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Year 15 and Preservation of Tax-Credit Housing for Low-Income Households: An Assessment of Risk

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ABSTRACT *This paper examines the risk associated with the expiration of the initial 15-year period protecting affordability for housing units developed using the federal Low-Income Housing Tax-Credit (LIHTC). The paper finds that the primary determinants of risk for properties with credit allocated between 1987 and 1989 are reduced by three factors: whether not-for-profit sponsors are part of the ownership structure of the projects, the existence of additional affordability restrictions, and the rehabilitation costs associated with the conversion to market rental. The proportion of properties in need of rehabilitation increased substantially in the post-1989 period, representing a different type of risk for tax-credit projects. It is concluded that state agencies have the opportunity to promote and support preservation measures by adding additional affordability restrictions as part of any refinancing related to capital improvements, by supporting non-profit sponsorship of projects, and by providing funding for rehabilitation.*

KEY WORDS: Affordable housing, tax-credits, risk

Introduction

The Low-Income Housing Tax-Credit (LIHTC) is by far the most important source of subsidy for low-income multifamily rental housing in the US, having produced nearly 2 million units since its inception in 1986 (*Affordable Housing Finance*, 2006). The Tax Reform Act of 1986, which created the LIHTC, specified that tax-credit units remain affordable to low-income renters (with incomes up to 60 per cent of their area median) for a minimum of 15 years. Subsequent legislation in 1989 imposed an extended affordability period of 15 additional years, but gave owners the ability of opting out under certain conditions. The affordability restrictions for the earliest tax-credit developments expired in 2002 and the preservation of tax-credit housing has become an increasingly important issue. Thousands of tax-credit units face the resolution of their ownership status after the expiration of their affordability restrictions. Even though projects receiving credit after

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1989 enjoy additional affordability protections, their preservation as low-income housing is not assured. Additional resources may be required to buy out owners who choose to opt out, and tax-credit housing will require greater capital investment as the stock ages. Particularly for this older stock, the need for rehabilitation of the projects might be as important a threat to preservation as the expiration of the tax-credits (Schwartz & Melendez, 2007).

'Year 15' challenges the continued affordability of tax-credit housing in several ways. Of most immediate concern are projects underwritten before 1990. Income and rent restrictions for these developments expire after the 15th year of operation (unless they are subject to additional restrictions imposed by other funding sources). In addition, year 15 often marks the end of a tax-credit project's limited partnership, thus requiring the sponsor to either acquire the limited partners' stake in the development or to sell the development altogether. Third, by year 15, many tax-credit properties may require funds for major capital improvements. How sponsors respond to these challenges will largely determine whether the low-income status of tax-credit housing is preserved.

Although Congress modified the tax-credit program in 1989 to extend income restrictions for at least 15 additional years, these restrictions are contingent on the ability of the developer to find new buyers should the original owners decide they want to relinquish their interest in the project. If the sponsor cannot find a buyer willing to keep income and rent restrictions in place, the sponsor may request the state housing finance agency to find a buyer who is willing to accept these restrictions. If the agency is unable to do so, rent and income restrictions are terminated and the sponsor may sell the property to the owner of his choosing. The new buyer is required to wait three years before raising rents beyond tax-credit limits or evicting low-income tenants (Housing and Development Reporter, 1997).

Since 1991, certain non-profit organizations have had the right of first refusal to purchase tax-credit properties from original owners for the sum of the outstanding debt plus capital gains taxes. Even when this amount is below prevailing market values, the acquisition of tax-credit housing is likely to require large amounts of capital. Unless non-profit groups or other developers are able to buy out the original owners and refinance the development at affordable terms, the long-term viability of this housing as a resource for low-income renters cannot be assured.

The prospects for continued low-income occupancy are enhanced when the development is protected by deed restrictions, covenants or other income or rent limitations imposed by subsidy programs. Conversion to market-rate occupancy is most likely when properties are located in high-rent areas and perhaps when they are under for-profit ownership (California Housing Partnership Corporation, 2001). Restructuring the financing of properties developed by community development corporations (CDCs) and other non-profit organizations is especially difficult. Equity investors seek to exit the projects once the tax-credit advantages associated with them are exhausted, and affordability restrictions often cause the fair market value to be lower than the mortgage debt held by lenders. In addition, many of these buildings were financed through primary or secondary mortgages, on which very little if any interest has been paid, thus increasing the 'exit taxes' owed by the investors. Since income and rent restrictions for the first tax-credit developments did not start to expire until 2002, very few studies are available on the current status of these developments. Moreover, there is little information on the intentions of tax-credit owners beyond year 15.

This paper examines the risk associated with the expiration of the initial 15-year period protecting affordability for housing units developed using the LIHTC. Specifically, the risk of LIHTC projects losing affordability is assessed based on responses to a national survey of tax-credit housing developers conducted in 2005. This survey gives particular attention to the differences between non-profit and for-profit owners, and between properties located in the most expensive and less expensive housing markets. The paper finds that the primary determinants of risk of losing affordability, after controlling for various characteristics of the property, are related to three factors: whether not-for-profit sponsors are part of the ownership structure of the projects, the existence of additional affordability restrictions, and the costs associated with the conversion to market rental or condo units.

Background

The LIHTC program was enacted by the Tax Reform Act of 1986 to help finance the acquisition, construction and rehabilitation of low-income, affordable rental housing. The program was made permanent in 1993. Under this program, federal tax-credits are allocated to authorized state agencies (usually state housing finance agencies) based on a per-capita formula, which in 2000 was indexed for inflation. Individual or corporate investors who provide funding for tax-credit housing are able to reduce their federal income tax liabilities over a period of 10 years. The amount of the credit is determined by the cost of the development, excluding land and certain other expenses, the proportion of total units housing low-income households, and the location of the development (see Enterprise, 2007 or Schwartz, 2006 for details on how the tax-credit is calculated). As mentioned earlier, tax-credit housing was initially required to remain affordable for 15 years, a period that was extended to 30 years for properties put into service after 1989. To qualify for the tax-credits, owners need to maintain rents at or below 30 per cent of maximum allowable tenant income. When 40 per cent or more of the units are slated for low-income occupancy, tenants may earn up to 60 per cent of the area's median family income. If 20 to 40 per cent of the units are to be for low-income households, the maximum allowable income is 50 per cent of area median.

