



Overview and proposed reforms of the low-income housing tax credit program

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The populist need for politicians to make housing more affordable has existed since antiquity.¹ The US Federal government has historically either subsidized the development of rent-restricted units (i.e., placed-based), or provided subsidies directly to recipient households (i.e., tenant-based) in efforts to make housing more affordable. The Low-Income Housing Tax Credit (LIHTC) program provides a subsidy to private developers who construct or rehabilitate rental housing with maximum tenant incomes and rents for at least 30 years. Since being enacted in the Tax Reform Act of 1986, the LIHTC program had subsidized the development of at least 2.78 million rental units through 2014 (US HUD, 2016). This accounts for approximately 6.7% of all rental housing and makes the LIHTC the largest place-based subsidized housing program in US history.² The Joint Committee on Taxation (2018) estimated the program cost the US government \$8.4 billion in lost tax revenue in 2017, and projects that amount will increase to \$10.4 billion by 2021.³ There is perennial bipartisan support in the US Senate to permanently expand LIHTC annual allocations by up to 50%.⁴

The purpose of this article is to outline the factors that determine the economic costs of the LIHTC program and assess potential policy reforms. It is not meant to be exhaustive, but rather a resource for academics and policymakers wishing to become better acquainted with the program as a tool to make housing more affordable. It also specifically addresses the economic merits of future increases in allocations, and two alternative revenue-neutral policy reforms that would increase the annual number of units subsidized under the program. Those more interested in the institutional details of the program should see Kroger (2014), or Olsen and Zabel (2015) for a broader review of US rental housing subsidies.

Existing research suggests that subsidizing housing consumption

through the LIHTC program is expensive. Alternatively subsidizing the housing consumption of targeted households through tenant-based subsidies would be more cost effective in most, and perhaps all, US housing markets. Economic arguments for continued support of the LIHTC program are that project-based subsidies are more cost-effective in rental housing markets with supply constraints, or that LIHTC units create positive externalities for their neighborhoods. Recent research has, however, suggested that LIHTC subsidies are poorly targeted to the locations where they would be most cost-effective. Research has also shown that while LIHTC units create positive externalities in lower-income neighborhoods, subsidized construction in higher-income areas reduce surrounding property values.

The article provides an overview of the LIHTC program in the next section. The third section discusses recent research on the cost-effectiveness of the LIHTC program relative to other housing subsidies. The article concludes with a review of potential reforms and three specific policy recommendations to increase affordable rental housing production without increasing tax expenditures.

1. Overview of the LIHTC program

The LIHTC program began through passage of the Tax Reform Act of 1986, and exists today as governed through Section 42 of the US Tax Code. In these regards, the program is unique compared to other means-tested rental housing assistance programs as its compliance rules are enforced by the US Internal Revenue Service. It also does not require an annual specific budget outlay, but is rather considered a tax expenditure that exists in perpetuity in the tax code.

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¹ See Smith (2006) for more on the relaxation of building codes in Ancient Rome to allow the construction of higher-density housing, or *insula*, to make housing more affordable.

² The US Census Bureau estimated there were 41,423,632 renter-occupied units in 2014.

³ This estimate includes a 12.5% increase in competitive LIHTC allocations approved by the US Congress in March 2018.

⁴ For example, Senate Bill 548 (2017) was introduced by Senators Maria Cantwell (D-Washington) and Orin Hatch (R-Utah), which had 7 Democrat and 4 Republican co-sponsors.

A key feature of the LIHTC program often overlooked by researchers is that developers can receive a subsidy through two different mechanisms. The most common mechanism (i.e., the competitive mechanism) sets minimum unit requirements (e.g., maximum tenant incomes and rental contributions), but constrains the annual per-capita dollar amount each state can allocate to developers.⁵ Developers could receive a subsidy up to 103% of their eligible non-land development costs, but the scarcity of the subsidy often requires them to submit ‘bids’ to state designated allocating agencies that make voluntary concessions in order to receive an allocation. These voluntary concessions often include lower maximum tenant incomes and rental contributions, extension of rental restrictions, or providing additional tenant amenities (e.g., playgrounds, internet, etc.).

The bottom bars of Fig. 1 illustrate the annual number of units allocated a competitive LIHTC subsidy from 2003 until 2014 according to the National Council on State Housing Agencies.⁶ At least 782,999 units were subsidized under the competitive version of the program over this period, which includes both new construction and the substantial rehabilitation of existing units. A high of 79,157 units were allocated a competitive LIHTC subsidy in 2008. Only 58,735 units received a competitive allocation in 2014.

To illustrate an example of how the LIHTC subsidy works in practice, Table 1 presents the attributes and expected cash flows for a hypothetical LIHTC development based on national averages and common underwriting assumptions. The project is assumed to be composed of 40 two-bedroom units and located in either a sufficiently low-income area that

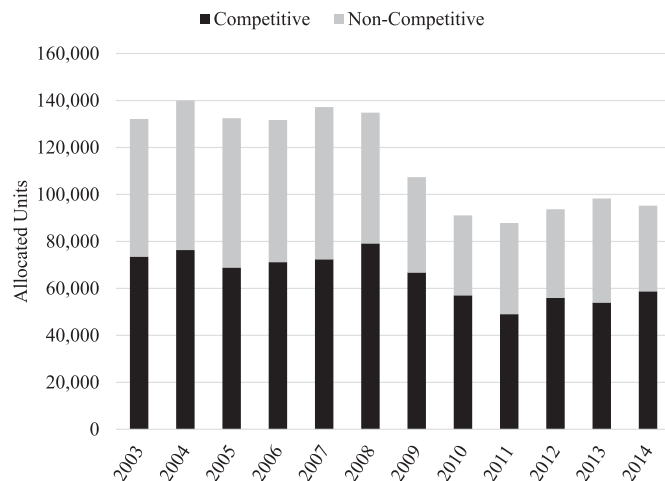


Fig. 1. Annual number of allocated LIHTC units, by mechanism type. Source: National Council of State Housing Agencies (NCHSA).

