6%	1.01	6694	0.84
2005	20.2%	1.01	6854	0.84
2006	17.3%	1.01	6931	0.87
2007	16.1%	1.00	6981	0.88
2008	10.1%	1.01	7012	0.97
2009	5.7%	1.00	7015	1.00
2010	3.1%	1.00	7018	1.00
2011	2.7%	1.00	7024	1.00

The Price Related Differentials are also presented in Table 4. For all years, the PRD is close to 1, indicating that lower valued properties and higher valued properties are equally impacted by the assessment cap.

Distributional Consequences of Assessment Limitation

Residential properties that do not increase more than 3 percent per year in market value do not benefit from the cap. If the local government raises the tax rate in order to collect the same revenue they otherwise would collect without the cap, then some properties limited by the cap may pay higher taxes than they would without the cap (Haveman and Sexton 2008).

To isolate the impact of the cap on the distribution of property tax liabilities, we conduct an equal yield analysis. We assume that the same amount of revenue would be collected under two conditions: 1) the value limited by the 3 percent cap divided by 3 is the gross tax base, 2) the market value divided by 3 is the gross tax base.

First, we estimate the total revenue that Los Alamos would receive under the current condition of the assessment cap, excluding all other exemptions, by applying the millage rate from 2011 (21.544) to the total amount of taxable limited values ($612.67 million). With the assessment cap, Los Alamos would receive $13.2 million in tax revenues.[18] To calculate the tax rate that would generate the same amount of revenue from values without the cap, we divide the revenue goal ($13.2 million) by the total amount of taxable market values ($630.19 million). The millage rate would decrease to 20.946. Thus, if the local government wanted to obtain the same amount of revenue without the cap as it does with the cap, the government would decrease the rate by 0.599 mills (21.544–20.945). This decrease in mill rate would affect residential properties that appreciate less than the cap, meaning these properties would pay less property tax without the assessment limit provision in place than they do with the provision. In this example, the difference in rates is small because few residential properties appreciated much more than the 3 percent cap in 2011.

[18] This estimate of $13.2 million in property tax revenues does not use net assessed value as the tax base as Los Alamos does in practice. This estimate takes into account only the effect of the assessment limit on property value and no other exemptions, deductions or credits.

Table 5 shows the number and type of properties that benefit from the cap. A property is considered to benefit from the assessment cap if its tax liability under condition 1 (with the cap) is lower than under condition 2 (without the cap). In 2011, 1,493 properties benefited from the cap out of 7,024 residential properties. If the government collected the same amount of revenue with the cap as they would without the cap, 5,531 properties would pay higher taxes to subsidize the tax break of 1,493 properties than they would if the cap provision did not exist. Of the total number of beneficiaries, 70 percent of the beneficiaries are single-family homes, 14 percent townhouses, and 12 percent are condos. Twenty percent of all the single-family homes are beneficiaries, 23 percent of all the townhouses are beneficiaries, and 24 percent of all the condos are beneficiaries. According to the equal yield analysis, if the government raised the mill rate to receive the same revenue goal with the cap as without the cap, 80 percent of single-family homes would pay more in property taxes with the cap than without, subsidizing the 20 percent of properties paying less taxes with the cap than without. Apartments are the property type with the highest percentage of beneficiaries: 70 percent of apartments are beneficiaries under the cap. According to the equal yield analysis, 30 percent of apartments and most other types of properties would subsidize the benefit received by 70 percent of apartments under condition 1 (with the cap).

Table 5: 2011 Beneficiaries of the Cap, Los Alamos County

	No. Beneficiaries	Percent of Beneficiaries	No. Property type	Percent of Property Type
Single Family	1054	70.6%	5219	20.2%
Townhouse/townhome	208	13.9%	880	23.6%
Condo	182	12.2%	758	24.0%
Duplex	22	1.5%	112	19.6%
Apartment	22	1.5%	31	71.0%
Xplex	4	0.3%	16	25.0%
Bed & Breakfast	1	0.1%	6	16.7%
Mobile Park	0	0.0%	2	0.0%
Total Parcels	1493	100.0%	7024	21.2%

We conduct the same equal yield analysis on 2007 data. Applying the 2007 millage rate (16.49) to the tax base of total limited value divided by 3 (condition 1 with the cap) generates $10.4 million in revenue. To generate the same property tax revenue using the estimated market value divided by 3 (condition 2 without the cap) for each property would require a tax rate of 14.185 mills. This equal yield analysis shows that to maintain the same level of revenue in 2007 without the cap as with the cap, the government would lower the rate by 2.305 mills. To collect the same amount of revenue with the cap as without, residential properties that increase less than the cap would pay more in taxes than they would if the provision did not exist.

