Effect of Home Ownership on Poverty Measurement

David M. Betson University of Notre Dame November, 1995

Introduction

In a previous paper, "Poor Old Folks: Have our Methods of Poverty Measurement Blinded Us to Who is Poor?", I presented a series of calculations representing the implementation of the National Academy of Sciences Panel's recommendations on poverty measurement.¹ The results reported in that paper indicated there would be a significant increase in the poverty rate of the elderly which would reduce the relative gap in poverty rates between children and the elderly. In 1992, the official poverty rate for the total population was 14.5 percent. The poverty rate for children was 21.9 percent while the elderly's poverty rate was 12.9 percent. Adopting the Panel's recommendations, the poverty rate for the total population would rise to 19.0 percent. While the poverty rate of children would rise to 25.8 percent or 3.9 percentage points, the poverty rate of the elderly would rise to 22.2 percent or 9.2 percentage points.

While this finding was significant, it was questionable whether it was a robust result. The NAS Panel in formulating its recommendations chose not to propose any explicit treatment of home ownership, but suggested that future research should be directed to examining how home ownership should be considered in determining whether or not a household should be counted as poor. Owning one's home could have a significant impact upon whether or not a household should be considered poor. For example, consider two households both with the same income, but one household rents their home and the other owns its home and does not have a monthly mortgage payment. If both households' incomes are less than the poverty line, would we consider both households poor? Clearly the household which rents does not have an income flow which is sufficient to meet its total needed expenditures, and should be considered poor. But what about the household which owns its home? Since this household does not have monthly mortgage payments for its home, it could use the portion of its income which would have gone toward the mortgage or rent for other household necessities such as food or clothing. Hence even if this household's income was less than the poverty line, it could possibly have sufficient income to meet its non-housing needs and should not be considered poor.

In 1992 using the current poverty definition, 33.5 percent of poor individuals lived in a home which they owned. The use of the Panel's recommendations would lead to an increase in the proportion of the

¹ See *Measuring Poverty: A New Approach*, edited by Citro and Michael, National Academy Press, Washington, DC, 1995.

poor who owned their home to 40.6 percent. How many of these poor do indeed have sufficient resources to meet their needs? Given that home ownership is more prevalent among the elderly, could it be that the closing of the relative gap between children and the elderly was illusionary? This paper be address these questions. The next section of the paper explores various treatments of home ownership for the purpose of poverty measurement and proposes a specific alternative. The third section implements this treatment in conjunction with the Panel's recommendations to explore its impact on the extent and composition of poverty in the U.S.

How Should Home Ownership be Considered for Poverty Determination?

The NAS Panel recommended that poverty be defined as not having sufficient resources to acquire a normative level of spending on food, housing, clothing, and other non-medical, non-work related necessities.² While the Panel was careful to define a measure of resources which was consistent with this concept, it recognized that its measure neglected the flow of shelter services derived from home ownership, and hence created an incompatibility in the resource measure between those families who chose to own and those who rented. This omission would lead to an overstatement of the extent of poverty in the population, and, in particular, the incidence of poverty within the elderly population where the rate of home ownership was the greatest. The NAS Panel thought that the practical difficulties of correcting the resource measure were so great that it could not make any recommendation for the inclusion of the value to the household from home ownership in the resource definition. It did recommend that future research and data collection be undertaken to consider alternative treatments of the home ownership for poverty measurement.

Data from the 1991 American Housing Survey suggest that many low-income households not only own their home but also do not have a mortgage payment. They report that 39 percent of low-income households own their home, while 66 percent of those who own do not have a mortgage payment. This information implies that 25.7 percent of the low-income population live in a home which is paid for and hence have housing for which their current resource needs are less than similar households who either rent or are paying a mortgage.³ Are many or few of these households poor?

² We will adopt the BLS's distinction between shelter and housing expenditures. Spending on shelter includes mortgage payments, property taxes, and maintenance costs for owned dwellings and rent paid for dwellings not owned by the unit. Housing expenditures is a broader concept which includes shelter expenditures as well as utilities, housekeeping supplies, and household furnishings. The NAS Panel used the term "shelter" to include what the BLS deemed as "shelter" spending and payments for utilities.

 $^{^3}$ The definition of a low-income household is not exactly the same as a poor household defined by the Census.