⁵ In 2016, this 10-year nominal total amount was equal to \$23.50 per state resident, with a minimum of \$26,900,000 for less populous states. The subsidy is eligible to be claimed by equity holders of LIHTC projects in equal installments over 10 years, given the units continue to meet the minimum requirements of the program for 15 years. The equity holder must also have sufficient tax liability because the tax credits are non-refundable.

⁶ The data from Figs. 1 and 2 are found in Appendix Table 1A. The US Department of Housing and Urban Development (HUD) also maintains a project-level database of LIHTC developments based primarily on year of completion, or placed into service. That database is publicly available at <https://lihtc.huduser.gov/> and reports that 548,025 competitive subsidized units were completed between 2003 and 2014.

⁷ LIHTC developments located in a designated QCT or DDA are eligible to receive an additional 30% increase in subsidy. HUD (2016) estimates 39.5% of LIHTC units placed-into-service between 2003 and 2014 were located in a QCT, and 25.3% were located in a DDA. See Freedman and Owens (2011) and Lang (2012) for more on QCTs and Eriksen (2018) for more about DDAs.

Table 1
Effect of proposed reforms on an average LIHTC development.

Subsidized Housing Units			40	
Non-Land Development Cost			\$6,400,000	
Land Acquisition Cost			\$1,600,000	
Total Development Cost			\$8,000,000	
LIHTC Mechanism	Current Policies as of 2018		Reduce Number of Years Subsidy Delivered	
	Competitive	Non-Competitive	Competitive	Competitive
Years of Subsidy Delivery	10	10	5	1
Annual Tax Credit Allocation	\$748,800	\$264,576	\$1,293,198	\$5,716,433
AMI Targeting	46%	60%	46%	46%
Tenant Max Annual Income	\$27,200	\$35,478	\$27,200	\$27,200
Tenant Max Monthly Rent	\$680	\$887	\$680	\$680
Present Value of Subsidy (d = 2.43%)	\$6,577,314	\$2,323,984	\$6,020,102	\$5,580,819
Effective Subsidy Per Unit	\$164,433	\$58,100	\$150,503	\$139,520
Property-Specific IRR w/Tax Credits	6.57%	4.87%	6.57%	6.57%
Subsidy Difference per Unit	–	–	–8.47%	–15.15%
Percent Increase in Similar Units			9.21%	17.86%

Notes: The above estimates are based on a hypothetical LIHTC development composed of 40 2-bedroom units located in a Qualified Census Tract or Difficult Development Area receiving a competitive allocation during 2016. The non-land development costs are based on RS Means national estimate of \$160 per square foot to develop 40,000 square feet of 3-story multifamily housing with an elevator using union labor. The land costs were assumed equal to 20% of total development costs. The tenant maximum income and rents are based on the national median income of \$59,130 for a 3-person family as defined by HUD during 2016. The AMI Targeting is the average percent of area median income (AMI) agreed by developers awarded an LIHTC subsidy in California during 2016. The present value of the subsidy is discounted at the yield on a 10-year US Treasury bond during December 2017, which was 2.43%. The property-specific IRR with tax credits assumes a 3% vacancy rate, annual operating expenses of \$4400 per unit. Maximum rents and operating expenses were assumed to increase at 2% per year, and the property will be sold at the end of the 15th year using a 6% capitalization rate, incur selling expenses of 5%, and indefinite rent restrictions. The property-specific IRR would be much higher if either the rent-restrictions were removed, or the development received an additional tax credit allocation after 15-years. The annual tax credit allocation under alternative reforms was determined based on the developer receiving the same property-specific IRR from before the reform.

is designated by HUD as a Qualified Census Tract (QCT), or a sufficiently high rent-to-income zip code that is designated by HUD as a small-area Difficult Development Area (DDA).⁷ RS Means estimates it would cost \$160 per square foot to develop 40,000 square feet of 3-story multifamily construction with an elevator using union labor, or \$6.4 million.⁸ The land is conservatively assumed to cost 20% of the total development costs, or \$1.6 million.

Maximum LIHTC tenant income and rental contributions must be respectively below 60% and 18% of the unit's local area median income

⁸ RS Means estimate is further based on fiber siding on wood frame construction with no basement and an average floor height of 10 feet. The estimate includes conservative industry standards of 25% contractor overhead and 8% in design-related fees. The next section discusses the evidence that developer costs of LIHTC units is often higher than industry averages for unsubsidized construction.

(AMI), adjusted for household size for at least 30 years.⁹ Under programmatic rules, the maximum rent for a 2-bedroom LIHTC subsidized unit is therefore independent of the tenant's actual income, but instead is based on the local median income for a 3-person household. Based on the national median income defined by HUD for 2016, the maximum LIHTC tenant income for a 2-bedroom unit would be \$35,478 and the maximum rent would be \$887.

It is not unusual for developers to 'bid' lower maximum tenant incomes and rents as a percentage of AMI in order to receive a competitive LIHTC allocation, although the exact percentage varies across states and depends on the level of competition to receive the subsidy. For example, developers awarded a competitive allocation in California bid on average maximum tenant incomes equal to 46% of AMI in during 2016 (California Tax Credit Allocation Committee, 2016). Based on the national median income, this would result in a maximum tenant annual income of \$27,200 and housing rent of \$680 per month for a 2-bedroom unit.

