A PRIMER ON THE PROPERTY TAX
with Special Application to Cook County, Illinois

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The Civic Federation

RESEARCH SERIES

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ABSTRACT

The property tax system in Cook County, which raises over $6 billion each year, has evolved in response to specific concerns. The cumulative effect of years of ad hoc policy changes is unwieldy and confusing. There are several good sources which explain the Illinois property tax[2] but none show the full range of relationships among the key policy variables, a gap this paper hopes to fill. For example, an equation is derived which shows under what circumstances a tax break increases the tax bill of an eligible taxpayer. This paper concludes with policy recommendations including a simple change in the timing of events in the property tax cycle to ameliorate the impact of the property tax without reducing revenue to local government or increasing the liability of any taxpayer.

[2] See, for example, two publications of the Taxpayer's Federation of Illinois: *1994 Practical Guide to Illinois Real Estate Taxation* by Jennifer Gordon and Christopher D. Romans and *Taxation Without Explanation: The Illinois Property Tax System* by Ronald D. Picur and Rowan A. Miranda (1993).

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The property tax is a unique revenue source because it is the only one which is *zero-sum*, meaning that the amount of money to be raised, called the *levy*, is set by law each year. Because the amount of money to be raised is fixed, relief given to one taxpayer necessarily increases the liability of other taxpayers. Other taxes defined in terms of a tax rate applied to particular transactions -- sales, wage payments, etc. -- are not zero-sum. Granting tax relief to a subset of taxpayers reduces the amount of money collected without increasing the tax burden on others. Unlike the property tax, a rate is set for an indefinite period.

CONTROLLING PROPERTY TAXES

We first analyze a simplified system, ignoring for the time being issues pertaining to assessment of property and the effects of various forms of tax relief. These complicating factors will be incorporated one at a time after basic relationships, including the effects of rate limits and tax caps, are clarified.

Each taxpayer's fractional share of a levy is the ratio of his or her taxable property value to the *tax base* -- that is, the total value of all taxable property within the area of the taxing government. How these values are measured is discussed later.[3] The tax bill of a typical property owner is equal to the product of his or her share (v/V) and the amount of money the government wishes to raise, the gross levy, L :

$$t = (v/V)\,L\,.$$

Since the sum of individual shares equals one, total taxes billed equals the gross levy. The total of all tax bills, T , is called the *extension*, and in the simplified model, it equals the gross levy.[4] For reasons of administrative convenience, the law provides for bills to be calculated using a mathematically equivalent method. The County Clerk first calculates a tax rate for each local government:

$$R \equiv L/V$$

and then calculates tax bills as follows (see sample bill in the appendix):[5]

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[3] Lower case letters refer to variables associated with a typical taxpayer while upper case variables refer to variables associated with units of government.

[4] Because some taxpayers are unable to pay their taxes and local governments levy an extra amount to compensate for this *loss in collection* which, in some cases, is quite large. In Ford Heights the loss factor exceeds 25% and the government nets only 75% of its gross levy.

[5] *Proof of equivalency:* $t = (v/V)\,L = v\,(L/V) \equiv v\,R$. The triple bar ($\equiv$) denotes a definition. Under arithmetic operations, it is treated like an equals sign. The total extension is therefore $T = VR$. On tax bills R is expressed as dollars per $100 of taxable value.

$$t = v R .$$

The state controls the finances of non-home rule units of government by limiting their maximum tax rate, referred to here as a ceiling.[6] Ceilings divide local governments into two categories, based on the relationship between levy and extension.

- Where gross levies are below the critical level, as they are for most communities in northern Cook County: $\mathbf{T = L}$.[7]

- Where the gross levies are at (or above) the critical level, as they are for most communities in southern and western Cook County, extensions are driven by changes in taxable property values: $\mathbf{T_{max} = V R_{max}}$, where $\mathbf{V}$ is the lesser of the current year or prior year's taxable property values.[8]

Another method of controlling property taxes is with *caps*. A tax cap is a limit on the rate of growth in the levy (expressed as a percent). It is currently set at the lesser of 5% or the rate of growth in the Consumer Price Index for Urban areas (CPI-U) during the preceding calendar year. The state has imposed tax caps on all non-home rule communities in the Chicago region.