The LIHTC provides two types of subsidies. The so-called '9 per cent' credit provides a stream of tax benefits with a present value of 70 per cent of the property's qualifying basis (that is, the total cost of the property devoted to affordable housing, less land and other ineligible expenses, and adjusted upwards by 30 per cent if located in a federally-designated 'qualifying census tract' or 'difficult development area'). The 9 per cent credit is the most competitive, since it provides the greatest benefit, and is used for rehabilitation or new construction projects without additional federal subsidies (although federal block grants may be combined with the tax-credit). State allocating agencies consider development costs, the number of units and the proportion of the total project, and other factors when allocating this type of subsidy. They may also impose additional affordability restrictions beyond those imposed by the federal government. The second type of subsidy is the so-called '4 per cent' credit which generates 10 years of tax-credits equal to 30 per cent of the present value of the project's eligible basis. When combined with tax-exempt bonds, this type of subsidy is 'as of right', and is not allocated by state housing finance agencies. Under certain circumstances, costs associated with the acquisition of a building, exclusive of the value of land, also qualify for the 4 per cent credit.

Syndication is an important component in LIHTC utilization. Syndication is simply the grouping of one or several low-income housing projects by an intermediary agent, called the syndicator, into an investment fund where one or several investors buy the rights to the tax-credits benefits in exchange for equity investment in the fund. Generally, the fund is structured as a limited partnership, a legal entity that structures a common ownership of the project between the developer or general partner (typically holding a 1 per cent share or less) and the investors or limited partners. The developer receives the funds for the project and the investors receive the tax-credits over 10 years, together with depreciation allowances, and sometimes a portion of annual cash flow. Syndication mitigates the risk of investment for any one of the fund investors and links low-income housing developers with needed equity financing for their projects. The amount of equity generated by the tax-credit depends on two factors: the price investors are willing to pay for the credit, and various transaction costs connected to the sale or syndication of the tax-credits.

In addition to structuring the deal, brokering relations with investors for the developers and vice versa, syndicators are responsible for asset management and LIHTC compliance over the 15-year life of the limited partnership. Syndicators receive earnings from the purchase of tax-credits and the selling of these benefits to investors, and over time from asset management fees and, in some instances, from a portion of the cash flow generated by the projects. Initially, during the years immediately following the establishment of the credit in 1987, investors typically paid less than 50 cents for each tax-credit dollar. Transaction costs accounted for 10 or more cents per dollar, leaving only 40 cents or less for the developer. The price paid by investors has increased over time. As the program became more familiar, and after Congress made the credit 'permanent' in 1993, investors saw less risk in investing in tax-credit projects and therefore accepted a lower rate of return (Ernst & Young, 2003). Whereas investors might have required a return of 30 per cent per year in the early years of the credit, as of 2005, they received less than 10 per cent. As a result, developers typically receive 90 cents or more for each tax-credit dollar, enabling them to finance projects with less mortgage debt than before and to target the property to lower income families.

Originally, developers of tax-credit housing were required to keep the housing affordable to low-income renters for 15 years; afterwards they may raise the rents and house higher income tenants, unless the property is subject to additional affordability or income restrictions (connected to additional subsidies, deed restrictions etc.). Smith (2002) estimated that about half of all tax-credit properties put into service before 1990 are not subject to additional affordability or income restrictions. However, responses to the survey here indicate that only about 23 per cent of the pre-1990 properties actually had any affordability restrictions beyond the initial compliance period. Federal legislation extended the affordability period for an additional 15 years for properties put into service after 1989.

Finally, one of the critical problems for projects placed in service in the early years is the need for reinvestment in capital improvements. This might be a more severe problem for properties in the initial years of the program when the initial capitalization of the projects was not adequate. High debt financing in relation to the capitalization of the projects was due in large part to the high yield paid by developers to tax-credits investors and higher transaction costs associated with syndication in this initial period. Since the price paid by developers of affordable housing for tax-credit did not start to go down from the 50 per cent range until after the LIHTC program was made permanent by Congress,

thus generating more equity for investment in the project, there is evidence that suggests that these original projects suffered from poor quality construction and insufficient reserves for capital improvements when compared to projects in subsequent years. Thus, these projects may have both a higher need for rehabilitation and a lower borrowing capacity for renovations (Schwartz & Melendez, 2007).

Description of the LIHTC National Survey

This study is based on information gleaned from a telephone survey of low-income housing development projects that received some form of low-income housing tax-credit between 1987 and 1992 and were located in metropolitan areas. This paper only uses the data for the projects placed in service during the years with 15 years federal affordability restrictions, from 1987 and 1989. The survey was conducted by the Community Development Research Center (CDRC) at The New School. The Center for Survey Research and Analysis at the University of Connecticut conducted telephone surveys with the project's designated contact person, usually the developer of record acting as general or managing partner. To select the sample, the universe was stratified by the tax-credit year placed in service period (1987 to 1989 or 1990 to 1992), by the type of housing market ('expensive' or 'not expensive'), and by the type of project sponsor ('for profit' or 'non-profit'). The stratification of the projects, as shown in Table 1 for the 1987 to 1989 period, made it possible to ensure a large sample of cases for statistical inferences for each grouping of concern. The universe was adjusted to reflect information from respondents to the telephone interviews. Interviews for 164 projects were completed for the pre-1990 period.

The survey instrument was developed from previous, smaller-scale surveys of tax-credit owners and developers (Abravanel & Johnson, 1999; California Housing Partnership Corporation, 2001; Dresser, 2001) and interviews were conducted with the eight firms responsible for the majority of tax-credit syndication. Collectively, these syndicators had contributed to the development of more than 8300 tax-credit properties containing more than 813 000 rental apartments as of May 2004. They account for more than two-thirds of all tax-credit units built through 2003. Nearly all of the tax-credit housing syndicated by two syndicators, the Enterprise Social Investment Corporation (ESIC) and the National

Table 1. 1987 to 1989 LIHTC projects by non-profit sponsorship and location in expensive housing markets

	Expensive market		
Non-profit	No	Yes	Total
	Universe (weighted cases)		
No	2250	380	2630
Yes	432	111	543
Total	2682	491	3173
	Sample (cases)		
No	52	61	113
Yes	13	38	51
Total	65	99	164

Sources: Low-Income Housing Tax-Credit Database, US Department of Housing and Urban Development, and LIHTC National Survey, 2005.