A developer awarded a competitive subsidy and agreeing to the above rental restrictions would be allocated a 10-year annuity of nonrefundable tax credits equal to \$748,800 per year.¹⁰ If those payments were discounted at the 10-year US Treasury bond yield, which was 2.43% on the last day of 2017, this subsidy would be equal in present value to \$6,577,314, or 103% of non-land development costs. Under relatively conservative underwriting assumptions, this would result in a property-specific internal rate of return of at least 6.57% with the tax credits.¹¹

The bottom bars of Fig. 2 illustrate the annual present-value of competitive LIHTC allocations to developers in constant 2014 dollars according to the NCHSA.¹² Increases in state maximum allocations have been approximately tied to inflation since 2003, although temporary increases in allocation authority occurred following Hurricane Katrina, the American Recovery and Reinvestment Act (ARRA) of 2009 and the Consolidated Appropriations Act of 2018. On average \$7.3 billion in

⁹ The minimum period of rental restrictions imposed on LIHTC developers was increased from 15 to 30 years in 1990, and some states encourage developers to pledge even longer periods of rental restrictions in their application. Developers forfeit future tax credit allocations and must repay one-third of previous allocations plus interest if the property is non-compliant with the rental restrictions during the first fifteen years, although there is no financial penalty imposed on developers for renegeing on those obligations after 15 years. Developers must also indicate whether a project will meet the "40/60" or "20/50" rule. The 40/60 rule requires that at least 40% of all units in the project will rent to households earning less than 60% of the AMI. The 20/50 rule requires at least 20% of all units will rent to households earning less than 50% of the AMI. According to the 2014 HUD database, 88% of LIHTC projects elect to adhere to the higher possible rents associated with the 40/60 requirement.

¹⁰ Since 2009, developers awarded a competitive LIHTC subsidy are allowed to claim 9% of non-land development costs (i.e. eligible basis) each year for the 10-years immediately following completion of the subsidized project. This amount is increased by 30% if the project is located in either a Qualified Census Tract or Difficult Development Area.

¹¹ These underwriting assumptions were based on 3% vacancy, annual operating expenses of \$4400 per unit, and 2% annual increases in gross rent and operating expenses. The property is also assumed to be sold at the end of year 15 to an owner that will maintain the rental restrictions based on a 6% capitalization rate, and brokerage expenses of 5%. The calculation ignores other potential tax benefits of owners (e.g., use of depreciation allowances to offset other taxable income). The potential IRR of the owner is much higher after accounting for those additional tax benefits, financial leverage, and if the rental restrictions were eventually removed. Novogradac (2015) estimated median per-unit operating expenses, including maintenance and repairs, between \$4200-\$4400 based on the number of units in the project. Enterprise Community (2016) estimated a 3% vacancy rate for units in their portfolio, although much higher operating expenses. REIS (2017) reports cap rates of multifamily rental housing were approximately 6% during 2016. <https://www.reis.com/cre-news-and-resources/cmb-apartment-market-trends-q1-2017>.

¹² The 10-year annuity of tax credits were discounted by the yield on a 10-year US Treasury bond during the last day of each year. Those estimates were further adjusted for inflation using the consumer price index with a base year of 2014.

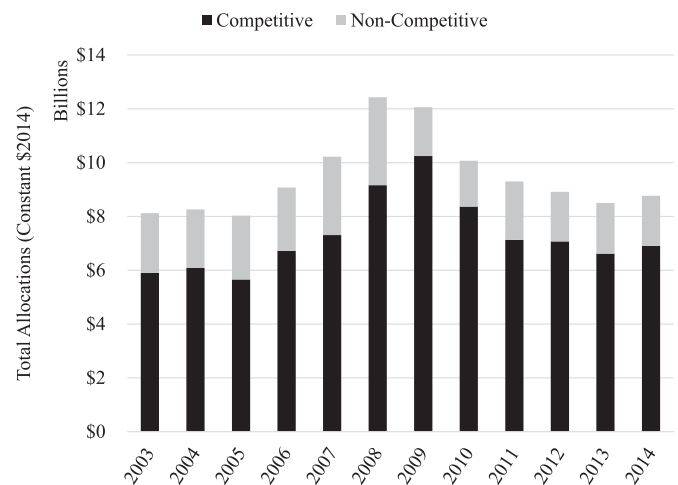


Fig. 2. Annual amount of tax credits allocated to LIHTC developers, by mechanism type.

Source: National Council of State Housing Agencies (NCHSA).

competitive tax credits were allocated annually to developers between 2003 and 2014, with a high of \$10.2 billion in 2009; \$6.9 billion were allocated in 2014.

There is no guarantee that a developer will be awarded a competitive subsidy and the opportunity cost of submitting a failed LIHTC application is potentially quite expensive.¹³ Table 2 reports the amount of subsidy requested and allocated by housing agencies in 2014, as reported by the NCHSA. Although the level of competition varies across states, the NCHSA estimated that \$2.37 was requested for every \$1 available in 2014. Only two of the 53 agencies for which all the data is available, Utah and Washington state, had sufficient tax credits to fulfill all of the requests.

Developers can avoid the uncertainty of receiving a subsidy and making any required concessions by instead opting to receive a lower base subsidy equal to up to 39% of non-land development costs (i.e., the non-competitive mechanism).¹⁴ States are not constrained in the amount of subsidy they can allocate to developers meeting the minimum requirements of this alternative version of the LIHTC program.¹⁵ Although less generous than its competitive counterpart, developers applying for the lower subsidy are enabled to use federal income tax exempt bonds to finance the project, or conduct less substantial rehabilitations of existing multifamily housing.

