

**The Extent and Value of Informal Economic Activity
In Non-Metropolitan Wisconsin**

By

John Larrivee

Presented at Western Agricultural Economics Association Annual Meeting
July 11-14, 1999
Fargo, ND

The Extent and Value of Informal Economic Activity In Non-Metropolitan Wisconsin

I. Introduction

One of the basic assumptions of labor market models is that individuals face a choice between labor and leisure. However, what is typically measured as leisure often includes a certain amount of unrecorded work, either in the household or in other unrecorded economic activity, referred to here as informal work. (Wales & Woodland, 1977). If the level of informal work is high, models using a simplistic assumption of leisure versus formal market work may produce erroneous predictions. While more sophisticated models may theoretically incorporate a decision making structure across the multiple choices of leisure, informal work and pure market work, such models need data on the various types of activity to do so. Unfortunately, such data is rare, and, as a result, very few studies have examined its presence and its impact on the formal labor.

Fortunately, a data set with this type of information now exists for Wisconsin. In 1996 several researchers at the University of Wisconsin sought to examine the resources used by families in rural Wisconsin. They included in their survey a substantial section on

informal economic activities, as well as questions on formal labor market variables, community involvement and attachment, public assistance benefits (both from governments and non-profit organizations) and family structure. This paper will use this data to examine some areas of informal labor market activity performed by people to either save money, make money or barter. It is hoped that identifying the level of involvement in informal economic activity in non-metropolitan Wisconsin will help provide a more complete understanding of the labor market here in the state.

This paper is divided into two sections. The first assesses involvement in the informal sector as defined by hours, purpose and type of activity for all households. The second section provides an approximate valuation of these hours of informal activity as determined by opportunity cost or replacement cost.

II. The Informal Sector

The informal sector generally refers to economic activity which is not recorded as part of the formal economy. These activities may range from gardening or do it yourself repairs to child care for pay to illegal activities like tax evasion and drug dealing. Several key distinctions used to characterize informal activity are the nature of production, the manner in which the good or service is exchanged, the legality of the activity and whether the transaction is recorded or not.

The informal sector is so rarely studied that no particular names have become standard in reference to such unrecorded activity. One categorization of these activities, similar to that of Thomas (1992), is the following. Household activities are those within normal family duties, such as caring for one's children or mowing the lawn. Informal activities are those in which one either makes small amounts of money through unrecorded activities or replaces goods and services from the market with those produced at home. Criminal activities are inherently illegal, such as the sale of drugs.

These distinctions are far from perfect. Perhaps the largest problem is distinguishing which are purely household activities. This has become increasingly difficult as market alternatives of what would have been considered traditionally household activities become more readily available (e.g. child care or pre-packaged meals) and as roles of household members change with time and social convention.

Despite these difficulties, this study uses the term "informal" to mean activities which are generally one step removed from household activities, are intended to produce goods or services either for sale or to replace those of the market, and are not inherently illegal, though their scale might make them have an illegal component in tax evasion or non-reporting. The activities considered here are hunting and fishing, raising animals or produce, crafts, landscaping or yardwork, repairs, construction, remodeling, personal services and boarding, for the purposes of making money, saving money or bartering.

A sense of the size of the informal sector can be seen by the few other such studies which have been done. VanEck and Kazemier's (1988) cross sectional analysis of households in Denmark found that the total value of informal economic activity was only approximately 1%

of GNP. A study of activities similar to those considered in this paper for the United States (Smith, 1985), estimated the size of the informal economy in the U.S. in 1981 to be about \$42 billion. Estimates of participation in the informal sector to make money are about 8.5% (Lemieux et. al., 1994) and 12% (Smith).

III. The Data

The survey covered a variety of areas including formal and informal work, community services and public assistance, family structure, income and education, community attachment and local economic conditions. It was based upon a random sample of households in areas characterized as non-metropolitan and it screened out adult sibling, roommate, or single male headed households. Overall, 1611 households completed surveys, for a response rate of nearly 56%.