In order to make a measure of total consumption of renters and home owners comparable, economists have proposed that the net rental equivalence value or " net imputed rent" for homeowners should be added to any measure of consumption. This additional resource to the household would be equal to the amount of money for which the household could rent their home minus the home owner's expenditures on the home -- mortgage (principal and interest), property taxes and maintenance costs. If the difference was negative then zero would be added to the home owner's measure of consumption.

The same logic could be applied to a definition of a household's resources. A household which has little or no mortgage payments has an asset which can be utilized to meet one of the household's needs -- housing. Owning a home without a mortgage payment means the household requires less cash income or in-kind benefits to meet its other needs. But just because the household may be housing "rich" does not imply that all of the household's needs are being met. While the household may have its housing needs met, it still has to have sufficient current resources to pay for the property taxes, utilities, and home repairs as well as its food, clothing and other non-medical, non-work related needs.

Several members of the Panel, as well as other analysts,⁴ felt that it was inappropriate to add the full value of net imputed rent of the home to the household's resources. They argued that individuals, especially the elderly, may be living in homes that are larger than their current needs. To impute the full value of the net imputed rent to these households would be inappropriate since in the short run, they could not use the excess of the imputed rent over the dollar value of their current housing needs to pay for other needs. To remedy such a potential problem, Ruggles has suggested capping the amount of imputed rent by the proportion of the household's needs deemed for shelter.

To implement this proposed treatment of home ownership, the following information would need to be collected from survey data on individual households:

- Whether or not the household owns or rents their home (currently on the CPS and CEX);
- For those who own their home (currently on the CEX) :
 - -- How much would your home rent for?
 - -- What was your monthly principal and interest payments?
 - -- How much did you pay in property taxes last year?
 - -- How much did you spend on maintaining your home last year?

While much of this data is collected on the CEX, the Panel questioned whether individuals could be expected to accurately know the rental value of their homes. As an alternative, the Panel suggested that the gross rental value of the home could be imputed by a hedonic pricing model. This approach would require

⁴ For example, see Ruggles (1990).

the collection of characteristics of the home (number of rooms at a minimum) on the CPS or SIPP data base. Then using another data base which contained rental payments along with characteristics of the housing unit, a regression model could be estimated which then could be used to impute rental values to the CPS or SIPP. However, even this method would still require the collection of mortgage payments (collected on SIPP but not CPS), property taxes (collected on SIPP but not CPS), and maintenance expenditures (not collected on either survey). Since the Panel did not feel that such data and imputations would be available in the near future, the Panel chose not to recommend to include the net imputed rental value of home ownership in its resource definition.

For purposes of considering alternative procedures of accounting for the value of an owned home to the household, let us adopt the following notation:

GRent	=	Annual Rental Value of Property;
Mort	=	Annual Principal and Interest Payments;
PTx	=	Property Taxes Paid;
Main	=	Home Maintenance Expenditures;
Т	=	Threshold for the household normative level of need expenditures
$\Theta_{\rm S}$	=	Proportion of threshold needs for shelter
NIRent	=	Net Imputed Rent
	=	MINIMUM[Θ_ST , MAXIMUM{GRent - Mort - PTx - Main, 0}]
R	=	Panel's Proposed Resource Measure
	=	Census Money Income
		+ Value of non-medical in-kind benefits
		- Income and Payroll Taxes paid
		- Work Related Expenses (including child care)
		- Medical Out-Of-Pocket Expenditures ⁵
		-

The conventional treatment of home ownership would lead to the following resource definition :

For households who own their home :

Resources = R + NIRent

For all other households :

Resources = R.

In principle, all the above information could be either collected or imputed to existing surveys such as CPS or SIPP. But as we have previously noted, the vast majority of the information needed to implement

 $^{^{5}}$ The Panel also recommended that the amount of child support paid be deducted from the measure of the household's resources.

this treatment of home ownership is not currently present on either of these two data bases. However, a crude approximation can be obtained by making the following assumption. If a household owns their home and has no mortgage payments, then the net imputed rental value of their home is at least as large as the shelter component of the household's threshold and hence the net imputed value of the home will be set to $\Theta_S T$. Otherwise, if the household owns their home but has a mortgage payment, we will assume that the net imputed rental value of their home is zero.