Equity Fund (NEF), has been developed by CDCs and other non-profit organizations. The six other major syndicators are for-profit organizations that have focused primarily on tax-credit properties involving for-profit developers, although some have also worked with non-profit developers as well. The results of those interviews are reported by Schwartz & Melendez (2007). In general, syndicators were interviewed on several major issues for the long-term preservation on tax-credit housing, including the expiration of affordability restrictions, the cost of acquiring tax-credit properties from current owners, strategies and challenges for financing the acquisition and renovation of these properties. There was also an exploration of the extent to which tax-credit properties have already been sold and the extent to which they have retained low-income affordability.

The survey was broken down into four main sets of questions targeted to different types of low-income housing projects. Core and Property Owner questions were asked of all the projects. Core questions include the year the tax-credits were allocated and when the property was placed in service, the type of tax-credit (4 per cent or 9 per cent), the size and nature of the housing project and the project's ownership as well as questions about the equity sources and procedures through which it was raised. Property Owner questions cover the average income of tenants, occupancy rates, rent levels, project costs and debt levels, and number and sources of mortgages. In addition, survey respondents were asked whether they had sold the property or not and, for those placed in service before 1990, what their planned year 15 decision might be regarding the sale and preservation of tax-credit housing. Projects were identified as pre-1990 based on the survey respondents' answers to questions about when the Low-Income Housing Tax-Credit project was placed in service and what year the project's owner first claimed low-income housing tax-credits.

Table 2 shows the general characteristics of LIHTC housing put into service from 1987 through to 1989. The market share (sponsorship) of non-profit sponsors (labeled NFP in the Table) is 17.1 per cent. This figure is based on a question asked directly to respondents: "Was a non-profit sponsor involved in the development of this Low-Income Housing Tax-Credit project?" Thus, NFP accounts for all possible types of sponsorship including syndication, equity investment, ownership or other types of sponsorships. The average number of units per project is 40.0, the proportion of projects located in qualifying census tracts is 26.3 per cent, and 44.3 per cent of the projects received a 9 per cent tax-credit. The proportion of qualified units in each project is 92.7 per cent and the occupancy rate is 92 per cent. Projects are about equally distributed within the metropolitan area, with 52 per cent located in the central city. In terms of the regional location of the projects, most projects were located in the South (36 per cent) followed by the Midwest (34 per cent), the West (20 per cent) and the Northeast (10 per cent). Although a relatively small proportion of projects (21 per cent) are in need of rehabilitation, the average rehabilitation costs for those projects in need of rehabilitation are $7348 per unit while available reserves are only $1630. This gap in reserves necessary for rehabilitation suggests that projects may have to borrow to cover capital improvements. Finally, new construction projects constitute the majority of projects at 53 per cent of the total.

Assessing the Risks of LIHTC Projects' Losing Affordability

To assess the determinants of risk for projects affected by the expiration of the 15-year affordability period of the LIHTC, an ordered logit model is used, with the risk of losing affordability as the dependent variable and variables controlling for project characteristics

Table 2. General characteristics of LIHTC housing projects

Name	Description	Mean	St. Dev.
RISK	Risk of housing stock losing affordability, 0–6 scale (dependent variable)	3.14	0.18
	Baseline: project location and other characteristics		
MHIGH	High-rent housing market	0.15	0.01
UNITS	Total number of units	40	7
NEW	New construction	0.53	0.05
	Qualified units	92.7	
NORTHEAST	Northeast census region	0.10	0.03
MIDWEST	Midwest census region	0.34	0.05
SOUTH	South census region	0.36	
WEST	West census region	0.20	0.04
METRO/CC	Census tract is Metro/Central City	0.52	0.05
DDA	Census tract is difficult development area	0.10	0.03
QCT	Census tract is a qualified census tract	0.26	0.05
	Type of sponsor		
NFP	Non-profit sponsor involved in the project	0.17	0.01
OWNIND	Individual proprietorship	0.32	0.05
	Additional affordability restrictions		
FMHA	FmHA (RHS) Section 515 loan	0.16	0.04
TAX4	Used 4% tax-credit	0.28	0.05
MINQUAL	Less than 2/3rds of rental units qualify for tax-credit	0.11	0.03
ADDAFFORD	Project has affordability restrictions beyond the initial 15 years	0.23	0.04
	Years of affordability restrictions beyond the initial 15 or 30 years	30.5	
	Costs, reserves & management		
RESERVES	Replacement reserves set aside for rehabilitation per unit	1630	532
NEEDREHAB	Rehabilitation work needed (Yes, No)	0.21	0.04
	Rehabilitation cost	7348	
OCCUPANCY	Occupancy rate	0.92	0.02

Sources: Low-Income Housing Tax-Credit Database, US Department of Housing and Urban Development, and LIHTC National Survey, 2005.

and finances, additional affordability restrictions and other environmental factors. The ordered logit model assumes that a latent variable, Y^* exists, and can be defined as $Y^* = x\beta + \varepsilon$, where ε represents a random disturbance term assumed to have a logistic distribution function. Further, it assumes that Y^* is divided by some cut-points (thresholds): $\alpha_1, \alpha_2, \alpha_3 \cdots \alpha_j$, and $\alpha_1 < \alpha_2 < \alpha_3 \cdots < \alpha_j$. In this model, LIHTC projects' levels of risks of losing affordability are the ordinal outcomes, R (RISK), ranging from 0 to 6. The ordered logit regression model is specified as:

$$\text{logit}(R_{ji}) = \alpha_j + \left(\sum\nolimits_k \beta_k A_{ki} + \sum\nolimits_l \beta_l S_{li} + \sum\nolimits_m \beta_m C_m + \sum\nolimits_j \beta_j X_{ji}\right)$$

Where, R_i is the cumulative logit function of the ordered level of LIHTC projects' risks of losing affordability for possible outcome category (or cut-point) j and project i,

α_j indicates the logit of the odds of being equal to or less than category j for the baseline group (LIHTC projects at no risk of losing affordability),
S_{ki} is the type of sponsor k for project i,
A_{li} are the affordability restrictions l for project i,
C_{mi} are the various types of costs m for project i,
X_{ji} is the characteristic j for project i, and
ε_i is a random error term for project i.

