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What is Housing Affordability? The Case for the Residual Income Approach

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Abstract

This article seeks to increase the awareness of and support for the residual income approach to housing affordability indicators and standards, especially in the United States. It begins with an overview of various semantic, substantive, and definitional issues relating to the notion of affordability, leading to an argument supporting the conceptual soundness of the residual income approach. The concept is then briefly set into the historical context of U.S. and British debates on affordability measures. This description is followed by a discussion of two of the principal issues involved in crafting an operational residual income standard: the selection of a normative standard for nonhousing items and the treatment of taxes.

The article concludes by considering some of the potential implications of the residual income paradigm for the analysis of housing problems and needs, for housing subsidy policy, and for mortgage underwriting practice.

Keywords: Affordability; Low-income housing; Residual income

Introduction

What is housing affordability? Most fundamentally, it is an expression of the social and material experiences of people, constituted as households, in relation to their individual housing situations. Affordability expresses the challenge each household faces in balancing the cost of its actual or potential housing, on the one hand, and its nonhousing expenditures, on the other, within the constraints of its income.

However, public policy and the interpretation of individual experiences are mediated through analytical indicators and normative standards of housing affordability that transcend unique individual experiences. Such indicators and

standards make it possible to arrive at conclusions—potentially contentious to be sure—about the overall extent of affordability problems and needs, as well as their distribution socially and geographically. They also provide an important foundation for the at least somewhat rational formulation, implementation, and evaluation of policies and practices that deal with affordability.

In the United States, there is widespread acceptance of the ratio of housing cost to income as the appropriate *indicator* of affordability and of the simple "rule of thumb" ratio *standard* (25 percent of income until the early 1980s, 30 percent since then) for assessing housing affordability problems, as well as for determining eligibility and payment levels, explicitly for publicly subsidized rental housing and somewhat more loosely for other rental and ownership programs and financing. The ratio paradigm persists in the United States despite considerable critical discussion in the late 1960s and early 1970s, and some efforts since then, in presenting and applying an alternative residual income approach.

This article begins with an overview of various issues surrounding the meaning of housing affordability, leading to an argument in support of the conceptual soundness of the residual income model. This concept is then briefly set into the historical context of U.S. and British debates about affordability measures. The latter literature has been examined because since about 1990, there has been insightful discussion in research and advocacy communities in Britain about the need for greater clarity in the meaning of housing affordability and the relative merits of various conceptual approaches, with particular attention to the residual income model. The following section discusses some of the practical challenges involved in operationalizing a residual income standard: selection of a normative standard for nonhousing items and the treatment of taxes. The article concludes by considering some of the potential implications of the residual income paradigm for the analysis of housing problems and needs, for housing subsidy policy, and for mortgage underwriting practice.

The logic of housing affordability

Semantic and substantive issues relating to affordability

There are several types of tensions in the literature on housing affordability, including but not necessarily limited to the following:

1. Conceptual rigor versus practical policy implications

2. Housing affordability versus "affordable housing"

3. Housing affordability versus housing standards

4. A normative standard of affordability versus empirical analysis of housing costs in relation to incomes

Conceptual rigor versus practical policy implications. Housing subsidy policy is inevitably shaped by factors other than the conceptual clarity of the affordability standard, such as potentially perverse incentives, fiscal constraints, and political interests, among others. This should not, however, diminish intellectual responsibility for rigorous and sound conceptualization, both for purposes of analysis and as an important consideration—if not the sole consideration—in formulating policy.

Feins and Lane (1981), Yip (1995), and Wilcox (1999), for example, have given considerable attention to affordability measures, yet ultimately have been unable to extricate themselves from this tangle. Hulchanski (1995), by contrast, has succeeded in clarifying the different uses of an affordability measure, although he, like Feins and Lane (1981), has remained within the confines of the ratio approach. Yip (1995) and Wilcox (1999) recognized the conceptual strength of the residual income approach, but in the end retreated into the conventional ratio measure as they considered the challenges in using the residual income approach for policy purposes.

Housing affordability versus "affordable housing." In Britain and the United States, affordability is often expressed in terms of "affordable housing." But affordability is not a characteristic of housing—it is a *relationship* between housing and people. For some people, all housing is affordable, no matter how expensive it is; for others, no housing is affordable unless it is free. "Affordable" housing can have meaning (and utility) only if three essential questions are answered:

1. Affordable to whom?

2. On what standard of affordability?

3. For how long?

Indeed, in light of the discussion in the following section on housing standards, one might also add, meeting what physical standard?

Before the 1980s in the United States, subsidized housing (public and private) was referred to as low-income housing and low- and moderate-income housing, with explicit definitions of "low income" and "moderate income." Although such terms and definitions are still used in determining eligibility

under various housing policies and programs in this country,[1] the term "affordable housing" came into vogue in the 1980s as part of the retreat from public responsibility for the plight of the poor and as affordability challenges moved up the income distribution. Although it still lacks precise and consistent definition, the term has since achieved international stature, and it typically encompasses not only social housing and low-income housing, but also financially assisted housing for middle-income households that find it difficult to purchase houses in the private speculative market.

It thus seems to me that a far more accurate term would be "below-market housing," which properly denotes identifiable segments of the housing stock, without making any unjustifiable general claim of affordability.

Housing affordability versus housing standards. Housing deprivation can take a variety of forms, of which lack of affordability is only one. Households may live in housing that fails to meet physical standards of decency, in overcrowded conditions, with insecure tenure, or in unsafe or inaccessible locations. While each of these other forms of deprivation is logically distinct from lack of affordability, most households that experience one or more of these other forms of deprivation in reality do so because they cannot afford satisfactory housing and residential environments.

If other forms of housing deprivation are largely due to the affordability squeeze, in measuring the extent of affordability problems how should we account for those households that seem *not* to have an affordability problem (as measured by some standard), yet *do* experience one or more other forms of housing deprivation? Simply put, if the cost of obtaining satisfactory dwellings and residential environments within the same housing market area exceeds what such households can afford, then they should reasonably be considered to have an affordability problem even though it is not revealed by applying an economic affordability standard. Only if such a household could afford adequate housing—and if such housing is actually available—might they reasonably be considered to be living in inadequate housing by choice. While housing deprivation is complex and can take various forms, standards for most forms of deprivation are fairly well established, and hence the measurement of deprivation and its relationship to affordability is, in principle, reasonably tractable.

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[1] Moderate income is a term for which there is no longer a precise definition for national policy in the United States, although some state governments do have explicit definitions. But "low income," "very low income" and "extremely low income" are defined by federal statutes and regulations. Each year, the U.S. Department of Housing and Urban Development publishes the income limits for each of these definitions, adjusted for household size, for every geographic area of the United States. See Stone (1994) for a critique.

However, can it not be argued that those households that *do* appear to have an affordability problem, yet are "overhoused," might not have an affordability problem if they were not overhoused? This question is the obverse of the one in the previous paragraph and could in principle be answered by a similar analytical technique. The difficulty, of course, arises from the question of what a reasonable, broadly acceptable operational definition of "over-housed" is. Although the relationship between the number of persons in a household and the number of bedrooms (or the total number of rooms) in the dwelling is widely used as an operational definition, this definition in its simplicity tends to be simplistic. For example, a modern garden apartment consisting of two tiny bedrooms, a small living room, and a minuscule kitchen could easily have less than half the usable space of a once luxurious Victorian apartment with one large bedroom, a good-sized living room and dining room, and an eat-in kitchen. Is it reasonable to consider a widow living in the former to be overhoused because the apartment has two bedrooms, but not in the latter because it has one?

