

## Housing Affordability: A Comparison of Measures

The purpose of this paper is to compare and contrast three measures of housing affordability. For each measure, statistical analyses of the Panel Study of Income Dynamics data are used to discover the extent of the affordability problem, and the similarities/differences in characteristics associated with the probability of experiencing the problem. Policy implications associated with the use of the different measures are discussed.

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### Introduction

Interest in housing affordability has ascended to the top of the national housing policy agenda in the United States, replacing other traditional housing issues such as physical substandardness and racial discrimination (Linneman & Megbolugbe, 1992; Apgar, 1989). Despite its new found prominence, housing affordability continues to suggest different things to different groups, prompting researchers to often talk past each other. These miscommunications are critical, since how one defines and measures housing affordability is inseparable from how one perceives the issue (Rosen, 1984) and it determines who is experiencing an affordability problem. A concrete example is government subsidy programs. The delineation of housing affordability determines which programs are relevant and who is eligible to receive government benefits.

The purpose of this paper is to compare and contrast different conceptualizations and measures of housing affordability and relate them to public policy outcomes; particularly those concepts and measures used to determine who is eligible for housing subsidies. The objectives are:

1. To discover the extent of the affordability problem when using different concepts and measures;
2. To discover household and housing characteristics associated with the problem of housing affordability when affordability is defined as:
  - a. housing expenditure/income norm;
  - b. housing poverty; and
  - c. housing burden.

### Definitions of Housing Affordability

The traditional approach of defining housing affordability dates back over 100 years to the writing of Ernest Engel. Utilizing observations of the housing expenditures of renters, Engel concludes that a family should spend no more than 25% of its income for housing, regardless of income level (Feins and Lane, 1981). This ratio considers income to be total gross income before taxes and housing expenditures constitute mortgage principle, interest, property taxes and insurance for homeowners and rental costs for renters.

The 25 percent rule has not been universally adopted by researchers who subscribe to the housing expenditure/income norm method of defining housing affordability. Engel's approach is criticized for not accounting for changes in consumer preferences for housing. In recent years, the observed level of expenditures, and therefore the rent to income ratio, has risen, in part, because of a demand for improved housing quality by consumers (Weicher, 1989). As Linneman and Megbolugbe (1992) state: "the housing standards of yesterday have shifted sharply upward--for both middle-class America and the less fortunate alike" (p. 370).

During the last few years, concomitant with the increase of housing prices, strong pressures arose to raise the traditional standard of housing expenditure from 25% of income to 30% or more (Weicher, 1989; Rosen, 1984). Rosen (1984) notes that the accepted norm of spending 25 to 30% of income on housing may have been appropriate in the past, "but recent economic conditions may require a different standard" (p 128). Political conditions also played a role in adjusting the housing expenditure standard. Deficit problems during the

Reagan administration induced a government decision to require residents of public housing to pay 30% of adjusted income for housing rather than the previous 25% (Leonard, Dolbeare & Lazere, 1989).

The traditional method of defining housing affordability solely in terms of a given percentage of income is challenged by Feins and Lane (1981), Stone (1993) and the North Central regional Research Committee, NC 199 (Winter, et.al, 1994) all of whom utilize a variation of housing poverty rather than the housing expenditure/income norm to measure housing affordability. A family is classified as experiencing housing poverty when family housing expenditures constitute so much of their income that there is not enough money remaining in their budget to meet other basic needs.

Feins and Lane (1981) believe that the amount that a family can afford to pay for their housing depends upon a variety of factors--not just their income. Factors such as size of the family, the area of the country in which they reside, the age and sex of the household head(s), and whether the family owns or rents their home makes a difference in ascertaining what amount spent for housing is affordable. They suggest using the Bureau of Labor Statistics (BLS) family budgets as a basis for developing guidelines for housing affordability. Their argument is that households "should not be expected to pay more for shelter than the amount specified by the BLS budget for the most modest standard of living" (p. 68).