Like Table 5, Table 6 shows the number and type of properties that benefit from the cap but for 2007 data. A property is considered to benefit from the assessment cap if its tax liability when

the base of the property tax is limited value is lower than it would be when the tax base is estimated market value. In 2007, 3,243 properties benefited from the cap. If the government collected the same amount of revenue with the cap as they would without the cap, 3,738 properties (6981 – 3,243) would pay higher taxes to subsidize the tax break of 3,243 properties. Of the total number of beneficiaries, 77 percent of the beneficiaries are single-family homes, 19 percent townhouses, and 4 percent are condos. Forty-eight percent of all single-family homes are beneficiaries, 44 percent of all townhouses are beneficiaries, and 33 percent of all condos are beneficiaries. According to the equal yield analysis, 52 percent of single-family homes would subsidize the tax break of 48 percent of single-family homes. Like 2011, apartments have the highest percentage of beneficiaries under the cap in 2007.

Table 6: 2007 Beneficiaries of the Cap, Los Alamos County

Property Type	No. Beneficiaries	Percent of Beneficiaries	No. Property type	Percent of Property Type
Single Family	2484	76.6%	5192	47.8%
Townhouse/townhome	604	18.6%	1364	44.3%
Condo	128	3.9%	384	33.3%
Duplex	0	0.0%	0	0.0%
Apartment	26	0.8%	34	76.5%
Xplex	0	0.0%	0	0.0%
Bed & Breakfast	1	0.0%	5	20.0%
Mobile Park	0	0.0%	2	0.0%
Total Parcels	3243	100.0%	6981	46.5%

There appears to be no systematic bias in how the cap impacts high- versus low-valued properties. The difference between the tax liability for the tax base of estimated market value and for the tax base of limited value was calculated for each property. The correlation coefficient between the market value and the dollar reduction in property tax liability for each property under limited and estimated market value was 0.1468 in 2011, indicating no strong relationship between the two numbers. Similarly, the correlation coefficient of -0.0698 in 2007 indicates no systematic bias. The correlation coefficient between the estimated market value and the ratio of the tax liability when the tax base is limited value and when the tax base is estimated market value is -0.0174 in 2011, also indicating no strong relationship. Similarly, the correlation coefficient of 0.0253 in 2007 indicates no systematic bias.

The relationship between the property values of the two difference tax bases instead of the tax liabilities can be analyzed from two different perspectives. First, the ratio of the limited value to estimated market value was calculated. Properties unaffected by the cap have a ratio of 1 because the two values are the same. The correlation between this ratio and the estimated value of each property is -0.0174 in 2011 and 0.0253 in 2007, neither of which indicates systematic bias. Second, the difference between the estimated market value and the limited value for each property was calculated. For properties unaffected by the cap, the difference is zero. The

correlation between the dollar reduction in value due to the cap and the estimated market value of each property is 0.3142 in 2011 and 0.4407 in 2007. The correlation coefficients in both years 2011 and 2007 show a slightly stronger bias indicating the higher the value of a property, the higher the dollar reduction in property value due to the cap.

Next we take a closer look at vertical uniformity by analyzing the distributional consequences of the cap according to the properties' estimated market values for 2011 and 2007. Twenty percent of the properties are placed into each of 5 quintiles according to their estimated market value. In Table 7 we analyze the frequency of properties capped as well as properties benefiting according to the equal yield analysis from the cap for 2011.

Table 7 Capped and Benefiting Residential Properties by Quintile, Los Alamos County 2011

Quintiles	2011 Bins of Estimated Market Value	No. Properties	No. Properties Capped	Percent Capped in each bin	No. Beneficiaries	Percent Beneficiaries	Percent Beneficiaries in each bin
1	0–$163,770	1405	475	33.8%	407	27.3%	29.0%
2	$163,771–$213,200	1405	437	31.1%	297	19.9%	21.1%
3	$213,201–$266,400	1405	379	27.0%	287	19.2%	20.4%
4	$266,401–$350,590	1405	329	23.4%	230	15.4%	16.4%
5	$350,591–$11,025,450	1404	344	24.5%	272	18.2%	19.4%
Total		7024	1964	28.0%	1493	100.0%	21.3%

In Table 7, there are 1,405 properties in each bin (except 1,404 in the fifth bin). The number of capped properties in each bin ranges from 329 to 475. If the data were perfectly uniform, one would expect 392 capped properties (28 percent) in each bin. The column "percent capped in each bin" is the percentage of "No. properties capped" divided by "No. properties." The bin with the lowest valued properties has the highest percentage of capped properties (34 percent). The second to highest valued bin has the lowest percentage of capped properties (23 percent). Properties with lower estimated market values are more likely to be capped than higher valued properties.