This assignment of the net imputed rental of home ownership based upon whether or not the home owner is paying a mortgage will overstate the "correct" adjustment to the household's resource for some families and understate it for others. For those households who have paid for their homes, this assumption could provide an overstatement of the resource value of the home to the household which will more frequently occur in the elderly population. What we have to remember is that for the elderly, their homes are most likely equally old and in need of repair. While this may especially true for the elderly, it could hold for many other low-income households. For those households who still are paying a mortgage on their home, households with relatively small mortgages, this assumption could lead to understatement of the net imputed value of housing services.

To get some indication of the extent to which this assumption may over- or understate the net imputed rental value of home ownership, consider the following information from the Consumer Expenditure Survey, 1988-89. For illustration purposes, I chose one household which was headed by an individual 35 to 44 years old with \$10,000 to \$15,000 of income and a second household headed by an individual over 65 with \$5,000 to \$10,000 of income. Using the BLS's published tables, the following table was constructed.

Table 1 Average Shelter Expenditures, 1988-89						
	Home Owners :					
	With Mortgages	Without Mortgages				
Reference person aged 34 to 44 years Income \$10,000 to \$15,000						
Estimated Rental Value of Home	\$5,400	\$5,400				
Principle and Interest Mortgage Payments	- 4,868	- 0				
Property Taxes	- 437	- 437				
Maintenance	- 690	- 690				
Net Imputed Value of Home	- \$595	\$4,273				

Table 1 - continued						
	Home Owners :					
	With Mortgages	Without Mortgages				
Reference person aged over 65 years Income \$5,000 to \$10,000						
Estimated Rental Value of Home	\$4,680	\$4,680				
Principal and Interest Mortgage Payments	- 2,700	- 0				
Property Taxes	- 490	- 490				
Maintenance	- 660	- 660				
Net Imputed Rental Value of Home	\$830	\$3,530				

These cases illustrate the possible variation in net imputed rental values that could occur in the population and provide a numeric basis to explain why or why not this addition should be made to a household's resources. In principle, the net imputed value of the home reflects the amount of money the household could receive if they moved out of their home and rented it to another household and continued to make the needed payments required to maintain ownership. For example, the elderly household who owns their home and does not have a mortgage could rent their home for \$4,680 but would still have to continue paying taxes and maintaining the property and hence would have \$1,150 of expenses. The net return from renting would then be \$3,530, which the household could use in addition to their other resources to meet not just their housing needs by renting another house but also their other needs. On the other hand, consider the young household who has a mortgage. While their home could rent for \$5,400, the household's expenses of keeping the home would exceed the potential rent by \$595. In this case, it would be unwise for the household to move out of their current home because they could not rent an equivalent home with their current resources. For that reason, the net imputed rent would be set to zero in this case.

While this discussion provides a story which justifies adding the net imputed rental value to the household's resources, it also points to some of the problems with this approach. To realize this potential household resource, the household has to move. This is not a costless exercise and in fact for some, perhaps especially for the elderly, moving could represent a large cost. The Panel in recommending to subtract the household's work related expenses, recognized that the cost of earning income should not be counted in the household's resources. It seems only consistent then to deduct some minimum cost of having to move if we are going to consider the net imputed rent to home owners. Some might suggest that the financial costs are small compared to physic costs of relocation and hence the previous argument is not relevant. But the Panel in rejecting a potential income concept of resources, such as embodied in the earnings capacity approach, did in fact accept the notion that physic costs are relevant. For labor and capital

income, the Panel proposed to consider only the actual income the household received not the amount of income they could have obtained if they had worked or invested up to their potential. If the reason why individuals are not earning their potential income is because of the physic costs they would incur if they did, then the Panel implicitly reasoned that physic costs should indeed count. This line of reasoning suggests that the full value of net imputed rental income households receive should be not be counted and if it is, it most likely overstates the value of the home to the household.

In constructing this table from the BLS's tables, it was impossible to distinguish differences in expenditures on property taxes, maintenance or the estimated rental value between home owners with and without mortgages. Thus the difference in the net imputed value of the home for these two groups is equal to the principal and interest payments which is paid by the homeowner with a mortgage. In reality, we would expect to see differences not only in mortgage payments but in all other components of the net imputed rental value. But given the relative magnitude of mortgage payments, it is anticipated that the greatest variation in net imputed rents will be created by whether or not the household has a mortgage. These examples provide some evidence that this may be the case.