In the past, inflation in property values gave communities latitude to raise taxes. Tax caps restrict their latitude by limiting the change in the levy (read the symbol $\%\Delta$ as 'percent change in'):

$$\textbf{Tax Cap} \equiv \textbf{lesser of 5\% or CPI-U} \geq \%\Delta V + \%\Delta R .$$

Growth in the tax base ($\%\Delta V$) exceeding the cap forces the rate down ($\%\Delta R < 0$) rendering the rate ceiling meaningless. On the other hand, if the tax base is declining, the rate ceiling forces the extension down, and the tax cap becomes irrelevant.[9] *Rate ceilings and tax caps are two blades of a fiscal scissors: when the tax base is rising, caps control revenue growth and, when the tax base declines, control is effected by the rate ceilings.*

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[6]Home rule units consist of Cook County and all cities and villages (municipalities) with at least 25,000 residents. No school district or special district qualifies. This paper uses the term "community" to refer to any taxing body, whether a unit of local government or school district.

[7] The County Clerk rounds up when calculating tax rates. This changes a typical tax bill by no more than one dollar multiplied by the number of units of government on the bill. Since there is no need to round off if a community is at its ceiling rate, rounding is more likely to affect bills in the northern suburbs.

[8] The levy is limited by law by the prior year's taxable property value. If taxable property values fall and the County Clerk finds they are inadequate to support the levy, he or she will reduce the extension below the levied amount.

[9] The percentage change in the product of two variables is equal to the sum of the percentage changes in each variable. Thus $T = V R$ implies that: $\%\Delta T = \%\Delta V + \%\Delta R$. For a government operating at its maximum rate the first term is zero and the percent change in its extension equals the percent change in the tax base.

Is a tax increase an increase in the *levy* or is it an increase in the *rate*? Local tax officials argue that they are not increasing taxes when they "ride the rate" -- that is, letting rising taxable property values drive up tax receipts without increasing the tax rate. According to critics *any* increase in the *levy* is a tax increase, even if the rate should fall. Tax officials base their argument on $t = v R$ while critics base theirs on the equivalent relationship, $t = (v/V) L$. Mathematically the contest between tax officials and their critics is a tie but when the state legislature joined with the critics to enact tax caps, local tax officials decisively lost the argument.

ASSESSMENT AND CLASSIFICATION

The County Assessor determines the value of each parcel, subject to appeal. State law requires that the total assessed property value of each county (**A**) to be one-third of the total of the *fair market value* (**F**) of its property. To enforce this law, the State Department of Revenue calculates a number for each county called the *equalization factor* (**M** , also known as the *multiplier*) which the County Clerk uses to adjust the assessed value of each parcel before calculating bills. After adjustment, taxable property value is defined as the *equalized assessed valuation* (**E**). These variables are related by the following equations:[10]

$$E \equiv MA = F/3 .$$

The ratio of assessed to fair market value (**A/ F**) is known as the *assessment ratio*. If it is one-third, then $A = F/3$, and the multiplier equals *one*. If the assessment ratio is less than one-third, the multiplier is greater than one and, if it is above one-third, the multiplier is less than one.

In the simple model the multiplier has no effect on the tax bill of a typical property owner. An individual bill is given by $t = v R$ where $v = Ma$ and $R = T/V = T/MA$. Upon making the appropriate substitutions the tax bill becomes:

$$t = (Ma)(T/MA) = (a/A) T$$

or just the property owner's fractional share of the total assessed valuation multiplied by the extension. However, this analysis implicitly assumes that the rate is below its statutory ceiling, R_{max} . Once the rate rises to this level, a fall in assessed value reduces extensions and the multiplier no longer cancels. The multiplier is useful because:

- it prevents inaccurate assessments on the low side from accidentally causing local governments to reach their tax rate ceilings,

[10] Sans serif block letters (Britannic Bold) refer to county-wide variables. Other capital letters refer to community-wide variables. The multiplier is determined by the state using a statistical sample of parcels. The multiplier used in calculation of property tax bills is a three-year moving average. If this average for any county falls between .99 and 1.01, the state assigns a multiplier of one to that county. These procedures raise other issues of a statistical nature which are beyond the scope of this paper.