Stone (1993) selects a different approach in defining "shelter poverty". Like Feins and Lane (1981), he challenges the conventional wisdom that the appropriate definition of housing affordability is calculated in terms of a designated percentage of income. He perceives the need for a sliding scale of affordability based on differences in income level and family composition. Many low income families and larger families spend less than 25 to 30% of their income for housing, and continue to be unable to afford the cost of other basic necessities. Unlike Feins and Lane (1981), he determines the amount a household would need to cover all basic necessities, except housing. After these necessities are covered, the residual is the amount the household can afford for housing. Like Feins and Lane, he suggests that calculations of housing affordability be based on the U.S. Bureau of Labor Statistics (BLS) Lower Budgets.

Unfortunately, the last BLS Lower Budgets update was in 1981. While the Lower Budgets can be updated through use of the Consumer Price Index (CPI), Hefferan (1987) argues that such a procedure is ill-advised. She cites the concerns noted by the BLS for discontinuing the budgets in 1981, such as outdated

expenditure data, atypical family types and controversial methods for assigning quantities of goods and services. In 1981, the BLS stated that costly new methodologies, expenditures and price data would be required to continue producing the budgets.

The North Central Regional Research Project NC199 (Rural Household at Risk of Serious Housing Problems in the North Central Region) (Winter, et.al, 1994) also defines housing affordability in terms of housing poverty. Rather than referring to the Bureau of Labor Statistics Lower Budgets as a determinant of basic needs, the North Central Regional Research Group defines basic needs as the official federal poverty threshold.

The housing poverty measures suggested by Michael Stone (1993) and the NC199 Committee define measures of housing affordability in terms of having enough income remaining after paying housing costs to cover other basic necessities. In fact, a family might spend nothing for housing and still be classified as experiencing shelter or housing poverty. Peter Salins (1989) sees this concept as flawed. He questions isolating only shelter as the variable of concern. Why not food and identify a construct called "nutrition-poverty"? He sees the real villain as poverty.

This argument leads to another candidate for measuring housing affordability; i.e, housing burden. Salins (1989) critique of housing poverty is a fair one. Poverty is the problem, but researchers must identify the source of the problem to combat it efficiently, whether it be housing, food, or some other factor. Housing burden is a measure designed to specifically identify those individuals that are experiencing poverty where housing costs are a primary component contributing to their monetary troubles.

The concept "housing burden" indicates situations in which housing costs contribute to the problem of inadequate resources to meet the basic needs of families. This concept adopts aspects of the traditional expenditure/income norm by allocating 30% of income for housing as an appropriate housing budget. Housing burden also adopts aspects of housing poverty by focusing on families who after spending 30% or more of their income for housing, do not have enough income remaining to cover other basic necessities. In these cases, excessive housing expenditures contribute directly to the problem of meeting basic household needs, and government housing programs possess the capacity to mediate the poverty problem.

Differences in the definitions of housing affordability likely mean differences in the characteristics of households experiencing affordability problems. Policy makers influence the design of programs intended to

address the housing affordability problem. Thus, the definition of housing affordability has direct policy implications.

This study examines the dynamics of three definitions of housing affordability. The first definition, housing expenditure/income norm, identifies households that spend over 30% of their income on housing. The second definition, housing poverty, identifies households that have an income below 70% of the poverty level after removing housing costs. The third definition, housing burden, identifies households that meet both of the aforementioned criteria.

The usefulness of the first definition is best applied as a guide. The notion that a millionaire who spends more than 30% of his or her income on housing as enduring of housing distress is ludicrous. The point is that the 30% criteria is unsatisfactory for use by government assistance programs. However, utilizing a 30% guideline in advising families in budgeting situations appears to be an appropriate use of the measure.

The second definition, housing poverty, does not specifically measure poverty created by housing. It reflects all people who are in poverty. It includes individuals paying no money for housing costs, but earn under 70% of the poverty threshold. Therefore, it might be a helpful criteria for those individuals that desire to use housing as a subsidy to reduce poverty, but does not help specifically identify those individuals that are experiencing dire conditions due to the cost of their housing.

