HORIZONTAL INEQUITY, VERTICAL INEQUITY, AND THE DISTRICT OF COLUMBIA'S PROPERTY ASSESSMENT CAP*

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INTRODUCTION

PROPERTY ASSESSMENT CAP POLICIES ARE renowned for causing horizontal and vertical inequities among affected properties. With horizontal inequity, in the realm of property taxation, affected properties in a jurisdiction with identical market values have markedly different property tax liabilities. Meanwhile, with vertical inequity some affected properties have annual property tax liabilities equal to or lower than properties with lower market values. Horizontal and vertical equity are interrelated principles used to judge the fairness of the distribution of tax burden for a tax or tax system (Cordes, 2005). However, most research on property assessment cap-induced inequity effects have focused on horizontal inequity (O'Sullivan, Sexton, and Sheffrin, 1995; Dye, McMillen, and Merriman, 2006; and Yuan, Cordes, Brunori, and Bell, 2007). These studies have tended to limit their analyses to demonstrating the cause and proving the existence of such inequities for a given jurisdiction. In an effort to examine this issue more comprehensively, this study not only examines the effect of a property assessment cap (PAC) policy on the distribution of the real property tax burden among homestead properties in the District of Columbia, but also attempts to measure the prevalence and depth to which horizontal and vertical inequities exist in the city's system of taxation for homesteads. This is done via a microanalysis of market value and real property tax liability data for each of the 93,000 homestead properties in the District of Columbia for year 2007.

This study presents three main findings. First, while 29 percent of the District's homestead properties were subject to relatively mild horizontal inequities, 64 percent were subject not only to substantial levels of horizontal inequity but also

to a considerable degree of vertical inequity. Second, many homesteads continuously subject to the District's PAC since its implementation in 2002 had 2007 property tax liabilities that were, on average, less than half the property tax liabilities of homes with similar 2007 market values but uncapped assessments.[1] And third, the PAC caused homes with market values in excess of $1 million and capped assessments to have property tax bills equal to homes with market values as low as $200,000 or less and uncapped assessments. These findings suggest that the PAC causes highly subsidized and pervasively inequitable taxation for homestead properties in the District. Subsequently, the annual property tax for the majority of homesteads (including the city's most expensive homes) more closely resembles a meager annual unit excise tax rather than a traditional ad valorem property tax.

THE PAC AS A CAUSE OF HORIZONTAL AND VERTICAL INEQUITY

State and local governments have a variety of tax relief programs that reduce property taxes to homeowners. Chief among these are homestead credit, homestead exemption, circuit breaker, and property tax deferral programs (Abt Associates, 1975; Baer, 2003). The intent of these programs has been to either modestly decrease the level of annual property taxes for the majority of eligible homeowners in a given jurisdiction (homestead credits, homestead exemptions) or provide a more significant level of tax relief but only for a very narrow group of homeowners (circuit breakers and property tax deferrals).

However, for many homeowners the problem of property taxation has not only been the high levels of annual property taxes but also the rapid and unpredictable growth in annual residential property tax bills. Rapid and unpredictable growth in annual residential property tax bills typically stems from the continuous and rapid growth in

property reassessments that typically occur during the upside of a jurisdiction's residential real estate cycle. It is argued that this situation contributes to excessively large property tax bills relative to household income (Musgrave, 2005), which strains certain homeowners' budgets causing a "cash-crunch" for some unsuspecting homeowners (Bowman, 2007).

A PAC, also referred to as a property assessment limitation, was first adopted in California in 1978 (O'Sullivan, Sexton, and Sheffrin, 1995) and can affect the vast majority of a jurisdiction's homeowners. This policy limits the growth of the taxable portion of property assessment values for individual eligible properties by a maximum allowable rate of annual growth that is statutorily specified. Relative to more traditional means of property tax relief that began in the 1930s (Groves, 1964), PACs are an innovative form of tax relief designed to specifically counter the growth (and subsequently the level) of homeowner property tax bills (Muhammad, 2007). This policy is generally hailed as an effective tax relief policy tool because it ensures eligible homeowners against spikes and rapid growth in annual market assessment values, and hence tax liabilities. Subsequently, PACs have been enacted with voter consent in 19 states (Anderson, 2006) and the District of Columbia. However, despite the popularity and effectiveness of this policy in providing meaningful property tax relief to a large portion of homeowners in a jurisdiction, PACs are renowned for causing inequitable property taxation among affected properties.

Horizontal and vertical equity are principles by which the fairness of a tax or tax system can be assessed. In the realm of property taxation, horizontal inequity exists when properties with similar economic circumstances that have the same market value have dissimilar property tax liabilities. This can be referred to as "unequal tax treatment of equals." Although properties with different economic situations and with different market values are expected to have different tax liabilities, vertical inequity is considered to exist when properties with higher market values have identical or lower property tax liabilities than properties with lower market values.