- it prevents similar parcels with equal market values being taxed differently by the same community in those communities straddling a county line.[11] and
- it prevents county assessors generating more state aid for their school districts by arbitrarily lowering assessments relative to prevailing fair market value. [The state school aid formula disproportionately benefits school districts with relatively low property values per average weighted daily attendance.]

State law permits Cook County to classify property and to apply a different assessment ratio to each class:[12]

Class	*Property Description*	*Assessment Ratio* (A/F)
1	Unimproved real estate.	0.22
2	Residential less than six units	0.16
3	Residential not in Classes 2 or 9	0.33
4	Nonprofit Organizations	0.30
5A	All real estate not otherwise classified	0.38
5B	Industrial	0.36
6A	New or rehabilitated industrial	0.30 first 8 years
6B,7,8,9	Other development incentive classes	0.16 first 8-12 years

Notwithstanding classification, the law requires that, *on average*, the county-wide aggregate assessment ratio be one-third. Because the residential property class contains the most assessed value and the assessment ratio for this class is significantly lower than one-third, the county-wide aggregate assessment ratio is less than 0.33. The Cook County multiplier is thus inflated -- i.e., permanently greater than one. In addition, classification shifts the property tax off of residential and onto industrial property. and the multiplier is a mechanism that diffuses changes in assessed value in each community district throughout the county.

TAX BREAKS

A Homeowner's Exemption of $4,500 is available to all owners who occupy their own property and, if the homeowner-occupier is age 65 or over he or she is also entitled to a Senior Citizen's Exemption, which equals an additional $2,500.[13] Senior citizens with incomes under $35,000 are also eligible for an assessment *freeze* -- that is, their assessments will not increase as their property appreciates. Exemptions and assessment freezes hereinafter are referred to generically as *tax breaks*.

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[11] For example the city of Elgin is split between Cook and Kane counties.

[12] Gordon and Romans, supra. p. 28.

[13] Actually the homeowner's exemption is based on a formula which phased it in but at the present time nearly all Cook County homeowner-occupiers are entitled to the maximum value of $4,500. In the collar counties this exemption is $3,500 and the senior citizen's exemption is $2,000. On Cook County tax bills these exemptions are referred to as the "Homeowner's Exemption Deduction" and the "Sr. Citizen's Homestead Exemption Deduction," respectively.

Tax Increment Finance (TIF) districts and abatements are forms of tax relief tailored for the needs of commerce and industry. Abatement is tax relief in the form of tax forgiveness to owners of particular parcels.[14] TIF districts help counties, cities and villages promote economic development within a target area by providing a source of revenue for a specified period of time to pay for the public development costs.[15] The boundaries of the district are established by local ordinance. After the effective date of its creation, the growth in taxable property value is not taxed for the normal functions of government but is taxed separately to pay for public development costs. The initial taxable property value, which does not change during the life of the district, continues to be taxed by all overlapping units of local government. There are definite advantages for the city and the district's property owners.

- The government is able to capture for its own purposes a portion of the tax base of other overlapping units of government.
- The TIF district's property owners pay less tax to all overlapping governments because equalized assessed valuation growth is taxed only for development costs, which are lower than the normal combined tax levies.
- Governments may be able to shift some regularly budgeted functions to TIF districts, thereby reducing the pressure on their normal levies.

The disadvantages accrue to overlapping governments, notably school districts:

- The equalized assessed valuation used to calculate their maximum property tax rate exclude the TIF district's growth increment which restricts their maximum levy.
- The tax rate increases for taxpayers within the jurisdiction of an overlapping government residing outside the TIF district, *provided* it has not reached its rate ceiling.

TAX CAPACITY, CLASSIFICATION AND TAX BREAKS

Tax capacity is defined as the maximum amount of property tax revenue that can be raised. The effect of classification and tax breaks can be measured by change in tax capacity. The difference between the maximum amount that can be extended with and without property classification and tax breaks, given the statutory ceiling. That is,

$$(V - V') R_{max}$$

where **V** is current taxable property value and **V'** is without classification and tax breaks.

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[14] They are used for industrial purposes or for enterprise zone (not to be confused with TIF district) development.

[15] Special districts and school districts are not so entitled. The lifespan of TIF districts is usually not more than 25 years, although 35 years is possible.