Likewise, properties with lower values are more likely to be beneficiaries according to the equal yield analysis (see the last column in Table 7) than properties with higher values. The number of beneficiaries in each bin ranges from 230 in the second to highest valued bin to 407 properties in the lowest valued bin. The column of "percent beneficiaries" divides the number of beneficiaries in the bin by the total number of beneficiaries, so 27 percent of the beneficiaries are in the lowest

valued quintile. If perfectly uniform, the percentage for each bin would be the same. The column with "percent beneficiaries in each bin" shows that of all properties in the lowest valued bin, 29 percent are beneficiaries.

Like Table 7, Table 8 shows distributional consequences of the cap, but for 2007 data. More properties were capped in 2007 than in 2011. In Table 8, 74 percent of the lowest valued properties were capped and 90 percent of the highest valued properties were capped. These 2007 data show the opposite trend than the 2011 data: the higher valued properties were more likely to be capped than the lower valued properties. This pattern suggests that market prices of higher valued properties appreciated faster, or turned over more, than lower valued properties in 2007 while market prices of lower valued properties appreciated faster than higher valued properties in 2011. The lower-valued properties, however, were more likely to be beneficiaries of the tax rate associated with the cap in 2007 and 2011, according to the equal yield analysis.[19]

Table 8: Capped and Benefiting Residential Properties by Quintile, Los Alamos County 2007

Quintiles	2007 Bins of Estimated Market Value	No. Properties	No. Properties Capped	Percent Capped in each bin	No. Beneficiaries	Percent Beneficiaries	Percent Beneficiaries in each bin
1	0–$193,420	1397	1040	74.4%	738	22.8%	52.8%
2	$193,421–$247,760	1396	1029	73.7%	676	20.8%	48.4%
3	$247,761–$311,040	1396	1074	76.9%	660	20.4%	47.3%
4	$311,041–$407,100	1396	1176	84.2%	631	19.5%	45.2%
5	$407,180–$11,442,940	1396	1251	89.6%	538	16.6%	38.5%
Total		6981	5570	79.8%	3243	100.0%	46.5%

Summary of the Los Alamos Case Study

The impact of the cap on the tax base decreased since the provision passed in 2001. Table 3 showed that the reduction in taxable value due to the cap declined from 2001–2011, as did foregone revenue. In 2001, the cap reduced the tax base by 18.7%, which amounted to $1.77

[19] Dye et al (2006a) and (2006b) also found that the number of properties benefiting from the assessment limit, in terms of having lower property tax liabilities than they would have had otherwise, was lower than the number of properties subject to the assessment limit. In 2011, there were 1,964 properties in Los Alamos County subject to the cap, but only 1,489 that saw their property tax liabilities actually decline as a result of the cap. Similarly, in 2007, there were 5,570 properties subject to the cap, but only 3,244 saw their property tax liabilities decline as a result of the cap.

million in foregone revenue. In 2011, the cap only reduced value by 2.8% and revenue by $380,000. These numbers will continue to fluctuate over the years depending on the real estate market and the quantity of residential property turnovers.

The provision that a new homeowner of a property with a fair market value equal to another home with a long-time homeowner may pay a larger tax bill opens the assessment limit law to criticism for lacking horizontal uniformity. Analysis in table 4 shows that the cap undermined horizontal uniformity in earlier years, but since the cap has affected fewer homes in the market downturn in recent years, similar houses pay similar taxes.

As for the distributional consequences if the government collected the same amount of revenue with the cap as they would without the cap in 2007, 3,738 properties would pay higher taxes to subsidize the tax break of 3,243 properties by a millage increase of 2.305. If the government collected the same amount of revenue with the cap as they would without the cap in 2011, 5,531 properties would pay higher taxes to subsidize the tax break of 1,493 properties than they would if the cap provision did not exist, but not by much, a millage increase of 0.599. In both years more single-family homes benefit from the cap than other residential property types. In terms of vertical uniformity, correlations between limited values and market values show no systematic bias except that the higher the property is valued, the more the cap reduces the value of the property in both years 2007 and 2011. The analysis of quintiles showed that lower-valued properties were more likely to be capped than higher valued properties in 2011 whereas in 2007, the higher valued properties were more likely to be capped than the lower valued properties. The lower-valued properties, however, were more likely to be beneficiaries of the tax rate associated with the cap in both 2007 and 2011, according to the equal yield analysis.

