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Volume Author/Editor: Charles T. Clotfelter

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Chapter Author: Charles T. Clotfelter

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4 Volunteer Effort

Pervasive but difficult to quantify, volunteer work has been widely regarded as a vital component of charitable activity in the United States. Despite the historical trend toward greater professionalism in public and private social-welfare agencies, volunteers have remained an important source of skilled labor in many organizations. A Gallup survey in 1981 estimated that over half of American adults and teenagers did some volunteer work during the year, either for an organization or informally (Gallup Organization 1981, p. iv). Based on data from this and one other recent survey, Weitzman (1983) has estimated that the market value of the time spent by volunteers is in the range of $54 to $65 billion in 1980 dollars.[1] Although the proper valuation of volunteer time involves more than simply applying market wage rates, such estimates suggest that the resource cost of volunteering is probably at least as large as aggregate contributions of money, which totaled about $40 billion in 1980.[2]

Recent federal administrations have made a special point to encourage volunteering. From John Kennedy's call for VISTA and Peace Corps volunteers to Ronald Reagan's establishment of a Presidential Task Force on Private Sector Initiatives, there has been an implicit understanding that volunteering may serve social goals more effectively or less expensively than government spending programs. President Reagan made this an explicit part of his administration's program: "Voluntarism is an essential part of our plan to give the government back to the people" (*Washington Post,* 8 October 1981).

1. $54 billion figure is based on estimates of $31.9 billion for 1973, using the National Study of Philanthropy. The $65 billion figure uses the Gallup survey for 1981. See Weitzman 1983, p. 270, table 1.

2. See, for example, *Giving U.S.A.* 1983, p. 36.

What defines charitable voluntary work? Normally, volunteers receive no pay, although they may receive reimbursement for expenses. Most volunteering is done under the auspices of private nonprofit organizations, but public agencies also make use of volunteers. Surveys of volunteers usually ignore work for unions and professional societies, and some exclude work in religious organizations dealing primarily with worship and religious education. Another distinction is made between work done for organizations and help provided informally, such as helping neighbors. Since it is more difficult to measure precisely, such informal help is sometimes excluded in measures of volunteer effort. Finally, there is no generally accepted minimum amount of time or effort required to be classified as a volunteer.

Despite these inevitable ambiguities, it is possible to get some idea of the extent of volunteering from recent surveys. In 1981 the Gallup organization formulated two measures of volunteer effort for use in household surveys. In a survey taken in September, respondents were asked if they were "involved in any charity or social service activities, such as helping the poor, the sick or elderly." By this measure, 29 percent of adults were volunteers, implying a total force of volunteers, cited above, of at least 40 million Americans ("Americans Volunteer: A Profile" 1982, p. 21). In a March survey, on the other hand, volunteering was defined much more broadly to include all volunteer work for religious organizations as well as informal helping. By this measure 52 percent of adults, some 80 million in all, had volunteered during the previous year (Gallup Organization 1981, pp. i–iv.; Hodgkinson and Weitzman 1984, p. 26). Numbers such as this are often cited to illustrate the importance of voluntary action as an alternative to government in dealing with social concerns.

In recent years, however, there has been a growing concern that the number of volunteers may be on the decline. Established nonprofit organizations have reported reductions in the number of members and volunteers, particularly among women. For example, the League of Women Voters reported a decline of about 8 percent in its membership between 1978 and 1980 (*Washington Post,* 23 May 1980). In the decade between 1969 and 1979, the American Red Cross reportedly lost a third of its over 2 million volunteers.[3] It is impossible to determine with much precision the overall decline in volunteers, however, because comparable survey data over time are not available.

The purpose of this chapter is to examine the effect of the tax structure on volunteer effort. This effect may be direct, for example, through deductions for expenses incurred in volunteering. Or it may be indirect, through the effect of taxation on labor force participation and hours of

3. *Durham Morning Herald,* 2 August 1981. See also McGuire and Weber 1982, p. 5; *Washington Post,* 27 April 1980; and *New York Times,* 16 April 1978.

work. Another possible indirect effect is that the income tax may stimulate volunteering through its encouragement of monetary gifts, which would be the case if contributions and volunteering are "complementary" goods. Section 4.1 presents tabulations on the extent of volunteering and characteristics of volunteers, and section 4.2 describes the federal tax provisions relevant to volunteer activity. Section 4.3 examines the question of the tax effects on volunteering within a simple economic model of individual choice. Sections 4.4 and 4.5 discuss econometric analyses of volunteer work—the former reviewing previous studies and the latter extending this work to look at the volunteer effort of women. The final section discusses the implications of theoretical and empirical work for tax policy.

4.1 Extent and Characteristics of Volunteer Effort

There is substantial variation in the kinds of work done and the frequency of volunteering by population groups. Table 4.1 provides detail about the kinds of organizations volunteers worked for during the year 1981, where volunteering is defined broadly to include all volunteer work in religious congregations[4] and informal helping. In fact, informal assistance and religious volunteering are the most frequently cited categories.

Table 4.1 **Percentage of Adult Men and Women Who Had Volunteered in the Past Year, by Activity, 1981**

Activity	Women	Men
Health	15	9
Education	15	8
Justice	1	1
Citizenship	6	7
Recreation	4	10
Social/welfare	5	4
Communication	6	6
Religious	22	16
Political	6	7
Arts and culture	3	3
Work-related	3	8
Informal/alone	28	17
General fund raisers	7	6
None	44	53
Number of interviews	793	808

Source: Gallup Organization, 1981, pp. 6–7.

Note: Percentages sum to more than 100 percent because multiple responses were allowed.

4. Religious volunteering may be divided between work done in community and traditional social-welfare projects, and work done in connection with education, administration, and worship activities that are entirely within the religious domain of the congregation. Although the former may be rooted in religious belief, it is often separated from the latter in classifying volunteer work. In table 4.1 both types of work are included.

Informal volunteering, done apart from any organization and including such assistance as helping a neighbor with repairs and baking brownies for a scout group, was cited by 17 percent of men and 28 percent of women. Religious volunteering was next with 16 and 22 percent, respectively. After these activities, women most often cited work in health and education, while men were most likely to work in recreational activities. From this tabulation, it is evident that men and women have somewhat different patterns of volunteer work. For both sexes, however, volunteering for religious groups exceeds that for any other organizational area and corresponds to the predominance of religious giving in individuals' contributions of money.

In order to examine variations in the rate of volunteer work, table 4.2 presents volunteering rates for men and women according to several demographic and economic characteristics. This table is based on a 1965 survey that excluded political, informal, and strictly religious volunteering. The overall rate of 16 percent is below the 29 percent figure for 1981 cited above, but the definitions are not comparable. For men and women, volunteering reaches a peak in the 35 to 44 age bracket. At every age, women volunteer at higher rates, with the difference being greatest in the 25 to 34 age group. Volunteering also varies by marital status, with married adults volunteering the most. The results for occupation reveal that men with high-skill occupations have very high rates of volunteering. In general, volunteering appears to be positively correlated to occupational status for both sexes.