The upper bars of Fig. 1 illustrate the annual number of units receiving a non-competitive LIHTC allocation from 2003 until 2014 according to the NCHSA. On average, 49,905 units received a subsidy through this alternative version of this program each year, with a high of 64,822 in 2007. The number of units subsidized through the non-competitive program has declined since 2008, with a reported 36,485 subsidized units in 2014. The upper bars of Fig. 2 illustrate the annual present discounted value of non-competitive LIHTC allocations. On

¹³ In addition to the non-trivial application costs to receive a subsidy in most states, developers must often secure development rights to the land and usually building permits before applying.

¹⁴ The US Applicable Federal Rate published monthly by the US Internal Revenue Service is used as the discount rate to convert the present-value subsidy to a 10-year annuity of tax credits eligible to be claimed by recipients. Similar to the competitive version of the program, the subsidy would be increased by 30% if the project was located in a designated QCT or DDA.

¹⁵ Although there is no explicit limit on the amount of non-competitive LIHTC allocations, developers usually supplement the subsidy with tax-exempt bonds issued by the state. Consequently, non-competitive LIHTC allocations may be limited by the availability of tax-exempt bonds or other subsidies used to make the project financially feasible.

Table 2
LIHTC competitive funding requests and allocations by housing agency in 2014.

Housing Agency	Allocation Requests	Allocations	Units Funded	Request to Allocations	Housing Agency	Allocation Requests	Allocations	Units Funded	Request to Allocations
Alabama	27,892,005	11,117,560	1207	2.51	Montana	7,585,060	2,689,352	181	2.82
Alaska	4,608,511	2,468,984	133	1.87	Nebraska	15,301,222	4,602,543	421	3.32
Arizona	33,418,311	15,255,437	1159	2.19	Nevada	8,838,798	6,422,268	582	1.38
Arkansas	19,807,093	6,567,084	632	3.02	New Hampshire	6,046,468	2,970,088	257	2.04
California	174,831,199	94,025,151	4846	1.86	New Jersey	43,234,428	20,553,162	1431	2.10
Colorado	53,259,527	12,309,882	683	4.33	New Mexico	18,398,540	5,450,607	380	3.38
Connecticut	15,586,394	10,148,507	700	1.54	New York	120,000,000	45,466,543	2928	2.64
Delaware	5,118,065	3,515,361	370	1.46	North Carolina	91,416,700	24,204,431	3030	3.78
D.C.	10,248,185	2,576,555	192	3.98	North Dakota	4,463,224	2,543,782	186	1.75
Florida	87,383,989	45,598,303	3088	1.92	Ohio	71,900,000	27,298,348	2722	2.63
Georgia	43,686,330	22,855,619	2379	1.91	Oklahoma	37,309,463	8,872,941	956	4.20
Hawaii	4,923,165	2,620,690	158	1.88	Oregon	18,415,796	9,076,547	664	2.03
Idaho	7,637,481	3,723,253	271	2.05	Pennsylvania	126,284,764	30,764,188	1750	4.10
Chicago	12,424,408	6,227,137	370	2.00	Puerto Rico	43,891,050	8,347,629	873	5.26
Illinois	50,807,857	27,157,270	2205	1.87	Rhode Island	14,381,307	2,514,668	192	5.72
Indiana	41,300,000	15,294,456	1001	2.70	South Carolina	26,379,498	10,703,847	876	2.46
Iowa	23,299,910	7,693,883	650	3.03	South Dakota	5,346,841	2,643,040	269	2.02
Kansas	23,579,370	6,773,859	476	3.48	Tennessee	58,541,826	14,945,832	1574	3.92
Kentucky	24,332,032	11,325,553	992	2.15	Texas	70,869,528	65,065,748	5925	1.09
Louisiana	34,000,000	12,940,953	986	2.63	Utah	6,848,948	6,862,561	655	1.00
Maine	8,044,431	3,085,425	320	2.61	Vermont	4,214,150	2,640,963	163	1.60
Maryland	27,000,000	14,543,667	135	1.86	Virgin Islands	N/A	2,408,329	N/A	N/A
Massachusetts	28,185,441	15,472,923	933	1.82	Virginia	28,835,304	19,222,354	3210	1.50
Michigan	64,049,872	23,888,949	2320	2.68	Washington	15,749,163	16,804,499	1247	0.94
Minnesota	23,000,000	12,571,690	1130	1.83	West Virginia	11,401,096	4,507,544	518	2.53
Mississippi	30,210,662	8,413,927	873	3.59	Wisconsin	36,435,027	13,607,057	1238	2.68
Missouri	59,585,590	13,731,800	1414	4.34	Wyoming	5,864,211	2,751,446	203	2.13
					Total*	1,836,172,240	773,435,866	62,054	2.37

Source: National Council of State Housing Agencies (NCHSA) Factbook, 2014. Notes: Only rent-restricted units reported and totals do not include units located in the Virgin Islands.

average, \$2.2 billion in allocations were made each year, with \$1.9 billion in 2014.

The second column of Table 1 illustrates how receiving a non-competitive LIHTC allocation affects the cash flows of an average project. For constructing an otherwise identical unit, the developer would receive a lower effective subsidy per unit, \$58,040 as compared to \$164,263. The lack of competition for this subsidy allows the developer to charge tenants a monthly rent targeted to households that earn 60% instead of 46% of AMI. Based on the national median income, this would be equal to \$887 per month in 2016. Before accounting for the more positive financial leverage enabled by using federal tax exempt bonds to finance the project, the lender would expect to receive a property-specific IRR with the tax credits equal to 4.87% if the rent restrictions were assumed to be indefinite. As before, the actual investor IRR would be much higher once leverage, additional tax benefits, and eventual removal of rent restrictions were accounted for in the analysis.