The coefficient β_k measures how a one-unit increase of a given sponsor S_k on the odds of the risk of losing affordability of being higher than the prior lower category of risk and keeping all other variables at their mean; β_l those of affordability restrictions A_{li}; β_m those of cost and management variables C_m; and, the coefficient β_j measures those of location and other project characteristics $X_{ji.}$

The dependent variable R is a measure of whether the low-income housing tax-credit housing project is at risk of losing affordability. The actual questions used to construct the scale are presented in Appendix A. First, a dichotomous variable was created based on whether the planned year 15 transaction decision at the end of the compliance period was or will be to continue to own the property and maintain its affordability. Then, in the case of properties that will be sold, projects were differentiated in terms of whether there is interest in selling to an entity willing to keep the property affordable or, in the case of properties that were already sold, whether or not the purchaser agreed to keep the property affordable for low-income households. The projects that reported affordability would be continued were then ranked into three groups according to the risk of losing affordability:

- When the owner said that maintaining the property's affordability was very important;
- When the owner said continued affordability was only somewhat or not too important; and
- When the owner intends to sell the property to an entity that will maintain affordability.

Projects that may lose affordability were also ranked into three groups:

- When the owner plans to sell the property and is not interested in keeping it affordable or is undecided about what to do with the property;
- When the owner plans to convert the property to market-rate occupancy, or when the property has already been sold and is at risk of converting to market rate; and
- When the property has already been sold without any affordability guarantees; this situation is thus ranked as having the highest risk on the scale.

The resulting scale has a value of 1 for no or very low risk, and a high value of 6. Properties are classified in the category of 'may lose affordability' when the original owner clearly intends to sell the property and is not interested in keeping the property affordable, or when the owner has already sold the property and the purchaser has not committed or did not agree to keep the property affordable for low-income households. As Table 3 indicates, of the total 3173 projects placed in service prior to 1990, it was estimated that 12.9 per cent of all properties (408 projects) are at the highest risk of losing affordability for low-income households or have already lost affordability. Overall, 1263 or 40 per cent of the projects are at some risk of losing affordability (representing 35 741 units).

Table 3. Risk scale and projects at risk for pre-1990 Low-Income Housing Tax-Credit Projects

Risk categories based on year 15 transaction decision, property status and priorities of the organization		Risk score	Weighted count: Maintain affordability	Weighted count: May lose affordability	Total
Maintain affordability	Continue to own the property and maintain its affordability and maintaining the property's affordability is very important to the organization	1	931		29.40%
	Continue to own the property and maintain its affordability and maintaining the property's affordability is somewhat or not too important to the organization	2	269		8.50%
	Attempt to sell the property or already sold the property and current owner is interested in keeping the property affordable	3	710		22.40%
May lose affordability	Attempt to sell the property and not interested in keeping the property affordable or undecided about what to do with the property	4		354	11.20%
	Plan to convert the property to market-rate rents or already sold the property and don't know if new owner will maintain affordability	5		501	15.80%
	Already sold the property and the purchaser did not agree to keep the property affordable for low-income households	6		408	12.90%
Total number of projects (weighted count)			1910	1263	3173
Weighted percentage			60.20%	39.80%	100%
Average score on the 1–6 at-risk scale			1.9	5.0	3.1
Average units per project			47.6	28.3	39.9
Total number of units represented			90 890	35 741	126 631

Source: Authors' estimates based on data from the LIHTC National Survey, 2005.

A selection of the variables described in Table 2 are included in the model; this Table also provides the mean and standard deviations of the variables. The first group of variables included in the model pertain to the location and other characteristics of the projects. MHIGH refers to projects located in high-rent markets and was described above as one of the stratification variables for the sample. Other location variables include the Census region where the project is located (NORTHEAST. MIDWEST and WEST, using the South as the reference category), whether the property is located in the central city of a metropolitan area (METRO/CC), and whether the property is in a census tract classified by HUD as a difficult development area (DDA) or a qualified census tract (QCT). The final two variables in the 'baseline' model control for the size of the project, in terms of units (UNITS), and whether the project was new construction (NEW, using rehabilitation or acquisition projects as the reference group).

In addition to control variables for location and other project characteristics, three types of explanatory variables were included in the model corresponding to the core hypothesis tested with the model. First, the hypothesis that the type of sponsor or ownership structure might be a factor associated with the conversion of properties to market rates was tested. Since individual ownership of the properties was more prevalent during the earlier years of the program and this type of ownership structure offers greater flexibility in decision making than others, it is expected that in comparison to partnerships and other forms of ownership structures these properties are at higher risk of conversion. Thus, the dummy variable OWNIND should be positively related to the risk of losing affordability. Conversely, non-profit organizations are mission oriented and their sponsorship of affordable housing is more conducive to preservation. NFP measures the effects of a non-profit sponsor being involved with the project and is expected to lower the risk of the project losing affordability.

The following group of independent variables pertains to the affordability restrictions imposed by the type of programs involved in the financing of the project. The Section 515 Rural Rental Housing program of the US Department of Agriculture provides mortgage loans to develop rental housing for low-income tenants and was often used in conjunction with the LIHTC. FMHA is a dichotomous variable that indicates whether Section 515 funds are used. Sometimes these funds are used in conjunction to the LIHTC to provide low-cost financing to developers as an incentive to avoid mortgage prepayment and preserve affordability. The 4 per cent tax is automatically available to all developments with tax-exempt bond financing, and is often used to finance site acquisition, which is not covered under the 9 per cent tax-credit program. TAX4 is included in the model to account for the 4 per cent tax-credit. This variable is expected to increase the risk to the extent that it is a less stringent affordability restriction than the 9 per cent tax-credit and might be used by developers that target lower proportions of low-income tenants in the project and might be less inclined to preserve affordability after the mandated compliance period. The LIHTC could be used to finance projects in which all the units are affordable or just a portion of total units are set aside for low-income tenants. Although in recent years more than 90 per cent of the units in projects financed using the LIHTC are rented to low-income tenants (AARP, 2002), the program requires that 20 per cent of the units are occupied by tenants that earn up to 50 per cent of adjusted area median income, or that 40 per cent of the units are occupied by tenants with incomes equal to or less than 60 per cent of the area median income. MINQUAL is added to control for projects in which less than two-thirds of units are occupied by qualifying tenants, and it is expected that the lower the proportion

of qualified tenants the higher the risk for these properties. Finally, ADDAFFORD is a dichotomous variable that indicates that the project has affordability restrictions beyond the initial 15 years. Obviously, additional affordability restrictions extending the number of years of affordability beyond the minimum requirement of 15 years for properties placed in service between 1987 and 1989 should lower the market value of the property and thus lower the risk of conversion to market rates.