The tabulation for labor force participation in table 4.2 shows that women who are not in the labor force are more likely to volunteer than those who are, but this relationship is reversed for men. A more detailed breakdown of volunteer work by hours of paid work is given in table 4.3. Among men, those working from 1 to 34 hours per week volunteered the most at each age level, with those employed 35 hours or more per week behind them. Men not working volunteered the least. Among women, the pattern was less clear. For women over 35, those without a paying job were the most active volunteers, conforming to the traditional stereotype. For women under 35, those working less than 35 hours volunteered the most, reflecting perhaps the emergence of new patterns of labor force participation. Women working 35 or more hours per week volunteered the least.[5] Indeed, housewives have constituted one traditional source of vol-

5. The squeeze between job and volunteering is described by one woman: "While I work and am paid for 40 hours per week, earning a livelihood involves at least 50 total hours: one hour each midday and one hour daily commuting. In addition, I sleep 56 hours per week, prepare 11 meals weekly averaging one hour each, do minimum housework in 20 hours a week and shop for necessities one to three hours per week. From 168 hours per week I'm down to less than 40 hours of 'disposable time' and haven't hugged my son or husband. It is not true that 'almost everyone has time he can give' " (letter of Jo Ann M. Crane, *Wall Street Journal*, 5 January 1982, p. 30). For another illustration, see the *Washington Post*, 23 April 1980, p. B7.

Table 4.2 **Percentage of Adults Volunteering, by Sex and Other Characteristics, 1965**

Characteristics	Women	Men	Total
All adults	18.5	13.5	16.1
Age			
14–17	18.8	11.7	15.3
18–24	11.3	10.4	10.8
25–34	23.3	13.8	19.0
35–44	27.4	21.2	24.2
45–54	20.4	16.0	18.1
55–64	15.3	10.0	12.8
65 and over	9.6	7.6	8.7
Marital status			
Single	14.2	10.3	12.1
Married, spouse present	22.3	15.6	19.0
Other	10.4	4.6	9.0
Occupation			
Professional, technical	26.8	28.5	25.2
Managers, officials, proprietors	20.9	23.2	22.8
Clerical	18.6	13.6	17.1
Sales	20.1	20.9	20.5
Blue-collar	10.3	8.9	9.1
Service	13.6	18.5	15.2
Farm	17.7	14.2	14.8
Labor force participation			
Employed	17.5	15.3	16.1
Unemployed	13.8	7.0	10.2
Not in labor force	19.2	8.6	16.5

Source: U. S. Department of Labor 1969, p. 6.

Note: Excludes political, strictly religious, and informal volunteering. Covers the year ending November 1965.

unteers. This appears to be changing, however, as a result of the recent increase in women's labor force participation as well as hostility in the women's movement to traditional voluntary work.[6] Because of the importance of this shift for overall volunteering, it is useful to consider tax effects on the labor force participation of women.

Two further tabulations covering both men and women in 1981 are presented in table 4.4. They show that volunteering rises with household income and family size. Economic theory suggests that the value of time rises with both income and family size; thus the implicit cost of volunteer-

6. In 1971 and 1974 the National Organization of Women endorsed resolutions against volunteering in preference to paid work for women (*New York Times*, 16 April 1978).

Table 4.3 **Average Annual Hours of Volunteer Work by Employment, Age and Sex, 1973**

Age and Sex	Unemployed or Not in Labor Force	Employed 1 to 34 Hours per Week	Employed 35 or More Hours per Week
Women			
35 and under	68.5	84.8	37.1
	(275)	(115)	(252)
36 to 50	128.4	79.6	49.1
	(361)	(138)	(210)
Over 50	93.4	79.6	55.6
	(614)	(92)	(167)
Men			
35 and under	31.8	68.3	48.1
	(31)	(70)	(419)
36 to 50	38.1	148.2	93.9
	(17)	(34)	(602)
Over 50	58.1	129.6	90.8
	(271)	(91)	(542)

Note: Numbers of observation are given in parentheses. Volunteering was defined as unpaid work for religious and other charitable organizations.

Source: Tabulations from National Study of Philanthropy. See Morgan, Dye, and Hybels 1977 for a description of the data.

ing would go up with both. Other forces may work in the opposite direction, however. If volunteering is a normal good, demand for it will rise with income. The evidence in table 4.4, which is consistent with other findings that memberships in voluntary associations rise with social class,[7] suggests that this income effect outweighs the increase in the value of time. Similarly, volunteering appears to rise with family size despite the increase in the value of time, suggesting strongly that at least some volunteer work has the effect of providing services to a family's own children as well as to others.

In addition to tabulations by other variables, it is instructive to examine the variation in volunteering among households. Since hours of the day are distributed a good bit more equally than income, one would expect more uniformity in volunteering than in the giving of dollars. It is by no

7. Data reported by Warner and Lunt (1941, pp. 323–33) in their study of an American community they called Yankee City suggest that membership in voluntary associations rose with social class. The percentages of each class belonging to three or more associations were: lower-lower: 7.2; upper-lower: 12.1; lower-middle: 20.1; upper-middle: 37.9; lower-upper: 47.1; and upper-upper: 49.1.

Table 4.4 Adult Volunteers by Income and Household Size, 1982

	Percentage of Adults Who Volunteered	
	During the Year	More Than 36 Hours in the Previous 3 Months
Household income		
Under $4,000	40	5
$4,000 - 6,999	36	13
$7,000 - 9,999	35	16
$10,000 - 14,999	46	14
$15,000 - 19,999	53	15
$20,000 and over	63	24
Household size		
One	41	15
Two	47	15
Three	55	19
Four or more	59	21

Source: Gallup Organization 1981, pp. 19-21.

Note: Definition of volunteering includes informal helping as well as work for organizations.

means obvious, however, whether the propensity to volunteer is more or less equally distributed than the propensity to give out of income. In order to describe how the extent of volunteering differs among households, table 4.5 presents the cumulative percentages for volunteer hours and number of households based on a weighted sample of 2436 households in 1973 classified by amount of volunteering. Over 40 percent of households contributed no volunteer time at all. At the other end, the 8 percent of households volunteering the most hours accounted for over half of all volunteer hours. Figure 4.1 presents the corresponding Lorenz curve, which plots the cumulative percentage of households against the cumulative percentage of volunteering. Shown by the solid line, this curve illustrates the unevenness of volunteering in the population. For comparison, the comparable distribution of monetary contributions by income is also plotted, using a dotted line. Based on the available data, these curves show that the propensity to contribute out of income varies less over the population than the propensity to volunteer. The coefficients of equality calculated from these data are 0.30 for contributions and 0.23 for volunteering.[8] Because incomes differ, of course, the distribution of actual contributions by households is much less equal.

8. "The coefficient of equality" is defined as the ratio of the area under the curve to the area of the complete triangle that contains it. The higher the value of the coefficient of equality, the more even the distribution. Perfect equality would be signified by a coefficient value of 1.0.

Table 4.5 **Distribution of Volunteer Hours by Households, 1973 (percentage)**

Volunteer Hours per Year	Unweighted Number of Households	Weighted Percentage of	
		Households	Volunteer Hours
None	1028	42.2	0
1-29	317	13.0	1.1
30-59	139	5.7	1.7
60-99	136	5.6	3.0
100-199	272	11.2	10.7
200-299	160	6.6	10.9
300-499	180	7.4	20.0
500-999	153	6.3	29.9
1000+	51	2.1	22.6
TOTAL	2436	100.1	99.9

Source: Tabulations from the National Study of Philanthropy.