The prime mark on any variable indicates that it is measured before classification or tax breaks. In the equations below, the subscript **i** on a variable is an index denoting a class of property (see above table). For example, if **i** = 2, the property is residential. Let $\mathbf{a'}_i$ be the assessed value of parcels in class **i** before classification and if $\mathbf{c}_i$ is the statutory assessment ratio for class **i**, then the assessed value of a parcel after classification, $\mathbf{a}_i$, is:

$$\mathbf{a}_i \equiv \mathbf{a'}_i \mathbf{c}_i$$

The assessed value of all property in the community is:

$$\mathbf{A} \equiv \mathbf{A'C}$$

where **C** is the weighted average of the $\mathbf{c}_i$ in the community.[16] The corresponding values county-wide are denoted by a bolder font:

$$\mathbf{A} \equiv \mathbf{A'C}\,.$$

Since fair market value is unaffected by classification, the multiplier compensates for changes in total assessed value induced by classification as follows:[17]

$$\mathbf{M} = \mathbf{M'}/\mathbf{C}$$

The tax bill of a typical taxpayer in class **i** is:

$$\mathbf{t}_i = (\mathbf{v}_i / \mathbf{V})\,\mathbf{T} = (\mathbf{a}_i'/\mathbf{A'})\,(\mathbf{c}_i/\mathbf{C})\,\mathbf{T}$$

Within a community the tax burden is shifted from residential taxpayers for whom $\mathbf{c}_i < \mathbf{C}$ to industrial/commercial ones for whom $\mathbf{c}_i > \mathbf{C}$.

An assessment freeze maintains a constant assessed value of a property over a period of time for purposes of computing the tax bill but not for calculating the value of the multiplier. An exemption deduction reduces the equalized assessed valuation. In the following equations, **x** and $\mathbf{z}_i$ respectively denote the value of all applicable exemptions and

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[16] $\mathbf{c}_i$ is the same for all parcels in class i, total assessed value in class i is obviously $A_i = A'_i\,\mathbf{c}_i$ and the assessed value of all property in the community is $A = (A'_1\,\mathbf{c}_1) + (A'_2\,\mathbf{c}_2) + \ldots + (A'_9\,\mathbf{c}_9)$. The right-hand side can be expressed as the product of the weighted average of assessment ratios (C, without subscript) and the total assessed value of a typical community. *Proof:* $(A'_1C_1) + (A'_2C_2) + \ldots + (A'_9C_9) = A'[(A'_1/A')C_1 + (A'_2/A')C_2 + \ldots + (A'_9/A')C_9]$. Notice that each term in brackets contains one factor of the form C_i the statutory assessment ratio for class i, and one factor of the form A'_i / A', which is the fraction of the community's assessed value in class i. Since every parcel is a member of some class, the sum of the A'_i/A' evidently equals one and the sum of the products of these factors with the $\mathbf{c}_i$ results in the weighted average of the $\mathbf{c}_i$ which is defined to be C.

[17] *Proof:* The multiplier without classification is $M' = E/A'$ while the multiplier with classification is $M = E/A = E/A'C$. Since $E = F/3$ on a county-wide basis and F is unaffected by classification, solve each equation for E and set the results equal to each other. Thus, $M'A' = MA'C$ which implies $M = M'/C$

the value of assessment freeze to a typical taxpayer while **X** and **Z** respectively denote the *total* value of all exemptions and frozen assessments within a tax jurisdiction. The value of taxable property for an individual and for his or her community are now described as:

$$v_i = e_i - Mz_i - x = M(a_i - z_i) - x$$

$$V = E - MZ - X = M(A - Z) - X$$

Tax breaks cause the tax rate to rise. As long as the tax rate stays below R_{max} the extension is unaffected because reductions in the tax base will offset increases in the rate. Once the rate ceiling is encountered, **R** gets "stuck" at R_{max}, forcing the extension down as additional tax breaks are awarded. Tax capacity increases whenever:[18]

$$C'/C > [M(A - Z) - X] / MA$$

Notice that all variables on the right-hand side are measured in terms of current (after tax breaks) values. Because the right-hand side is always less than one, a sufficient condition for capacity to increase is $C > C$ which is the case in residential communities. But this is not a necessary condition, so there may exist some industrial communities which also experience increased capacity