Case Study: San Juan County

San Juan County is in the Northwestern corner of New Mexico. It borders Arizona, Colorado and Utah and is adjacent to the Navajo Nation Reservation and the Jicarilla Indian Reservation. The county is 5,514 square miles with a population of 130,044 in 2010; or 23.6 people per square mile, compared to a state average of 17.0 people per square mile.

The county is primarily a tourist destination for outdoor recreational activities including camping, hunting and fishing, and snow skiing. Farmington is the largest city in the county, with a population of 43,573 in 2006, and serves as a regional shopping hub.

Eighty percent of the population is high school graduates, compared to 82 percent for the state as a whole, but only 14.2 percent have a bachelor’s degree or higher, compared with 25.1 percent for the state as a whole.

In 2009 there were 45,996 housing units in the county, and a homeownership rate of 75.9 percent, compared with a homeownership rate of just 69.6 percent in the state. There were 39,264 households in the county with a median household income of $46,007 in 2009 and 20.6

percent of the population living below the poverty line, compared with 18.2 percent of people living below the poverty line statewide.[20]

Data

The total net taxable property value for the county was $2,796 million in tax year 2010. This taxable base is composed of residential property (40.4 percent of the taxable base), non-residential property (which is composed of centrally assessed property which is 38.9 percent of the taxable value and other non-residential property) which is 20.6 percent of the taxable base, as well as livestock, which accounts for a negligible part of the taxable base.[21]

The San Juan County Assessor's Office provided data for improved residential properties for the years 2003, 2007 and 2011. The data file for each year contains information for each individual improved residential property—an identifier for the district where the parcel is located, the type of property, the estimated market value, the limited value, which reflects the impact of the assessment cap on that individual property, and the assessed value used for determining the actual property tax liability for each property.[22]

The file for each year includes all developed residential parcels broken down by land use type. The land use types include MH Park, which are mobile homes permanently attached to the ground. The vast majority of mobile homes are not permanently attached to the land and, while they are considered residential properties, they are technically defined as personal property. While legally eligible for the assessment cap, since it applies to residential properties, mobile homes not permanently attached to the land are personal property and treated as a depreciable asset which decline in value over time. The focus of this analysis is on real property, so mobile homes not permanently attached to the land are not included here.

Other land use types include Partially Exempt properties, which are those where part of the property is exempt from paying property taxes. The taxable portion of such properties is included in this data file. Residential Mix properties are properties that are part residential and part commercial in nature. While the total value of each such property is included in this file, the difference between estimated market value and limited value is a result of the assessment cap. The category Residential properties include all other residential properties.

The following table provides a breakdown of those data by land use type.

[20] US Census Bureau, QuickFacts, San Juan County, New Mexico.

[21] San Juan Amended Abstract, October 7, 2010.

[22] Assessed value for determining tax liabilities equals one-third of adjusted value reflecting the impact of the assessment limit for each individual property. If the increase in a property's market value is less than allowed by the cap, then the adjusted value equals market value.

Table 9: Improved Residential Properties, San Juan County, New Mexico

Property Type	2003	2007	2011
MH Park	95	95	95
Multi-family	313	315	315
Partially Exempt	2	2	2
Residential Mix	127	127	127
Residential	20,131	20,130	20,135
TOTAL Parcels	20,668	20,669	20,674
Affected by Cap	1,231	18,431	17,405
Pct Affected by Cap	6.0%	89.2%	84.2%

The total number of parcels varies across years because in 2003 and 2007 there were parcels where the limited value was higher than estimated market value. These were determined to be errors and were omitted.

The cumulative impact of the assessment limit is illustrated by the data in Table 9. Specifically, in 2003 only 6 percent of the parcels where affected by the cap. By 2007, when real estate prices peaked, nearly 90 percent of the properties where affected by the cap. As the real estate market declined and individual properties sold, the proportion of properties affected by the cap declined to 84 percent by 2011.

Impact of the Assessment Limit on the Property Tax Base and Revenue

In order to estimate the impact of the assessment limit in New Mexico on the property tax base in San Juan County the difference between the estimated market value and the limited value (the value of a property reflecting the impact of the assessment cap) was calculated for each property in the data set for each year. If an individual property was not affected by the cap because its value increased by less than 3 percent from the previous year, or it was sold in the current year, the two values will be identical and the difference is zero. If the 3 percent cap was in effect for a property, the difference represents the reduction in the value because of the limit. Thus, summing the differences estimates the extent to which the estimated market values are reduced because of the assessment limit. The assessment ratio for residential properties in New Mexico is one-third, so the total reduction in estimated market value because of the limit is divided by three to determine the impact of the cap on assessed value subject to taxation.