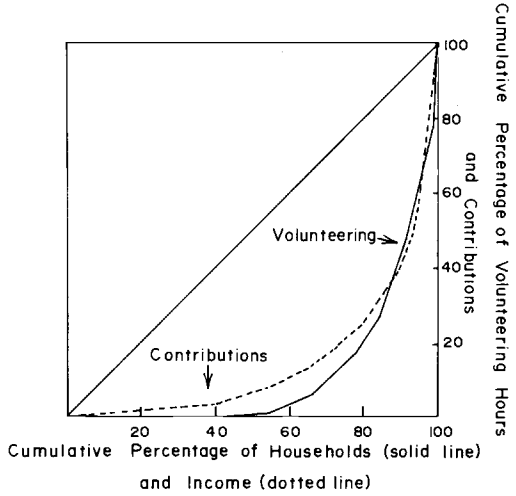

Fig. 4.1 Distribution of volunteering hours and contributions, 1973. *Source:* tables 2.3 and 4.5.

A final empirical issue that can be addressed with simple tabulations is whether contributions of money tend to go with volunteering. The notion that "money follows involvement,"[9] or the reverse, concerns the complementarity of the activities of contributing and volunteering. If people tend to do them together, stimulating one will also stimulate the other. If, on the other hand, contributions of time and money are substitutes, the en-

9. See James E. Kemper, *Wall Street Journal,* 22 December 1982, p. 20.

couragement of one would tend to come at the expense of the other. The possibility of a complementary relationship appears to be supported by surveys that have found that giving money and time do in fact appear to go together. The Gallup survey in 1981 using the broader definition of volunteering found that 91 percent of those who volunteered also gave money, compared to only 66 percent among those who did not volunteer (Gallup Organization 1981, p. 23). More detail is available in the 1973 Michigan survey of philanthropy, which included questions about contributions of time and money. Table 4.6 is a tabulation from that survey showing average hours of volunteer work for husbands and wives according to the couple's ratio of contributions to income. With few exceptions, the table shows that households contributing larger proportions of their income also volunteered more.[10] In addition, this effect appears to be stronger for men than for women. Whereas husbands average fewer volunteer hours in the bottom four classes, their volunteering exceeds that of wives in the next four. While these results suggest that contributions of time and money are complementary, they are by no means definitive since other variables are not held constant. The issue of complementarity is addressed below in considering the effect of income taxation on volunteering.

Table 4.6 **Average Annual Volunteer Hours by Ratio of Contributions to Income, Married Couples, 1973**

Ratio of Monetary Contributions to Income[a]	Wife	Husband	Total	N
0	24	20	44	85
0–.02	43	38	81	798
.02–.04	87	73	160	370
.04–.06	119	98	217	200
.06–.08	143	125	269	87
.08–.10	138	151	289	80
.10–.15	171	224	396	101
.15–.20	169	181	350	45
.20–.30	173	151	324	27
.30–.50	227	205	432	19
Greater than .50	155	246	401	39
TOTAL				1851

Source: Tabulations from the National Study of Philanthropy.
Note: Intervals are inclusive of the upper limit.

10. Morgan, Dye, and Hybels (1977, p. 174) present other tabulations supporting the same conclusion.

4.2 Tax Treatment of Volunteer Services

Two sets of provisions in the federal income tax relate to the contribution of volunteer time: First, the tax provisions concerning deductions for charitable contributions affect the attractiveness of money contributions—the alternative to volunteering—and refer specifically to volunteer services. As outlined in chapter 2, the charitable deduction was available before 1982 for taxpayers who itemized their deductions but was extended to nonitemizers beginning only in 1983. The tax code explicitly excludes the value of services contributed to charitable organizations in describing deductible items. Contributions of blood are also excluded (*1980 U.S. Master Tax Guide* 1979, sec. 1141, p. 414). Most expenses incurred in volunteering are, however, deductible as part of the charitable deduction. These include unreimbursed costs of transportation, telephone, meals, and lodging in connection with volunteer work. In contrast to deductions for business expenses, neither depreciation nor insurance costs are eligible for the charitable deduction. In addition, the mileage allowance is less than that allowed for business travel.[11]

Second, the tax treatment of volunteering is affected by more general provisions of the income tax, including the tax-rate schedule, the definition of taxable income, and special provisions for secondary earners. To the extent that volunteer activity is an alternative use of time to other nonmarket activities and work, the definition of taxable income and the schedule of tax rates are relevant to volunteering because they determine the income and substitution effects underlying a household's allocation of time. Special provisions for secondary earners, in particular, may affect household decisions about volunteering. Congress included in the 1981 tax cut a deduction for married couples for part of the second earner's income. Beginning in 1983 the deduction is scheduled to be 10 percent of the earned income of the spouse with lower income up to $30,000 (U.S. Congress, Staff of the Joint Committee on Taxation 1981, p. 35). Because this provision will in many cases cause the tax rate faced by the secondary earner to diverge from the tax rate at which contributions of money may be deducted, this special provision will tend to favor money gifts over contributions of time. In order to illustrate this and other tax effects on volunteering, it is useful to consider a simple example of a household's choice between money contributions and volunteering.

In assessing the tax treatment of volunteering, one question that can be raised concerns the neutrality of the tax system on treating gifts of money and time. That the tax law allows deductibility of the former but not the latter has been criticized by some.[12] Long (1977) demonstrates, however, that this traditional tax treatment is neutral, at least for itemizers. An ex-

11. In 1982, 8¢ per mile.
12. See, for example, Baird 1972.

ample will serve to illustrate this point. Consider a taxpayer who can make $10 by working another hour or can do an hour of volunteer work worth $10 to a charitable organization. Under these circumstances the charity will receive $10 worth of services whether the taxpayer volunteers for an hour or works an hour and contributes the proceeds. Neutrality would require that the tax treatment leave the taxpayer as well-off in one situation as in the other. Table 4.7 summarizes the tax treatment of gifts of time and money. In all cases, volunteering has no effect on taxes or disposable income since it is neither taxed nor deducted. For taxpayers who itemize their deductions, as shown in line (a), contributing one's earnings leaves taxes unchanged, the same as for volunteering. Thus the basic tax treatment of itemizers is neutral, which is Long's (1977) central argument.

The income tax was not neutral, however, in its treatment of contributions by taxpayers who did not itemize their deductions. Because contributions were not deductible against earnings at the margin, the tax made volunteering more advantageous, other things equal. In order not to lose

Table 4.7 Tax Treatment of Giving Money and Volunteering

	Change in Household's Tax Liability (in dollars)		
	Tax Increase Due to Additional Earnings	Tax Decrease Due to Gift	Tax Change
Tax treatment of earning and contributing $10; 30 percent marginal tax rate.			
Pre-1982 law			
(*a*) Itemizer	+3.00	−3.00	0
(*b*) Nonitemizer	+3.00	0	+3.00
Full charitable deduction for nonitemizers and deduction of 10 percent for second-earner income (itemizers and nonitemizers)			
(*c*) Primary earner works extra hour and contributes $10	+3.00	−3.00	0
(*d*) Secondary earner works extra hour and contributes $10	+2.70	−3.00	−0.30
Tax treatment of volunteering one hour	0	0	0

income, a taxpayer at the 30 percent tax bracket, for example, could choose between volunteering an hour or working an hour for $10, contributing $7 and keeping the remaining $3 to cover the increased taxes.[13] When the above-the-line deduction for nonitemizers is fully implemented, this distortion will be eliminated. The actual effect of this new deduction will depend, of course, on whether volunteering is encouraged more by the complementarity effect through the price of money gifts than it is discouraged by the end of this distortion.[14]

The new partial deduction allowed for the second earner will introduce a different distortion at the same time the itemizer/nonitemizer distortion disappears. If the primary earner works an additional hour and contributes the proceeds, the income tax will be neutral between gifts of time and money, as in line (a). If the gift comes from the secondary earner, however, giving money will be favored over volunteering. This distortion will not be large, of course, because the difference between spouses' marginal rates is small, being no higher than 5 percent when the basic tax rate is 50 percent.