The superiority of the concept of housing burden is that, by combining the 30% guideline with the poverty level, one is able to isolate those individuals that are experiencing poverty and housing costs are an integral part of the cause of their impoverishment. This definition does not identify the reason that the individual or family is experiencing a housing burden. It cannot distinguish between poor management of money and the inability to obtain affordable housing, but it does allow the identification of individuals who require assistance.

This paper compares the characteristics of the groups categorized under the different definitions of housing affordability. This comparison helps isolate the dissimilar policy recommendations that follow from each operationalization of housing affordability and to better understand the impact of the definitions that are applied to the problem.

### Methodology

Data from the 1987 Panel Study of Income Dynamics Wave XX, were used in this analysis (Survey

Research Center, 1989). Data were collected from the male head of household, if present. Otherwise, the data were collected from the female head of household. The sample of 7061 heads was weighted so that it is representative of the United States population (Duncan & Morgan, 1985).

Independent variables used in the analysis are defined and measured as follow: (1) age of household head is the age, in years, at the time of the interview; (2) head of household is designated as male, female or dual with dual being the indicator group; (3) household size is measured to include the number of persons living in the household at the time of the interview; (4) a head of household is classified as a minority if the head is Black, Asian, Hispanic, or Native American; (5) income is measured as the dollar amount received, before taxes, by the household in 1986; (6) a household is considered disabled if the household contained an adult individual that had a previous condition that limited the type or amount of work done; (7) health is measured by asking the respondent to self-report his/her health as either poor, fair, good, or excellent; (8) tenure is measured as either ownership or rental of the housing unit; (9) housing assistance is coded "yes" if any one of the following conditions were met by the household: lived in public housing; the government paid part of housing costs; the household received help with their heating bills; (10) public assistance is coded "yes" if the household received any one of the following: Supplemental Security Income, Medicaid, food stamps; (11) urban areas include counties of residence in which the population of the largest city was 50,000 or more; rural areas include counties of residence in which the population of the largest city was less than 50,000; (12) geographic regions of the United States are those defined by the U.S. Bureau of the Census. They are Northeast, North Central, West and South.

The dependent variables are conceptualized and defined as follow: (1) housing expenditure/income norm--if housing expenditures consume 30% or more of household income; (2) housing poverty--if household income (minus housing expenditures) is less than 70% of the household's poverty threshold; (3) housing burden--if a household is spending 30% or more of household income for housing expenditures; and has less than 70% of the household's poverty threshold remaining. Housing expenditure is defined as money spent on utilities, rent, mortgage payment and property taxes.

To discover the extent of the affordability problem when using different definitions, frequency distributions are reported. To discover household and housing characteristics associated with the problem of housing affordability when defined as: (1) housing

expenditure/income norm; (2) housing poverty; and (3) housing burden, the SPSS program for logistic regression was used. Each of the housing affordability measures was treated as a dependent dichotomous variable.

### Results

Of the households in the weighted sample, 16.5% pay more than 30% of their income for housing (housing expenditure/income norm); 12.1% of the households experience housing poverty; and, 8.4% experience housing burden. The first measure of housing affordability (housing expenditure/income norm) includes households with higher incomes, and as a result, more discretionary income that can be allocated to housing. Because of the higher income, enough income remains to meet other basic needs as defined by the poverty threshold. Therefore, although all of the households are spending more for housing than is recommended by social planners, many are not experiencing problems that suggest a need for assistance.

The second measure of housing affordability (housing poverty) includes households who are not paying at least 30% of their income for housing, but still do not have enough income to meet remaining basic needs as defined by the poverty threshold. Under this definition it is unclear whether government housing assistance or some other form of assistance would be most effective in reducing the poverty problem.