EFFECTS OF A PAC ON PROPERTY TAX LIABILITIES

This section discusses some of the details of PAC policy, as well as other relevant features of the District of Columbia's property tax policies for homesteads. This section also presents a simple model that demonstrates how these tax policies affected the property tax liabilities of homesteads in the District for years 2002 to 2007.[2]

In 2002, the District began its transition from assessing one-third of the city's property once every three years (a triennial assessment system[3]) to an annual property assessment system. During this transition, approximately one-third of the city's properties shifted back into an annual assessment system each year for years 2002 to 2004.[4] The return to an annual assessment system produced subsequent annual market assessment values for homestead properties that better reflected the demand and supply conditions that existed in the marketplace for owner-occupied properties. However, the transition from restrained assessment values under the triennial assessment system to annual assessments in the midst of an extremely robust property market produced supernormal annual growth rates of 18 percent and higher for some properties for the transition years. This large rate of growth in assessment values due to reassessment is the classic result of a correction taking place when reassessment eventually occurs after several years of no reassessment (Aaron, 1975), especially in a rapidly appreciating market.

To counter the dramatic increases in real property assessments, elected officials enacted numerous tax relief measures for homesteads beginning in 2002. Table 1 lists the major tax policy features for years 2001 to 2007. PAC legislation was enacted in 2002 and stipulated that District homeowners would not pay property tax on the increase in market value above 25 percent of the prior year's assessment. In 2004, the city lowered the assessment cap to 12 percent and increased the homestead deduction amount from $30,000 to $38,000. In 2006 the tax cap was again lowered to 10 percent and the homestead deduction amount was increased from $38,000 to $60,000.

Also in 2006, legislation was enacted that retroactively lowered the taxable assessment values of all capped homestead properties (at that time) that received PAC relief under the 25 percent cap in years 2002 and 2003 so that their 2006 taxable assessment reflected a continuous annual 12 percent capped assessment from 2002 to 2005 and a subsequent 10 percent cap in 2006.[5] In the analyses that follow, this retroactive measure is considered the adjusted tax cap rate when the intertemporal effects are examined in Table 2.

Table 1
Summary of the District of Columbia Tax Policy for Homesteads, 2001 to 2007

	2001	2002	2003	2004	2005	2006	2007
Tax Rate[1]	$0.96	$0.96	$0.96	$0.96	$0.96	$0.92	$0.88
Homestead Deduction Amount	$30,000	$30,000	$30,000	$30,000	$38,000	$60,000	$60,000
Initial Tax Cap Rate		25%	25%	12%	12%	10%	10%
Adjusted Tax Cap Rate		12%	12%	12%	12%	10%	10%
Share of Homesteads in City Assessed Annually	33.3%	33.3%	66.6%	100%	100%	100%	100%

[1]District of Columbia property tax rates are dollar amounts per $100 of assessed value (i.e., an assessment ratio of 100 percent). The tax rate of $0.96 per $100 of assessed value is equivalent to a tax rate of $0.0096. For the remainder of the paper, tax rates are referred to in dollar amounts without reference to dollar amounts per $100 of assessed value.

Table 2
**The District's Real Property Tax Policies and the Median Homestead Property
for Years 2001 to 2007**

	2001	2002	2003	2004	2005	2006	2007
Market Value	$128,499	$155,227	$187,514	$226,517	$273,632	$330,548	$400,050
% Chg		20.8%	20.8%	20.8%	20.8%	20.8%	21.0%
MV Minus Homestead Deduction	$98,499	$125,227	$157,514	$196,517	$235,632	$270,548	$340,050
Capped Taxable Assessment		$110,319	$123,557	$138,384	$146,030	$136,433	$150,076
Tax Liability[1]	$946	$1,059	$1,186	$1,328	$1,402	$1,255	$1,321
% Chg		12.0%	12.0%	12.0%	5.5%	-10.5%	5.2%
Effective Tax Rate	$ 0.74	$ 0.68	$ 0.63	$ 0.59	$ 0.51	$ 0.38	$ 0.33
% Chg		-7.3%	-7.3%	-7.3%	-12.6%	-25.9%	-13.1%
Tax Relief Value	$ 288	$ 431	$ 614	$ 846	$ 1,225	$ 1,864	$ 2,400
Relief Percentage	23.3%	28.9%	34.1%	38.9%	46.6%	58.7%	62.5%

[1]The annual percentage change in the tax liability for the median homestead in Table 2 for years 2002 to 2004 was 12 percent. This stems from the PAC allowing the liability to grow only at a rate of 12 percent per annum. The liability in 2005 grows by only 5.5 percent, and this is caused by an increase in the annual homestead deduction amount by $8,000. The liability in 2006 declines by 10.5 percent, and this is caused by an additional increase in the annual homestead deduction amount by $22,000, a tax rate reduction to $0.92, and a lowered assessment cap rate of 10 percent. The liability in 2007 only grows by 5.2 percent, and this is caused by an additional tax rate reduction to $0.92.