4.3 Theory of Volunteer Work

The theories of helping and charitable behavior discussed in chapter 2 apply in much the same way to the contribution of time as to material gifts. In analyzing the kinds of volunteer work typically observed in American communities, it is not uncommon to discover elements of enjoyment, altruism, and self-interested consumption of family services and training underlying that work. Table 4.8 summarizes the responses to a survey of adult volunteers taken in 1981. When asked why they first became involved in volunteering, volunteers were most likely to say they wanted to help others or do something useful. Manifestations of this impulse range from the almost missionary fervor of the early March of Dimes to the pragmatic "we do it because it needs to be done."[15] The next most frequent response given by volunteers in 1981 was that they had an interest in the work (35 percent). Twenty-nine percent said they felt needed or thought they would enjoy the work. Indeed, some volunteer activity appears to include a not unsubstantial component of socializing and other

13. It is worth noting that the example assumes that the taxpayer can choose to spend an additional hour working. In addition, actual choices between earning-giving and volunteering would be affected by the taxpayer's productivity in a marginal hour spent in each pursuit. In general, the benefit to the charity from volunteering and giving money must be compared along with the change in tax liability. The definition of neutrality, however, is independent of either of these assumptions.

14. The theoretical analysis of this question is taken up in the next section.

15. See Sills 1957, p. 241, and *Raleigh News and Observer*, 13 December 1981. A New York man who does health-related volunteer work expressed a similar sentiment: "I do all this to help people in trouble. I couldn't pass anyone having a problem without doing something about it" (*New York Times*, 29 January 1977).

Table 4.8 Adults' Stated Reasons for Volunteering

Reasons	Percentage of Volunteers
Wanted to do something useful; help others; do good deeds for others	45
Had an interest in the activity or work	35
Thought I would enjoy doing the work; feel needed	29
Had a child, relative, or friend who was involved in the activity or would benefit from it	23
Religious concerns	21
Wanted to learn and get experience; work experience; help get a job	11
Had a lot of free time	6
Thought my volunteer work would help keep taxes or other costs down	5
Other	1
Don't recall	5
Number of interviews	(843)

Source: Gallup Organization 1981, p. 28.

Note: Adults in this survey were asked: "For what reasons did you first become involved in this volunteer activity?" Percent total exceeds 100 because more than one response per question was allowed.

enjoyment. For example, in a study of charitable activity in an English village, Obler (1981, p. 36) observes that

> private giving is an integral part of public, social life in Penridge. Hardly a week goes by when there is not a coffee morning, whist party, village fete, fashion show, concert, wine and cheese party, show and sell stall or an open garden day to raise money for some cause.

The historical social-class homogeneity of most voluntary associations may be a further indication of the social aspect of some volunteering.[16] Twenty-three percent of the 1981 sample of volunteers had a child, relative, or friend involved in the activity or would benefit from it, suggesting a somewhat different consumption motive for volunteering. Twenty-one percent expressed a religious motivation, which could certainly be related to the most frequently given response described above. The final response named by more than 10 percent of the sample was a desire to obtain work

16. Warner and Lunt (1941, pp. 118, 303–33) found that most voluntary associations in Yankee City were homogenous in social-class composition, with upper-class women dominating the membership rolls of charitable organizations.

experience (11 percent). Some volunteer coordinators have said that career aims are important for a growing number of volunteers, particularly women who have been outside the labor force (*New York Times,* 29 January 1977).

There are, in short, several distinct classes of motivations for engaging in voluntary work. They may be summarized as *a*) giving, *b*) consuming, and *c*) investing. The giving component has much in common with contributions of material gifts, but the form of the gift may take on special significance, as noted below.

Volunteering may have a consumption aspect to the extent that it provides personal or family services or offers contact with others, camaraderie, and interesting experiences. It may have an investment aspect to the extent that it offers experience that can be useful in the job market. Needless to say, it is no more feasible to quantify these components than to distinguish them from altruistic motives in observing actual volunteer behavior. That volunteering may be enjoyable or useful, however, suggests that theoretical models need to incorporate these possibilities.

An individual often has the choice between contributing money or volunteering in support of a charitable organization's programs. The analysis of volunteering thus raises the question of what determines the form in which giving is carried out. To explain why individuals choose to volunteer, two kinds of reasons may be offered. One is that, for some people, the very motivation for giving may be tied to a desire to be personally involved to at least some extent with that giving. Such individuals would not be indifferent between contributing ten hours to a worthy cause and making a monetary contribution that would buy the equivalent amount of work. Quite a different explanation is suggested by the "new home economics," a body of theory that analyzes work in the home analogously to production in a firm, with home production being the function of material inputs and the time of at least one household member. According to this view, volunteering and donations of money can be viewed as inputs in the nonmarket production of the good "giving and helping," or "charity." By implication, households derive satisfaction from the final "output" of the production process, not from the hours of volunteer work or from the dollars of contributions. While a desire for personal involvement—the first explanation—would seem to place a lower limit on the amount of volunteering that an individual would find acceptable, the home-production model implies that a family's mix of donations and volunteering will depend only on its relative efficiency in volunteering and the value of time of household members.

4.3.1 Models of Taxes and Volunteering

As in the case of monetary contributions, it is useful to analyze the effect of taxes on volunteering in the context of a simplified economic model. Using this model, it is possible to distinguish several effects of an income

tax with a deduction for charitable contributions. Several issues are then dealt with in more detail, including the notion of "home production" of charity and the interaction between the time allocations of husband and wife.

Volunteering in a Simple Model of Giving

It is straightforward to extend the basic neoclassical model of consumer behavior to explain contributions of money and volunteering. The individual may be viewed as choosing the desired amount of contributions, volunteering, and leisure subject to an exogenous wage rate and the total amount of time available. Appendix C presents such a model, in which the individual values contributions, volunteering, leisure, and purchased commodities. The individual in this model will volunteer until the valuation of a marginal hour of that activity equals the after-tax wage rate, the same condition applying to the allocation of time for leisure.

This analysis implies that taxes can affect volunteering in several ways. First, any income effect of taxes will affect the marginal utility of income. A tax increase lowers net income and raises the marginal utility of income, thus reducing the equilibrium amount of volunteering. This implies that empirical work should account for the effect of total tax liability on net income. Second, changes in the marginal tax rate influence volunteering by changing the shadow price of time. An increase in the marginal tax rate reduces the opportunity cost of volunteering and thus tends to increase volunteering. Finally, tax rules may affect the marginal utility of volunteering. One important way of doing this is by reducing the price of making donations of money. If donations and volunteering are *complementary* goods in the economic sense, reducing the price of one of them will tend to increase demand for the other.

The question of complementarity takes on central importance in considering whether U.S. tax laws have encouraged or discouraged volunteering. Since, on the one hand, the charitable deduction makes contributions of money less expensive relative to volunteering, one might suppose that volunteering would be discouraged, as compared to what they might have been without the deduction. But complementarity raises the opposite possibility. If contributions of money and time are complementary activities, the stimulation of the former through the charitable deduction would also encourage the latter.