The third measure (housing burden) identifies households who are paying at least 30% of their income for housing and do not have enough income remaining to meet basic needs as defined by the poverty threshold. This measure eliminates households paying more than 30% and having enough income left for remaining needs; and it also eliminates families in poverty who are not paying 30% for their housing, but still don't have enough left for basic needs. Thus, the remaining individuals in the category of housing burden are economically stressed and paying an inordinate amount of their income for housing. These individuals can be efficiently helped by the implementation of government housing programs.

For each of the three measures (with other variables controlled) the data indicate that large families, lower income households, households with higher educational level, female headed households and older households have a greater probability of experiencing a housing affordability problem ( $p < .05$ ) (See Table 1). Households living in the Northeast and Western regions have a greater probability than the mean of having an housing expenditure/income ratio of over 30%, but do not have a greater probability of experiencing housing poverty or housing burden. Households receiving public

assistance and younger households have a greater probability of an expenditure/income ratio of over 30% and of experiencing housing poverty, but not housing burden. Homeowners have a greater probability of experiencing housing poverty and housing burden, but not having an expenditure/income ratio over 30%. Urban households have a greater probability of experiencing a expenditure/income ratio of over 30% and to be housing burdened than rural households, but are not more likely to be in housing poverty.

The findings show more similarities than differences across the measures. The differences in characteristics identified across measures appear to reflect the nature of the measures. The greater probability of households in the Northeast and West (where housing costs have been high) and in urban areas (where housing preferences may be higher) of spending more than 30% of income on housing may reflect the impact of higher income households who are using discretionary income to meet housing needs. The finding that urban households who have a greater probability than rural household of being housing burdened but not of experiencing housing poverty may reflect higher preferences for housing and/or higher housing costs.

Homeowners, when controlling for other variables, are more likely to experience housing poverty and housing burden, but not a housing expenditure/income ratio of over 30%. At the lower income levels, it is likely that many homeowners have over extended themselves in order to buy a home. This phenomena would not be as prevalent for households with higher incomes as would be found in the measure of housing expenditure/income ratios.

The greater probability of households receiving public assistance experiencing housing poverty likely reflects the inclusion of the very low income households not paying 30% of their income for housing; a group not included in the other two measures. This finding provides evidence that housing poverty is incorporating casual variables relating to all forms of poverty into the measure of housing affordability.

For the housing expenditure/ income norm measure, the variables included in the model were able to predict 85.96% of the cases correctly. For the housing poverty measure, 97.07% of the cases were classified correctly. For the housing burden measure the classification table indicated 94.15% of the cases had been correctly classified.

Table 1. Logit regression of measures of housing affordability on selected independent variables

Characteristics	Expenditure/income ratio		Housing poverty		Housing burden	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Family Size	.2866*	.0417	1.5728*	.1284	.7156*	.0802
Head of household <sup>a</sup>						
Male/Female	-.2988*	.0781	-.0807	.1778	-.0405	.1425
Female	.3251*	.0567	.2547	.1177	.2012	.0935
Male	-.0263		.1740		-.1607	
Age of head	.0266*	.0131	.0769*	.0248	.0390*	.0202
Age <sup>2</sup> of head	-.0003*	.0001	-.0007*	.0002	-.0003	.0002
Education of head	.1142*	.0259	.1445*	.0554	.1095*	.0448
Family income	-.0001*	4.88 E-06	-.0008*	4.18 E-05	-.0004*	1.96 E-05
Race (white) <sup>b</sup>	-.0201	.1012	-.0263	.2032	.1372	.1601
Poor health <sup>b</sup>	.0932	.1095	.0355	.2008	.0526	.1647
Disabled <sup>b</sup>	.0012	.1010	-.1841	.1955	-.0156	.1630
Tenure (rent) <sup>b</sup>	-.1576	.0931	-.6172*	.1822	-.6869*	.1529
Rural <sup>b</sup>	-.2596*	.0808	-.3079	.1682	-.3764*	.1361
Region <sup>a</sup>						
Northeast	.1311*	.0716	.1425	.1563	.1247	.1243
North Central	-.1580*	.0643	-.0218	.1344	.0346	.1054
South	-.1988*	.0646	-.0602	.1314	-.0911	.1078
West	.2257*		.0605		-.0682	
Public assistance <sup>b</sup>	.2827*	.1172	.5884*	.1971	.2544	.1572
Housing assistance <sup>b</sup>	-.1232	.1126	-.2790	.1870	-.2358	.1191
Constant term	-.5521	.3463	1.6441	.7316	-.1474	.5708
Model Chi-Square	1691.655*		3558.100*		2164.558*	
%Classified Correctly	85.96		97.07		94.15	