Table 2 presents a stylized method of illustrating how property tax liabilities are calculated for the city's homesteads. In 2001 the median value for a homestead property in the District of Columbia was $128,499. In 2007 the median value for a homestead property was $400,050.[6] The value of the median homestead property more than tripled over these six years. This rate of growth represents an annual average increase of 20.8 percent. These statistics will be assumed to characterize the annual median market values for homestead properties in the city for years 2002 to 2006.[7] The homestead property in Table 2 is a hypothetical property that is referred to as the city's median homestead property and will be considered to typify the valuation and taxation of all homesteads in the city over the given time period.[8]

Table 2 presents three measurements of allotted tax relief: effective tax rate, tax relief value, and

relief percentage. The effective tax rate is the ratio of the tax liability for a given year to the same year's market value. It is a measure of the tax relief relative to the statutory tax rate and differs from the statutory tax rate by the amount of tax relief received in a given year. The tax relief value is the difference between the market value and the taxable assessment value multiplied by the statutory tax rate for the given year. It is the amount of actual relief received in terms of tax dollars.

The relief percentage is the amount of market value in a given year that is exempt from taxation as a share of total market value. That is, the amount equal to the market value minus the taxable assessment all as a share of the total market value for a given year. This statistic indicates the extent to which a property's final taxable assessment differs from market value for a given year. The higher the relief percentage, the greater the share of market value that is exempt from taxation. Table 2 shows that the relief percentage for 2007 was 62.5 percent. This means that, on average, property tax liabilities for 2007 were based on only 37.5 percent of the market value for homesteads that were subject to the PAC continuously since 2002.

An important implication should be highlighted. If there was no PAC in years 2002 to 2007, the taxable assessment of the typical homestead in any given year would equal the market value minus the homestead deduction amount. This would cause the property tax liability for all properties to still be characterized as ad valorem. For example, absent the PAC, a homestead with a market value of $400,050 in 2007 would had a tax liability of

$2,992 ($340,050*$0.0088). That is, the starting point in the tax bill calculation process in each year would be the given year's market value, and the subsequent tax liability would strongly be a function of the market value.

However, under the PAC, the annual tax bill is no longer a function of the market value. For a property's initial year in the assessment cap program, the PAC calls for the property's taxable assessment from the previous year to grow only by an amount statutorily allowed by law. In the second year, and every year thereafter, the starting point in the tax bill calculation process is the previous years' capped taxable assessment, which is allowed to also grow only by an amount statutorily allowed by law.[9] The consequence is that tax bills for homestead properties affected by the PAC are no longer a function of market values. It is in this regard that it is argued that the PAC decouples a homestead's taxable assessment from the market value. And if the multiyear growth rate in market value exceeds the growth rate for capped taxable assessments, the multiyear trajectory of the capped taxable assessment is independent of (decoupled from) the multiyear trajectory of annual market values. This is the context in which pervasive horizontal and vertical inequity becomes manifest. Note that the 2007 liability of $1,321 in Table 2 is 56 percent less than $2,992, which would be the tax liability for the median property absent the PAC. Figure 1 uses the data in Table 2 to further illustrate this issue.

The difference between the amount of the annual taxable assessment without PAC and the amount

Figure 1: **Decoupling the Homestead Tax Liability and Market Value Relationship in the District of Columbia**
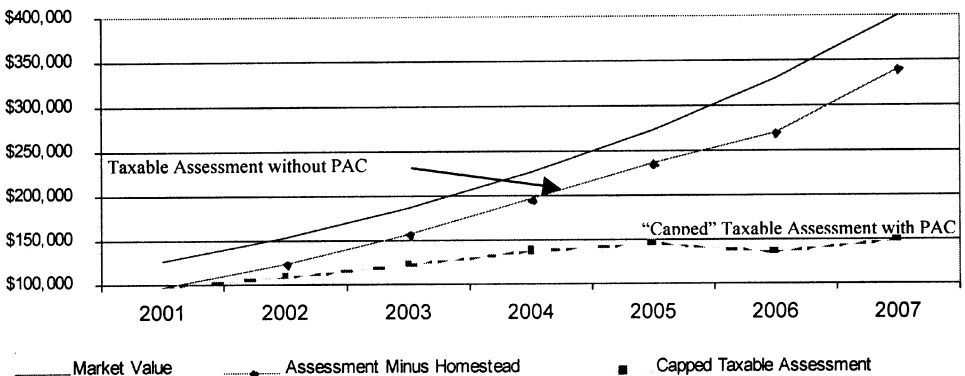
of the capped taxable assessment with PAC in any given year represents tax relief due to the PAC. Figure 1 suggests that the annual growth rate for market value (in excess of the capped growth rate) and the number of years in the cap program determine the cumulative actual amount of PAC tax relief that affected properties automatically receive. That is, the greater the extent to which a property's annual growth rate for market value exceeds the capped growth rate, the greater the PAC tax relief that will automatically be received. Also, the greater number of years a property remains in the cap program, especially when the home value rises faster that the capped taxable assessment, the more PAC tax relief affected properties will receive. It is in this sense that the PAC system of distributing the property tax burden shifts the property tax burden away from rapidly appreciating homesteads and long-time capped homesteads and towards homesteads that experience relatively slower or no appreciation and relatively newly capped homesteads.[10]