Donations and Volunteering as Inputs to "Charity"

One important distinction to be made with regard to this general model is whether individuals place a value on the hours of volunteering they do, or whether they simply value the resulting charitable services that result. If one is willing to assume that individuals do not place such a value per se on the form of charity, it is possible to simplify the preceding model by

viewing donations and volunteering simply as two inputs used in producing the composite commodity, "charity." In this model the choice between donations and volunteering is assumed to be separated from other allocation decisions.[17] In the absence of the charitable deduction, the budget line is KL, with slope $(1\text{-}t)w$, as shown in figure 4.2. Allowing a full deduction for money donations changes the slope of the budget set from $w(1\text{-}t)$ to w. Clearly there is a substitution effect in favor of donations, shown here by the decrease in volunteering between points a and b. This is the detrimental effect of the deduction on volunteering. However, the income effect may outweigh this effect. If the amount of full income spent on charity remains a constant, the budget line becomes JL. If the deduction causes the individual to increase his total outlay for charity, however, the budget line would shift further out, say to $J'L'$. As drawn, this income effect dominates the substitution effect, and volunteering increases as a result of the deduction. Whether the income effect outweighs the detrimental substitution effect in general will be determined by two aspects of preferences: the "complementarity" of donations and volunteering, as shown by the curvature of the indifference curves, and the income elasticity of volunteering. If donations and volunteering were perfect substitutes, with indifference curves being straight lines, the deduction could cause the individual to switch entirely from volunteering to donations. Or, if volunteering were an inferior good (or had zero income elasticity), the

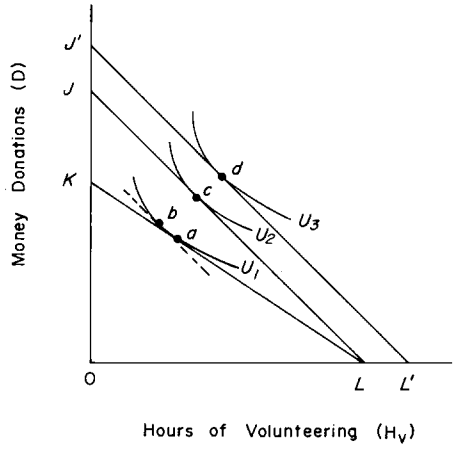

Fig. 4.2 Deductibility of contributions and individual volunteering. KL: no deductibility; slope = $w(1\text{-}t)$. JL: deductibility; slope = w. $J'L'$: deductibility with increase in budget for charity.

17. Separability implies that the marginal rate of substitution between volunteering and donations is not affected by the amount of other goods consumed. See Appendix C.

deduction would decrease volunteering. In general, however, the effects of the deduction are unclear in theory, and it is necessary to turn to empirical work to assess the effect of the charitable deduction on volunteering.[18]

Volunteering in a Model of the Household

One important feature missing from models of individual behavior is the possibility of interactions in volunteering among household members. Gronau (1973) presents a model in which husband and wife maximize household utility subject to time constraints. Where production is of the fixed-proportion form and each spouse has marginal cost functions depending on their shadow wage and the price of purchased inputs, the household's optimal allocation involves letting the lower-cost spouse do the production of a given household good. Gronau distinguishes between households in which both spouses work in the market and those in which only the husband works in the market. Because of the complexity of the various combinations of work, leisure, and home production, I focus here and in part 4.4 of this chapter on the important case in which only the husband works in the market. One reason for doing this is that it allows a straightforward test of the complementarity hypothesis. By observing nonworking wives in households with different prices for donations, it is possible to estimate the cross-price effect on the amount of volunteering.

If one views volunteering as one form of home production, Gronau's analysis (p. 641) implies that the effect of an exogenous increase in household income on the family's allocation of time between leisure, volunteering, and other home production will depend on the time-intensity of each activity, the income elasticity of each activity, and the substitutability of each spouse's leisure and volunteering, home production, and market goods. The increase in income will increase the value of the wife's time, but the net effect on her time allocation is uncertain.

Simultaneous versus Sequential Time Allocation

The neoclassical theory of the allocation of time described in this section pictures the individual or household making simultaneous decisions about how much time to spend in work, volunteering, home production,

18. A similar model is suggested by the theory of "home production." In this framework, volunteering—like other uses of nonworking time—is merely an input in the production of "homemade" commodities. Following Gronau's (1973) formulation, the household might value goods $Z_1, \ldots, Z_n$, each of which is subject to production functions of the form $Z_i = Z_i(X_i, H_i)$, where X_i is a market good and H_i is hours devoted to home production of Z_i. Gronau assumes fixed-proportions technology so that the marginal cost of producing Z_i is $MC_i = a_iP_i + b_iw^*$, where P_i is the price of X_i, w^* is the shadow price of time, and a_i and b_i are constants. Applying this assumption to the production of charity gives the marginal cost as $MC = aP + bw^*$, where P is the tax-defined price of making monetary donations. The assumption of fixed-proportion technology is, of course, the extreme of complementarity and was used only to highlight the possibilities for intrafamily allocations of time. In any case, the notion of home production of charity implies separability.

and leisure as well as how to spend money earnings. It is worth noting a sequential model in which some of these decisions are made before others. Specifically, it may be that the household first chooses the hours of market work, and only then decides how to allocate nonmarket work time between leisure, volunteering, and home production. To the extent that these nonmarket activities are similar to each other and hours of market work are often inflexible, this may be a reasonable model. If so, it highlights the importance of income taxation on labor supply as a determinant of volunteer effort. This model is considered further in section 4.5.

4.4 Empirical Analysis Related to Volunteer Work

In terms of the neoclassical model of time allocation, income taxation has three distinct effects on the supply of volunteer behavior by households. First, the income tax obviously affects disposable income and thus the demand for leisure and other forms of consumption. Second, the marginal tax rate has a substitution effect which affects the relative attractiveness of another hour spent in working, volunteering, or some other activity. Together, these effects may be quite important in determining whether individuals will participate in the labor market and how much they will work. These decisions obviously bear directly on the time available for volunteering. Whether they are made prior to or jointly with decisions to volunteer is unclear, however. Third, the deductibility of contributions of money and the marginal tax rate together determine the price of such contributions relative to consumption expenditures. What effect this price has on volunteering depends in part on whether contributions of time and money are complements or substitutes.[19]

Since market work is a principal competitor for the time available to individuals, this section begins with a brief review of empirical evidence on the effect of income taxes on labor supply. It then proceeds to a description of empirical work focusing directly on volunteering.

4.4.1 Taxes and Labor Supply

The effect of income taxation on labor force participation and work effort has been a topic of great importance in public finance long before the emergence of "supply-side" economics. The theory underlying most empirical work embodied three principal assumptions: individuals have preferences for "leisure" (nonworking time) and market goods, they may work any number of hours within their time constraint, and they respond the same to a change in the net wage whether it is caused by a change in the gross wage or the tax rate. In the empirical work on labor supply, attention has been focused on labor force participation and hours of market

19. See section 4.3 for an explanation of these terms.

work. Little attention has been paid to the allocation of time not spent in market work—the amalgam labeled "leisure." Following the economic theory of an individual's choice between leisure and other consumption, an income tax is shown to have an income effect and a substitution effect. Since leisure is a normal good, increasing the tax lowers disposable income and tends to increase work effort. The substitution effect, by lowering the net wage, goes in the opposite direction, discouraging market work.[20] Which effect dominates depends, of course, on the nature of preferences and the structure of the income tax. Empirical estimation is required.