To compute the value of relief (or cost) of a tax break to a typical taxpayer, compare his or her tax bill including these tax breaks to a hypothetical bill on the same parcel without these tax breaks being given to anyone. If the bill with tax breaks is smaller, the taxpayer is receiving relief. If it is larger, the taxpayer is paying for someone else's relief and experiences a new burden. Tax relief occurs whenever the taxpayer's share of all tax breaks is greater than his or her share of the assessed valuation without the breaks:[19]

$$(Mz_i + x) / (MZ + X) > a_i / A$$

Those taxpayers for whom the opposite is true, carry an additional burden, even though they are eligible for the tax break. Their bills would be smaller if the break did not exist.

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[18] To calculate the change in tax capacity, begin by expressing the maximum extension with and without classification, freezes or extensions. The change in tax capacity is their difference, $T_{max} - T'_{max}$ or $[MA(C'/C) - (M(A - Z) - X)] R_{max}$ which is greater than zero (increasing capacity) if and only if the quantity multiplying R_{max} is greater than zero, or whenever: $C'/C > [M(A - Z) - X]/MA$.

[19] Recall that the tax bill of a taxpayer in class i without these tax breaks is: $t_i = (a_i/A) T$. With these breaks the tax bill of a typical taxpayer is: $t_i = (v_i / V) T = \{[M(a_i - z_i) - x]/[M(A - Z) - X]\} T$. The amount of relief (or burden) of a tax break is their difference: $[Mz_i + x - MZ(a_i / A) - X(a_i / A)] R'$. Tax relief occurs if the first two terms are greater than the last two.

THE EFFECTS OF TRIENNIAL ASSESSMENT

Cook County is divided into three assessment districts -- the City of Chicago, the northern townships and the southern townships -- which are assessed in rotation. By the time a district is assessed, it has experienced three years of changing (usually increasing) property values. Triennial assessment inflates the multiplier because on average 60% to 75% of all assessments are out-of-date. Communities ride a roller coaster of tax capacity. In two out of three years tax capacity will be low. The tax effects on a given parcel depend on whether it is in a district being assessed and whether it is taxed by local or county-wide governments. Combinations of these possibilities yield four distinct outcomes.[20]

Case 1. Area is Assessed and Tax is Local. For simplicity assume that the assessed valuation of the subject parcel changes in direct proportion to the assessed valuation of the assessment district as a whole, therefore the tax *share* of the taxpayer is the same before and after assessment.[21]

$$\%\Delta t = [(e/v) - (E/V)][\%\Delta M + (A_1/A)\%\Delta A].$$

Because only a portion of the property in the county is being assessed, the impact of the assessment increase is reduced by the fraction A_1/A which represents the fraction of the county's property undergoing assessment. Tax relief occurs as a result of assessment if and only if $(e/v) - (E/V)$ is negative, that is when:

$$(Mz + x)/a < (MZ + X)/A$$

Taxpayers who incur additional burdens as a result of exemptions and freezes benefit from assessment increases. What is happening is that other property owners are seeing their assessments rise and therefore the relative value of their tax breaks falls, and they experience an increase in their taxes as a result. This is analogous to erosion of the value of the personal income tax exemption as income rises.

Case 2. Area is Assessed and Tax is County-wide. We again assume that assessment causes the value of all parcels to increase in the same proportion, therefore

$$\%\Delta t = [(e/v) - (E/V)]\%\Delta M + [(e/v)(A_1/A) - (E/V)]\%\Delta A .$$

Clearly if the first term is negative, so is the second, and

$$(Mz + x)/a < (MZ + X)/A$$

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[20] The results in this section are derived using calculus, therefore the proofs are not given. They focus on the partial effect of assessment changes and omit any effect from changing levies.

[21] In the following equations A is, as usual, the assessed value of the county, A_1 the assessed value of the newly assessed district and A_2 the combined assessed value of the districts not assessed. $A = A_1 + A_2$. By assumption $a/A_1 \equiv$ same before and after assessment.

becomes a sufficient, but not necessary, condition for tax relief.