The final set of independent variables measures the effects of conversion costs and management effectiveness. The first variable, RESERVES, indicates the amount of replacement reserves set aside for capital improvements per unit. There is no theoretical presumption of how this variable may affect the risk of losing affordability. The higher the amount of reserves, the more developers can invest in capital improvements to convert properties to market rates. Reserves could also be an indication of sound asset management and be a factor to be considered for prospective owners when considering a purchase for conversion to market rates. However, if those reserves are an indication of the extent of capital investments needed for conversion, a negative association of higher reserves would be expected to the risk of losing affordability. To allow for this last effect independent of the prior potential roles that reserves may play in the affordable housing market, a dummy variable is added, NEEDREHAB, to capture the effects of whether rehabilitation work is needed in the property. Clearly NEEDREHAB is negatively correlated to RESERVES to the extent that the amount of reserves is partly an indication of the capital improvements necessary for conversion of properties to market rates. The inclusion of NEEDREHAB in the equation should capture the portion of the effect of the need of capital improvements on the potential conversion of LIHTC properties to market rents. There is a theoretical possibility that high reserves are conducive to conversion because they lower transaction costs, and consequently positively correlated to the risk of losing affordability. However, it is expected that the need for rehabilitation acts as a deterrence to conversion of the properties to market rents to the extent that it increases the transaction costs associated with such conversion.

The final variable of this set, OCCUPANCY, is the occupancy rate of the project in the past year and serves as a proxy for the effectiveness of project management. In general, a lower occupancy rate reflects both whether the rental market is tight and whether the project management is effectively filling vacancies and making needed repairs promptly. In the case of affordable housing units, where projects typically have a historical high demand and long waiting lists for vacancies, it is assumed that maintaining a high occupancy rate is more reflective of the quality of management than rental market tightness. A low vacancy rate provides cash flows for maintenance and capital improvements, thus making projects more attractive for conversion. The next section of the paper assesses the relative importance and significance of the factors associated with the risk of losing affordability.

At-Risk Properties

Table 4 shows descriptive data for key factors in the decision to convert pre-1990 LIHTC housing into market rentals after year 15. The variables included in Table 4 are the same as those in Table 2, except that some of the omitted categories have been added for illustration purposes. Based on the observed distribution of projects, developments with lower rehabilitation costs and properties owned by individual investors are

Table 4. Pre-1990 Low-Income Housing Tax-Credit Projects by risk of housing stock losing affordability

	Maintain affordability	May lose affordability	Total
Type of sponsor: primary source through which the tax credit was raised			
Syndicators	32.8%	15.4%	25.9%
Non-profit syndicators (NEF, ESIC)	9.0%	0.7%	5.7%
Direct placement	35.0%	40.9%	37.3%
Some combination	6.7%	0.9%	4.4%
Individual funds or own funds	15.0%	35.0%	23.0%
Raised through other means	1.6%	7.1%	3.8%
	100.0%	100.0%	100.0%
Type of sponsor: ownership structure			
Individual proprietorship	26.1%	39.9%	31.6%
General partnership	12.6%	17.5%	14.5%
Limited partnership with non-profit general partner	7.8%	3.8%	6.2%
Limited partnership with for-profit general partner	34.7%	23.9%	30.4%
Other limited partnership	7.1%	0.1%	4.3%
Other ownership structure	11.8%	12.4%	12.0%
Do not know ownership	–	2.3%	0.9%
	100.0%	100.0%	100.0%
Type of sponsor: sources that provided the equity for the project (includes all sources provided)			
Individual investors (all)	66.0%	73.9%	69.2%
Corporate investors (all)	28.7%	33.1%	30.5%
Non-profit and government investors (all)	31.3%	8.1%	22.1%
Tax-credits			
Received a 4% tax-credit only	41.6%	37.0%	39.8%
Received a 9% tax-credit only	46.0%	41.8%	44.3%
Received both a 4% and 9% tax-credit	12.4%	19.0%	15.1%
Additional affordability restrictions			
Properties with additional affordability restrictions	29.0%	13.6%	22.9%
Additional years of restrictions	4.6	3.4	4.2
Section 8 or FMHA contract	9.6%	4.1%	7.4%
Regulatory agreement through state or local government	4.2%	4.1%	4.2%
Land use restriction	4.3%	4.1%	4.2%
Real estate tax abatements, subordinate mortgage covenants and others	1.3%	4.1%	2.4%
	19.3%	16.6%	18.2%
Costs, reserves & management			
Property requires rehabilitation work	42.9%	20.1%	33.8%
Reserve per unit set aside for rehabilitation	$2330	$570	$1529
Rehabilitation required per unit in dollars	$8247	$3412	$6322
Dollar amount of replacement reserves for rehab	$70 285	$18 815	$49 797

Source: Authors' estimates based on data from the LIHTC National Survey, 2005.

over-represented among those that may lose affordability after the expiration of the year 15 federal restriction. For example, properties that may lose affordability have an incidence of requiring rehabilitation about half (20.1 per cent) that of properties more likely to maintain affordability (42.9 per cent). The rehabilitation required per unit for properties that may lose affordability of $3412 is less than half of the $8247 required for those that are likely to maintain affordability. Similarly, 39.9 per cent of properties at risk of losing affordability are owned by individuals and 35.0 per cent were financed by own funds, while only 26.1 per cent of properties that maintain affordability are owned by individuals and 15 per cent were financed by individuals. Conversely, projects having a non-profit syndicator or owned by limited partnerships are over-represented among those more likely to maintain affordability. Less than 1 per cent of the properties likely to lose affordability were syndicated by NEF or ESIC, syndicators that are subsidiaries of non-profit organizations, while they were responsible for 9 per cent of the overall transactions for properties maintaining affordability. Properties owned by limited partnerships, regardless of the type of limited partners, were over-represented among those more likely to maintain affordability than any other type of ownership structure. Finally, whether the program received a 4 per cent, 9 per cent or both types of tax-credits does not seem to be a major factor associated with a higher risk of losing affordability. Since both groups of affordability have a fairly similar proportion of projects claiming both types of credits, it is likely that these credits are used by different segments of the affordable housing market with similar risk propensities.