In an early study, Break (1957) concluded that taxes had little effect on the labor supply of men. Increasingly sophisticated analyses since then have yielded much the same conclusion. Kosters (1969), for example, obtained very small estimates of the uncompensated labor supply for men—in the range of -0.04 to -0.09. Hausman's (1981) recent work also implies an uncompensated labor-supply elasticity for men around zero, although Hausman's findings imply larger income and substitution effects than those of previous studies. In contrast, most empirical analysis of the labor supply of women implies a relatively high degree of sensitivity to income taxes. Hausman, for example, finds uncompensated wage elasticities on the order of +0.5 for female heads of households and +1.0 for wives, implying a much greater importance for income taxation. The potential income effect of taxation on the labor supply of married women with children is illustrated in table 4.9, which shows market participation rates for women as a function of husband's income and education. In general, as the incomes of husbands rise, the proportion of wives who work in the labor force declines markedly. Although this suggests nothing about the division of time spent outside of the labor force, it certainly demonstrates that important differences exist in the amount of time available for volunteer work.

4.4.2 Empirical Analysis of Volunteering

In assessing explicit analyses of volunteering, it is useful to relate theoretical models of individual behavior to empirical analysis, discuss the data and models used in previous analyses, and describe the results of those analyses.

20. The effect of a proportional income tax can be written:

$$\frac{dL}{dt} = wS - y\frac{\partial L}{\partial y}$$

where L is hours of work, t is the tax rate, S is the income-compensated wage effect on labor, w is the gross wage, and y is total income. The first term on the right-hand side corresponds to the substitution effect of the tax, and the second to the income effect. See, for example, Atkinson and Stiglitz 1980, pp. 23–61.

Table 4.9 **Labor Force Participation Rates of Married Women with Children under 18, by Years of Schooling Completed and Income of Husband, 1978**

Husband's Income, 1977	Total[a] Participation Rate	Years of School Completed by Wife		
		0 to 11	12	16
Under $3,000	49.2	36.1	56.0	—[b]
$3,000 to 4,999	50.8	41.6	55.8	—[b]
$5,000 to 6,999	50.6	42.9	56.1	—[b]
$7,000 to 9,999	54.9	48.6	56.8	75.6
$10,000 to 12,999	56.7	49.4	56.4	68.5
$13,000 to 14,999	54.6	44.3	54.9	58.2
$15,000 to 19,999	51.3	39.8	51.7	55.2
$20,000 to 24,999	46.1	36.4	44.6	49.5
$25,000 to 34,999	40.3	33.3	34.4	48.5
$35,000 to 49,999	26.7	—[b]	35.8	46.8
$50,000 or more	26.7	—[b]	23.7	24.6

Source: U.S. Bureau of Labor Statistics 1979, pp. A33–A34, table 14.

Note: Labor force is given as percentage of population.

[a]Total includes wives with other amounts of schooling than shown separately.

[b]Base is less than 75,000 persons.

Models for Estimation

Based on the theoretical discussion in section 4.3, an empirical model for estimating the effect of taxes on volunteering is given by:

$$H_v = f(w^*(1-t), P, Y_f - T, Z), \tag{1}$$

where H_v is hours of volunteer work, $w^*(1-t)$ is the net-of-tax wage rate, P is the net price of giving a dollar in contributions, Y_f is "full income," T is taxes, and Z is a vector of household characteristics such as age, family composition, and education. This function is interpreted as a supply function for volunteer effort. It can be estimated from available data without reference to demand by assuming that the demand for volunteer service is perfectly elastic at the going price of zero.

Two "prices" are important in this supply function. To the extent that individuals can choose the number of hours they work, the net-of-tax wage represents the opportunity cost of spending an hour doing (unpaid) volunteer work. For those who are not working at all, w^* in this ideal model is the gross "reservation wage" necessary to entice them to work. Since giving money is obviously a substitute for giving time, the price of money gifts P is included to reflect the cross-price effect on volunteering while $w^*(1-t)$ is the "own-price" of volunteering.

Full income measures potential income for some given amount of work effort and so is not a function of the amount of labor supplied. Previous

empirical work on the supply of labor suggests that leisure is a normal good. This finding provides no guidance, however, as to how the demand for volunteer activity changes when income changes. Finally, a model of volunteer work should contain a set of variables designed to account for demographic characteristics likely to influence the desire or ability to do volunteer work. The information presented at the beginning of this chapter suggests, for example, that volunteering varies by age, sex, and family composition as well as income. As in any econometric analysis, it is important to account for other potentially important variables in order to isolate as much as possible the independent effect of the variable of interest—in this case, taxes.

Econometric Problems

The estimation of this ideal model is difficult in practice owing to the complexity of the allocation process within households and shortcomings in available data. One of several alternative models might be used to explain the allocation of time within a household. In its most general form, a model might allow for the simultaneous determination of hours of work and volunteering for each member of a household, or at least each adult member.[21] In order to estimate such a model, it would be necessary to have not only the hours of work and volunteering for each adult but also a wage rate for each. In practice, wage rates of working couples are often not recorded separately for both spouses, and reservation wages are, by their nature, unobserved. As has been spelled out in the recent econometric literature, restricting the sample to those with observed wages will introduce sample selection bias into the estimates.[22] Even the observed wage may not be a wholly appropriate measure of the potential wage. As Lewis (1969) has pointed out, the wage may be a function of the number of hours worked, making wages earned by part-time workers suspect. In addition, wages may reflect conditions of the workplace, making a determination of the potential wage or full income problematic.

One simplification that can be made in this general model is to assume a recursive structure, whereby decisions to work or not precede the decisions about how much to work and whether and how much to volunteer. In this model taxes would be a determinant of the number of hours worked, leaving remaining hours to be divided between volunteering and other activities that can be lumped together as "leisure," though the latter includes household work. Since neither volunteering nor leisure provide monetary income, the marginal tax rate (through the net wage) would not affect the choice between them. The price of cash gifts would, however, affect volunteering through its cross-price effect, as above. In this recur-

21. For models of household decision making, see Becker 1974.
22. For a discussion of this problem, see Heckman and MaCurdy 1980.

sive model, the primary influence of taxes on volunteering would be seen in the determination of hours of work. How the nonwork time is split between volunteering and leisure depends on the income elasticity of each and the cross-price effect between the price of donations and volunteering.

Data on Volunteer Work

Household surveys provide the most important source of data on volunteer activity. Since 1965 several national surveys (U.S. Department of Labor 1969; Gallup Organization 1981) have been performed with the primary objective of estimating the amount and kind of volunteer work performed in the United States. Questions on volunteering have also been included in other surveys.[23] As reflected in the first section of this chapter, however, these surveys have differed in many respects, including the very measure of volunteer activity. Respondents were asked whether they participate in certain volunteer activities and how many hours they spend. The surveys differed, however, in both the time period covered and the kinds of activities counted as volunteering. The time period covered ranges from the previous week to the previous year. As for the definition of volunteer activity, surveys differ in their inclusion of volunteering for religious organizations and informal volunteering, such as helping a neighbor move.

The data set with the most complete information on tax-related variables is the National Study of Philanthropy undertaken by the Census Bureau and the University of Michigan's Survey Research Center.[24] The sample included over 2800 households, selected so as to oversample households with high incomes. The survey asked about volunteer activity of husband and wife during the year 1973, and this activity was broken down by type of organization served. Data on labor force participation, household income, and tax status are included, but it is impossible to identify the wage rates of both spouses in two-earner couples.