Table 10 summarizes the results for each year. The table presents data on the total estimated market value in each year (divided by 3), total limited value (divided by 3), the reduction in estimated market value because of the assessment cap, the percent reduction in assessed value

because of the assessment limit, and an estimate of foregone revenue because of the assessment limit.[23]

For example, in 2003, two years after the cap was imposed, the total estimated market value of all improved residential property in San Juan County subject to taxation was $577 million. The taxable limited value, which reflects the effect of the cap on each individual property, was $574 million, resulting in a reduction of the assessed taxable base of $3.6 million, or 6 tenths of one percent, a very modest impact.

Table 10: Impact of Assessment Limit on Improved Residential Real Property Tax Base (Millions of Dollars)

Year	Taxable Estimated Market Value	Taxable Limited Value	Reduction in Taxable Value Due to the Cap	Percent Reduction in Taxable Value Due to the Cap	Foregone Property Tax Revenues Due to Cap
			(Millions of Dollars)		
2003	577.12	573.52	3.60	0.63%	N.A
2007	854.58	720.51	134.07	18.61%	$3.25
2011	1093.50	852.28	241.22	28.31%	$5.78

Each year, however, more properties become subject to the cap and properties subject to the cap are constrained in growth for more than one year. As a result, the cumulative impact of the assessment limit will increase with time. For example, by 2011 total estimated market value subject to taxation increased to $1.09 billion, total limited value subject to taxation increased to $852 million and the cap reduced taxable value by $241 million.

Foregone property tax revenues are estimated by multiplying the reduction in taxable base because of the cap by the appropriate tax rate. In 2007, the aggregate property tax rate was estimated to be 24.231 mills and in 2011 the aggregate property tax rate was estimated to be 23.603 mills.[24] Multiplying these rates times the reduction in property tax base for 2007 and 2011 indicates that the New Mexico assessment cap program reduced property taxes by $3.25 million in 2007 and $5.78 million in 2011. These estimates of foregone revenue assume that all else is held constant. Certain exemptions or other tax relief mechanism would possibly change if the cap were repealed. The estimation of foregone revenue does not estimate tax revenue if the

[23] Foregone revenue for 2003 is not calculated because of the lack of information on millage rates in effect that year. For 2007 and 2011 millage rates for state debt service, county activities (operational, debt service and water reserve fund) and the San Juan Community College. For 2007 the total was 11.5 mills and for 2011 the total was 11.767 mills. These millage rates do not include millage rates for municipal operations and debt service and school districts.

[24] The estimated aggregate property tax rate for each year equals the county rate plus the state rate plus the average municipal and school rates for Aztec, Farmington and Bloomfield, and the rate for community colleges and debt service.

cap were repealed. Rather, foregone revenue measures the amount of revenue limited by the cap under current policies and circumstances.

Impact of Assessment Cap on Uniformity

Assessment uniformity reflects the fair and equitable treatment of individual properties. Uniformity results when individual properties are assessed at the same percentage of market value. This ensures that property tax liabilities are distributed across individual properties, and types of properties, in relation to their share of the total value of the tax base. Systematic differences in assessed values relative to market values can lead to both horizontal and vertical inequities. (Eckert, p. 516)

Two measures are used to evaluate the uniformity of assessments. The coefficient of dispersion measures the horizontal uniformity of assessments. Low coefficients of dispersion tend to be associated with good assessment uniformity. (Eckert, p. 534) The price-related differential measures the vertical uniformity of assessments. A price-related differential greater than 1 indicates that high-valued properties are under-valued, while a price-related differential less than 1 indicates that low-valued properties are under-valued. (Eckert, p. 539–40)

These two metrics are used to analyze the impact of the assessment limit in New Mexico on properties in San Juan County. In calculating the ratios to compute these metric, estimated market value is treated as the market value of each property and the limited value is treated as the assessed value reflecting the impact of the assessment cap. Table 11 presents the results from this analysis.