Case 3. Area is *Not* Assessed and Tax is Local. If the multiplier changes due to other parts of the county being reassessed, the total extension may change and

$$\%\Delta t = [(e/v) - (E/V)]\%\Delta M.$$

Inspection of the coefficient of $\%\Delta M$ reveals the difference between two fractions. The coefficient will be negative if and only if:[22]

$$x/a < X/A$$

and tax bills now fall when the multiplier rises and rise when the multiplier falls. This counterintuitive result occurs because a rising multiplier benefits those who had previously been disadvantaged by having a low exemption value relative to the average taxpayer. The shoe is now on the other foot. We saw this happen in Case 1.

Case 4. Area is *Not* Assessed and Tax is County-wide. The tax burden is shifted away from a parcel if it is in a region of the county that is not newly assessed. The effect of assessment is unambiguously negative:

$$\%\Delta t = [(e/v) - (E/V)]\%\Delta M - (E/V)(A_1/A)\%\Delta A_1.$$

TIMING EFFECTS IN TAX CALCULATIONS

These relationships are obscured by the way tax bills are calculated. For illustration assume that a local government with a fiscal year corresponding to the calendar year adopts a budget for *1997* on or before December 31, *1996*.[23] By law the levy in the *1997* budget is limited by a tax cap which uses the CPI-U for the prior calendar year, *1995* while the levy will not be extended (collected) until *1998*.[24]

Because the assessments for *1998* are not be completed until late summer, the first installment in calendar year *1998*, due by March 1, must be estimated. State law sets the first installment at half of the extension for fiscal year *1997*. This, in turn, is based on the levy for *1996* which was part of the *1996* budget, adopted in *1995*. The second installment is the difference between that amount and the budgeted levy for fiscal year *1997*, adopted in *1996*. The stair-step pattern in the following table reflects the fact that tax bill calculations depend upon the prior year extension and the levy from two years prior.

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[22] Proof: $e/v = Ma/(Ma-x)$, $E/V = MA/(MA-X)$. Then, $(e/v) - (E/V) < 0$ if and only if $Ma/(Ma-x) < MA/(MA-X)$ or $Ma(MA-X) < MA(Ma-x)$ or $-MaX < -MAx$ or $aX > Ax$ or $X/A > x/a$

[23] Different types of governments have different fiscal years.

[24] Notice on the sample bill (attached) the tax year is 1993 but the collection dates are in 1994. Legend has it that a tax moratorium was declared during the Great Depression and collections never caught up.

Year & installment	Levy amount (a)	*growth* (b)	Extension amount (c)	*growth* (d)	Tax Bill amount (e)	*growth* (f)
19X1	$1,000					
19X2	$1,100	*+10%*	$1,000			
19X3(1)	$1,320	*+20%*	$1,100	*+10%*	$500	
19X3(2)					$600	*+20%*
19X4(1)			$1,320	*+20%*	$550	
19X4(2)					$770	*+40%*

The percent increase between the first and second installment (column f) is exactly double the percent increase in the extension (column d) which, in turn, is equal to the levy increase one year earlier (column b). No wonder that the average taxpayer cannot figure out what is causing taxes to go up. No tax is popular but magnification of the rate of increase in tax bills is an unnecessary artifact of the method used to calculate the bill that only serves to aggravate taxpayer anger.

Local government have their problems, too.

- Under Generally Accepted Accounting Principles (GAAP), revenue is reported on annual financial statements *only if* it is received during that year or no more than 60 days thereafter. Governments with growing levies will show current operating deficits, even if their budgets are balanced on a *cash* (non-GAAP) basis.
- Even though the deficit referred to above is not a result of imprudent management, it is a real deficit nonetheless. A serious cash flow problem arises and the government must find a way to bridge the time period between levy and receipts. The problem is cumulative: if the levy grows year-in-year-out, the problem grows without limit.

Another source of anxiety for local governments and irritation for taxpayers is uncertainty over the date the second installment bills will be mailed. Because the property tax is zero-sum, no bills can be calculated until all assessment appeals have been decided. Every year the number of appeals filed increases and it becomes more difficult to meet a statutory second installment mailing date.