To assess the statistical significance and relative importance of the three sets of factors associated with the risk of losing affordability, we developed the analysis in four steps beginning with a baseline model and then adding each of the three sets of determinant factors in subsequent steps (Table 5). The Wald chi-square, a non-linear test for the hypothesis that all the coefficients for the variables included in the equation are equal to zero, and the significance (Prob $>$ F) for the first equation suggest that the baseline models do not reliably predict the LIHTC projects' risk of losing affordability. Once sponsorship, affordability restrictions, and costs and management variables are added to the model, both the Wald chi-square and its significance improve markedly, indicating that the estimated models yield a significantly better fit to the data than the baseline model. In other words, the location, ownership and other characteristics of the projects by themselves do not adequately explain the risks of LIHTC projects losing affordability. Of the variables included in the baseline model, location in a high-rent area is the only variable associated with the risk of losing affordability at a significant statistical level. However, the variability of the MHIGH coefficient and its significance in subsequent equations suggest that location in a high-income rent area is capturing the effects of omitted variables from the model, most notably the cost variables added in the fourth step.

To measure the relationship of the type of sponsor or ownership to the risk of losing affordability, dummy variables are used for non-profit sponsors (NFP) and for projects owned by individuals (OWNIND). By implication, limited partnerships are used with for-profit general partners and other forms of ownership as a reference group. Adding the non-profit sponsor and private ownership variables to the equation increases the Wald chi-square to 20.05. In terms of sponsorship and ownership of the projects, only the non-profit variable reduces the odds of a high risk level, this variable is significant at the 1 per cent level. For example, considering the final model when all variables are included in the estimated equation, non-profit sponsorship of a LIHTC project reduces the odds of the risk

Table 5. Odds ratios for ordered logit models of pre-1990 LIHTC Projects for risk of losing affordability

	Models			
Model	1	2	3	4
Baseline				
MHIGH	0.511[a]	0.429[b]	0.419[b]	0.478
	0.206[a]	0.170	0.181	0.217
UNITS	0.995	0.995	0.995	0.994
	0.003	0.004	0.003	0.004
NEW	0.392[a]	0.450	0.818	1.207
	0.220[a]	0.245	0.511	0.735
NORTHEAST	0.969	1.314	1.569	1.522
	0.817	1.051	1.304	1.236
MIDWEST	0.592	0.655	0.691	0.668
	0.301	0.348	0.401	0.395
WEST	1.121	1.404	1.342	1.136
	0.899	1.193	1.218	0.974
METRO/CC	0.584	0.719	0.680	1.066
	0.326	0.434	0.453	0.662
DDA	1.001	1.258	1.438	1.203
	0.871	0.912	1.270	0.972
QCT	0.838	1.270	1.338	0.762
	0.537	0.823	0.836	0.534
Sponsor				
NFP		0.133[c]	0.106[c]	0.086[c]
		0.081	0.066	0.048
OWNIND		0.945	0.568	0.468
		0.512	0.372	0.292
Restrictions				
FMHA			0.339	0.273
			0.318	0.232
TAX4			0.853	0.981
			0.486	0.574
MINQUAL			1.337	0.745
			1.041	0.573
ADDAFFORD			0.214[c]	0.242[c]
			0.126	0.122
Costs & management				
RESERVES				1.000
				0.000
NEEDREHAB				0.144[c]
				0.120
OCCUPANCY				1.015
				0.019
Number obs	164	164	164	164
Population size	3173	3173	3173	3173
Wald chi-square	10.08	20.05	37.96	61.21
Prob > F	0.3438	0.0447	0.0009	0.0000

Notes: t's are shown below the coefficients.
[a] Significant at the 10% confidence level.
[b] Significant at the 5% confidence level.
[c] Significant at the 1% confidence level.
Source: Authors' estimates based on data from the LIHTC National Survey, 2005.

of losing affordability at the highest level by a factor of 0.086, in comparison to the lower levels of risk, and given that all of the other variables in the model are held constant.

Adding affordability restriction variables to the equation improves the explanatory power of the model. With regard to the effects of LIHTC program qualifications and restrictions on the risk of losing affordability, it is hypothesized that the risk of losing affordability might be affected by whether the 'as of right' 4 per cent tax-credit was claimed (TAX4), or if less than two-thirds of the units qualified for the tax-credit (MINQUAL). By adding FMHA, there is also control for whether the properties received subsidies through the Section 515 program. None of these variables is statistically significant. In other words, there is no significant association of the type of program used to structure the subsidies for affordable housing development to a higher risk of losing affordability. However, the presence of additional affordability restrictions beyond the mandated limit of 15 years (ADDAFFORD), such as deed restrictions or mortgage terms, is significant at the 1 per cent confidence level. Additional affordability restrictions on a LIHTC project result in a decline in the odds of a project belonging to the highest level of the risk of losing affordability by a factor of 0.242 in comparison to the lower levels of risk, and given that all of the other variables in the model are held constant. Finally, of the cost and management variables included in the final equation, the need for extensive rehabilitation (NEEDREHAB) is the only variable with a statistically significant association to risk; a LIHTC project in need for extensive rehabilitation reduces the odds of reaching the highest level of the risk of losing affordability in comparison to the lower levels of risk by a factor of 0.144, given that all of the other variables in the model are held constant at the mean.

To illustrate these relations in a more intuitive way and to better understand the predictions from the model, the predicted probabilities of LIHTC projects' risk of losing affordability by the level of risk were estimated for the three significant variables reducing risk: NFP, ADDAFFORD and NEEDREHAB. Table 6 depicts the predicted probabilities of the risk of losing affordability for each level of risk, where the value of each of the independent variables is assumed to be either 0 or 1 and the other variables included in the equation are held constant at their mean. In other words, the predicted probabilities assess the likelihood of a LIHTC project's level of risk in comparison to lower levels of risks holding all other variables at their mean value. The results of the exercise, depicted in Table 6, indicate that the probability of LIHTC projects' risk of losing affordability decreases with the presence of any one of these key variables. Projects with a non-profit

Table 6. Predicted probability of risk level by non-profit sponsorship, affordability restrictions and rehabilitation needs

Risk		1.00	2.00	3.00	4.00	5.00	6.00
All variables		0.42	0.08	0.19	0.09	0.12	0.09
Non-profit sponsor	No	0.23	0.12	0.32	0.13	0.13	0.07
	Yes	0.78	0.09	0.10	0.02	0.01	0.01
Affordability restrictions	No	0.29	0.14	0.31	0.11	0.10	0.05
	Yes	0.63	0.12	0.17	0.04	0.03	0.01
Need extensive rehabilitation	No	0.28	0.13	0.32	0.11	0.11	0.05
	Yes	0.73	0.10	0.12	0.02	0.02	0.01

Source: Authors' estimates based on data from the LIHTC National Survey, 2005.