A question of greater subtlety that is just as significant for assessing affordability is, should households be considered overhoused if they have rooms for anticipated additional children, for overnight visits from family and friends, for study or hobbies, or for home-based businesses or employment? Thus, the number of households that appear to have an affordability problem, but would not have one if they were not overhoused, is likely to be considerably lower based on some flexible standard rather than a simplistic person/bedroom (or person/room) definition of what it means to be overhoused.

In sum, housing affordability is not really separable from housing standards. An analysis of the extent and distribution of affordability problems that takes into account other forms of housing deprivation would increase the number of households determined to have a true affordability problem, while adjustment for overhousing would decrease it. Because of these offsetting tendencies and definition difficulties, housing affordability studies should ideally be iterative: applying an economic affordability standard in the first instance, while exploring ways of enhancing the precision of the analysis to account for under- and overhousing.

Lerman and Reeder (1987) and Thalmann (1999, 2003) have developed and applied such quality-based measures, which classify a household as having an affordability problem not on the basis of actual housing cost in relation to income, but on what it would cost to obtain housing of a basic physical standard within a given local housing market. Lerman and Reeder (1987) have developed their model using the ratio standard; Thalmann used a ratio standard in his first article (1999), but a residual income standard in his later one

(2003). Both limited their analyses to renters because of the difficulty in consistently defining and measuring homeowner occupancy costs.[2]

A normative standard of affordability versus an empirical analysis of housing costs in relation to incomes. Studies of consumer expenditures have been carried out in Europe and North America since the late 19th century, yielding considerable information about how households have spent their incomes for housing and other items. One way of summarizing the data on housing costs has been to calculate the mean or median ratio of shelter expenditures to income. It has then been assumed that because households on average actually spend this percentage of their incomes for shelter, it is thereby justified as a standard of what it is reasonable to spend.[3] Rapkin rather whimsically noted this confusion when he wrote,

> No discussion of the rent-income ratio can begin without a reference to the familiar belief that one month's rent should approximate one week's salary. It has never been quite clear to me whether this statement purports to be a statistical observation or whether it is a "folkloristic" exhortation to husbandry. (1957, 8)

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[2] Focusing on U.S. rental housing units that pass certain physical standards of adequacy, Lerman and Reeder (1987) determined statistically the *minimum* hedonic rent for units of each size (number of bedrooms) within a given census region and city population size. They have called this the "minimally adequate" rent. They then determined the appropriate housing unit size for a household of a given size based on Section 8 regulations, referring to the minimally adequate rent for such a household as the "predicted rent." On this basis, if the predicted rent for a given type of household is no more than 30 percent of its income, then according to Lerman and Reeder's (1987) logic, the household does not have an affordability problem even if the actual rent exceeds 30 percent of income. From their perspective, a household in the latter circumstance has, as they put it, "a strong taste for housing" (390). That is, the household is choosing to spend more than 30 percent. The weakness in this assertion is that, while it may be true for some relatively high-income households, it is not necessarily true for all or even most households, especially those with low incomes. Some households paying over 30 percent of income might be quite willing to move into minimally adequate units to reduce their housing costs, but such units may not in fact be available. They are likely to be occupied already, they may be in inaccessible or undesirable locations, they may be effectively off-limits to some people because of discrimination, or relocation costs may be too high economically and/or socially. Regarding as "misclassified" all households that are determined to have a conventional affordability problem but not a quality-based affordability problem thus tends to exaggerate the magnitude of such a misclassification.

Thalmann (1999) has developed a more complex approach that attempts to take into account variation in the price of particular types of housing units, including those not directly related to quality. Also, he has properly recognized that "units renting at the average rate may not be readily available in the market" (Thalmann 1999, 1944).

[3] The same confusion could, in principle, arise with residual incomes rather than ratios. It just happens that the ratio indicator has been for the most part unquestioned.

Baer (1976) made a useful contribution by explicitly distinguishing between an *indicator*, which measures empirically the relationship between, say, housing costs and incomes, and a *standard*, which specifies normatively the appropriate value or values that an indicator should take or not exceed. As he stated with regard to housing affordability:

> Given the variety of circumstances facing different households, rules of thumb about the percent of income to be devoted to housing can be extremely misleading in individual cases and therefore in aggregate data as well. Although generally recognized, the dilemma has largely defied attempts to establish appropriate housing standards. (Baer 1976, 383)

To illuminate the issue further, Feins and Lane (1981) and Yip (1995), for example, carried out extensive empirical work on the relationship between housing expenditures and incomes in the United States and England, respectively. In both instances, they recognized explicitly the distinction between indicators and standards. Yet they, as well as Baer (1976), ultimately used empirical findings on expenditures as the basis for their normative standards. To be sure, all of these authors rejected the notion of a single normative standard for all types of households. Nonetheless, their proposed standards were derived from actual patterns of expenditures by various subsets of the population.

In reality, what most households actually pay for housing is not what they realistically can "afford": Many pay more, while some pay less, whether measured in money or as a percentage of income. Who pays more and who pays less than they realistically can afford is, of course, not random, but rather is correlated with economic and social circumstances. As a normative concept, an affordability *standard* must have some independent logical or theoretical basis against which households' actual circumstances can be measured. Otherwise, the standard is tautological or arbitrary, and affordability is purely subjective.

Diverse and incompatible definitions of housing affordability

Mathematically, the relationship between housing costs and incomes can be computed either as a ratio or as a difference. These two approaches are the formal foundations of the prevailing affordability paradigm and its principal challenger, respectively.

In practice, however, there appears to be a greater variety of different approaches to defining housing affordability or the lack thereof:

1. Relative—changes in the relationship between summary measures of house prices or costs and household incomes

2. Subjective—whatever individual households are willing to or choose to spend

3. Family budget—monetary standards based on aggregate housing expenditure patterns

4. Ratio—maximum acceptable housing cost/income ratios

5. Residual—normative standards of a minimum income required to meet nonhousing needs at a basic level after paying for housing

Relative measures. The relative approach, used widely by the mortgage lending and real estate industries to assess the affordability of the residential sales market, is based on prototypical housing costs, primarily for potential home buyers. The derived indicators enable two or more points in time to be compared as to whether, on average, dwellings for sale have become relatively more or less affordable, typically either in relation to median income or in constant dollars. The technical sophistication of such affordability measures varies, with considerable discussion as to the most appropriate definitions of housing cost and income to use in constructing the measure, as well as the implications of different cost and income definitions (Linneman and Megbolugbe 1992; Pannell and Williams 1994; Weicher 1977).

The most widely cited relative measures in the United States are those of the National Association of Realtors (NAR) and the Joint Center for Housing Studies.[4] However, in both cases, these measures are really applications of the

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[4] The NAR approach (2005) computes the ratio of "the median family income as reported by the U.S. Bureau of the Census" to the income needed to qualify for a mortgage on "the national median-priced existing single-family home as calculated by NAR…, assuming a 20% down payment." The ratio is multiplied by 100 to yield an index number, such that "a value of 100 means that a family with the median income has exactly enough income to qualify for a mortgage on a median-priced home" (NAR 2005). An index below 100 implies that a median-income family does not have enough income to qualify for a median-priced existing single-family home, while a higher index implies more than sufficient income to qualify. "Qualification," though, assumes a conventional ratio standard: "the monthly P&I payment cannot exceed 25% of a [sic] the median family monthly income" (NAR 2005).