Table 11: Impact of Assessment Limit on Uniformity of Assessments

	Coefficient of Dispersion	Price-Related Differential
2003	0.50%	0.999
2007	9.97%	0.986
2011	19.80%	1.024

In 2003, the coefficient of dispersion is nearly zero reflecting the fact that few properties were subject to the assessment limit so that the estimated market value and the limited value for each property were nearly identical. The price-related differential is nearly 1 indicating vertical uniformity in the application of the assessment limit across all properties. By 2011, however, the cumulative effects of the assessment limit are starting to show. The coefficient of dispersion has increased to 19.8 percent indicating a systematic reduction in horizontal uniformity as a result of the assessment limit. Similarly, the price-related differential has increased, albeit slightly, indicating a somewhat favorable impact of the limit on higher valued properties.

Distributional Consequences of Assessment Limitation

Not all properties benefit from the cap because their value does not increase more than 3 percent per year. In addition, some properties may be affected by the cap, but if the local government has to raise the tax rate to collect the same revenue they too might have to pay higher taxes than they otherwise would.

To isolate the impact of the cap on the distribution of property tax liabilities, we conduct an equal yield analysis. We assume that the same amount of revenue would be collected under two scenarios: 1) the value limited by the 3 percent cap divided by 3 is the gross tax base, and 2) the estimated market value divided by 3 is the gross tax base.

First, we estimate the total revenue that would be generated in San Juan County under the current condition of the assessment cap, excluding all other exemptions, by applying the millage rate from 2011 (23.965) to the total amount of taxable limited values ($852.3 million). With the assessment cap, jurisdictions in San Juan County would receive $20.4 million in property tax revenues.[25] To calculate the tax rate that would generate the same amount of revenue from market values unconstrained by the cap, we divide the revenue goal ($20.4 million) by the total amount of taxable market values ($1.09 billion). The millage rate would decrease to 18.7 mills. Thus, if the local government wanted to obtain the same amount of revenue without the cap as it does with the cap, the government would decrease the rate by 5.265 mills (23.965 – 18.7). This decrease in mill rate would affect residential properties that appreciate less than the cap, meaning these properties would pay less property tax without the assessment limit provision in place than they do with the provision.

Table 12 shows the number and type of properties that benefit from the cap. A property is considered to benefit from the assessment cap if its tax liability under Scenario 1 (with the cap) is lower than under Scenario 2 (without the cap). In 2011, 11,416 properties benefited from the cap out of a total of 20,674 residential properties.[26] If the government collected the same amount of revenue with the cap as they would without the cap, 9,258 properties would pay higher taxes to subsidize the tax break of 11,416 properties than they would if the cap provision did not exist.

Of the total number of beneficiaries, 97.9 percent of the beneficiaries are single-family homes. About 55.5 percent of all the single-family homes are beneficiaries, 42.5 percent of residential mix properties are beneficiaries, and 53.3 percent of all multi-family parcels are beneficiaries. According to the equal yield analysis, if the government raised the mill rate to receive the same revenue goal with the cap as without the cap, nearly 45 percent of single-family homes would pay more in property taxes with the cap than without, subsidizing the 55 percent of properties

[25] This estimate of $20.4 million in property tax revenues does not use net assessed value as the tax base as would be done in actual practice. This estimate takes into account only the effect of the assessment limit on property value and no other exemptions, deductions or credits.

[26] Remember in Table 9 there were 17,396 improved residential properties affected by the cap. Table 12 indicates that only 11,385 of those actually have lower tax liabilities when the limited value is the base relative to what they would pay when estimated market value is the base. That is, some properties have lower assessed values when limited value is the base, but the tax rate is higher in order to raise the same amount of revenue and the rate increases more than the value of their property decreases because of the assessment cap.

paying less taxes with the cap than without. Similarly, according to the equal yield analysis, nearly 57 percent of apartments would subsidize the benefit received by 53 percent of multi-family parcels under Scenario 1 (with the cap).

Table 12: 2011 Beneficiaries of Cap, San Juan County

Property Type	Number	% of Beneficiaries	% of Property Type
MH Park	20	0.2%	21.1%
Multi-family	168	1.5%	53.3%
Partially Exempt	1	0.0%	50.0%
Residential Mix	54	0.5%	42.5%
Residential	11,173	97.9%	55.5%
TOTAL Parcels	11,416	100.0%	55.2%

There does not seem to be any systematic bias in the impact of the cap across high- or low-valued properties. For each property the difference in the tax liability when the tax base is estimated market value and when it is limited value was calculated. The correlation coefficient between estimated market value and the dollar reduction in property tax liability for each property under the limited and estimated market value was -0.244 in 2011 and 0.132 in 2007 indicating no strong relationship between the two numbers across all properties. Alternatively, the correlation coefficient between actual value and the ratio of the tax liability when limited value is the base and when estimated market value is the base is 0.148 in 2011 and -0.117 in 2007, again indicating no strong relationship. Thus, there does not seem to be a systematic relationship between this ratio and the estimated market value of the property.