CONCLUSION: POLICY PROPOSALS

The zero-sum nature of the property tax makes it especially difficult to reform because one taxpayer's gain is another's loss. The proposals discussed in this section will not change anyone's tax liability but they will give the taxpayer better information and eliminate the tax roller coaster resulting from the way in which bills are calculated.

The Value of Tax Breaks. At the present time each tax bill shows the value of claiming the "Senior Citizen's Homestead Deduction" and the "Homeowner's Exemption Deduction."[25] The formula used in these calculations is **x R** and if a taxpayer does not claim an exemption, this value is zero. It would be more accurate to inform the taxpayer how his or her bill is affected by the particular tax break program. Many who claim a tax break would find their bills are larger as a result. A new column should be included on the tax bill showing **[(V/ A) - (v/ a)] R** for each government to which the property owner pays taxes.[26] The sum of this column is the total value to the taxpayer of the tax breaks given to everybody, including themselves. All of the necessary data is generated in the normal course of preparing the tax bills.[27]

The Effect of Triennial Assessment. Triennial assessment, while useful administratively, puts property owners on a tax roller coaster. Bills fluctuate and fluctuations are magnified by timing effects when bills are calculated. Local governments, on the other side of the transaction, are likewise on a revenue roller coaster. Nobody is served well. These problems are readily solved if the multiplier is allowed to vary by assessment district in such as way that the county-wide average assessment ratio remains one-third.

A multiplier should be calculated for each assessment district using the same methodology now used for the county multiplier, except that each new multiplier should contain an extra factor equal to three times the proportion of the county's assessed value of property in that district. The extra factor is a number close to one but slightly lower in newly assessed districts and higher in the others. It is required to guarantee the average parcel in the county will be assessed at one-third of fair market value[28] while minimizing fluctuations in assessed value of individual parcels.

Timing in Calculations. The cumulative effect is an unwieldy, confusing apparatus that serves neither taxpayer nor local government well and it is unnecessary. Doing away with the property tax is not an option: it annually raises over $6.3 billion for 521 local governments and school districts in Cook County. Many appealing modifications may not be politically feasible because they would cause shifts in the tax burden. Nevertheless there are some policy changes which would make life easier for taxpayer and government alike. The following proposal has three parts:

- Calculate extensions based on last year's taxable property value, the same basis local governments now use to calculate their levy. If this is done, tax bills can be computed on January 1 of the year taxes are extended.

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[25] See a sample bill in Appendix 1.

[26] For each taxpayer the benefit derived from tax breaks alone is [(V/ A) - (v/ a)] R. *Proof:* Total benefit = (a / A)T - (v / V)T = [(a /A)V - v] R . Dividing by a gives the desired result. A negative value indicates a tax burden.

[27] The variables v , a and R already appear on the bill. The variable V is part of the rate calculation and A is easily derived by adding all a values within each community.

[28] *Proof:* The district multipliers satisfy $3M_j A_j = F_j$. Adding these and dividing by total county assessed value gives $3(A_1/A)M_1 + 3(A_2/A)M_2 + 3(A_3/A)M_3 = F/A$. The average multiplier is this number divided by three, or $f/3A = M$.

- Abandon two-installment billing and adopt the installment schedule used in the collar counties. Extend total tax in June. Permit taxpayers to elect two payments. If they so elect, half of the current bill is due within 30 days and the other half, September 1.
- Require that at least half of the bill be paid within 30 days and, if not, penalties and interest would be assessed on that portion of the bill. Neither discount nor penalties would be assessed on the balance if it is paid by a predetermined second installment date.

The advantages of these changes are:

- Annual tax increases will be evenly divided between installments. The percent increase from bill-to-bill will exactly equal the percent increase in the levy.
- Both governments and taxpayers will save money because only one bill is sent.
- Everyone can plan more efficiently because the due dates are not dependent on completion of the appeals process and can be fixed in advance.
- The operating deficit caused by delay in collecting revenue is reduced.
- There is no inconsistency between the basis on which governments calculate their levies and that on which the County Clerk calculates the extensions.