The Joint Center, by contrast, computes a set of indicators without reference to any normative standard (2004). For home buyers, the center computes the before-tax and after-tax monthly mortgage payment on the median-priced existing single-family home (from NAR), assuming "a 30-year mortgage with 10% down" (Joint Center 2004, 31). The center also computes median contract rent and gross rents. These amounts are presented in constant dollars for each year, thereby providing a true relative measure of prototypical housing costs. The affordability indicators are all ratio measures: the prototypical home buyer costs as a percentage of median homeowner income and the prototypical renter costs as a percentage of median renter income.

Treskon and Pelletiere (2004) have similarly analyzed renter affordability, using median gross rent, median renter income, and the 30 percent of income ratio standard.

ratio approach, not a conceptually distinct approach. The relative approaches may thus serve a useful purpose, but provide no independent normative standard for assessing how many and which kinds of households can and cannot afford those properties that are for sale. Nor do they provide any basis for assessing possible affordability stresses of owner-occupiers in their current dwellings, although the Joint Center's renter ratios do provide broad-gauged indicators of renter stress.

Subjective approaches. The second approach rests on the assumption of *homo economicus*: Since households are presumably rational utility-maximizers, every household is by definition paying just what it can afford for housing. Some households may live in undesirable conditions; others may have low incomes that give them few choices; but they all make the choice that is best for them within their constraints. Thus, from this perspective, housing affordability per se has no generalizable meaning; it is neither rationally possible nor socially desirable to establish a normative standard of affordability other than individual choice. As a recent memorandum on affordable housing submitted to a U.K. Parliamentary Select Committee bluntly stated: "The concept of affordability, of whatever commodity, is essentially subjective" (2002, 2).

More sophisticated versions of this perspective do recognize that the degree of financial flexibility does increase with income (Kempson 1993; Linneman and Megbolugbe 1992). However, while higher-income households for the most part have considerable discretion about how to allocate their resources between housing and other items, and hence for them affordability may be quite subjective, households at the lower end of the income distribution are not simply choosing freely between housing and other needs. Rather, housing costs generally make the first claim on disposable income, so that lower-income households have little discretion in what they can spend for nonhousing items. Thus, the subjectivity of affordability is not only *not* universal, it is not even a continuum that increases with income. Instead, I would contend, there is a threshold or transition zone above which affordability could become increasingly subjective. The important questions then are, What is that threshold or transition zone below which affordability is not subjective, and how can objective affordability below that threshold be defined and measured? These questions are not addressed within this perspective.

Family budget standards approaches. The third approach to conceptualizing housing affordability bases standards on summary measures of what households in the aggregate actually spend. In practice, this has formed the basis for the ratio approach. It has also provided the basis for the budget standards

approach of a standardized monetary amount for housing. Since the latter can be understood as a purely income-based standard of affordability, it deserves attention here as a distinct approach.

Although every household has its own unique conditions, historically and socially determined notions of what constitutes a minimum adequate or decent standard of living do exist. They represent norms around which a range of variations can be recognized and about which there certainly could be some philosophical debate. While the experience of poverty is recognized as more than just the inability to secure a socially determined minimum quantity and/or quality of essential goods and services, measurable material deprivation is obviously a central element in poverty. Furthermore, in societies where most basic goods and services are commodities, it is possible, at least in principle, to determine the monetary cost of achieving such a basic material level. This budget standards approach to poverty and income adequacy has a long and honorable history (Bernstein, Brocht, and Spade-Aguilar 2000; Bradshaw 1993; Bradshaw, Mitchell, and Morgan 1987; Citro and Michael 1995; Expert Committee on Family Budget Revisions 1980; Oldfield and Yu 1993; Parker and Nelson 1998; Ruggles 1990).

The budget standards approach involves specification of a market basket of essential items. For housing, food, and most other items, data from consumer expenditure surveys, expert opinions, and, in some cases, opinion surveys and focus groups are used to establish a minimal standard of type, quantity, and quality in a given social context at a given point in time. (The physical standard will of course vary by household type, and this qualifier applies to all of the following.) The physical standard for each item is then priced, and the prices summed to yield a total (after-tax) minimal budget.

If the amounts for housing specified in the standard budgets really do represent the income needed for essentially *any* household of a given type to obtain socially defined minimally adequate housing, then affordability has no independent meaning. In principle, any household whose income is no less than the total budget should be able to meet all of its basic needs, including housing, at the physical quantity and quality represented by the standard.

Due to the inherent nature and variability of housing costs, there are, however, conceptual problems in the treatment of housing costs in the budget standards methodology. While it is well conceptualized and operationalized for other items, *it is flawed with regard to housing*. The issue is revealed by contrasting the budget standards approach and implications for food and housing.

Given the nature of food items—low price variance and high supply elasticity—essentially any household could in principle meet the physical food

standard with the amount represented by the specific monetary standard, at least within a particular geographic region.

Housing, by contrast, is highly inhomogeneous. Because it is bulky, durable, and tied to land, it shows high price variance and low supply elasticity—even within a given market area. How then should the minimum standard for housing be priced? If prices are determined for a sample of units meeting the minimum physical standard, the price distribution has a large variance. Which point on the distribution should then be selected for the monetary standard for housing?

If a very low cost is selected (say, the midpoint of the lowest third of the distribution of rents for private market housing, as was the standard in the U.S. Bureau of Labor Statistics [BLS] lower-standard budgets), then most households, despite their best efforts, will not be able to obtain physically adequate housing at the monetary standard unless an extraordinarily large supply of physically adequate housing priced barely above this cost threshold is available. That is, to meet the minimum physical standard, most households would need an income above the total specified by the monetary budget standard. If, however, the monetary standard for housing were set closer to the midpoint of the price distribution, such as the 40th percentile of rents for physically standard units, then some households could spend less than the monetary standard for housing and hence need less income than the total budget, through no virtue of their own. Others, though not as many as with a lower point on the distribution, would have to spend more. The 40th percentile is the definition of fair market rent (FMR) computed by the U.S. Department of Housing and Urban Development (HUD) and used in recent U.S. budget standards—see Bernstein, Brocht, and Spade-Aguilar (2000).

In sum, housing is unique; the budget standards methodology may be able to specify a reasonably precise *physical* standard for housing, but it cannot establish a precise *monetary* standard.[5] Further, in terms of policy, this means

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[5] While difficult, it is not impossible to specify what constitutes a unit that is minimally adequate physically, and it would be possible to determine the hedonic price of these minimal physical characteristics. However, because housing is tied to location, which of course cannot be standardized, actual prices for dwelling units will show a large variance even after controlling for physical characteristics. Further, because housing is so inhomogeneous with respect to age, amenities, space, and condition, most households, despite their best efforts, would never be able to obtain housing at the price hedonically determined for a unit that is minimally adequate physically.

Thus, as suggested in the earlier section on standards, in assessing housing need on an individual basis, a household's actual affordability situation could in principle be tempered by considering whether units meeting a minimal physical standard are actually available, as well as the monetary and nonmonetary costs of moving, to determine whether the affordability problem is by choice. Obviously, this is very different from assessing the relationship between what

that housing affordability problems cannot be explained as just income problems. General and standardized income support alone would be neither efficient nor equitable for solving affordability problems.[6]

The ratio approach. As an indicator for expressing the relationship between housing costs and incomes, the ratio measure has the longest history and widest recognition. Normatively, the ratio approach recognizes that what many households pay for housing in relation to their income is the result of difficult choices among limited and often unsatisfactory alternatives. It asserts that if a household pays more for housing than a certain percentage of its income, then it will not have enough left for other necessities. It usually specifies an explicit ratio of housing cost to income as a standard against which households' actual circumstances can be measured. Yet despite its widespread recognition and acceptance, there is no theoretical or logical foundation for the concept or the particular ratio or ratios that are used.

