Luxembourg Income Study Working Paper Series

Working Paper No. 39

Horizontal Equity and the Redistributive Impact of Housing Allowance Programs in Norway and Sweden

Jeff Ankrom

November 1989

(scanned copy)

Luxembourg Income Study (LIS), asbl

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Jeff Ankrom

Wittenberg University

Department of Economics

P.O. Box 720

Springfield, Ohio 45504

U.S.A.

I wish to thank Johan Fritzell and Joakim Palme of the Swedish Institute for Social Research for their numerous helpful comments. This paper was written while I was a guest at the Institute. I also wish to thank the Center for the Study of Population, Poverty, and Public Policy (CEPS), which houses the Luxembourg Income Study (LIS) project, for making these data available. Special thanks to John Coder, who tolerated my programming abilities.

ABSTRACT

This study examines the redistributive impact of housing allowance programs in Sweden and Norway. Familiar concepts, horizontal and vertical equity, are used to show that policies designed to reduce vertical inequities often introduce horizontal inequities that weaken the redistributive impact of government transfer programs. Horizontal inequities occur when "equals" are treated differently, and in this study, "reranking" which may occur in the process of giving housing allowances, constitutes an inequity. Vertical equity demands that unequals be treated differently, and this principal may require that income dispersion be reduced. The normative principal that incomes should be compressed is not questioned in this study. However, the redistributive effects arising from horizontal and vertical components are distinguished and measured for both Norway and Sweden.

MEASURING REDISTRIBUTION

Consider a simple society composed of five families with market incomes, taxes, transfers, gross and net incomes as shown in Table 1. Market incomes are distributed unevenly, and if the goal of the tax and transfer system is to compress incomes, this goal is certainly accomplished. In this example it is also worth noting that taxes and other transfers (housing allowances excluded) preserve the market income ranking. However, observe that housing allowances have the effect of reranking families B and C. C's market, post-tax, and post-other-transfer incomes are higher than B's, but C's net income falls below B's.

TABLE 1 about here

If one calculates Gini coefficients for market income, gross income, and net income with and without reranking, an interesting result emerges. The market income Gini is .482, reflecting a relatively high amount of inequality. Taxes and non-housing transfers push the Gini down to .1996, a clear improvement if the policymaker's goal is to compress incomes. Again, this was accomplished without reranking. The concentration index (Cn), which assumes that the incomes in column 6 are not reranked, is .1643 while the net income Gini (Gn) allowing column 6 incomes to be reranked equals .1652.

The difference between Cn and Gn of .0009, as Kakwani (1980) and Jenkins (1988) have shown, has an interesting interpretation. In this context it may be viewed as an index of the magnitude of horizontal inequities (1) introduced by the housing allowance program. More formally, the redistributive effect of the housing allowance program (Rh) may be decomposed into vertical (Vh) and horizontal (Hh) components:

$$Rh = Vh + Hh = \left(\frac{e}{1+e} \cdot Ph \right) + (Cn - Gn) \qquad \text{(Eq. 1)}$$

where

e = total housing transfers/total gross income

= average transfer rate

Ph = (Gg - Ch) = expenditure progressivity index

Ch = concentration index of housing allowances

and Gg = Gini index for gross income.

This expression shows that the redistributive effect of transfers is determined by the amount of reranking (captured by Cn - Gn), the fraction of national income devoted to housing allowances (e), and expenditure progressivity (Ph). Because the interaction of these three factors is complex, a number of unintended effects can arise. For example, it is possible that a rise in e (ie. society decides to devote more resources to housing allownces) can significantly change Hh and Vh even though Ph has not changed (ie. the poorest i percent of the population receive the same percent of allowances before and after the decision to commit more resources.). Also, a rise in Ph

accompanied by a constant e (ie. society decides to give the very poor a higher share of a fixed stock of housing allowances) can change Hh and Vh. In both cases it may happen that Hh falls (becomes more negative), V rises, and because the H effect swamps the V effect, R falls. (2)

How could the housing allowance program of Table 1 be "reformed"? If the goal were to maximize R, keeping H=0 and spending no more than $120, transfers of $83.32 for A, $23.33 for B, and $13.35 for C are required. If the program goal is to redistribute income no further (ie. R=H=0), then transfers of $16.56, $19.20, $19.68, $28.68, and $35.88 are required. Note that in this case the share of total housing allowances going to each family is the same as that family's share of the total gross income. In fact, this is a simple rule which could be applied to determine each family's housing allowance. Finally, a simple change which could keep V = .0353 but eliminate horizontal inequities would be to give family B $5 less and family C $5 more in housing allowances.