DATA AND METHODOLOGY

This study does not formally test the hypotheses of horizontal and vertical inequities among District homesteads.[11] Nor does it conduct the traditional analyses of property tax ratios and other statistics based on jurisdictional averages.[12] Instead, this study is a microanalysis of District of Columbia Office of Tax and Revenue property tax data for 2007 that illustrates the prevalence and extent to which PAC-induced horizontal and vertical inequity existed among District homestead properties. The data contain the official 2007 market values (authorized by the city's Chief Assessor), taxable assessments and tax liabilities for each of the city's 93,000 homestead properties. In the District, taxable assessment values are the amounts to which the statutory residential tax rate is applied in order to calculate the tax liability for homestead properties. Taxable assessments differ from market values due to applicable property tax relief (homestead deduction and PAC).

Furthermore, this study employs a microsimulation model that replicates the property tax liability calculation process detailed in Table 2 for all of the city's homesteads individually. The model is used to estimate the 2007 homestead property tax liability for each homestead in the city according to District tax policies that were in effect for 2007 (the

"with PAC" scenario or WPAC), as well as simulating tax liabilities under a condition that assumes the PAC did not exist in 2007 (the "without PAC" scenario or WOPAC). This approach allows for a robust examination of the distributional impact of the PAC on property tax liabilities for homesteads. The model simulates liabilities only for year 2007 with respect to when properties actually entered the PAC program.[13]

EMPIRICAL RESULTS

Horizontal Inequity

This section compares the tax liability results of the microsimulation model for a sample of homestead market values under both the WPAC and WOPAC scenarios. A comparative analysis of the two sets of results for a common group of homesteads will help define the extent to which horizontal inequity existed in the property taxation of District homesteads.

For this exercise, homesteads with one of seven specified market values that range from $200,000 to $5 million are examined. Of the seven groups of homesteads examined, each will have one target market value that is bounded by a maximum value of $5,000 plus the target market value and a minimum value of $5,000 minus the target market value. For example, one group of properties will have a target assessment value of $200,000, but the entire group will include values that range from $195,000 to $205,000. Another group will have a target assessment value of $5,000,000, but the entire group will include assessment values that range from $4,995,000 to $5,005,000. This approach is taken to obtain more robust group sizes to more reliably measure the extent to which horizontal inequity exists. The $10,000 range of actual market values for each group will be deemed not to undermine the validity of the analysis.

Table 3 shows that for each of the seven market value levels there is practically no variance in tax liabilities as measured by effective tax rates for homesteads at each level under the WOPAC scenario. This is indicated by the lack of range between the lowest and highest effective tax rates at each market value level. The slight statistical variation in effective tax rates at the $200,000, $1 million, and $5 million levels is likely due to the range of market values at each target market value level and

Table 3
2007 Effective Tax Rates for Selected Market Values without PAC Scenario (WOPAC)

			2007 Effective Tax Rates		
	Selected Market Values	# of Homesteads	Low Value	High Value	Range
1	$200,000 (Range $195,000 to $205,000)	1,535	$0.61	$0.62	$0.01
2	$400,000 (Range $395,000 to $405,000)	1,695	$0.75	$0.75	$0.00
3	$600,000 (Range $595,000 to $605,000)	618	$0.79	$0.79	$0.00
4	$800,000 (Range $795,000 to $805,000)	524	$0.81	$0.81	$0.00
5	$1,000,000 (Range $995,000 to $1,005,000)	2,229	$0.82	$0.83	$0.01
6	$2,000,000 (Range $1,995,000 to $2,005,000)	297	$0.85	$0.85	$0.00
7	$5,000,000 (Range 4,995,000 to $5,005,000)	17	$0.87	$0.87	$0.01

is considered insignificant. The homestead deduction causes the median effective tax rates to differ from the 2007 statutory tax rate of $0.88.