How can one account for the existence and persistence of the fixed-ratio or percentage-of-income affordability concept? Apart from the mathematical simplicity of the percentage standard, the rationale for the conventional standard—and the rationalization for raising the acceptable level from 25 to 30 percent in the United States in the 1980s—has been built on interpretations of empirical studies of what households actually spend for housing (manifesting the tension discussed earlier). Because ratios are pure numbers, they can be compared across time and space and thus are susceptible to being reified as universal and lawful. Such "laws" then become legitimated as appropriate indicators and as the basis for normative standards.

Even most of those who have rejected the notion of a single ratio *standard* have accepted uncritically the ratio *indicator*. Feins and Lane, for example, after discussing the distinction between indicators and standards, have asserted: "When we apply these terms to the issues of housing affordability, we find that the ratio of shelter expenditures to household income is the appropriate indicator" (1981, 7). (See also Pedone 1988 and Yip 1995; for a critique of such alleged "lawfulness," see Chaplin et al. 1994.)

However, there is no logical basis for such an assertion. Once the ratio measure is accepted as the appropriate indicator, ipso facto, the standard must be a ratio or a set of ratios. Yet the notion that a household can adequately meet its nonshelter needs if it has at least a certain percentage of income left

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a household actually pays for food and other nonhousing items vis-à-vis normative payment standards for such items. There are very good reasons for singling out housing for special status.

 [6] For a similar argument, see Thalmann (2003).

after paying for housing implies either that (1) the lower the income of a household, the lower the amount it requires for nonshelter needs, with no minimum whatsoever, or (2) that the normative ratio must diminish with income, all the way to zero below certain incomes. Further, since an affordability standard is intended to measure whether housing costs make an undue claim on household income in relation to other needs, basing such a standard on what people actually pay provides no way of assessing whether they are in fact able to achieve some minimum standard for nonshelter necessities. These logical flaws in the ratio approach lead inexorably to the residual income concept.

The residual income concept of housing affordability. This approach arises from the recognition that because of housing's distinctive physical attributes in comparison with necessities, its cost makes the largest and least flexible claim on after-tax income for most households (in other words, nonhousing expenditures are limited by how much is left after paying for housing). This means that a household has a housing affordability problem if it cannot meet its nonhousing needs at some basic level of adequacy after paying for housing. The appropriate *indicator* of the relationship between housing costs and incomes is thus the difference between them—the residual income left after paying for housing—rather than the ratio.

What are the implications of this logic for an affordability *standard*? If we consider, for example, two households with comparable disposable incomes and suppose that one consists of a single person while the other consists of a couple with three children, obviously the larger household would have to spend substantially more for its nonshelter necessities than the small household to achieve a comparable quality of life. This implies that the larger household can afford to spend *less* for housing than the small household with the same income. Now if we compare two households of the same size and composition, but with different after-tax incomes, both would need to spend about the same amount to achieve a comparable standard of living for nonshelter items. The higher-income household could thus afford to spend more for housing, both as a percentage of income and in monetary terms.

Generalizing from these examples tells us that since the nonhousing expenses of small households (to achieve a comparable basic standard of living) are, on average, less than those of large households, the former can reasonably devote a higher percentage of income to housing than larger households with the same income. Since low-income and higher-income households of the same size and type require about the same amount of money to meet their nonhousing needs at a comparable basic standard of living, those with lower incomes can afford to devote a smaller percentage of income to housing than otherwise

similar higher-income households. In this way, the residual income standard emerges as a sliding scale of housing affordability with the maximum affordable amount and fraction of income varying with household size, type, and income. Indeed, it implies that some households can afford nothing for housing, while others can afford more than any established ratio.

Operationalizing a residual income standard involves using a conservative, socially defined minimum standard of adequacy for nonhousing items. Thus, while the residual income *logic* has broad validity, a particular residual income *standard* is not universal; it is socially grounded in space and time.

Issues involved in selecting such a standard for nonhousing necessities and dealing with personal taxes will be taken up after reviewing the debates about affordability standards in the United States and Britain. This literature not only strengthens the argument for the residual income approach, it also helps illuminate some of the practical tasks involved in operationalizing it.

Debates about affordability standards

Before the late 1960s in the United States and the late 1980s in Britain, leading housing experts accepted without question the ratio of housing costs to incomes as the appropriate affordability indicator, challenging only the notion of a single ratio as an appropriate normative standard—see Rapkin (1957) and Donnison (1967), respectively.

In the United States, there then followed nearly a decade of considerable intellectual ferment and great progress in reconceptualizing affordability in terms of residual incomes, after which interest diminished until quite recently. In Britain, there has been even richer debate since about 1990, adding an important theoretical foundation to the argument for the superiority of the residual income approach, but apparently with no recognition of the work that has been done on this side of the Atlantic. By the same token, the British literature on the topic does not seem to be familiar to most U.S. readers. Therefore, in the interest of promoting deeper understanding and further development of the residual income paradigm, it is worth reviewing briefly the debates that have taken place.

U.S. *debates about affordability standards*

In the 1960s and early 1970s, concern with poverty and urban problems included considerable discussion of housing affordability concepts. A number of U.S. housing analysts looked at affordability in relation to income adequacy and living standards, not merely as a matter of costs, and began questioning the conventional ratio approach to affordability.

The late Cushing Dolbeare appears to have been one of the first to go beyond recognizing the inadequacy of the ratio standard, especially for the poor, and to suggest an alternative. In a pamphlet with a limited circulation, she offered an alternative as part of a proposal for housing grants for the very poor:

> The subsidy might cover the difference between the amount the family could afford for shelter after meeting other basic needs and the cost of shelter—the "residual" approach.... The compelling argument in favor of the residual approach is that it covers, if necessary, the full amount needed for housing, thus assuring that the recipient is able to meet as many...other basic needs—food, clothing, medical care, etc.—as possible. (Dolbeare 1966, 12)

The nonshelter standard in this residual income approach was an amount equal to the federal poverty threshold for a household of a given size, minus an estimated typical shelter cost for low-income households of that size.

The issue emerged in the policy arena under the auspices of one of the commissions established in the wake of the urban riots of the mid-1960s. In its 1968 report, the U.S. President's Committee on Urban Housing, asked, "When does a family need a subsidy?" and went on to declare: "Determination of a proper proportion of a family's income for housing requires some difficult value judgments….The staff concluded that no flat percentage can be equitable for all" (41–42).

Several of the consultants to the committee went a little further in conceptualizing how a variable standard might be developed, but most then retreated to the simpler, conventional ratio standard (G.E. TEMPO 1968; Robert Gladstone and Associates 1968). Another of the consultants did examine the differential effect of household size on housing affordability and in doing so used the concept of a minimum adequate budget that varies with household size. Not surprisingly, he found that smaller households with incomes at the minimum budget level could obtain and afford shelter at higher rent/income ratios than larger households could (von Furstenberg 1968).

Over the next few years, some elements of a consensus on an appropriate approach seemed to be emerging until the issue was submerged by the economic crises of the 1970s. In 1971, a congressional committee published reports on housing affordability standards that it had requested from a number of experts. Three of the reports (Frieden 1971; Lowry 1971; Newman 1971) argued explicitly and strongly for using a residual income approach to analyzing housing needs and subsidy formulas for federal housing programs. Both Newman (1971) and Lowry (1971) suggested that BLS normative family budgets should be used to set the standard for nonhousing expenses.