Table 7. Conditional probability of risk level by non-profit sponsorship, affordability restrictions and rehabilitation needs

	Risk			1	2	3	4	5	6
			No need for rehabilitation						
Affordability restrictions	No	Non-profit sponsor	No	0.10	0.07	0.27	0.17	0.23	0.16
			Yes	0.57	0.14	0.19	0.05	0.04	0.02
Affordability restrictions	Yes	Non-profit sponsor	No	0.32	0.14	0.30	0.10	0.09	0.04
			Yes	0.85	0.06	0.07	0.01	0.01	0.00
			In need of rehabilitation						
Affordability restrictions	No	Non-profit sponsor	No	0.45	0.15	0.26	0.07	0.06	0.03
			Yes	0.90	0.04	0.04	0.01	0.01	0.00
Affordability restrictions	Yes	Non-profit sponsor	No	0.77	0.09	0.10	0.02	0.02	0.01
			Yes	0.97	0.01	0.01	0.00	0.00	0.00

sponsor, or with additional affordability restrictions beyond year 15, or when the projects need extensive rehabilitation, have a lower risk of losing affordability. For example, the predicted probability of LIHTC projects' risk of reaching the highest level (i.e. risk $= 6$) when non-profit sponsors are involved (NFP $=$ Yes) is .01, when compared to the odds of a risk level of 5 or lower. In contrast, the probability for projects with private sponsors is .07. Thus, the probability of a project having the highest risk is reduced from 0.07 to 0.01 by the participation of non-profit sponsors. Imposing affordability restrictions reduces the odds from 0.05 to 0.01 at the highest risk level, when compared to the odds of not having affordability restrictions. This pattern is observed for the need for extensive rehabilitation as well.

Predicted probabilities can be estimated from the model to assess the interaction of key variables. Table 7 depicts conditional probabilities for the three key variables from the model. The data in this table answer the question, for example, of what would be the probability of a LIHTC reaching a risk level 6 when the project is in no need for extensive rehabilitation, does not have affordability restrictions, and no non-profit sponsor is involved in the project? The answer is 0.16 (the extreme right, upper corner cell of the Table). A similar project, but in need of extensive rehabilitation, would have a combined predicted probability of 0.03 (the upper right corner cell of the set of rows for 'In need of rehabilitation'), when compared to reaching a risk level of 5 or lower. Conversely, a project with affordability restrictions and non-profit sponsors, in need of rehabilitation has a probability of 0.97 of having the lowest risk (risk level 1). Since the cumulative probability of any row equals 100 per cent, these combined predicted probabilities can be interpreted as depicting the relative impact of a variable in combination with others, and holding the rest of the variables in the model at their mean value. By this measure, projects with no affordability restrictions or non-profit sponsors, and in no need for extensive rehabilitation have the overall highest predicted level of risk of losing affordability of 0.56 (i.e. the sum of risk levels 4 to 6, in relation to levels 1–3). In comparison, the effects of any one of the variables in Table 6 by themselves range from 0.26 to 0.33 (the sum of risk levels 4 to 6 for the 'no' rows). In sum, the above analysis establishes that the interactions of these variables are critical when assessing the risks of LIHTC projects losing affordability.

At-Risk Projects Post-1989

The next step in the analysis involves using the findings from the model estimating the relative importance of the various factors affecting LIHTC projects' affordability during the 1987–89 period to assess the risk of post-1989 projects. Table 8 summarizes the data for key variables associated with the risk of losing affordability for both periods under consideration. Recall that the level of risk is based on developers' answers to the questions used to build the risk scale used as dependent variable in the regression model (Table 3). As expected, the overall level of risk decreased from 3.1 in the 1987–89 period to 2.2 in the 1990–92 period. A lower average risk score results in a substantial decline of the overall number of projects at risk of losing affordability; the number of at-risk projects declined from an estimated 1263 in the first period to 237 in the second period. Similarly, the total number of rental units affected declined from 28 per cent of total units 4 per cent.

It is evident that Congressional action increasing the LIHTC affordability restrictions to 30 years induced a lower risk of losing affordability for post-1989 LIHTC projects. But in addition, over time, local authorities became more aggressive in imposing affordability restrictions. The proportion of projects with affordability restrictions beyond those mandated by the federal program, those restrictions imposed by state and other local housing authorities allocating the credits, doubled for the post-1989 period from 23 per cent to 46 per cent of the projects. The data also indicate that other important factors associated with a lower risk of losing affordability, such as non-profit sponsorship of the projects and the need for rehabilitation, clearly contribute to a lower risk for post-1989 LIHTC projects. The overall proportion of projects with non-profit sponsorship increased from 17 per cent in the first period to 30 per cent of the projects in the post-1989 period. Projects at risk of losing affordability, for all practical purposes, do not have non-profit sponsorship. The need for rehabilitation (NEEDREHAB) is the last significant variable lowering the risk of losing affordability identified by the ordered logit model. The proportion of projects in need of rehabilitation increased from 21 per cent in the first period to 33 per cent in the second period. However, in contrast to the first period when at-risk projects had a much lower proportion of properties in need of rehabilitation, the need for rehabilitation affects all projects, regardless of whether projects are likely to maintain or to lose affordability. Thirty-three per cent of the projects which are more likely to maintain affordability are in need of rehabilitation, while 39 per cent of those more likely to lose affordability are in need of capital improvements.