Alternatively, the dollar difference between the estimated market value and the limited value for each property was computed. If the values are the same, the difference will be zero. When correlating the dollar reduction in value due to the assessment cap and the estimated market value for each property, the correlation coefficient in 2007 was 0.671 and in 2011 it was 0.526. In other words, there is a relatively strong relationship between estimated market and reduction in taxable value with the limited value where higher valued properties tend to have higher dollar reductions.

Next we take a closer look at vertical uniformity by analyzing the distributional consequences of the cap according to the properties' estimated market values for 2011. Twenty percent of the properties are placed into each of 5 quintiles according to their estimated market value. In Table 13 we analyze the frequency of properties capped as well as properties benefiting according to the equal yield analysis from the cap for 2011.

Table 13 : Capped and Benefiting Residential Properties by Quintile, San Juan County 2011

Quintiles	2011 Bins of Estimated Market Value	No. Properties	No. Properties Capped	Percent Capped in each bin	No. Beneficiaries	Percent Beneficiaries	Percent Beneficiaries in each bin
1	0–$95,649	4,135	3,384	81.84%	2,561	22.43%	61.93%
2	$95,650–$128,758	4,142	3,640	87.88%	2,389	20.93%	57.68%
3	$128,759–$158,099	4,128	3,603	87.28%	2,344	20.53%	56.78%
4	$158,100–$209,042	4,134	3,498	84.62%	2,142	18.76%	51.81%
5	$209,043–$3,536,828	4,135	3,280	79.32%	1,980	17.34%	47.88%
Total		20,674	17,405	84.19%	11,416	100.00%	55.22%

In Table 13, there are something more than 4,125 properties in each bin. The number of capped properties in each bin ranges from 3,280 to 3,640. The column "percent capped in each bin" is the percentage of "No. properties capped" divided by "No. properties." The bin with the next to lowest valued properties has the highest percentage of capped properties (nearly 88 percent). The highest valued bin has the lowest percentage of capped properties (79 percent). Properties with lower estimated market values are more likely to be capped than higher valued properties.

Likewise, properties with lower values are more likely to be beneficiaries according to the equal yield analysis (see the last column in Table 13) than properties with higher values. The number of beneficiaries in each bin ranges from 2,561 in the lowest valued bin to 1,980 properties in the highest valued bin. The column of "percent beneficiaries" divides the number of beneficiaries in the bin by the total number of beneficiaries, so 22 percent of the beneficiaries are in the lowest valued quintile. If perfectly uniform, the percentage for each bin would be the same. The column with "percent beneficiaries in each bin" shows that of all properties in the lowest valued bin, 62 percent are beneficiaries. The share of beneficiaries declines for each quintile with only 47.9 percent of properties in the highest value bin benefiting from the assessment cap in 2011.

Summary of the San Juan Case Study

The assessment cap program in New Mexico reduced the property tax base in San Juan county by $720 million in 2007 and $852 million in 2011. This reduction in the property tax base reduced property tax collections for all jurisdictions in San Juan County by $3.3 million in 2007 and $5.8 million in 2011.

The provision that a new homeowner of a property with a fair market value equal to another home with a long-time homeowner may pay a larger tax bill opens the assessment limit law to criticism for lacking horizontal uniformity. Analysis in Table 11 shows that the cap undermined horizontal uniformity from 2003 to 2011.

Finally, a tax expenditure analysis should explore the distributional consequences of such programs. Ideally, one would analyze the shift in property tax burdens across land use types, which could not be done for San Juan County because we did not have access to the entire tax roll for the County. The above analysis does document the shift in property tax burdens across individual residential properties, however. If the government collected the same amount of revenue with the cap as they would without the cap in 2011, 9,258 properties would pay higher taxes to subsidize the tax break of 11,416 properties.

In terms of vertical uniformity, correlations between limited values and market values show no systematic bias except that the higher the property is valued, the more the cap reduces the value of the property. The analysis of quintiles showed that lower-valued properties were more likely to be capped than higher valued properties in 2011. The lower-valued properties also were more likely to be beneficiaries of the tax rate associated with the cap in 2011, according to the equal yield analysis.