In the mid-1970s, a big step forward was taken when two research projects—one by Grigsby and Rosenburg (1975) for Baltimore and the other by Stone (1975) for the country as a whole—independently operationalized the residual income approach by using the nonhousing components of the BLS lower budgets and applied this standard to estimate the extent of housing affordability problems. In his study, Stone introduced the term "shelter poverty" to characterize households that, squeezed between income and housing costs, cannot meet their nonshelter needs at the BLS lower-budget standard (1975). Thereafter, Stone continued to update and apply the shelter-poverty standard (1983, 1990, 1993, 1994, 2006), but otherwise there was very little consideration of the residual income approach to housing affordability (at least in the United States) until quite recently.[7]

In recent years, other analysts have expressed tentative recognition of the appropriateness of the residual income approach, as both indicator and standard. For example, Bogdon and Can (1997), in an article on the measurement of local housing affordability problems, compared various approaches, including the ratio measure and the shelter-poverty residual income approach, as well as several others that are actually adaptations of the ratio measure. Ultimately, though, they adopted the ratio measure and its variations for convenience.

Finally, Kutty (2005) has forcefully restated the case for the residual income approach, alluding to the work of Stone (1990, 1993) and others. Most notably, she has operationalized a residual income standard with the nonhousing standard set at two-thirds of the federal poverty threshold and applied it to compute what she calls "housing-induced poverty." As she acknowledges, her choice of a nonshelter standard is lower than the BLS lower-budget standard used by Stone (1990, 1993) and other authors. Her approach is critically examined in the section on operationalizing a residual income standard.

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[7] A report growing out of the Experimental Housing Allowance Demand Study proposed a residual income affordability standard, but suggested that the nonshelter standard be set at three-quarters of the federal poverty standard—a level considerably lower than the BLS lower-budget nonshelter level. After making the proposal, however, the author proceeded to use the traditional 25 percent of income standard in his analysis (Budding 1980).

In the late 1980s, there was a brief and limited discussion about the inadequacies of the ratio approach (Leonard, Dolbeare, and Lazare 1989; National Housing Task Force 1988). Leonard and colleagues restated the arguments against the ratio approach and in favor of the residual income logic (1989). Following the same logic developed earlier by Stone (1975, 1983) and by Grigsby and Rosenburg (1975), they operationalized a residual income standard based on the BLS lower-budget nonhousing components. Since the BLS budgets were not computed after 1981, Stone's later work (1989, 1990, 1993, 1994, 2006), as well as that of Leonard, Dolbeare, and Lazare (1989), has updated the nonshelter standard by applying appropriate Consumer Price Index changes to corresponding BLS lower-budget components.

British debates about affordability standards

In the late 1980s, concern about rising housing costs across all sectors of housing—social rented, private rented, and owner occupied—in Britain opened up discussion and debate about the meaning of affordability. Malpass and Murie (1999) provide a summary of the context. Since then, members of the academic, professional, and advocacy communities in Britain have explored the issue extensively.

On the one hand, Bramley, in an unpublished paper (1990), offered a broad definition of affordability that appeared to move in the direction of a residual income approach, but then apparently actually used a ratio standard in his research, as noted in Hancock (1993). On the other hand, two reports growing out of a Joseph Rowntree Foundation project on housing affordability in London, one by Brownill et al. (1990) and the other by Sharp et al. (1990), provided a deeper criticism of the ratio approach. More significantly, they made an argument for the logic of the residual income approach in terms quite similar to the logic being debated nearly two decades earlier across the Atlantic. However, the authors did not then suggest a normative standard for a minimally adequate residual income or a direction for establishing such a standard.

In 1991, two substantial theoretical works on the economic principles of affordability came forth. Hancock presented a paper by this title at the Housing Studies Association Conference in 1991, although it did not appear in print until 1993. Whitehead's article titled "From Need to Affordability" was published in 1991. Since their arguments are not specific to Britain and may help strengthen understanding of and support for the residual income approach here, they deserve particular attention.

Whitehead began by explaining that affordability refers to "the opportunity cost of housing vis-à-vis other goods and services" (1991, 873). This language is essentially the logic of residual income, although it does not necessarily give primacy to housing costs. Further, her subsequent discussion of definitions of affordability standards compares residual income and ratio approaches and suggests an equity argument against the latter.

Hancock's (1993) paper delved into a more formal theoretical analysis of affordability, arguing "from first economic principles that it is more logical to use some form of residual income definition than one based on a prescribed ratio of housing costs to income" (127). She then formulated an operational definition and examined the incidence of lack of affordability in Glasgow, one of the very few British studies of this kind.

Several other papers during that period further suggest the shift toward recognizing the residual income approach as the most appropriate definition of

affordability (Bramley 1994; Chaplin et al. 1994; Kearns 1992), but none made progress toward operationalizing the approach.

The most comprehensive examination of housing affordability, but one that unfortunately has not resulted in any published work, is a 1995 thesis by Yip. In it, he explained well the ratio, residual income, and behavioral approaches to affordability; carried out extensive empirical analyses of housing expenditure patterns; and computed the incidence of affordability problems in England on various standards using data from the U.K. Family Expenditure Survey.[8]

Since 1995, the British literature on affordability concepts has, for the most part, shown familiarity with the debates and cited some of the preceding sources, but it has been focused on policy issues, particularly rent-setting in social housing and housing benefit reform. As far as I have been able to determine, no further conceptual work has been done. The papers by academics and policy research centers have all acknowledged the conceptual weaknesses of the ratio approach and recognized the logical superiority of residual income concept, but none has been able to untie the knot binding the potential operationalization of the concept to existing income support and housing benefit policies (Freeman, Chaplin, and Whitehead 1997; Freeman, Holmans, and Whitehead 1999; London Research Centre 1996; Wilcox 1999; Wilson and Morgan 1998).

Operationalizing a residual income standard

Two major practical issues have to be dealt with to translate the residual income approach into an operational affordability standard: specifying the monetary level of a minimum standard of adequacy for nonshelter items other than taxes and dealing with personal taxes.

Nonhousing necessities

The residual income literature that has taken up this practical problem mirrors and indeed explicitly rests on the contending approaches to specifying minimum adequate incomes—albeit minus housing. Thus, in this country, one strand has adopted a fraction of the federal poverty threshold as the standard (Budding 1980; Dolbeare 1966; Kutty 2005), while the other has used the

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[8] This dissertation was an empirical tour de force, making use of sophisticated statistical methods to extract a great deal of insight from the U.K. Family Expenditure Survey data, but did not make any conceptual advances. Also, Yip expressed a preference for the ratio over the residual income approach, basing his position on two weak arguments: that the ratio approach is supported by empirical "laws" and that the residual income approach is too closely bound up with the concept of poverty (1995).

nonhousing, nontax items of a family budget standard (Grigsby and Rosenburg 1975; Leonard, Dolbeare, and Lazare 1989; Newman 1971; Stone 1975, 1983, 1990, 1993, 2006).

Dolbeare (1966) proposed using the poverty threshold minus an estimated "typical" shelter cost for low-income households. Budding (1980) proposed using three-quarters of the poverty threshold as the nonhousing standard, while Kutty (2005) has adopted two-thirds of it. This approach has the great virtue of being based on a familiar and widely used monetary standard of adequacy and being computationally simple. However, it reproduces all the problems and limitations of the poverty standard (Bernstein, Brocht, and Spade-Aguilar 2000; Citro and Michael 1995; Expert Committee on Family Budget Revisions 1980; Ruggles 1990) and adds another one of its own: The particular fraction is arbitrary.[9]

The budget standards concepts and methodology have provided a rather less familiar but not necessarily more complex basis for establishing a normative standard for an after-tax basis for residual income. As explained earlier, this approach takes into account the actual cost of a basic market basket of necessities. By explicitly identifying and pricing the various elements, nonhousing items can be extracted so that their total cost is not an arbitrary fraction of the total budget.