The two examples in Table 1 also illustrate how our assumption may create biases in our calculations of the net imputed rent. Recall for homeowners who have mortgage payments, we will be assigning a value of zero for the net imputed value of the home. In the case of the younger household, the costs of owning the home exceed its estimated rental value, while for the elderly household, the opposite holds. These examples suggest that assigning a value of zero to both groups would create a bias in favor of categorizing too many elderly home owners with a mortgage as poor since this group on average has a positive net imputed value to their home. But averages are just that, averages. We would expect there to be a distribution of net imputed rental values around this mean, implying that even within the group of households headed by an individual 35 to 44 years old, there would be some households who would have a positive net valuation even though a zero would be assigned. Conversely, for those elderly households with a mortgage, there would be some households who would have negative net valuation where a zero value would indeed be correct.

For those households who do not have a mortgage, we first need to impose the cap implied by the proportion of the household's total needs which are deemed for shelter expenses (housing minus utilities), $\Theta_S T$. The average number of persons in the younger household was 3.0 individuals, while there were 1.4 individuals in the elderly household. Taking the \$14,800 reference family of four threshold which the Panel used to illustrate their recommendations back into 1989 dollars yields a threshold of \$12,986. Using the equivalence scale formula recommend by the Panel, the relevant threshold for the younger household would be \$11,532, and for the elderly household the threshold would be equal to \$6,624.

Determination of an appropriate value for Θ_S is more problematic since the Panel never decomposed the threshold into its components. To arrive at a reasonable "guess" for the proportion of the threshold devoted to shelter, the following average spending patterns for a family of four from the 1989 Consumer Expenditure Survey will be helpful. Taking the average spending amounts for food, housing (shelter plus utilities), and clothing for the four person family, they spent \$15,933 on these three commodities. Using the midpoint of the Panel's suggested range for the multiplier which represents other non-medical and nonwork related necessities, we would arrive at a "threshold" for the family of four based upon average spending levels of \$19,120. Based upon this "threshold", shelter expenditures are 32 percent of the household's needs. An alternative approach to this calculation would be to include the net imputed value of home ownership for home owners. The average net imputed rental value reported in the CEX was \$962. If this amount was included in these calculations, the proportion of the threshold devoted to shelter would rise to 35%. However, this average value should be treated with caution since it was based upon average values and hence negative net imputed rental values could not constrained to zero. Thus this average is most likely too high. Based upon these calculations, the range of 30 to 35 percent would seem reasonable for a value of Θ_S but for illustrative purposes, we use 32% in the following discussion.

Table 2						
Average Annual Spending Pattern	s for a Four	Person Unit from	the 1989 CEX			
		Average Spending	Percent of FHC+			
Food		\$5,567	29.1%			
Housing ⁶		\$8,238	43.1%			
Owned Dwellings (72% of sample) : Principal and Interest Property Taxes Maintenance and Repair	\$3,577 668 505					
Rented Dwellings (28% of sample) : Rental Payments	\$1,282					
Utilities	\$2,206					
Clothing		\$2,128	11.2%			
FHC		\$15,933				
FHC+ = 1.20 x FHC		\$19,120				
Housing (Total) - Utilities		\$8,238 - 2,206 \$6 032	43.1%			
Sneller		Ф0,03 2	31.0%			

Utilizing these values for Θ_S and T, we would cap the net imputed rental value at \$3,690 (= .32 x \$11,532 -- 32 percent of the threshold for the younger household) for the younger household and \$2,210 (= .32 x \$6,624 -- 32 percent of the threshold for the older household) for the older household. Comparing these caps with the estimates reported in the 1989 CEX of the average net imputed rental values of \$4,273 for younger households and \$3,530 for older households, the caps would significantly limit the amount of "rent" imputed to these householders. Again this would be true only on average and because the distribution of net imputed values even for this group could be wide, there could be a significant number of households which incorrectly are placed at the cap.

 $^{^{6}}$ Note that these amounts are the average amounts over the entire sample. For example, renters do not on average pay \$1,282 on rent. This amount reflects that 72 percent of the sample do not pay rent and the remaining 28 percent have average annual rents of \$4,579 or \$382 per month.