Conclusion

Property tax expenditures can and should be estimated in state tax expenditure reports. The costs of assessment limits need to be estimated. To estimate the foregone revenue of assessment limits, data must be collected on both the assessed and market values and the difference in those values multiplied by the current tax rate. If states are able to calculate the shift in tax burden and loss, the reports will provide more transparency. Presenting tax expenditure estimates by county is particularly important for assessment limits because of the variation by county, as found in studies of Florida and California and confirmed for New Mexico in the above analysis.

The impact of the 3 percent cap on San Juan County differed from Los Alamos County in that the cumulative effects of the cap in San Juan increased revenue foregone over the years while the revenue foregone due to the cap decreased over time in Los Alamos.

Disparities in horizontal uniformity increased in San Juan County over time while disparities in horizontal uniformity declined in Los Alamos in recent years. The impact of the cap differs between the two counties because the cap affected fewer properties in 2011 (28 percent) than 2007 (80 percent) in Los Alamos, whereas the number of properties affected by the cap in San Juan remained above 80 percent from 2007 to 2011. The number of properties affected by the cap likely declined in Los Alamos County after 2007 because of a slowing in the price appreciation of the real estate market, which does not appear to have occurred in San Juan County. Another reason for the decline in properties affected by the cap could be a sharp increase in the number of homes sold (because the limited value of the home returns to market value upon sale), but as discussed above, this did not occur in Los Alamos County. Ultimately,

the impact of the cap depends on housing turnover rates and the differential growth in housing values, as well as how well those values held up during the 2007–2009 recession.

The price related differential showed strong vertical uniformity. A closer analysis of vertical uniformity in both counties in 2011 using quintiles showed a slight tendency towards a larger percentage of lower valued properties benefiting from the cap than higher valued properties. In 2007, Los Alamos County showed that higher valued properties were more likely to be capped than lower valued properties, however, lower valued properties were more likely to benefit under the equal yield analysis.

A comparison of the findings for Los Alamos County and San Juan County, New Mexico to other locations show that they resemble the impact of a similar assessment limit in Florida on the tax base, but greater than the impact in Minnesota. Variation in the national real estate market and economic trends over time necessitates that the comparison of effects in different locations occurs in the same year. Given that the 3 percent cap went into effect in New Mexico in 2001, the effects on the tax base between 2001 and 2011 cannot be compared to studies conducted on data that precede 2001 (O'Sullivan, Sexton and Sheffrin 1995; Sjoquist and Pandey 2001).

The percent reduction in the tax base in 2007 is similar among San Juan County, Los Alamos County, and the state of Florida. Florida's "Save Our Homes" amendment to the Florida Constitution established an assessment limit of 3 percent on homestead properties (which excludes vacation homes and non-owner occupied residences) in 1992. The 3 percent cap reduced the tax base by 17 percent in 2007 (University of Florida 2007, 21).[27] In 2007, the 3 percent cap on all residential property reduced the tax base in San Juan County by 18.6 percent and the tax base in Los Alamos County by 14 percent. In 2004, counties in Florida collected 10.6 percent less revenue from homestead property taxes due to the cap (Hawkins 2006, 9). In 2004, Los Alamos collected 15.7 percent less revenue from all residential property taxes due to the cap (1.65 million).[28]

Assessment limits are becoming increasing popular in efforts to protect homeowners from rapidly increasing property values. The lower the limit, the greater impact it has on reducing property taxes on those properties increasing most rapidly in value. However, as shown here and in Dye et al (2006), to the extent property tax rates are increased to make up for lost revenues even some properties subject to the cap may experience higher property taxes than they would without the cap. Also, assessment limits clearly undermine the horizontal uniformity and fairness of the property tax. As the base is narrowed and taxes increase on those properties not benefiting from assessment limits the property tax could lose its credibility and eventually its legitimacy.

In conclusion, it is important for state policy makers to systematically consider the costs of assessment limits, both in foregone revenues for local governments and the distribution of property tax liabilities which could ultimately impact the legitimacy of the tax. In order to

[27] Calculated from the conceptual equivalents of taxable limited value and taxable estimated market value on page 21 of the University of Florida report ($644 billion divided by $1.042 trillion).

[28] The Los Alamos calculation was made first calculating the revenue of taxable market value multiplied by the mill levy (620.95 million * .016883) to get 10.4835. Then, the foregone revenue in 2004 (1.65 million) was divided by the revenue that would be collected without the cap 10.4835. These numbers disregard other exemptions.

accomplish this, states must develop tax expenditure budgets for property tax relief mechanisms. States must track estimated market values, limited values that show only the effect of the cap, and net assessed values. With these values, foregone revenue can be estimated as well as the distributional consequences of the benefits can be analyzed by property type as well as property wealth.

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