Since these interactions are so complex, it is worth investigating the redistributive effects of housing allowance programs in Norway and Sweden. In the following sections the redistributive impact of housing allowance programs in these two countries is investigated. Special attention is given to properly decomposing this impact into horizontal and vertical components, and to further investigation of horizontal effects as outlined above.

FAMILY SIZE AND EQUIVALENCE SCALES

In the example of Table 1, no reference was made to the number of persons in the family. It certainly matters whether family C (with $400 income) contains four or two members. How can family income be related to family well-being per person? A simple yet appealing procedure has been proposed by Buhman, Rainwater, Schmaus, and Smeeding (1988) that accounts for joint consumption possibilities within the family. Let:

$$W = \frac{Y}{S^{e}} \qquad \text{(Eq. 2)}$$

where:

W = well being per person in the family

Y = family income

S = family size

e = equivalence elasticity coefficient ($0 < e < 1$)

In this formulation, W increases as family size increases but at a decreasing rate. In other words, two persons living together find it more expensive to do so, but it will not be twice as expensive unless e = 1. In the case where e = 1, well-being per person is equal to income per person, implying that there are no joint consumption

possibilities in family living. If e = 0, family well-being per person is identical to family income, suggesting that any number of persons can live as cheaply as one. Clearly, e must be between 0 and 1, and the size of e determines how significant joint consumption possibilities are assumed to be. In this study e = .54 (3), suggesting that income in a two person family must be 45 % higher than in a single person household if W is to be maintained. Similarly, family income must rise again by 36 % and 30 % as third and fourth persons are added, to maintain W (4).

DATA

Data used in this paper are found in the Luxembourg Income Study (LIS) data set, which attempts to create data that comform to standards designed to allow cross-national comparisons. The Swedish data are from the 1981 Swedish Income Distribution and Level of Living Survey, while Norwegian data are from the 1979 Norwegian tax files. There are approximately 10,000 sample units in each survey, and a very large number of income concepts can be constructed for all countries. The family is the unit of analysis for reasons explained above.

Table 2 summarizes the relation between "gross" and net income. All market income, taxes, and transfers (excluding housing) are included in gross income. The focus of this study is exclusively on the redistributive impact of housing allowances. If the focus were elsewhere, one would of course define gross income differently. This methodological choice attributes redistributive effects exclusively to housing allowances.

TABLE 2 about here

EMPIRICAL RESULTS

Table 3 displays values for Norway and Sweden for key indices and index components discussed above. The results show that for Sweden, nearly half of the redistributive effect of housing transfers which would be accomplished by pure improvements in vertical equity are lost to violations in horizontal equity. The pure vertical equity, improvement (V) is significant. The Gini for post tax and transfer income (excluding housing allowances) is .3108 for all receivers of housing allowances. With the addition of housing allowances, significant income compression occurs because e is large and because Ch is negative. The interpretation here is that Sweden devotes a large pool of funds to housing allowances (e = .1529), and that they are distributed generously to persons with low market incomes. (5)

TABLE 3 about here

This is not necessarily a bad result if it were not for the fact that significant horizontal inequities are introduced by the housing allowance program. Hh is half the magnitude of Vh, a surprisingly large loss, especially when we consider that family size has already been accounted for by the use of equivalance scales, and considering that all taxes and other transfers are included in " gross" income. Thus, the methodology appears to be conservative, and yet large horizontal inequities appear to be present in the Swedish housing allowance program.

For Norway the housing allowance program is smaller (e = .051), assuring that Vh will be smaller for Norway (.0205 vs. .0522 for Sweden). Note that in some respects the Norwegian program is more efficient than its Swedish counterpart. The ratio of Norwegian to Swedish Vh is .4 suggesting that the Swedish housing allowance program is much more effective in compressing incomes. However, the ratio of Norwegian to Swedish Rh rises to .74 because Swedish Hh is so high relative to Norwegian Hh. Simply stated, much of the Swedish redistributive impact resulting from compression is lost due to reranking.