Table 4 shows the effect of the PAC on the effective tax rates for the same properties shown in the previous table, and the results are quite different. First, the range between the lowest and highest effective tax rates at each market value level is significant. The $5 million market value level, for example, has the smallest range ($0.48) between the lowest and highest values for effective tax rates. And, the $600,000 market value level has the largest range ($0.78). This means that for all homesteads that have an approximate value of $600,000 the effective tax rate could have been as low as $0.01 or as high as $0.79. This table indicates that the PAC is the cause of dissimilar, and hence inequitable, taxation for homesteads that are similarly valued at all selected market value levels. And because this result occurs at every market value level in this analysis, it is concluded that horizontal inequity is likely to exist among property taxation of homesteads in the District of Columbia in 2007 at every market level.[14]

Horizontal Inequity by Years in Cap Program

This section takes a closer look at homestead properties according to when they entered the assessment cap program. Figure 1 (presented earlier) illustrates how the extent to which the annual growth rate of homestead market values exceeds the cap rate helps determine the amount of actual PAC relief received by individual homesteads. The following analysis further demonstrates that the number of continuous years in the cap program is also a major determinant of the amount of PAC tax relief. The following analysis groups all homesteads into one of the following four cohorts. Table 5 briefly describes the cohorts.

Table 6 shows how the District's homesteads are distributed among the cohorts according to various statistics. This table indicates that 6.9 percent of the homesteads were not capped in 2007 (taxed on an ad valorem basis), while the remaining 93.1 percent were subject to inequities.

The above table shows that cohorts 1, 2, and 3 bear a noticeably higher property tax burden relative to their share of assessment value. And, cohort 4 has 64.2 percent of the city's total homestead assessment value but only 56.2 percent of the tax liability due to receiving 78.4 percent of the tax relief dollars. This suggests that relatively higher tax burdens in the other three cohorts partly subsidize the substantially lower tax burden of cohort 4.[15]

Table 7 provides the share of the total properties, median effective tax rate, median market value, and median relief percentage for each cohort. Clearly, homesteads in cohort 4 are the greatest beneficiaries of the PAC as indicated by the sub-

Table 4
2007 Effective Tax Rates for Selected Market Values with PAC Scenario (WPAC)

	Selected Market Values	# of Homesteads	2007 Effective Tax Rates		
			Low Value	High Value	Range
1	$200,000 (Range $195,000 to $205,000)	1,535	$0.00	$0.62	$0.62
2	$400,000 (Range $395,000 to $405,000)	1,695	$0.03	$0.75	$0.72
3	$600,000 (Range $595,000 to $605,000)	618	$0.01	$0.79	$0.78
4	$800,000 (Range $795,000 to $805,000)	524	$0.08	$0.81	$0.73
5	$1,000,000 (Range $995,000 to $1,005,000)	2,229	$0.07	$0.83	$0.76
6	$2,000,000 (Range $1,995,000 to $2,005,000)	297	$0.18	$0.85	$0.67
7	$5,000,000 (Range 4,995,000 to $5,005,000)	17	$0.39	$0.87	$0.48

Table 5
A Brief Description of Cohorts

	2007 Cap Status	Description
Cohort 1	Not capped (in 2007)	Not capped in 2007, strictly ad valorem property taxation
Cohort 2	Newly capped	Not capped in 2006 but capped in 2007
Cohort 3	Medium-term capped	Capped for years 2006 and 2007 but entered program after 2002
Cohort 4	Long-term capped	Capped since the inception of program in 2002

Table 6
The 2007 Distribution of Homesteads by Cohorts

	Homesteads	Homestead Assessment Value	Tax Liability (PAC Scenario)	Tax Cap Relief
Cohort 1	6.9%	6.7%	10.4%	0.0%
Cohort 2	10.5%	10.1%	13.3%	4.4%
Cohort 3	18.6%	19.0%	20.2%	17.1%
Cohort 4	64.0%	64.2%	56.2%	78.4%
Total	100.0%	100.0%	100.0%	100.0%

Table 7
Program Tenure and Inequity by Cohort

	Cohort 1	Cohort 2	Cohort 3	Cohort 4
Share of Properties	6.9%	10.5%	18.6%	64.0%
Median Effective Tax Rate	$0.75	$0.62	$0.46	$0.36
Median Market Value	$409,340	$390,750	$679,540	$1,269,690
Relief Percentage	15.4%	30.7%	47.8%	60.5%

stantially lower median effective tax rate. In a city where the typical homestead has tripled in value between years 2002 and 2007, these homesteads have been in the best position to capitalize from the PAC, which has limited annual taxable assessment growth to 10 or 12 percent per annum. Homesteads in the other three cohorts are relatively recently purchased homes. Therefore these homes entered the cap program near the peak of the recent real estate cycle and when their market and taxable assessment values were relatively high. In practical terms, homesteads in cohort 4 had their 2001 assessments, which were heavily impacted by the triennial assessment system, capped. This means that nearly all of the increase in market values for these homes over this extraordinary time period was exempt from property taxation in 2007.