The authors who have used the budget standards approach in this country have all relied on the nonshelter, nontax pieces of the BLS lower-standard budgets, updated using corresponding components of the Consumer Price Index (CPI) (Stone 1993). For a while, the BLS itself considered the lower budgets to represent a minimum standard of adequacy, but later retreated from this claim even before the Family Budget program was eliminated in 1981 (Stone 1993). Nonetheless, the composition of goods and services in the BLS budgets was based on consumption patterns in the early 1960s and was not revised to reflect changes in norms and actual consumer buying patterns over time. It is therefore worth asking whether there are more current normative family budgets that might be used to operationalize the residual income approach and how the nonhousing standards of such budgets compare with the updated BLS lower-budget nonhousing standard.

In the United States, the Economic Policy Institute (EPI) has developed a set of basic family budgets (Allegretto 2005; Bernstein, Brocht, and Spade-Aguilar 2000; EPI 2005). Separately, Wider Opportunities for Women (WOW) has developed a so-called "Self-Sufficiency Standard" (SSS), which is also a set of normative basic budgets (Pearce 2003; WOW 2003). Both of these endeav-

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[9] Indeed, Kutty herself seems to be aware of the limitations (2005).

ors, unlike the official poverty standard and in response to one of its most widely acknowledged weaknesses, have developed budgets based on the cost of living in local areas, rather than a single national standard. BLS budgets were prepared for local areas as well as for a national standard. While most of the residual income work based on the BLS lower budgets has been national, some has used updated metropolitan Boston BLS lower budgets (Stone 1989; Stone, Werby, and Friedman 2000). Thus a comparison of nonhousing standards has been made using both national and Boston examples. Table 1 presents the results for a prototypical four-person household consisting of two adults and two children under 18.

Both the EPI budget and the SSS include child care costs, which, as can be seen, are by far the largest nonshelter cost. With child care costs included, the nonshelter standard implied by these two budgets is far above the updated BLS lower-budget nonhousing standard. Since the BLS budgets did not provide for child care expenses (they assumed a mother at home), comparing the nonhousing standards without child care costs reveals the EPI standard to be quite close to the updated BLS standard, despite substantial differences in composition. The nonhousing, non-child-care SSS, by contrast, is much lower—even lower

Table 1. Low-Cost Budget Standards, Nonhousing Items, Excluding Taxes, for a Four-Person Household (Two Adults and Two Children)

Budget Item	BLS Lower Budget[a]		SSS[b] Boston 2003	EPI[c] Boston 2004	U.S. Poverty Threshold[d] 2003
	United States 2003	Boston 2003			
Food	$ 8,701	$ 9,001	$ 6,648	$ 7,044	
Housing furnishings and operations	$ 933	$ 897	nc	nc	
Transportation	$ 2,202	$ 2,390	$ 1,368	$ 3,852	
Clothing	$ 1,176	$ 1,545	nc	nc	
Medical	$ 5,061	$ 6,263	$ 3,204	$ 7,104	
Other goods and services	$ 4,781	$ 5,594	$ 4,200	$ 6,000	
Subtotal	$22,854	$25,690	$15,420	$24,000	$18,660
Child care	nc	nc	$14,712	$15,576	nc
Total	$22,854	$25,690	$30,132	$39,576	$18,660

[a]Updated from the last BLS lower budget, computed for 1981, using corresponding CPI–U (Consumer Price Index for all Urban Consumers) components.

[b]Pearce (2003).

[c]Economic Policy Institute Basic Family Budgets (Allegretto 2005).

[d]Federal poverty threshold for a four-person family with two children under 18. Unlike the other standards, this includes housing.

nc = not computed.

than the poverty threshold (which includes housing). Nonetheless, the SSS is equal to about five-sixths of the poverty level, somewhat above Kutty's (2005) two-thirds and Budding's (1980) three-quarters. Indeed, if the official poverty threshold were to have any role in setting a uniform national residual income affordability standard, it would at best provide a conservative standard for consumption *excluding* housing and child care.

Personal taxes

The poverty threshold was conceptualized as a standard of inadequate consumption, that is, as a standard for after-tax income. Yet it has routinely been applied to before-tax income, because the decennial census and Current Population Survey (as well as the American Housing Survey and the American Community Survey) obtain only before-tax incomes from respondents. Although Kutty (2005) has recognized this inconsistency, her residual income standard makes no correction for it. Instead, she has adopted two-thirds of the poverty threshold as the total nonhousing standard for consumption and personal taxes. Yet before- and after-tax incomes in general differ substantially, even in prototypical low-income cases. Thus, quite apart from the question of whether a fraction of the poverty threshold is a defensible minimum for nonhousing consumption, failure to take taxes into account generates other distortions. A residual income standard that ignores taxes inevitably leads to considerable misidentification of households with affordability problems.

In contrast to the poverty standard, all of the budget standards models have taken into account personal taxes. However, the computation assumes an after-tax budget, *including housing*, for each household type. So regardless of whether one uses the budget standards framework or the poverty threshold or some other model for nonhousing consumption, prototypical taxes need to be computed as a function of income as well as household type to fully operationalize a residual income standard—absent data sets that provide after-tax incomes. Stone's shelter-poverty residual income standard (1993) explicitly takes federal and nonfederal income taxes (including credits) and Social Security taxes into account. It is the computation of taxes that makes operationalization of a residual income standard relatively complex, although algorithms to compute personal taxes for prototypical households are not that difficult to construct.

Implications and applications

The implications of using a residual income affordability standard differ from the conventional ratio approach in the following areas at least: analysis

of housing problems and needs, eligibility and payment standards for housing subsidies, and mortgage underwriting standards.

Analysis of housing problems and needs

Over the decades, on both sides of the Atlantic, several studies have used a residual income approach to measure the incidence of affordability problems for a particular time and place (Grigsby and Rosenburg 1975; Hancock 1993; Kutty 2005; Leonard, Dolbeare, and Lazare 1989; Yip 1995). However, the only works examining affordability trends over time based on a residual income standard and explicitly compared with the ratio approach, are Stone's studies of shelter poverty in the United States (1983, 1990, 1993, 2006).

He has found that since 1970, the incidence of shelter poverty in the aggregate in the United States has been close to the incidence of affordability problems based on the conventional 30 percent of income ratio standard: In 2001, 32.1 million households (15.1 million renters and 17.0 million homeowners) were shelter poor, compared with 34.6 million paying 30 percent or more of their income for rent (Stone 2006).[10] Of course, this is just a coincidence, an artifact of the particular residual income standard and the particular ratio standard. Kutty's much more conservative standard yields a far lower figure for households in what she calls "housing-induced poverty"—17.2 million (renters and homeowners) in 1999 (2005).

However, Stone's approach reveals a very different distribution of the problem than the one suggested by the ratio approach. This difference points to some of the practical significance of a residual income standard: Small households (of one and two persons) have lower rates of shelter poverty than conventionally measured affordability problems, while larger households have considerably higher rates of shelter poverty than conventionally measured affordability problems (1993, 2006). This difference by household size is to be expected for any residual income standard, simply because any normative standard for nonhousing items will increase monotonically with household size. Essentially, for small households, shelter poverty does not reach as far up the income distribution as conventionally measured affordability problems do, while for larger households, shelter poverty reaches higher than the affordability burdens suggested by the conventional standard do.