The disadvantages (with rebuttal) are:

- Taxes are apportioned based on old assessment data. *However* the date of assessment coincides with the levy date and no permanent shift in the tax burden results.
- With one bill, some taxpayers may forget. *However*, having a date for the second installment which does not change from year-to-year will vitiate this problem, particularly if the installment dates are also changed to decrease the time lapsed between them as they are in the collar counties which tax on a single bill.
- Since governments will not be able to gain access new property for one year, owners of these parcels get a free ride during the first year. The one-time shortfall is never recaptured and will compound over time. *However*, this effect is similar to the impact on local government when state law was changed to require the use of prior year net equalized assessed valuation for adopting levies. In this case governments were unable to gain access to assessment increases on existing property. Therefore the cost of the policy change proposed here cannot be prohibitive.

Appendix 1
SAMPLE TAX BILL

Letters correspond to variables in equations

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COOK COUNTY COLLECTOR REAL ESTATE TAX BILL - 1993

VOLUME 059 INDEX NUMBER -0000 TOWN 17001 EVANSTON

1992 RATE	1992 TAX	1993 RATE	1993 TAX	TAXING AGENCIES
3.771	1,760.30	4.148	1,990.63	SCHOOL DISTRICT C C 65
				NORTH SUBURBAN MASS TRANSIT DISTRICT
2.310	1,078.31	2.295	1,101.37	CITY OF EVANSTON
.239	111.57	.248	119.02	OAKTON COMMUNITY COLLEGE DISTRICT 535
2.866	1,337.85	3.000	1,439.70	EVANSTON TOWNSHIP HIGH SCHOOL 202
.010	4.67	.011	5.28	NORTH SHORE MOSQUITO ABATEMENT DISTRICT
.470	219.40	.471	226.03	METRO WATER RECLAMATION DIST OF GR CHGO
.061	28.47	.060	28.79	GENERAL ASSISTANCE EVANSTON
.148	69.09	.025	12.00	TOWN OF EVANSTON
		.022	10.56	CONSOLIDATED ELECTIONS
.008	3.73	.008	3.84	SUBURBAN T B SANITARIUM
.063	29.41	.072	34.55	FOREST PRESERVE DISTRICT OF COOK COUNTY
.762	355.69	.649	311.45	COUNTY OF COOK
.414	193.26	.322	154.53	COOK COUNTY HEALTH FACILITIES
11.122	5,191.75	11.331	5,437.75	TOTAL TAX

2,595.88 ESTIMATED INSTALLMENT 2,841.87 FINAL INSTALLMENT

sum of installments equals total tax

PAYMENT INFORMATION HAS BEEN TRANSCRIBED FROM THE WARRANT RECORDS ON FILE IN THE OFFICE OF THE COUNTY COLLECTOR

Edward J. Rosewell COOK COUNTY COLLECTOR

MARKET VALUE 160,550 ..... f
PCL 2-06
25,688 ASSESSED VALUATION ..... a
2.1407 STATE EQUALIZATION FACTOR ..... M
47,990 EQUALIZED VALUATION v
6,230.92 GROSS TAXES BEFORE EXEMPTION
283.28 SR. CITIZEN'S HOMESTEAD DEDUCTION
509.90 HOMEOWNER'S EXEMPTION DEDUCTION] .... xR
5,437.75 TOTAL TAXES AFTER EXEMPTION ..... t
46,680 PRIOR YEAR-EQUALIZED VALUATION

WHEN PAYING IN PERSON DO NOT DETACH
WHEN PAYING BY MAIL
PLEASE DETACH AND KEEP FOR YOUR RECORDS

1ST INSTALLMENT:
AFTER MARCH 1, 1994, 1.5% PENALTY PER MONTH MUST BE ADDED TO UNPAID BALANCES.

2ND INSTALLMENT:
AFTER SEPT 1, 1994, ...Note: this is for 1993 taxes
1.5% PENALTY PER MONTH MUST BE ADDED TO UNPAID BALANCES.

ILLINOIS STATE LAW REQUIRES THIS LISTING OF TAXING DISTRICT PENSION AMOUNTS-THESE FIGURES ARE INCLUDED ABOVE

SCHOOL DISTRICT C C 65	74.38	CITY OF EVANSTON	143.01
EVANSTON TOWNSHIP HIGH SCHOOL 202	81.10	METRO WATER RECLAMATION DIST OF GR CHGO	11.99
FOREST PRESERVE DISTRICT OF COOK COUNTY	1.43	COUNTY OF COOK	61.90