The sample was obtained over a six week period at the beginning of 1996 and was based upon the respondent's recall of the previous year. According to Juster and Stafford (1991), data from recall runs risks of measurement error, as people often report what they did in the previous week rather than in an average week. They conclude that time diaries provide the most accurate understanding of how people spend a given day. On the other hand, he also recognized that time diaries for short periods may completely miss activities that do not occur on a typical day and that one could not administer a study requiring time diaries to be kept every day for long periods. Consequently, for a broad overview of what might occur during the year, one is forced to rely upon recall studies.

Unfortunately the accuracy of such data is uncertain because most time use research making comparisons between the best survey methods has considered typical household

activities such as meal preparation. The only study (Hill, 1986) to have examined some of the activities recorded in this survey (repairs), found they were actually under-reported in recall surveys relative to time diaries.

The activities examined in this study were those given as answers to the following questions from the survey. Have you ever:

- Hunted or fished for food?
- Raised animals for food or sale?
- Grown vegetables, fruits or other plants for food or sale?
- Made crafts, clothes or other household items?
- Done landscaping or yardwork, farmwork, plowed snow or cut firewood for someone else?
- Done home repairs for yourself or someone else?
- Done repairs on cars, equipment or appliances?
- Built or remodeled your home or someone else's?
- Built or remodeled barns, sheds, or other buildings for your family or someone else?
- Performed personal services for others such as caring for children, disabled or elderly persons, housecleaning, hair cutting or styling, shopping or providing transportation?
- Taken in boarders, relatives or friends?

The survey also asked respondents to give the reasons for which they did activities, as well as their importance. The reasons were: to make money, for barter, to save money, as a hobby, for someone else, or for some other reason. The first three (make money, barter and save money) were all considered by this study as informal activities for economic reasons. However, of 53 people who responded they did one of the activities for barter, only 17 included hours. Consequently, they were not considered as a separate category, but any totals of household informal hours include those hours.

In general, the wording is sufficiently broad to include most activities, although a general "any other activity" category was not included. Moreover, combining numerous activities into

one category made it more difficult to know what activity people actually did and to assign a proper wage to the category. For example, one cannot distinguish who did personal services (e.g. housecleaning) from who did child care.

Perhaps the biggest potential problem with the wording is that used for personal services. Specifically, the question asks if a person did any personal services "for others" to save money. While it is true that many of these activities are those hardest to define as household or informal, the phrasing itself may have prevented people from including activities done to save money. No household responded positively to this. It is likely that many respondents who did personal services to save money were thus forced to respond that they did the services under the "for other person" category, which was not included in this study as "for an economic reason." However, this hypothesis cannot be proven and hence this study will make the restrictive assumption that no personal services were done to save money. Results with these hours are included in one of the tables for comparison and full results are available from the author. It should be noted that since one third of all informal hours reported by women came in this category, the results for women change significantly when hours for personal services to save money are excluded.

IV. Valuing Informal Economic Activities

A. Calculating Income from Activities to Make Money.

Unfortunately, the survey asked "What percentage of total household income came from this activity?" rather than "How much did you earn from this activity." This makes direct calculation of income from informal more difficult as one cannot determine the amount of income

earned in the informal activity unless both total household income and percentage of total household income were given. As a result, while 204 households reported informal activities to make money, only sixty percent included sufficient information to actually calculate the income. In addition, it is likely that people are not as accurate with a percentage of household income as they would be with an actual dollar amount for earnings.

B. Opportunity Cost and Replacement Cost Valuation

For informal activity in which no compensation was observed, one must use other means to approximate the value of the good or service. The ideal method would use some combination of outputs and inputs. Unfortunately, this is unlikely given the data required, which usually tends to only include time devoted to the activity. Hawrylyshyn (1976, 1977) proposes three general means of estimating value based upon labor input alone: opportunity cost (the opportunity cost to the individual doing the informal activity, relative to formal market work), replacement cost (the cost to hire another individual to do each specific task in question), and general replacement cost (the cost to hire one person to take care of all of the tasks in question). This study uses Hawrylyshyn's first two methods. Despite differences in these methods, Murphy (1978) and others have found that on average they produce generally similar estimates overall.