A major advantage of the National Study of Philanthropy is the information available on income taxes. Since respondents were asked whether or not they itemized, it is possible with some reliance to calculate the price of giving for almost all the sample. The only major problem is those taxpayers who are on the "borderline" between itemizing and not itemizing and who would, in fact, not have found it advantageous to itemize if their charitable contributions had been zero. The presence of these taxpayers requires special attention. With the exception of the study by Mueller discussed below, all of the econometric studies of volunteering done to date have employed this data set.

23. See, for example Morgan, Dye, and Hybels 1977.
24. For a full description, see Morgan, Dye, and Hybels 1977.

Econometric Studies

Three previous econometric analyses of volunteering have been identified and are described here. The first is that of Mueller (1975).[25] The data were based on a 1963 survey of 310 women who had graduated from Columbia between 1945 and 1951. Although the survey contained no questions about taxes, important social and economic information was available. In particular, information on the respondent's current or last market wage, husband's income, age of children, religion, and size of community was included. In addition, Mueller added two variables intended to account for volunteer work done in anticipation of gaining useful job-related skills. One is the average comparable market wage for the kind of volunteer work being done, and the other is a dummy variable signifying the respondent's desire to look for a job. Using ordinary least squares, Mueller estimated equations explaining total hours of volunteer work and hours of volunteer work other than for professional societies. Neither the husband's income nor the gross wage are significant in explaining volunteer hours. These results suggest that volunteering is unlike leisure, which is responsive to the wage and income elastic. Instead, Mueller argues, the results suggest that women engage in volunteering because it will give them valuable skills rather than because it is enjoyable. Supporting this notion, Mueller found that women volunteered more if they performed jobs with high market wages and if they planned to return to work. These findings could merely suggest, however, that interesting volunteer jobs elicit more effort and that volunteer jobs meet similar personal needs as market jobs. Taken together, these findings suggest that the potential for strong tax effects through income or wage rates is limited.

Among the other explanatory variables, identifying with a major religious faith was positively associated with volunteer work. Whether religious women volunteer more in nonreligious organizations is unclear, however. Size of community also had a significant effect. Women in small towns and rural areas volunteered the most. The number of children or the presence of young children were not significant variables.

The second study of volunteer effort, by Dye (1980), was the first to examine explicitly the effect of taxes. By including the price of giving money as an explanatory variable, Dye was able to focus on the question of whether volunteering is a substitute or a complement for contributions of money. This empirical question is one of the most important in evaluating the effect of taxes on volunteering.

25. Havrilesky, Schweitzer, and Wright (1973) analyzed some aggregate data on volunteers for environmental groups. Data on income and wages were not included, and no variables were significant at the 95 percent level in explaining median hours of volunteered time. The authors did find, however, that volunteering was greatest in areas with the poorest environmental quality.

As the first researcher to use the National Study of Philanthropy, Dye was able to calculate the net price of giving using data for individual households. Equations were estimated in two stages. The first explains whether households volunteered at all, and the second explains hours of volunteering by the household. While this procedure is not ideal from an econometric point of view, [26] it points up two rather distinct components to the volunteering decision, comparable to the participation and hours of work components in labor supply. In his basic equations Dye considers volunteering for the entire household together, though he notes that similar results were obtained from individuals. In both stages volunteering is explained by the logarithm of the price of money gifts, net income, and wealth and by dummy variables for education, age, and marital status. Dye found that volunteering increases with education and wealth, is higher for married couples, and is lower for those over 65.

Volunteering in Dye's equations is negatively associated with the price of giving money, suggesting that volunteering and monetary contributions are gross complements. Taken together, his equations imply a cross-price elasticity of -0.83. If correct, this finding would imply that policies lowering the price of contributions will encourage volunteering. In other words, the tendency for both kinds of contributions to be done together outweighs any tendency to substitute one form for another. As strong as this complementarity appears to be, however, one weakness in Dye's empirical model is the absence of a net wage. As noted above, the measurement of the net wage for households is greatly complicated by the fact that wages cannot be observed for those who do not work. Nonetheless, the omission of this variable may bias the cross-price effect. For example, if the price of contributions is positively correlated to the net wage, the negative effect for the price of contributions may result partly from an omitted net wage that would have had a similar negative effect if included. If price and the net wage are negatively related, the estimated price effect would, in absolute value, be an underestimate.

In the third econometric study, Menchik and Weisbrod (1981; 1982) used the same survey data to estimate a more complete model of volunteer work. By including the net wage as an explanatory variable, they are able to reflect the choice between market work and volunteering. Since the net wage is the opportunity cost of volunteering, a straightforward model such as that described in Appendix C predicts that a rise in the net wage will discourage volunteering as long as the substitution effect dominates the income effect. The addition of the net wage required a restriction in the sample used, however. Since the Michigan survey data does not pro-

26. As Dye suggests, Tobit would be appropriate, as would logit or probit for the first stage and some method that accounts for sample selection in the second.

vide separate data on the wages of working spouses, wages could be approximated from family income only for households with one earner.[27] Consequently, Menchik and Weisbrod analyzed the volunteer activity of working adults in single-earner households. Volunteering by spouses not in the labor force as well as by two-earner households was not considered in the study.[28]

A second important feature of the Menchik-Weisbrod study is the replacement of reported income by "full income," the income that would have been earned if the earner had worked full-time. Because it is independent of the labor supply of the worker, it is considered an exogenous variable. The tax and marginal-tax-rate variables are also calculated using full income. The only drawback to this procedure is that it assumes that participation decisions—specifically, the decision of nonworking spouses not to work—are independent of taxes. The importance of the bias introduced by such treatment is, however, unclear.

Menchik and Weisbrod also include a variety of explanatory variables measuring characteristics of the household and local area. Their 1982 study reports Tobit estimates of equations explaining hours of volunteering as a function of the net wage, the price of contributing money, and full income as well as local government expenditures, sex, marital status, the presence of children in the household, age entered quadratically, and dummy variables for size of community, parental characteristics, and informal helping activity.

Table 4.10 summarizes their basic estimates for total volunteering. The sample used for estimation excludes households with incomes over $50,000. The most striking finding is that the net wage has a positive and significant coefficient, contrary to the expected negative effect. Menchik and Weisbrod (1982, p. 24) explain this by noting the possibility that volunteering is undertaken primarily as an investment in human capital, not as a "consumption" activity like leisure. If the return to this kind of investment is correlated with the net wage, volunteering could rise with the net wage. They find further support for the investment model in the insignificant sign of full income; a positive effect would be expected under the consumption model of volunteering.[29] The price of making monetary donations is insignificant. Thus no support is provided either for Dye's con-

27. They approximated the hourly wage by

$$w = (Y - \sum_i r_i A_i) / H,$$

where Y is total income, A_i is the holding in asset of type i, r_i is that asset's rate of return, and H is approximate annual hours of work. Savings accounts and bonds were assigned a rate of return of 7 percent, while stocks and other assets were assumed to have a rate of 3 percent.

28. Menchik and Weisbrod (1981, p. 169n) also note that this sample selection rule may introduce statistical bias as well to the extent that workers are systematically different from those not in the labor market.