It is of particular interest to note the trends in median market values and median effective tax rates across cohorts. Table 7 shows that effective tax rates tend to decline as time spent in the cap program increases. The median market value for cohort 1 is $409,340. But among capped homesteads, the lowest median market value belongs to cohort 2 at $390,750, and the highest median market value belongs to cohort 4 at $1.3 million. Therefore, as the median market value tends to increase among capped homesteads according to cohorts, the median effective tax rate simultaneously tends to decrease. Note that half of all the homesteads in cohort 4 had an assessed value greater than $1.3 million while half of all the homesteads in the same cohort had an effective tax rate less than $0.36. This indicates that the median effective tax rate for some of the city's most expensive homesteads (cohort 4) was 52 percent less than the effective tax rate of some of the city's significantly more modest and uncapped homesteads (cohort 1).

Vertical Inequity

The following analysis assesses the prevalence of vertical inequity among homesteads in cohort 4, which is selected because it has the largest share of capped homesteads in the District. These homesteads have been capped for the greatest number of years and have been allotted the greatest share of PAC tax relief dollars. Since inequity has been found to be positively correlated with number of years in the cap program, the most extreme cases of vertical inequity are expected to be found in cohort 4.

Table 8 presents the property tax liability and accompanying liability statistics for 10 selected

Table 8
2007 Tax Liabilities and Tax Relief Statistics for WOPAC (Uncapped) Homesteads at 10 Selected Market Values

Market Value	$100,000	$200,000	$300,000	$400,000	$500,000	$600,000	$700,000	$800,000	$900,000	$1,000,000
MV Minus Homestead	$40,000	$140,000	$240,000	$340,000	$440,000	$540,000	$640,000	$740,000	$840,000	$940,000
Tax Bill	$352	$1,232	$2,112	$2,992	$3,872	$4,752	$5,632	$6,512	$7,392	$8,272
Effective Tax Rate (ETR)	$0.35	$0.62	$0.70	$0.75	$0.77	$0.79	$0.80	$0.81	$0.82	$0.83
Tax Relief Value	$528	$528	$528	$528	$528	$528	$528	$528	$528	$528
Relief Percentage	60.0%	30.0%	20.0%	15.0%	12.0%	10.0%	8.6%	7.5%	6.7%	6.0%

market values under the WOPAC scenario. These liability statistics can also be interpreted to typify taxation results for uncapped (i.e., cohort 1) homesteads with identical 2007 market values. For example, Table 8 states that a homestead under a WOPAC scenario and with a $1 million market value level would have a 2007 tax bill of $8,272, an effective tax rate of $0.83, a tax relief value of $528, and a relief percentage of 6 percent.[16]

These statistics will serve as a point of reference by which the liability statistics, calculated via the microsimulation model, for homesteads in cohort 4 will be compared. Since the PAC has been found to dramatically lower property tax liabilities for some properties, particularly over the long term, identifying homesteads in cohort 4 with actual liability statistics comparable to those in Table 8 will illustrate the degree inequity existed among District homesteads. For example, the PAC could cause a homestead with a $1 million 2007 market value to have an effective tax rate of $0.35 and a relief percentage of 60 percent. This is interpreted to mean that a $1 million home with a capped assessment could be levied with a 2007 property tax liability as if it was a $100,000 home under a WOPAC scenario (or in cohort 1).

Absent a PAC, where all homesteads in the city would be subject to traditional ad valorem taxation, all homes of a given market value would have the same tax liability. For example, all homes in the city with a market value of $200,000 would be taxed "equally." However, the District's PAC decouples the property tax liabilities of capped properties from the market values of the respective properties.

Upon examination of liability statistics for all cohort 4 homesteads, these properties are grouped in cells in Table 9 by their actual 2007 market values (shown on the far left column) and by their inferred market value under a WOPAC scenario (shown on the top row with dollar amounts). In other words, each cell in the table gives the number of homesteads in cohort 4 with a similar market value and a similar effective tax rate and relief percentage that corresponds to a selected market value of a homestead not subject to the PAC. The effective tax rate and relief percentage that corresponds to each of the 10 selected market values are given in Table 8.