The inclusion of an imputed rental value for home owners makes sense if one is trying to account for the assets of the household and how they may be utilized to meet the household's needs. However, although many households hold their wealth in a home, it does not seem consistent to consider home ownership and ignore other assets if one is truly concerned about the extent to which a household can meet some minimum consumption level. Yet, the above treatment of home ownership is consistent with an alternative view of poverty which focuses entirely upon income flows into the household and hence ignores Consistent with the Panel's approach to poverty measurement, it would be reasonable to ask assets. whether household had at its disposal, a dwelling in which it could live and hence meet its shelter needs. Even though the household owned the home, it still would have expenditures to keep the home as shelter. Households without mortgages would still have to pay property taxes and have maintenance and repair expenses. The above figures indicate that on average, these expenditures represent 25 percent of shelter costs. While these households would need to make these expenditures, their needed shelter expenses would be 75 percent less than those households who did not own or who did own but had a mortgage. This line of reasoning would suggest that home owners without mortgages should have a threshold which is lower than other households by .75 Θ_{ST} . This reduction in the threshold for the household would be equivalent to adding the same amount to the household's resources. Using the same logic, one would not either add to the household's resources or subtract from its threshold if the household rented or owned a home but had a mortgage. Presumably both of these kinds of households will have to have income sufficient to the full cost of its shelter needs which does not imply that they will necessarily spend that amount on shelter.

This second justification for the treatment of home ownership is a direct rationale for its use and is not a justification based upon an approximation to some ideal procedure. However, the range of values for Θ_S would be different than before. Instead of the reasonable values for Θ_S ranging from 30 to 35 percent, this argument would suggest the appropriate range would be roughly 75 percent of that range or 25 to 30 percent.

The Impact of Home Ownership on Poverty

While the March CPS contains information on whether or not a household owns its home, it does not contain data on whether or not the home owner is paying a mortgage. To implement the proposed treatment of home ownership, we have to impute whether or not the household had a mortgage. A very conservative approach would be to assume that all home owners do not have a mortgage. In this case, if the household own its home, a value of .75 $\Theta_{S}T$ was added to the household's resources.

TABLE 3								
Proportion of Home Owners Who Do Not Have a Mortgage by Age of Head and Before Tax Income (in parenthesis is the proportion of households who own their homes)								
	Before Tax Income (1989)							
AGE		less than \$5,000	\$5,000 to \$10,000	\$10,000 to \$15,000	\$15,000 to \$20,000	\$20,000 to \$30,000	\$30,000 to \$40,000	greater than \$40,000
Less than 25		100.0% (1%)	50.0% (4%)	40.0% (5%)	25.0% (12%)	29.4% (17%)	31.0% (29%)	7.3% (41%)
25 - 34		44.4% (18%)	47.1% (17%)	23.8% (21%)	21.9% (32%)	12.2% (41%)	7.6% (53%)	5.6% (72%)
35 - 44		19.4% (36%)	26.7% (30%)	16.1% (30%)	25.0% (44%)	18.6% (59%)	13.7% (73%)	4.6% (87%)
45 - 54		45.6% (57%)	58.1% (43%)	45.7% (46%)	40.7% (59%)	24.6% (69%)	19.5% (77%)	15.6% (90%)
55 -64		60.0% (55%)	62.5% (56%)	61.6% (73%)	60.3% (78%)	55.4% (83%)	48.9% (88%)	36.8% (95%)
Greater than 65		81.8% (55%)	85.5% (69%)	86.3% (73%)	76.2% (84%)	76.1% (88%)	71.6% (88%)	65.6% (93%)
Source : Consumer Expenditure Survey, 1988-89, BLS, Tables 23 to 28								

However, such an assumption is quite unrealistic. From BLS publications, we see that home ownership and the proportion of home owners who do not have a mortgage varies greatly by age of the head of the household and income as is demonstrated by Table 3. To impute whether or not a reported home owner had a mortgage, I used the probabilities contained in Table 3 along with a random number generator. For each home owner, I drew a number from a uniform random number generator. If the number was less than the probability for the household's characteristics, then the household was assumed not to have a mortgage and a value of .75 $\Theta_{\rm S}$ T was added to the household's resources. If the number exceeded the probability, then the household was assumed to have a mortgage and nothing was added to its resources.