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[10] He found that in 1970 the number and percentage of shelter-poor households was just slightly greater than those exceeding the then operative 25 percent of income standard. By the late 1970s, the incidence based on the 25 percent standard overtook shelter poverty and has since far exceeded it. However, since the mid-1980s, the aggregate incidence on the now dominant 30 percent of income standard has been quite close to shelter poverty (Stone 1993, 2006).

Stone has also found that the rate of shelter poverty among small households has declined since 1970 but increased for larger households; this is in contrast to the conventional measure, which has consistently shown small households to be worse off (1993, 2006). His residual income approach thus suggests that affordability problems for families with children are rather more severe than usually thought, with implications for housing production needs as well as for the allocation of subsidies for existing housing.

Eligibility and payment standards for housing subsidies

U.S. rent subsidy formulas have required assisted households to pay a fixed percentage (25 percent until the early 1980s, 30 percent since then) of *adjusted* income, which is based on certain deductions from gross income (see HUD 2002 for the currently allowed exemptions and deductions). These deductions have recognized, albeit partially and very weakly, the claims of nonhousing items in relation to household size.

Stone has examined some ways in which the residual income approach could be used to reform the formulas for determining assistance levels for U.S. households receiving subsidies (1983, 1993). He has argued that if the logic of residual income affordability is compelling but political support for adoption of the shelter-poverty residual income standard is lacking, subsidy formulas could move closer to the shelter-poverty standard by substantially raising the deductions and simultaneously increasing the percentage of net income recipients pay. For example, he has shown that based on minimum nonshelter costs as of the early 1990s:

> [a] formula combining a deduction of $2,400 per person with a 45 percent of adjusted income formula would bring rents fairly close to the shelter-poverty standard, but even an initial target of $1,200 per person and 35 percent of adjusted income would provide significant benefit to the poorest households and greater equity in allocating available subsidies. (Stone 1993, 271)

Indexed to inflation in nonshelter items, this approach would require the deductions at present to be about $4,000 per person with a 45 percent of adjusted income formula and $2,000 per person with a 35 percent formula.

While this approach has the virtue of simplicity, it is problematic in two respects. First, it fails to take into account regional variations in the cost of nonhousing necessities. Second, there are economies of scale in household consumption, so that per capita costs rise monotonically but at a diminishing rate with household size. Equivalency factors used to scale both the poverty level and family budget standards explicitly embody this lack of linearity. Thus,

annual determination of standard deductions by locality and household size would result in greater equity in subsidy payments and greater efficiency in their allocation. Development and publication of such standards would be analogous to HUD's annual determination of income limits and FMRs for several hundred geographic areas encompassing the entire country. Income limits are based on an estimate of median family income for each geographic area, which is used as the four-person standard for the area and then scaled up or down to larger and smaller households. FMRs are based on rent distributions in each area for unsubsidized two-bedroom units that recently turned over, scaled up and down for larger and smaller units. Similarly, HUD could determine the residual income deduction standard for a four-person household in each geographic area, to be scaled up and down for larger and smaller households. Once a baseline is established, annual adjustments could be made using the area CPI, excluding housing. As with current policy, additional deductions might be permitted for child care and extraordinary medical expenses.

Stone (1993) has argued that a long-term goal should be to move toward the shelter-poverty standard itself for assisted housing rents, but with some possible adjustments. For one thing, he acknowledges that while a residual income approach suggests that the poorest households can afford nothing for shelter, policy makers and the public have tended to require assisted households to make some minimum out-of-pocket rent payments. Historically, the requirement in public housing was that tenants pay either 25 percent of adjusted income or 5 percent of total income, whichever is higher. Currently, it is 30 percent of adjusted income, 10 percent of total income minus certain income adjustments, or a locally set minimum rent of zero to 50 dollars a month, whichever is the most (HUD 2002).

Of greater significance, Stone has recognized the perverse incentive of using a pure residual income formula for setting rents: Since it would result in housing assistance decreasing by $1 for every $1 increase in disposable income, subsidized households would be unable to increase their resources for nonshelter consumption until they pay the full, unsubsidized cost for their units. Thus, such households would never have an incentive to increase their incomes. He therefore suggests the possibility of reducing "housing assistance by less than one dollar for every dollar of disposable income above the zero threshold" (1983, 271).[11] This issue is what the British call "a poverty trap," and the

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[11] Stone sees a potential exacerbation of horizontal inequity in such an approach within the U.S. context:

> On the other hand, a formula that does not fully offset the effect of higher incomes would mean that some scarce subsidy dollars would not be freed up to assist other needy house-

notion of a subsidy "taper" of less than 100 percent has been a key part of British debates about subsidy reform. (Many of the earlier British sources cited earlier, as well as Elsmore 2000, discuss this issue).

Mortgage underwriting standards

Mortgage underwriting is a complex process that involves assessing the characteristics of the property and the household. Household characteristics that receive attention are credit history, current debt burdens, and the level and stability of income. For our purposes, it is the last that is of interest. Most particularly, residential mortgage underwriting uses a *ratio* standard of antici- pated housing costs to incomes as one of the principal determinants of loan eligibility and amount. In this country, the ratio is typically 25 to 35 percent, with the particular ratio depending on a household's other debt obligations and how inclusive the definition of housing costs is. A higher ratio is presumed to increase the risk of default because the household's nonhousing expenses compete with the capacity to make mortgage payments. It is important to note, however, that the implicit logic of such risk analysis is based on residual income. One might therefore reasonably wonder whether residual income might be a better determinant of how much mortgage debt a borrower can reasonably carry without undue risk.

The underwriting purpose in assessing the relationship between a prospec- tive borrower's income and anticipated debt service (and other homeowner costs) should not be to determine whether the borrower can just barely meet nonhousing needs given the anticipated housing costs, but whether the nonhousing expenses are higher than some reasonable minimum level and flex- ible enough to be able to cushion or offset somewhat an unanticipated drop in residual income.

The best education programs for prospective home buyers have the partic- ipants engage in a critical analysis of their family budgets, including an assess- ment of their nonhousing needs and expenditures. Some participants conclude that not only their incomes, but also their nonhousing circumstances, make homeownership unrealistic or infeasible, while others decide that they can and will adjust some of their nonhousing expenditures to increase the amount potentially available for homeownership. Indeed, some first-time home buyer

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holds. Thus the notion of a partial offset for rising incomes would be fair only at the point where housing truly becomes an entitlement: that is, needy households would not be competing for housing subsidies. (1983, 271)

The latter situation is found in Britain, where the housing benefit is an entitlement for those meeting the eligibility criteria.

programs allow loan qualification on the basis of higher-than-standard ratios for graduates of home buyer education programs who have undertaken such personal budget analyses and nonhousing lifestyle adjustments. While ratios are nominally still used in such situations, the residual income logic is implicitly being applied.

However, qualifying low-income households on the basis of higher-than-standard ratios, or even standard ratios, may place some of them at great risk if the resulting level of residual income is unreasonable and unsustainable. The analysis summarized in table 2 illustrates the dilemma of ignoring residual income in mortgage underwriting, especially for low-income households, as well as the potential wisdom of taking residual income into account as a supplement even if not as a replacement for ratios.