Table 9 indicates that there are 7,251 capped homesteads in cohort 4 with a 2007 market value that ranges from $200,000 to $300,000 but with

Table 9

Comparing Tax Liability Statistics of Homesteads in Cohort 4 to the Tax Liability Statistics of WOPAC (Uncapped) Homesteads

Market Values Inferred by Actual Liability Statistics of Homesteads in Cohort 4

Actual Market Values for Homesteads in Cohort 4	$100,000	$200,000	$300,000	$400,000	$500,000	$600,000	$700,000	$800,000	$900,000	$1,000,000	Total	Share of Total Cohort
$200,000 - $300,000	7,251										7,251	14.9%
$300,000 - $400,000	8,789	4,052									12,841	26.3%
$400,000 - $500,000	3,909	2,804	91								6,804	13.9%
$500,000 - $600,000	1,534	2,435	95	14							4,078	8.4%
$600,000 - $700,000	725	3,098	232	44	6						4,105	8.4%
$700,000 - $800,000	421	3,045	233	39	11	5					3,754	7.7%
$800,000 - $900,000	252	2,266	239	46	3	4	3				2,813	5.8%
$900,000 - $1 million	128	1,356	180	39	12	10	1	1			1,727	3.5%
$1 million - $2 million	193	3,330	896	274	57	26	14	9	6		4,805	9.8%
>$2 million	24	373	161	42	9	5	3	3	0	1	621	1.3%
Total	23,226	22,759	2,127	498	98	50	21	13	6	1	48,799	100.0%
Share of Total Cohort	47.6%	46.6%	4.4%	1.0%	0.2%	0.1%	0.51%	0.32%	0.15%	0.02%	100.0%	

an effective tax rate of $0.35 or less and a relief percentage of 60 percent or higher. This means that these 7,251 capped homesteads are valued between $200,000 and $300,000 but have a tax bill equal to or less than that of an uncapped homestead valued at $100,000. That is, these 7,251 cohort 4 homesteads have actual market values between $200,000 and $300,000 but are taxed as if they were $100,000 homes, absent a PAC. In that same column in Table 9, there are 24 capped homesteads in cohort 4 with a 2007 market value of $2 million or greater but also with an effective tax rate of $0.35 or less and a relief percentage of 60 percent or higher. This means that these 24 capped homesteads have actual market values of $2 million or greater but are taxed as if these were $100,000 homes, absent a PAC. Each column represents homesteads in cohort 4 that have approximately the same tax liability but various actual 2007 market values.

Meanwhile, each row represents homesteads in cohort 4 that have approximately the same market value but with differing tax liabilities. For example, there are 3,909 homes in cohort 4 that have 2007 market values that range from $400,000 to $500,000 but have a tax liability as if these same homes had market values of $100,000 homes, absent a PAC. There are also 2,804 homes with the same actual 2007 market values ($400,000 to $500,000) but have a tax liability as if these same homes were $200,000 homes, absent a PAC. And finally, there are 91 homes still with the same actual 2007 market values ($400,000 to $500,000) but have a tax liability as if these same homes were $300,000 homes absent a PAC. This is PAC-induced horizontal inequity. Each row illustrates actual cases of horizontal inequity.

The 48,799 homesteads identified of the total 59,936 (81.4 percent) in cohort 4 in Table 9 are subject to a considerable degree of inequity. This suggests the inequities of the remaining 11,137 (18.6 percent) homesteads in the cohort are not as egregious as those identified in the above table. In terms of central tendencies, the majority (55 percent) of homesteads identified in Table 9 in Cohort 4 had market values that ranged between $200,000 and $500,000. And, 94 percent of the homesteads had tax burdens that were equal to uncapped homesteads that were valued between $100,000 and $200,000.

When averages and central tendencies are the focal point of data and statistical analyses, additional important information embedded in the source data is sometimes overlooked or glossed over. This paper is based on a microanalysis that not only examines overall averages and central tendencies in the data but also less than overwhelming patterns and propensities in the data that are nevertheless highly informative. For example, the analysis shows that there were 3,920 (193 + 3,330 + 24 + 373) homesteads in cohort 4 that had 2007 market values in excess of $1 million but had tax liabilities as if they were homes valued at $300,000 or less in cohort 1 or absent the PAC. This small subgroup of properties is only 4 percent of the city's homesteads but speaks volumes concerning the PAC-induced inequity of taxation of the city's homesteads.

CONCLUSIONS

This study finds that the District's PAC is the cause of pervasive inequitable taxation of homesteads in the District and that the 2007 property tax liabilities for the majority of the city's homesteads tended to be a meager fraction of the amounts that they might be levied absent such a policy. This policy, in turn, has caused the property tax for these homesteads (and particularly some of the city's most expensive homes) to more closely resemble a mere annual unit excise tax rather than a traditional ad valorem property tax. While this result is likely to be unobjectionable for most homeowners and many policy makers, this policy demonstrates the excessive erosion of the real property tax base to the advantage of some of the District's wealthiest homeowners. This research questions the efficacy and effectiveness of such a practice.