2. Economic motivations for housing subsidies and related research

The US Federal Government spent at least \$50 billion on rental housing subsidies in 2015 (US OMB, 2015).¹⁶ Despite such expenditures, economists have often struggled to justify theoretically why the government should subsidize housing consumption, especially as compared to an unrestricted cash grant. Two motivations have emerged in the economics literature to justify housing subsidies.¹⁷

The traditional justification is based on interdependent utility functions where higher-income households wish to redistribute their consumption to lower-income households. Higher-income households may

be concerned that recipients undervalue housing for themselves, or their children. An in-kind transfer allows donor households to set minimum housing standards for recipients they would otherwise be unable to enforce with cash grants. Another attractive quality of in-kind transfers is that they ensure that the benefits of the subsidy are directed towards the children of the recipient household.

A second potential advantage of housing subsidies for redistributive purposes rests on ensuring that the subsidy is targeted to households who are truly in need. Some households may attempt to mimic truly needy households in order to receive an unrestricted cash grant (Nichols and Zeckhauser, 1982)). In order to improve targeting, the government may therefore subsidize inferior goods or place maximum limits on consumption that recipients naturally self-select away from as their incomes rise.

Although LIHTC units may satisfy the motivations for housing subsidies described above, the preponderance of research suggests housing vouchers are relatively more cost-effective to achieve these goals in the majority of housing markets (Olsen, 2017). This result exists because it is cheaper on the per-recipient basis to subsidize consumption in existing vacant housing units, rather than building new units exclusively for that purpose. The media has recently highlighted cases of some LIHTC projects having high per-unit development costs. In some instances the per-unit cost of subsidized units has exceeded the median price of single family homes in the local area.¹⁸ One explanation for higher development costs for LIHTC subsidized units is based on how the subsidy generosity is determined (Eriksen, 2009; Lang, 2015). Based on where the

¹⁶ This estimate includes direct expenditures through primarily HUD, and reductions in future tax revenues due to the LIHTC program.

¹⁷ See Olsen and Zabel (2015) or Currie and Gahvari (2008) for a review.

¹⁸ Affordable Housing Finance (2012) cites a case in Maine where each LIHTC unit in a rehabilitation project cost \$265,000 to produce. The median price of a single family home in the state of Maine was \$159,000 during the same time period. Another example of excessive costs is found in St. Paul, MN during 2016, where the per-unit cost of renovating 251 units with the LIHTC was \$665,000 (Melo, 2016).

subsidized unit is located, developers could receive as much as \$1.03 in additional tax credits for each additional \$1 in construction and other qualified non-land development expenses. This distortion is a potential explanation for why non-land development costs of LIHTC units in California between 1999 and 2006 were 21% more expensive on a per-square foot basis to develop than medium quality market-rate rental units as estimated by RS Means (Eriksen, 2009).

A more difficult to quantify distortion in housing markets from the LIHTC program exists due to the subsidized units not actually increasing the quantity supplied of rental housing. This displacement, or crowd-out, occurs because LIHTC tenants might have otherwise occupied an unsubsidized rental unit in the immediate vicinity of the subsidized unit in absence of the program. On a theoretical basis, crowd-out from the LIHTC program is thought to be especially severe considering the more moderate incomes of LIHTC tenants makes it unlikely they would have been homeless in absence of the subsidized unit. Offering these moderate-income households below-market rents to reside in LIHTC subsidized units would eventually result in fewer substitutable units in elastically supplied rental housing markets. Previous estimates of crowd-out from the LIHTC program range from 30% to 100% (Malpezzi and Vandell, 2002; Sinai and Waldfogel, 2005; Eriksen and Rosenthal, 2010).

A potentially valid economic argument for continued support of the LIHTC in light of the above evidence is that the supply of lower-quality housing is not sufficiently elastic in some housing markets. Housing supply elasticity measures the degree to which housing producers can increase or decrease the quantity supplied of available units in response to changes in price. Natural geographic constraints or local-land use regulations may reduce the amount of developable land, or make housing marginally more expensive to build, which can cause the housing supply to be inelastic.¹⁹ Additional housing vouchers would increase rents of unsubsidized households if housing supply was perfectly inelastic or fixed, because no crowd out from additional LIHTC subsidized units would occur. Saiz (2010) estimated housing supply elasticity varies dramatically across US cities, although the majority are quite elastic, which suggests an important role in targeting housing subsidies based on local market attributes.

Eriksen (2017) showed the LIHTC program is poorly targeted. He compared the per capita number of LIHTC units developed from 1993 until 2013 in the 100 largest metro areas to housing affordability in 1992.²⁰ Fig. 3 reproduces those results and shows virtually no correlation between housing affordability and future LIHTC construction (i.e., the R^2 of the regression fit is approximately 0.01). For example, Des Moines, IA is one of the most affordable metro areas in the U.S. and had more than double the per capita amount of LIHTC subsidized units than Honolulu, HI, which is one of the least affordable metro areas. These non-results are largely attributable to setting state allocation limits based on population instead of underlying attributes of the housing market, such as construction costs, the price of land, or other measures of affordability.