Two prototypical four-person households have been considered—one with the 2003 median homeowner income of $53,000 and the other with an income of $40,000. The following procedure has been used to estimate the maximum amount each household could afford for mortgage principal and interest (P&I) and still meet its other needs at a conservative level. First, after-tax incomes

Table 2. Homeowner Affordability on a Residual Income Standard for a Four-Person Household (Two Adults and Two Children), 2003

	Gross Income	
	$53,000[a]	$40,000
Taxes[b]	$10,000	$8,000
Disposable income	$43,000	$32,000
Minimum cost of nonshelter items[c]	$23,000	$23,000
Maximum affordable total housing cost	$20,000	$9,000
Nonmortgage housing costs[d]	$4,200	$4,200
Maximum affordable for mortgage P&I	$15,800	$4,800
Net homeowner tax benefits[e]	$900	$600
Maximum affordable for P&I net of tax benefits	$16,700	$5,400
Maximum affordable for P&I based on 25 percent of income	$13,250	$10,000
Maximum affordable for P&I based on 33 percent of income	$17,490	$13,200

[a]Median income of homeowner households (Joint Center for Housing Studies 2004).

[b]Taxes include Social Security taxes, federal income taxes, and state and local income taxes, the latter based on the national average ratio to federal income taxes. Federal income taxes assume that the household takes the standard deduction; the net reduction in taxes from homeowner tax deductions is taken into account below.

[c]Updated BLS lower budget for nonhousing items for the United States.

[d]Obtained from the 2003 American Housing Survey (U.S. Bureau of the Census 2004). Median monthly costs are as follows: real estate taxes ($114); property insurance ($45); electricity ($68); other utilities for heating, cooking, water, and trash disposal ($100); and routine maintenance ($25).

[e]Computed following the procedure used in Joint Center for Housing Studies (2004).

P&I = principal and interest.

were estimated, taking into account Social Security taxes, federal income taxes, and state and local income taxes (the latter using national averages); homeowner tax benefits are included later. The maximum amount affordable for all housing costs was then determined by subtracting from disposable income the updated BLS lower-budget standard for nonhousing (other than taxes) for the United States in 2003 (rounded up from table 1). The maximum affordable for P&I before homeowner tax benefits is then computed by subtracting estimated nonmortgage housing costs (real estate taxes, property insurance, fuel and utilities, and routine maintenance) based on median actual expenditures for these items from the 2003 American Housing Survey (U.S. Bureau of the Census 2004). The maximum affordable P&I is increased somewhat by taking into account homeowner tax benefits (following the procedure used by the Joint Center for Housing Studies 2004).

As table 2 indicates, a homeowner or prospective homeowner with an income of $53,000 a year could almost—but not quite—meet its nonhousing needs at the BLS lower-budget level at the 33 percent of income underwriting standard.[12] At the more conservative 25 percent of income underwriting standard that the NAR (2005) uses in its homeownership affordability index, the household would have about $3,500 to spare, enabling a slightly higher level of nonhousing consumption and/or a cushion against unanticipated expenses or major repairs.

By contrast, a four-person household with an income of $40,000 a year could not come close to meeting its nonhousing needs at the BLS lower-budget level if qualified at even the conservative 25 percent ratio, let alone the more liberal 33 percent ratio or an even higher ratio used for some first-time home buyer programs. Such a household would have about a $4,600 shortfall at the 25 percent standard and $7,800 shortfall at the 33 percent standard. Indeed, if such a household were qualified at the 33 percent standard, its nonhousing consumption would be at about the level of the SSS, *excluding* child care (see table 1). Finally, also important is the fact that this analysis does not include possible nonhousing debt payments, which would further reduce the maximum affordable amounts.

This analysis suggests the implications and potential utility of the residual income approach for mortgage underwriting, but it is of course by no means definitive. It would therefore be premature and inappropriate to propose radical changes to underwriting standards at this time. I do, however, have three suggestions for ways in which the approach might begin to receive greater consideration.

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[12] Given the approximations of the model, the $800 deficit is insignificant.

First, I would propose that first-time home buyer programs incorporate a residual income analysis, at the very least for advisory purposes if not as a formal criterion. The analysis would begin with determining how large a mortgage payment a prospective buyer could afford based on the existing ratio standards used by the program. The amount of this payment would be subtracted from gross income, as would nonhousing debt payments and personal taxes, to ascertain the amount of residual income available for nonhousing necessities and nonmortgage housing expenditures. Subtracting estimated nonmortgage housing costs (perhaps including savings for major repairs, etc.) would yield an estimate of residual income for nonhousing necessities. The latter figure would then be assessed to determine whether it is reasonable and realistic given the applicant's individual circumstances or a normative nonhousing standard. On this basis, some applicants might be reassured that they could proceed without undue stress on their finances, while others might conclude or be advised that, even though they have met the ratio criterion, it would be unwise to proceed.

Second, it would be interesting to undertake an analysis of lower-income homeowners who have purchased in the past 5 to 10 years to ascertain whether residual income at the time of application has any predictive value for the likelihood of default. Specifically, the research could compare those who have experienced mortgage default with those who have not and be limited to those who have not been subjected to predatory lending. Of course, the difficulty with carrying out such an exercise is the lack of adequate and appropriate data. Even if a sample of mortgage applications could be obtained, tax information would be needed from returns or W2 forms, as well as data on nonmortgage housing costs. Moreover, all of this information would have to be in a form that protects the privacy of individual households.

The difficulties just identified for a retrospective analysis lead to the third suggestion, which is a prospective version of the same sort of study. A major mortgage institution could undertake such a project, which would, in some ways, be just an extension of the types of data collection and analyses these entities currently conduct. The project could begin with a data collection protocol that would obtain and record the necessary information from mortgage applicants to determine their residual incomes at the time of application and approval and enter the information into a database. The protocol would need to make it possible to track the subsequent trajectory of payments and possible defaults while ensuring confidentiality. While the effort would be considerable and would take several years at least before the database would be sufficiently mature for useful analysis, the potential utility of residual income analysis for more precise assessment of risk and more sophisticated underwriting would, in my opinion, justify the investment.

Conclusion

This article has examined the foundations of the housing affordability concept, debates about the meaning of affordability, and some of the practical tasks and challenges in operationalizing and applying a residual income affordability indicator and standard. The principal purpose has been to build the case for the residual income concept of housing affordability as sound in its own right and as a compelling alternative to the ratio approach.

Using the conventional ratio concept to define and measure housing affordability has been the prevailing approach because it is simple to understand and apply, because it seems to fit people's commonsense experience, and because it has a long tradition, the imprimatur of venerable historical authority, and the official sanction of most governments.

However, I have argued that the ratio concept is logically unsound and gives a misleading picture of the way households experience the squeeze between housing costs and incomes. A more realistic concept of affordability can be crafted from an understanding of the unique features of housing costs. Such a concept highlights the interaction among incomes, housing costs, and the costs of nonhousing necessities. This residual income approach does not yield a simple rule of thumb ratio. Instead, it leads to a sliding scale, which recognizes that true affordability is sensitive to differences in household composition and income.

Operationalizing a residual income affordability standard is, to be sure, more complex than simply adopting a fixed percentage of income. It is not, however, intractable to do so and does not require econometric analysis or the generation of new data. Over the past few decades, several authors have produced operational residual income standards, although there continues to be some debate about the appropriate nonhousing standard to use (Kutty 2005; Stone 1993, 2006).

Because the residual income model departs in significant ways from the ratio approach, it has a number of implications for policy and practice. First, it offers a more precise and finely honed instrument for assessing housing needs and problems. Second, it points toward revisions in housing subsidy formulas that would result in a more equitable and efficient allocation of subsidies. And third, it suggests a way of refining residential mortgage underwriting that might perhaps yield a more accurate assessment of risk.

The residual income approach to housing affordability is neither well known, particularly in this country, nor widely understood, let alone accepted. But it is sound, it is robust, and sooner or later, it will effectively compete with, if not replace, the traditional paradigm of housing affordability.

Author

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