The practice of state and local governments limiting property assessment values as a form of property tax relief is more than 30 years old. But, the time seems ripe to modify or reform this policy in ways that preclude both the seemingly unwarranted amounts of annual property tax relief going to the city's highest valued homes and the inadvertent near full property tax exemption for affected properties. For example, a condition might be implemented such that a property's taxable assessment may not be less than a certain percentage of market value. Such a condition could allow policy makers to redirect these recaptured property tax relief dollars to higher and better uses such as providing more property tax relief to lower- and middle-income households for example.

Notes

[1] In comparison, homes subject to 17 years of Proposition 13 in Los Angeles and San Francisco tended to have effective tax rates in 1992 that were one-fifth of uncapped homes (O'Sullivan, Sexton, and Sheffrin, 1995).

[2] In the District of Columbia, homestead properties are owner-occupied properties that are registered with the Office of Tax and Revenue to receive tax relief via the homestead property tax deduction, property assessment cap, senior credit, and other programs. Every few years audits are conducted to ensure homeowners' compliance with eligibility rules. Every registered homestead is automatically eligible for the homestead deduction and property assessment cap.

[3] Under a triennial assessment system, the city's entire property tax base in the city was divided into three assessment groups called triennial groups (tri-groups) in 1999. Each tri-group contained approximately a third of the total value of taxable real property. Property reassessments for each tri-group occurred once every three years and increases in assessed value were phased in over a 3-year period.

[4] In 2002, all properties in tri-group 1 were reassessed for the first time since 1999. In 2003, all properties in tri-group 2 were reassessed for the first time since 2000. In 2004, all properties in tri-group 3 were reassessed for the first time since 2001. Thus, in 2004, for the first time since 1998, all taxable real property in the District was assessed on an annual basis.

[5] At issue are the homesteads in tri-groups 1 and 2 that entered annual assessments when the tax cap was 25 percent in 2002 and 2003, but tri-group 3 entered annual assessments when the tax cap was 12 percent in 2004. This measure was an attempt to equalize the tax relief among all homesteads.

[6] The market values are the annual estimated market assessment values determined by the city's property assessor in the Office of Tax and Revenue.

[7] The smoothed annual average growth rates and subsequent estimated market value levels for years 2002 to 2006 in Table 2 stem from the calculated annual average growth rates with respect to the actual median values in 2001 and 2007.

[8] The market value minus homestead deduction amount for 2001 was $98,499 ($128,499 - $30,000). The capped taxable assessment for 2002 is $110,319, which is the previous year's taxable assessment plus 12 percent ($98,499 *1.12). A property is taxed on the lesser of two calculations, the market value minus homestead deduction amount or the capped taxable assessment value for any given year. The tax bill is equal to the applicable taxable assessment (the lesser of the two possible taxable assessments) times the statutory tax rate. The 2002 tax bill is $1,059 ($110,319 * $0.0096).

[9] As long as the capped taxable assessment value for any given year is less than the market value minus the homestead deduction amount and the ownership of the homestead does not change, the capped taxable assessment value is the applicable amount to which the tax rate is applied.

[10] Since the peak of current real estate cycle in the District of Columbia has been considered to occur between years 2005 to 2007, annual assessment growth in the subsequent years is likely to moderate dramatically in the coming years. This market correction is expected to cause market values for homesteads to gradually realign with their respective capped taxable liabilities over a period of more than 10 years. However, a policy proposal to induce near convergence in a shorter amount of time is discussed in Government of the District of Columbia, January 2008.

[11] Previous analyses (Government of the District of Columbia; 2007a, 2007b) have concluded that horizontal and vertical inequity exists in the District's system of property taxation of homestead properties.

[12] For example, the coefficient of dispersion (COD), the average percentage deviation from the median ratio, can be generally used as an indicator of horizontal equity, and the price–related differential (PRD) is a statistic that measures the vertical equity based on jurisdictional average ratios (Eckert, 1990).

[13] In 2007, a homestead property was eligible for the PAC if the growth rate in the 2007 market value relative to 2006 exceeded 10 percent and if there has not been a property ownership change since 2005.

[14] The selected market value levels range from $200,000 to $5 million cover 90 percent of all homesteads.

[15] The relatively lower tax bills for homesteads in cohort 4 is considered to be only partially subsidized by the other cohorts because there are two other property classes in the District that bear a tax rate of more than double the residential statutory rate. These other two property classes (commercial property and vacant property) have not typically been afforded any tax relief and consequently face a dramatically higher relative tax burden. Also, the tax rates for other taxes (e.g. income tax, sales tax, business taxes etc.) may be higher so as to help finance or subsidize lower property tax bills for homeowners, particularly those in cohort 4.

[16] The tax relief value at all market value levels is constant because the homestead deduction amount is a flat amount of $60,000. The tax value of this deduction is equal to $528 ($60,000 * $0.0088) or the deduction amount times the statutory tax rate.

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