Another argument in favor of the LIHTC program over tenant-based assistance is that subsidized units may generate positive externalities on either the residents of the subsidized units, or the neighborhoods where they are located. A recent review by Dillman et al. (2017) found 16 studies have attempted to quantify the externalities created by LIHTC subsidized units. An empirical challenge in this literature is disentangling

the endogenous reasons why developers first apply to receive, and then state agencies approve more subsidized units in some neighborhoods. For example, LIHTC developers may purposely site subsidized projects in already gentrifying neighborhoods with rising incomes, or decreasing crime rates. Given this, our best evidence on how LIHTC units causally effect neighborhoods is at approximately the 30th percentile of neighborhood average incomes. This is where some developers are more likely to site projects because of the 30% increase in subsidy generosity from QCT designation. That research has estimated large positive increases in property values (Baum-Snow and Marion, 2009) and reductions in violent crime (Freedman and Owens, 2011) in those lower-income areas. One explanation for these results is that LIHTC construction may clear previous blight, or attract more moderate-income households that otherwise would not have lived in low income areas.

Diamond and McQuade (2016) provided the most robust evidence to date on how LIHTC units impact residents of higher-income areas. They used a novel non-parametric estimator to identify the effects of LIHTC units on surrounding property values from existing trends, and first replicated the previous positive association between LIHTC construction and property values in low-income areas. They then show that additional LIHTC units in higher-income areas with low minority populations are associated with declines in values of surrounding properties. Although the authors did not identify the mechanisms that decrease property values in higher-income neighborhoods, their results suggest that where to locate LIHTC properties is an open area for research.

3. Potential LIHTC reforms

Despite evidence that the LIHTC is less cost-effective than tenant-based assistance in most housing markets, the program is politically popular among both parties of the US Congress. In March 2018, Congress avoided a shut-down by passing the Consolidated Appropriations Act, which included a provision to temporarily increase LIHTC competitive allocations by 12.5% through 2021. Even after this temporary expansion, there still exists bipartisan support for a bill that would permanently increase competitive LIHTC allocations by 50% phased in over the following five years, and increases the generosity of the subsidy for developers opting to receive the non-competitive subsidy (S.548, 2017).²¹ In this section, we discuss the economic merits of the proposed expansion, and discuss two alternative proposals that would increase the annual number of units subsidized under the program without any increase in tax expenditures.

3.1. Increase annual allocations

A 50% increase in annual competitive LIHTC allocations phased over five years would result in state housing finance agencies being eligible in 2023 to allocate up to \$10.6 billion to developers in present value terms given current population estimates.²² This would represent an additional \$3.54 billion in present value allocations. This increase would not result in immediate lost tax revenue for the US Government, but rather accrue

¹⁹ These constraints can be naturally imposed, such as water features or earthquake risks that require specific types of construction. They can also be artificially imposed, like density limits and minimum housing standards imposed by the local governments. White et al. (2016) provides a case study in Florida arguing that reducing government regulation could lead to substantial increases in low-rent housing without any subsidy.

²⁰ The housing affordability measure was the dollar gap between the maximum LIHTC rent for a 2-bedroom unit based on a household earning 60% of the area median income and the HUD-defined Fair Market rent. This “affordability gap” was originally computed by Green (2011) in comparing place-to tenant-based subsidies.

²¹ Other proposals in Senate Bill 548 include changes to tenant eligibility requirements and an increase in credit generosity for all projects allocated a non-competitive subsidy. This proposed increase would set the annual tax credit allocation to be at least 4% of non-land development costs. The proposed Senate Bill also includes a provision that allows LIHTC tenants to earn up to 80% of the area median income, as long as the average tenant income in the development was less than 60%. The Consolidated Appropriations Act of 2018 (H.R. 1625, 2018) permanently instituted this income averaging provision.

²² In 2016, each state's per capita allocation authority equaled \$23.50. A 50% increase in allocations would mean that the increased allocation authority would equal \$35.25 in 2023. The US Census Bureau currently projects the US population will be approximately 342 million by 2023. The present value of these allocations were discounted at 2.43%, which was the yield on the 10-year US Treasury Bond on the last day of 2017.

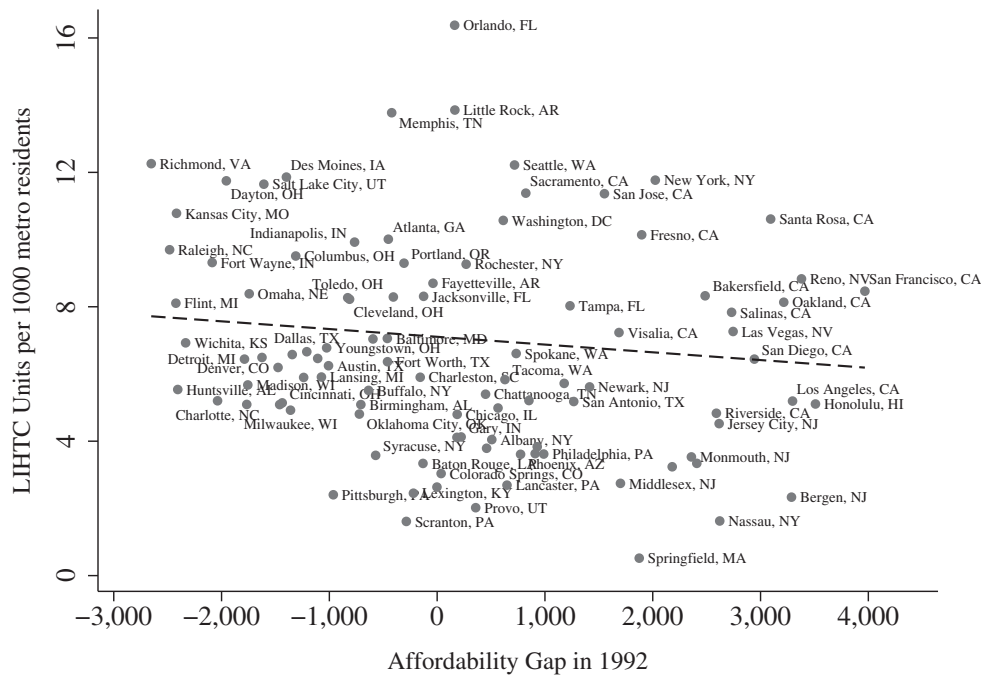


Fig. 3. Total LIHTC construction between 1993 and 2013 as a function of 1992 affordability gap for the 100 largest metro areas in 2013.