\* Significant at the 5 percent level

a Calculated using deviations coefficients

b Coding: Minority=0, white=1; own=0, rent=1; urban=0, rural=1; public assistance, housing assistance, disabled, poor health, no=0, yes=1.

## Policy Implications

The analysis of the measures of housing affordability clarifies similarities and differences among the measures, and thereby enables policy makers to select the measure most appropriate to meet their desired goals.

If simplicity is desired for advising individuals of recommended expenditures for housing, then the housing expenditure/income norm is the most appropriate measure. This measure is a quick and easy guide to planning housing expenditures for individuals of all income levels. However, the measure includes households who have chosen to spend a large part of their discretionary income on housing and would not be the appropriate measure for government aid programs.

If the goal is to reduce the effects of poverty, in general, and housing is perceived as a means for accomplishing this goal, then the housing poverty measure could be utilized. The shortfalls of this measure is that housing aid will be allocated to many individuals and families who have other problems. If the cause of poverty in a community is a lack of jobs or an undereducated population, infusing money in housing programs is not the most efficient method of combating poverty.

If the goal is to help those who are paying excessive amounts of their income for housing to the extent that inadequate income remains for other basic needs, the housing burden measure is most appropriate. The housing burden measure identifies families that require housing assistance to escape poverty. By narrowing the category of housing affordability to families that are both paying too much for housing and experiencing poverty, a more useful indicator for government aid programs is created.

Noting the above goal of providing a governmental tool, a strong argument can be presented for using the housing burden measure. Linneman and Megbolugbe (1992) note that no country relies exclusively on the private sector to shelter low-income families. The question is: How large should the assisted sector be and who should be the recipients of assistance? Kain (1983) argues that housing subsidies that target middle- and high-income households "are inefficient because they induce homeowners to consume more housing than they would otherwise" (p. 147). He also sees the housing problems of poor persons as problems of poverty. Using the housing burden measure would focus the housing assistance on a smaller, more specific segment of households--a segment that is paying high housing costs with the consequence of inadequate funds for basic needs.

A second area where differentiation of the housing affordability measures provides policy guidance is in relation to ascertaining the appropriate strategy to address the housing affordability problem. Is the affordability problem one of weak demand and therefore the use of vouchers is suggested? Or is the problem one of inadequate supply, suggesting the need for additional housing construction or renovation? Data for a community analyzed using both the housing poverty measure and the housing burden measure would help clarify the housing affordability status of the community. If the data indicate that a sizeable proportion of the population are housing burdened, it would suggest that there is a housing shortage, particularly in the lower cost market and that policies to increase housing supply through construction or renovation would be needed. Conversely, if the data indicate a sizeable proportion in the community are experiencing housing poverty, then housing vouchers (in effect, income maintenance) to increase resources for effective demand would likely be the more appropriate policy.

To conclude, housing burden provides two valuable policy oriented benefits. First, housing burden is a specifically tailored measurement tool that identifies families in need of government housing assistance. This tool aids government in allocating resources efficiently. Secondly, by using housing burden as the dependent variable in studies, more will be learned about the specific causes of housing affordability problems. This research demonstrates that casual differences exist between the different measures of housing affordability that might create misperceptions as to the factors causing housing affordability problems. Using housing burden alone and in conjunction with other measures will allow researchers and policy makers to eliminate some of these uncertainties.

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#### Endnotes

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