The following table reports the impact of the proposed treatment of home ownership on the poverty rate of the total population, of children, and of the elderly. The final column reports the proportion of the poor population which owns a home. These figures are reported for the current poverty definition, for the Panel's recommendations, and for the proposed treatment of home ownership in addition to the Panel's recommendations. For the proposed treatment of home ownership, three values of Θ_S were utilized to explore the sensitivity of the results to the choice of .75 Θ_S .

Table 4							
Alternative Poverty Rates in 1992 and Percentage of Poor Who Own Their Homes							
	Total	Poverty Rates of Children	: Elderly	Percent of Poor Who Own Homes			
Current Definition	14.5%	21.9%	12.9%	33.5%			
Panel Recommendations (\$14,800 and F = .70)	19.0%	25.8%	22.2%	40.6%			
Correction for Home Ownership :							
Assuming No Mortgage if Owned H	ome:						
$.75 \Theta_{S} = 25\% .75 \Theta_{S} = 30\% .75 \Theta_{S} = 35\%$	15.7% 15.2% 14.8%	22.3% 21.8% 21.3%	15.9% 14.9% 14.1%	28.2% 26.0% 23.8%			
Imputation of Having a Mortgage :							
.75 $\Theta_{S} = 25\%$.75 $\Theta_{S} = 30\%$.75 $\Theta_{S} = 35\%$	17.4% 17.1% 16.9%	24.7% 24.5% 24.3%	16.9% 16.1% 15.4%	35.0% 34.1% 33.2%			

As noted previously, the Panel's recommendations not only raised the overall rate of poverty but the rates of children and the elderly. These recommendations also lead to a closing of the relative gap in poverty rates of children and elderly as well as leading to a higher proportion of home ownership in this redefined poverty population. As one would expect, placing a value on home ownership lowers the poverty rates for all groups but the poverty rate of the elderly appears to be much more sensitive to the treatment of home ownership. While the results based upon the assumption that all home owners do not have a mortgage provides a useful benchmark, I do not place much confidence in these results. At best they represent a lower bound for poverty rates which would be implied by considering home ownership along with the Panel's recommendations. As such they inform us that the net impact of the recommendations as well as the proposed treatment of home ownership would leave the number of poor children relatively unchanged and increase the poverty rate of the elderly. However, the relative gap in poverty rates would not be closed as much as predicted by just the Panel's recommendations. But what is interesting is that roughly 25 percent of the poverty population would continue to be home owners, implying that there are a significant number of households whose income is not sufficient to meet their non-shelter needs.

Turning to what I consider to be the more realistic situation where mortgages are being imputed to the file, we find the poverty rate of children and of the elderly to be insensitive to the choice of Θ_S . Compared to the current definition, the poverty rates of children and the elderly would rise but the relative gap in their poverty rates would only slightly close. Based on these imputations, the proportion of the poor population who were home owners would remain roughly unchanged.

Conclusions

As we suggested in the previous paper, the ownership of a home has a significant impact on the poverty rates of the elderly. But one clear message from these calculations is that the full impact of the Panel's recommendations, even after considering the ownership of a home, will lead to more elderly being counted as poor. While our treatment of home ownership has dampened the impact of the other recommendations, this result remains.

But one question does remains, should home ownership provide sufficient cause for special consideration in poverty measurement? While traditional economic reasoning has led others to conclude that it should directly enter via the addition of the net imputed rental value of the home, I am not convinced by this reasoning. What I find convincing is the observation that if a home owner does not have a

mortgage or has a small mortgage, then they will have a greater ability to finance their needs compared to an identical household who rents. The logic behind this justification leads me to suggest that what should be added to home owners' resources is the difference between the portion of the household's shelter needs which do not reflect property taxes, maintenance, and repairs expenses (approximated by .75 Θ_S T) and the amount of mortgage paid by the household,

Maximum (.75 Θ_S T - Mortgage, 0).

If the difference is negative then zero would be added. For those households without a mortgage, the maximum amount, .75 Θ_S T, would be added to the household's resources reflecting that this portion of the shelter needs have been met.

The primary advantage of this approach is that it focuses directly upon the ability of the household to meet its needs given its current situation and not a hypothetical situation envisioned through the use of the net imputed rent. The second advantage is that this approach would require only one additional question (the amount of the mortgage paid) on the March CPS and none on the SIPP data. It would be possible to implement without much difficulty.