Notes: The y-axis is the number of LIHTC units constructed per 1,000 metro residents between 1993 and 2013. The x-axis is the 1992 affordability gap defined as the difference between the 40th percentile of housing rents for a 2-bedroom unit and 18% of the median area income for a 3-person household. The affordability gap is in 2013 dollars adjusted using the US Bureau of Labor Statistic's Consumer Price Index. The dashed lined represents the 2013 population weighted linear regression of the relationship. The regression slope coefficient was -0.001 and the R-squared was 0.016.

over the following 10 years when project owners were eligible to claim the additionally allocated tax credits.

Despite wide variation across US states in housing affordability and supply elasticity, it is important to recognize the proposed 50% increase in allocations would not be targeted to housing markets where the LIHTC is thought to be most, if at all, cost effective. Eriksen (2017) estimated that the maximum rent of LIHTC units (i.e., 18% AMI) was greater than the fair market rent as defined by HUD in 66 of the 100 largest US cities in 2013, and therefore not binding unless developers agreed to voluntarily bid lower maximum rents due to competition to receive the scarce subsidy. Increasing the aggregate amount of tax credits available to be allocated in those areas may result in developers to not have to make such concessions in order to receive an allocation. Given the potential for crowd-out in supply elastic markets, this means additional LIHTC allocations could not only result in no discernible increase in the number of affordable units, but also result in potentially higher maximum tenant rents.

Although the optimal level of LIHTC allocations is unclear, future increases in allocations should at least be differentially targeted to areas where place-based subsidies are thought to be most effective. Prior to 2016, HUD annually ranked each metro area's housing affordability based on rent divided by income in order to determine Difficult Development Area status. Future increases in LIHTC allocations could be differentially targeted to metro areas based on underlying affordability using either a similar affordability ranking, or the gap between the median housing rent and 18% AMI. To increase its political appeal, an equivalent subsidy could be provided in the form of tenant-based rental or ownership assistance to areas with greater housing affordability.

3.2. Alternative reforms

We propose two alternative reforms to the LIHTC program that could serve to increase the annual number of units produced with no budgetary impact. The first is to limit the maximum subsidy a developer could receive from the program on either a per-unit or per square footage basis. Currently the program provides little to no incentive for developers to minimize the costs of development. Average competitive allocations increased from \$62,398 per unit in 2003 to \$117,604 in 2013. This rate of increase is 60.1% higher than what is estimated through increases in

construction costs as estimated by RS Means over the same time period.²³

One potential reform is to institute a ceiling on the amount of subsidy that can be allocated per unit constructed. Ideally this limit would vary based on local labor market conditions, composition of bedrooms, and potentially even common areas shared by residents (e.g., community rooms, daycares, etc.). Developers could also be rewarded for innovative ways to reduce costs, given their ability to provide affordable units meeting the minimum quality standards of the program. Therefore, an alternative reform could be to institute a fixed annual subsidy based on independent cost estimates to develop multifamily housing in the local area. For example, construction estimates from RS Means could be used to determine the maximum allowable subsidy adjusted by either square footage, composition of bedroom sizes, or scope of rehabilitation in each state or metro area annually. To the extent these reforms could reduce per-unit subsidized costs, the annual number of units allocated a subsidy would increase holding aggregate dollar allocations constant. Additional research is needed to decompose differences between the costs of LIHTC and unsubsidized development before an ideal policy can be defined.

The second reform relates to the LIHTC subsidy delivery mechanism itself. The program currently allocates a 10-year annuity of non-refundable tax credits, but the LIHTC developments themselves do not create sufficient taxable income to claim the full, if any, value of the subsidy. This results in LIHTC developers selling 99.9% of the equity of their projects bundled with reductions in future tax liabilities to C corporations with a sufficient tax liability.²⁴ This exchange is not necessarily

²³ RS Means estimates that construction costs increased nationwide by 55.3% between 2003 and 2014. Table 1A in the appendix reports the national allocations per unit between 2003 and 2014, adjusted for inflation. The comparison in the text uses unadjusted allocations because the RS Means construction cost index does not account for inflation.

²⁴ LIHTC projects themselves do not generate sufficient tax liability to offset the subsidy due to imposed rental restrictions, increases in operating costs due to complying with the program, and tax depreciation allowances entitled to all owners of rental housing. Other types of investors (e.g., S corporations, LLCs, partnerships, and individuals) are restricted from investing in LIHTC equity due to restrictions on passive losses associated with allocated tax credits (see Section 469 of US Tax Code).

inefficient, but rather transfers the underlying expected benefits and risks of owning subsidized housing.²⁵ To the extent those risks could be minimized, developers would receive a higher value on the secondary market for the equity of their property, and a greater amount of LIHTC properties could be produced holding tax expenditures constant.

An unnecessary risk for the equity owner is to have a sufficient tax liability in order to claim the tax credits. Fannie Mae was the largest investor in LIHTC equity prior to 2008, and learned first-hand of the need of having a sufficient tax liability after conservatorship made their tax credits allocated under the LIHTC program essentially worthless. More recently, reductions in corporate tax rates from the Tax Cut and Jobs Act of 2017 seemingly increased this risk for some investors and lead to anecdotal reports of lower prices of LIHTC equity (*Affordable Housing Finance*, 2018). To the extent that tax credits under the program could become refundable and eligible to be claimed by other investor structures (i.e., S corporations), the removal of passive loss limits would increase the equity raised by LIHTC developers.²⁶ Increases in equity raised would consequently increase the number of units produced by each current dollar of the allocated subsidy.