CONCLUSIONS

The policy implications in these findings are clear. The hypothetical housing allowance program like that constructed in Table I uses the housing allowance program to correct market incomes inequality. The size of the allowances in column four of Table 1 may

seem intuitively appropriate if one observes the maldistribution of market incomes. However, since taxes and other tranfer programs in Norway and Sweden already remove much of the inequality associated with market incomes, one must view the goals of housing programs in a different light. It now becomes problematic if housing programs introduce such significant horizontal inequities, especially if further compression of incomes is not accomplished.

There is of course evidence that Swedish policymakers are using the housing allowance program to correct inequalities in market incomes (the concentration index (Ch) for Sweden is -.0828.) Ch will equal -1 in the case where the family with lowest gross income gets all housing allowance money available to the program. Ch equals +1 if the wealthiest family gets all allowances, and will equal 0 if all families get equal sized allowances. The progressivity index (Ph) is .3936, which implies a significant contribution to vertical equity improvements.

At least, policymakers in Norway and Sweden must link the size of housing allowances with a global income concept to minimize the introduction of horizontal inequities. It may be that recipients are qualified for allowances on the basis of faulty information in the hands of program administrators, that program design is faulty, or that administrators are using policy to consciously further shuffle the income distribution. Since the last option seems unlikely, attention must be paid to program design and administration.

The result of this paper suggests that housing allowance programs, especially in Sweden, could be more effective in achieving

the desirable and politically popular goal of reducing income dispersion. Because significant horizontal inequities appear to be introduced by housing allowance programs, resources devoted to these programs are less efficiently deployed than could be the case.

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TABLE 1. The Redistributive Effect of Taxes and Transfers

	(1)	(2)	(3)	(4)	(5)	(6)
Family	Market Income	Taxes	Non-Housing Transfers	Gross Income	Housing Allowance	Net Income
A	100	0	270	370	55	425
B	300	30	160	430	40	470
C	400	60	100	440	25	465
D	800	200	40	640	0	640
E	1200	400	0	800	0	800

Components of Equation 1:

Gg= .1996 e= .04478 Rh= .0344

Cn= .1643 Ph= .8246 Hh= -.0009

Gn= .1652 Ch= -.625 Vh= .0353

TABLE 2. The Relation Between Gross and Net Income in This Study

+ wages and salaries
+ self employment income
+ family benefits
+ pensions
+ social security
- income taxes
- payroll taxes
- wealth taxes
= Gross Income
+ housing allowances
= Net Income

TABLE 3. Redistributive Impact of Housing Allowance Programs

Country	Go	Cn	Gn	H	V	R
Sweden	.3108	.2586	.2845	-.0259	.0522	.0263
Norway	.3889	.3684	.3695	-.0011	.0205	.0194

	Ph	e	Ch
Sweden	.3936	.1529	-.0828
Norway	.4227	.0510	-.0338

Notes:

a. The sample population is all receivers of housing allowances.

b. Equivalence scales are used to transform all data.

NOTES

(1). Plotnick (1985) discusses the normative aspects of this issue, distinguishing horizontal and vertical equity while offering a thorough summary of different ways to measure horizontal inequities.

(2). Kakwani (1984, 162-63) provides an interesting discussion of this issue.

(3). This is the average implied by official poverty lines used in eight countries: Switzerland, Sweden, The United States, The United Kingdom, Australia, The Netherlands, and Canada. See Buhman, Rainwater, Schmaus, and Smeeding (1988) for details.

(4). O'Higgins, Schmaus and Stephenson (1989) discuss equivalence scales in depth and examine their impact on measurement.

(5). The interpretation of Ch is extremely important for this study. That Ch is negative suggests that the poorest i % of the population receive more than i % of housing allowances, for all $0 < i < 100$. Ch is constructed by calculating a Gini-like index of the distribution of housing allowances, ranked by an appropriate income concept. Returning to Table 1, Ch is determined by calculating the concentration of column four figures ranked by gross income.