The need for rehabilitation is a factor associated with a lower risk of LIHTC projects' conversion to market rents. However, from the point of view of preservation of the affordable housing stock, a substantial increase in the projects in need of rehabilitation in the second period raises important concerns. For the properties in the first period, there is the possibility to recapitalize the project as part of financing the acquisition from limited partnerships. Many states have already instituted special provisions to give priority to the preservation of year 15 properties in their allocation of new tax-credits. Indeed, the refinancing of properties with capital improvements included as part of the transactions, including funding from the LIHTC program as well as from other public subsidies, has allowed non-profit sponsors to be more competitive in the market for properties with expired tax-credits. This has thus further reduced the potential of conversion to market rates, ensuring the long-term preservation of the affordable housing stock.

Table 8. Risk and other characteristics for LIHTC Projects by periods

	Pre-1990 Affordability			Post-1989 Affordability		
	Maintain	May lose	Total	Maintain	May lose	Total
Number of projects (unweighted)	115	49	164	133	20	153
Number of projects (weighted)	1910	1263	3173	2264	237	2501
Average number of rental units (weighted)	48	28	40	39	16	37
Total number of rental units (weighted)	90 897	35 744	126 641	88 065	3695	91 767
% Rental units	0.72	0.28	1.00	0.96	0.04	1.00
Key variables						
Average risk score (1–6)	1.9	5.0	3.1	1.9	4.7	2.2
Affordability restrictions beyond LIHTC 15/30 years	0.29	0.14	0.23	0.47	0.37	0.46
Non-profit sponsor involved in the project	0.28	0.01	0.17	0.33	0.00	0.30
Rehabilitation work needed	0.30	0.07	0.21	0.33	0.39	0.33

For the projects in the second period, precisely because affordability restrictions would not expire for a longer period of time, some of the public funding earmarked for year 15 financing might not be available. In this case, refinancing of LIHTC is contingent on several factors. To begin with, after the benefits of the tax-credits are exhausted by the limited partner, the general partner could refinance the mortgage and cover any capital improvements necessary to make the transaction feasible. However, this option is limited by the availability of public funding for this purpose and the properties' cash flow. Short of substantial public subsidization, refinancing is contingent on whether the property cash flow is sufficient to support the level of debt generated by the purchase and rehabilitation of the project. In a recent study on this subject, syndicators reported that most of the early tax-credit properties do not have substantial if any reserves. This problem is particularly significant for properties located in economically depressed areas with weak housing markets (Schwartz & Melendez, 2007). The need to finance the physical improvement of tax-credit properties after year 15 represents a different type of risk to the preservation of LIHTC projects than the expiration of federal tax-credits in year 15. Extended affordability restrictions do not address the need for investments on capital improvements to insure the continued physical viability of the projects.

Conclusions

Examining projects underwritten and placed in service prior to 1990, it was found that 'Year 15' challenges the continued affordability of tax-credit housing in several ways. First, it is estimated that of the total 3173 LIHTC projects placed in service prior to 1990, 40 per cent are at risk of losing affordability. Moreover, as a result of the expiration of affordability restrictions, 13 per cent of the projects, representing 11 545 units of housing, are at the highest risk of losing affordability. Year 15 marks the end of the initial LIHTC compliance requirements and often the end of the project's partnership with the investors' limited partner. Exit strategies involve non-profit and private sponsors either acquiring the limited partners' stake in the development or the sale of the development altogether. The evidence presented above indicates that the presence of non-profit sponsors and the imposition of affordability restrictions beyond those required by the federal LIHTC program by state and local housing authorities allocating tax-credits, have lowered the risk of conversion and contributed to the preservation of low-income housing. Contrary to the expectations of this study, location in a high-rent market by itself does not seem to be a factor leading to conversion. Paradoxically, the need for rehabilitation has served as a deterrence to conversion of low-income housing to market rates. Since many properties are in need of capital investments or would need refinancing for acquisition by new owners, there is an opportunity for state agencies involved in the financing of capital improvements and purchases to negotiate stricter affordability restrictions and to support an enhanced role for non-profit organizations in the preservation of the affordable housing stock.

Finally, it is important to recognize that affordability restrictions are not the only challenge to the continued viability of tax-credit housing for low-income renters. Long-term affordability restrictions matter little when the property is unable to secure funding to pay for essential capital improvements (Schwartz & Melendez, 2007). The physical rehabilitation of properties in the 1990 to 1992 period is of serious concern.

Not only did the proportion of properties in need of rehabilitation increase substantially, from 0.21 in the initial years of the tax-credits to 0.33 in the post-1989 period, but the availability of financing is contingent on the financial health of the projects. These projects were placed in service at a time when the tax-credits commanded a relatively low price leaving the projects with high rates of indebtedness, thus facing tighter constraints for the recapitalization of the projects. If the reserves are inadequate and the rent roll is too small to support a mortgage large enough to cover capital improvements, the property will most probably require additional subsidy, perhaps in the form of new Low-Income Housing Tax-Credits, to remain viable for the years ahead. From a public policy perspective, year 15 accentuates the need for state and local governments to balance carefully the goals of preserving and expanding the stock of affordable housing in allocating scarce subsidy dollars (Collingnon, 1998; Craycroft, 2004). Many properties, particularly those located in low-rent, inner-city areas, require public investments and instituting effective ways of monitoring and enforcing long-term affordability requirements. The risks of deterioration of the affordable housing stock for lack of investments in rehabilitation deserve further study by those who are concerned with the preservation of affordable housing.

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Appendix A

Questions Used to Create the At-Risk Scale (From the LIHTC National Survey 2005)

Yes, sold or in contract to be sold	25% → Go to Section SP
No, not sold or not in contract to be sold	75%
Count	(317)

S1. Has the property been sold or is it in contract to be sold?
PRE3. How important is it to your organization to maintain the property's affordability? Is

Very important	65%
Somewhat important	18%
Not too important	4%
Not important at all	10%
Refused	3%
Count	(119)

it very important, somewhat important, not too important, or not important at all?
PRE6. What was or will be the planned year 15 transaction decision at the end of the

Continue to own the property and maintain its affordability	69% → Go to Section CO
Convert to market rate rents	11% → Go to Section M
Attempt to sell the property	13% → Go to Section SE
Other (Specify)	1%
Don't know/Haven't decided	7%
Count	(119)

compliance period?
SE2A. Is there an interest in selling to a non-profit or other entity willing to keep the

Yes	67%
No	13%
Don't Know	20%
Count	(15)

property affordable?

Yes	58%
No	28%
Don't Know	14%
Count	(78)

SP5. Did the purchaser agree to keep the property affordable for low-income households?

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