The less obvious risks for the equity owner of LIHTC properties are possible non-compliance with rental restrictions and unanticipated inflation eroding the full value of the subsidy. The tax credits are currently eligible to be claimed in equal nominal amounts over 10 years, with a penalty imposed if the property does not remain compliant with rental restrictions for at least 15 years. The 10 years the subsidy is delivered is seemingly arbitrary, especially considering that LIHTC equity investors presumably have a higher discount rate than the Federal Government.

The last two columns of *Table 1* highlight the economic cost of the subsidy being delivered over 10 years. The two columns calculate the annual allocation necessary to hold the property-specific IRR of the hypothetical developer constant if an otherwise equivalent subsidy was delivered over a shorter-time period. The estimates reported in the third column suggest alternatively delivering the subsidy over 5 years would result an 8.47% reduction in effective subsidy per-unit, or equivalently a 9.26% increase in the number of similar units if allocations were held constant.²⁷ The estimates reported in the fourth column correspond to allowing LIHTC equity owners to immediately claim the full value of the subsidy the year after completion. This alternative policy proposal would result in a 15.15% reduction in effective subsidy holding the property-specific IRR constant, and increase the number of similar competitive LIHTC units by 17.86%, or an additional 7,325 affordable units each year, with no budgetary impact.

4. Conclusion

The lack of affordable housing is a growing concern and the US Federal government has historically used a combination of place- and tenant-based subsidies in an attempt to make housing more affordable. The LIHTC is the nation's largest place-based subsidized housing program with at least 2.78 million units produced under the program since its creation in 1986. Recent research suggests that LIHTC units create positive externalities in low-income neighborhoods, although the subsidy is relatively cost-ineffective compared to alternative tenant-based subsidies in the majority of metropolitan areas. Congress temporarily increased LIHTC funding in March of 2018, and there is bipartisan support for a permanent 50% increase in credit allocation over five years.

²⁵ See *Eriksen (2009)* for more on the underlying risks of investing in LIHTC subsidized properties.

²⁶ For example, developers could use the refundable tax credits to either reduce their debt obligations upfront (i.e., take out a smaller mortgage), or to provide greater cash flow to service the debt in the future.

²⁷ These estimates are dependent on the value of the assumed discount rate. As the discount rate increases, the reduction in effective subsidy also increases.

This review has argued that such non-targeted increases in allocations may not only be wasteful, but even harmful to LIHTC tenants because developers may no longer be required to voluntarily bid lower maximum tenant income and rents in order to receive a competitive allocation. At minimum, future increases should be targeted differentially to areas with a larger dollar gap between rents and incomes, suggestive of potential supply constraints. We offer two potential policy alternatives that would lead to an increase in the annual number of housing units subsidized under the program annually, holding current dollar allocations constant. The first would be to encourage developers to innovate in reducing development expenses by capping the maximum allowable subsidy based on local or unit-specific attributes. The second is to reform how the subsidy is delivered to developers by making the tax credits refundable and delivering them over a shorter period of time.

The most important caveat of this research is that the authors are constrained by existing data and research on LIHTC program. No national database currently exists at the project-level that includes developer agreed rental restrictions and development costs. A better understanding of these costs and benefits are essential to developing reforms that will improve the way that the United States Government and the LIHTC program can provide low-income households with access to affordable housing in the future.

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Appendix

Table 1A

Data for *Figs. 1 and 2*: Annual Number of Allocated LIHTC Units and Annual Amount of Tax Credits Allocated to LIHTC Developers, By Mechanism Type

Year	Units	Present-Value Allocations	Average Allocation Per Unit
Panel A: Competitive Allocations			
2003	73,567	\$5,906,117,277	\$80,282
2004	76,326	\$6,086,795,604	\$79,747
2005	68,887	\$5,655,514,608	\$82,098
2006	71,171	\$6,720,907,203	\$94,433
2007	72,384	\$7,307,339,804	\$100,952
2008	79,157	\$9,163,168,031	\$115,759
2009	66,767	\$10,245,495,774	\$153,451
2010	57,047	\$8,367,652,654	\$146,680
2011	49,047	\$7,128,516,690	\$145,341
2012	55,925	\$7,071,153,099	\$126,440
2013	53,986	\$6,617,029,632	\$122,569
2014	58,735	\$6,907,504,326	\$117,605
Panel B: Non-Competitive Allocations			
2003	58,585	\$2,216,201,144.88	\$37,829
2004	63,674	\$2,173,916,784.88	\$34,141
2005	63,562	\$2,373,415,178.82	\$37,340
2006	60,533	\$2,354,017,796.56	\$38,888
2007	64,822	\$2,913,157,796.99	\$44,941
2008	55,693	\$3,266,281,866.75	\$58,648
2009	40,600	\$1,812,926,567.20	\$44,653
2010	34,045	\$1,704,805,991.25	\$50,075
2011	38,801	\$2,170,833,855.28	\$55,948
2012	37,763	\$1,844,277,148.59	\$48,838
2013	44,299	\$1,882,936,530.90	\$42,505
2014	36,485	\$1,859,599,290.22	\$50,969

Notes: The 10-year annuity of tax credits were discounted by the yield on a 10-year US Treasury bond during the last day of each year. Allocation estimates were further adjusted for inflation using the consumer price index with a base year of 2014.

Appendix B. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.regsciurbeco.2018.07.002>.

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