29. This expectation assumes volunteering to be a normal good.

Table 4.10 Menchik-Weisbrod Equation Explaining Hours of Volunteer Work

Explanatory Variables	Estimated Coefficients
Constant	0.413
Net wage	76.5[a]
Price of contributions	29.8
Full income	0.007
Local-government expenditures	−0.32
Female	12.07
Married	222.2
Young child	262.0
Other children	375.0[a]
Age	−59.9[a]
Age squared	0.566[a]
Large city	−38.6
Suburb of city	−100.9
Medium-sized city	34.2
Small city	−300.6[a]
Parents contributed	−91.0
Parents attended religious services	−281.4
Father completed high school	37.5
Hours of informal helping	0.484

Source: Menchik and Weisbrod 1982, p. 25.

Note: The sample included 816 observations of households with incomes of $50,000 or less. The method of estimation was Tobit.

[a]Significant at 95 percent level.

clusions that giving time and money are complementary or for the alternative hypothesis that they are substitutes.

4.5 Further Analysis: Explaining Volunteering by Women

This section extends previous empirical work by focusing on volunteering by women. As shown in tables 4.1 and 4.2, women volunteer more often than men. Yet analysis on working adults in single-earner households, such as the Menchik-Weisbrod study, virtually ignores the volunteer behavior of women. An important drawback to this approach is that, for most women in the philanthropy survey, neither wages nor potential wages can be approximated.[30] Therefore, it is impossible to apply the neoclassical model of simultaneous time allocation, described above in section 4.3.

30. For a description of Menchik and Weisbrod's (1981) method of approximating wages for single-earner households, see their section D and footnote 27. Because income is not reported separately for spouses, it is impossible to obtain wage estimates for two-earner households.

A sequential variation of the full neoclassical model is, therefore, adopted in this section. It is assumed that, for women, the labor-force-participation decision is made prior to the parceling up of nonmarket work time between "home production," volunteering, and leisure. As a consequence, the allocation of time by women becomes a recursive process, with the volunteering decision following the labor-force-participation decision. In this model taxes have two important effects on volunteering: the effect on participation and the effect on time allocation given the participation decision. A more restrictive form of this model would be that hours of work are also determined prior to the allocation of nonwork time, but this assumption will be used only as one alternative in this section. The assumption that the participation decision comes prior to the volunteering decision does not seem unreasonable, given the large number of women who choose to remain out of the labor market for long periods during their lives. Still, the recursive model used here is largely an assumption of convenience, made necessary by the lack of appropriate labor market data for most women.

Equations explaining the decision to volunteer as well as the number of hours of volunteering per year for women were estimated using the same National Study of Philanthropy. Equations (A) and (C) in table 4.11 give the estimated coefficients of a set of explanatory variables measuring household net income, net price of making donations, age, the presence of children, education, family background, and newness in the neighborhood. Equation (A), which explains volunteering as a dichotomous variable, is estimated by the logit maximum-likelihood procedure. Corresponding to the tabulation in table 4.2, volunteering rises and then falls with age in equation (A). Volunteering is higher for women with more children under 18 at home, suggesting that a mother's involvement with child-related activities increases the likelihood that she will become a volunteer. The estimated coefficients of the education terms suggest, as has previous analysis, that women's volunteering increases with education. Finally, the negative effect of the net price of donations supports the hypothesis of complementarity between donations and volunteering.

Equation (C), explaining hours of volunteer work, is estimated by the Tobit maximum-likelihood method. It shows significant coefficients only for the presence of a small child (negative) and college education (positive). The coefficient of price is negative, but not significantly different from zero at the 95 percent level ($t = 1.0$). The point estimate of the coefficient implies a cross-price elasticity of -0.25 for expected hours of volunteering, calculated at the mean number of hours.[31] These equations

31. The elasticity is $F(z)\,(b/H)$, where $F(z)$ is the predicted probability of positive hours of volunteering (0.499), b is the coefficient of the price term (-52.3), and H is the mean number of hours of volunteering (103.4).

Table 4.11 Volunteering by Women

Explanatory Variable	Volunteering (dichotomous) Logit (A) Women Not Employed	(B) All Women	Annual Hours of Volunteer Work Tobit (C) Women Not Employed	(D) All Women
Log of net income	−0.00241	−0.0388	18.1	3.90
Log of price	−0.966[a]	−0.895[a]	−52.3	−79.6[a]
Age	0.105[a]	0.188[a]	14.4	24.9[a]
(Age)^2	−0.00113[a]	−0.00190[a]	−0.149[a]	−0.241[a]
Children under 18	0.181[a]	0.226[a]	18.4[a]	24.5[a]
Children under 5	−0.138	0.162	−64.8[a]	−1.77
High school graduate	0.879[a]	0.773[a]	104.[a]	94.1[a]
College graduate	1.71[a]	1.44[a]	191.[a]	169.[a]
Parents contributed	0.201	0.155	8.01	−3.44
New in neighborhood	−0.266	−0.256	7.90	−1.82
Hours of market work	—	−0.00688[a]	—	−1.27[a]
Intercept	−3.43[a]	−5.06[a]	−649[a]	−783.[a]

Source: National Study of Philanthropy 1973.

Note: The sample size was 1122 in equations (A) and (C) and 2323 in equations (B) and (D). The predicted probability of observing volunteering ($F(z)$) was 0.499 and 0.314 in equations (C) and (D), respectively.

[a]Significantly different from zero at 95 percent level.

provide only mixed support for the hypothesis of a complementarity effect of the charitable deduction on volunteering. To reiterate, both equations (A) and (C) rest on the assumption that participation decisions are made prior to volunteering decisions, thus making it possible to restrict the examination to those not in the labor market. While the behavior of this sample may differ from that of working women, this assumption, if correct, would imply that there is no simultaneity bias due to the endogeneity of the participation decision.

The much stronger assumption that hours of market work are predetermined is embodied in equations (B) and (D), which include women both in and out of the labor force. The estimated effects in general are similar to those in equations (A) and (B). In addition, the hours of market-work variable exerts a negative and significant effect on volunteering. The point estimate in equation (D) implies that volunteer hours will be reduced about eight hours for every ten additional hours of market work, suggesting that volunteering will take most of the brunt of increases in women's hours of market work. Because adequate wage data are not available for most women, however, it is impossible to estimate a complete model that accounts for simultaneous choice of hours of volunteering and market

work. The price of contributions is significant in both equations. In equation (D), the cross-price elasticity is -0.35.[32] This point estimate implies that a 10 percent decrease in the price of giving, say from .60 to .54, would cause a 3.5 percent increase in the expected amount of volunteering.

4.6 Conclusion

In summary, the income tax appears to influence volunteering by affecting both participation choices and the division of nonmarket work time. The hypothesis that giving time and giving money are complementary activities receives some support in each analysis of the National Survey of Philanthropy. While the findings are not everywhere statistically significant and are based on only one data set, the findings are reasonably consistent with each other. If correct, these findings suggest that the tax system has a much more pervasive effect on behavior than what can be observed in contributions alone. They suggest that the tax system indirectly encourages involvement in charitable organizations by providing an explicit incentive for only one form of involvement. The work of religious and charitable organizations appears to use people's time and money together. While the proportions obviously vary from person to person and from organization to organization, neither alone is as useful as both together. If the United States is, as de Tocqueville observed, a nation of joiners and voluntary associations (de Tocqueville 1835), then the tax system, through its deductions for charitable contributions, appears to foster that quality. It is not unreasonable to suppose that the extension of the deduction to nonitemizers will further encourage involvement in and volunteer work for charitable organizations. Informal volunteering and helping behavior may be encouraged as well.

32. The elasticity is again calculated at the mean number of annual hours of volunteering for the sample which is 71.3.