Both methods inherently assume that labor costs are the only input and are equal to the value of the good or service. This ignores other inputs such as land or capital, as well as the value of the output itself. Finally, to some extent, neither fully solves the problem of attempting to value activities in which the individuals do their informal activity more for enjoyment than to gain

resources. Fortunately, each activity in the data set also included information on the reasons for doing the activity and its importance, which helps separate out those individuals who did such activities to make or save money from those who merely did them for pleasure.

Opportunity cost methods follow from models of household behavior used in labor economics. As the name implies, that which the individual chooses must be valued at least as highly as that which was foregone. In the case of the activities considered here, the opportunity cost of each hour of informal activity is considered to be the hourly wage rate that person could have received from labor in the market. For each activity, it is assumed that the person has a choice between an hour of an activity (such as fixing the roof) and an hour of labor in the market (which produces income that could be used to pay someone else to fix the roof). Some refinements for this method are to use predicted wage and/or to adjust for taxes and travel cost in the wages.

The opportunity cost method may produce some seemingly odd results. For example, the opportunity cost value of an hour of gardening by a brain surgeon would greatly exceed that of a graduate student even if the graduate student actually did a better job in the same time. Second, the opportunity cost method implies that the value of any work done by a person is the same, whether it is yardwork, child care or fixing a car, all of which have different values in the market. Finally, it would imply that work done by an unemployed person has no value since there is no opportunity cost. This can be seen in the accompanying tables in which those without wages (but who had informal hours) were not counted in opportunity cost estimates (but are included in the replacement cost estimates since these do not require wages).

To determine the value of the informal activity using this method, one multiplies the hours the individual reported spending in informal activity by the wage rate received in the market. One potential difficulty is that in those cases with second jobs recorded, it is not clear which wage to use as opportunity cost: the higher or the lower value. Since one could make a possible case for either, both values were retained to provide possible bounds on the opportunity cost value estimates and both are included in the tables.

In order to determine valuations by replacement cost, one determines the market wage for each given activity and multiplies this by the hours given for it. Wages were determined by using the United States Department of Labor's survey of wages in the agricultural sector (for hunting, raising animals or growing produce), or from the Wisconsin Wage Survey (for the others). In general, relatively low values from each category were chosen to err on the conservative side. The wages used were \$5 for hunting/fishing, raising animals and raising produce, \$7 for crafts, \$8 for yardwork, \$10 for house repairs, \$13 for car repairs, \$12 for home remodeling or building, \$10 for other building work, and \$6 for personal services or boarding.

VI. Results

Information on participation in informal activities by activity and purpose for each household is given in Table I. Reading across the columns gives the breakdown of the reasons for each of the activities. Reading down the table gives the number households reporting having done each activity for that reason. Because some households engaged in multiple activities for the same reason (e.g. raising produce and fixing cars to make money), totals at the bottom

exceed the number of households which actually did any activities for the given reason. For example, only 204 households engaged in any of the eleven activities to make money, but 27 households engaged in more than one activity to make money, so the total number recorded as done to make money was 231. Similarly, the total number of households that actually engaged in an activity for barter or to save money were 53 and 883 rather than the 55 and 1635 recorded. Overall, the total number of households that engaged in activities for a primarily economic reason was 959, or approximately 60% of all households of the 1611 in the survey, with 12.5% of the 1611 doing an activity to make money (close to Smith's estimate), and 55% to save money. While a majority of households engaged in these activities for economic reasons at least once, these activities were done most frequently for non-economic reasons.

From this, one can conclude that hunting and fishing were overwhelmingly done as hobbies. Yardwork, raising animals and personal services were the activities most commonly performed to make money. House or car repairs were the most commonly performed services to save money.

Note, these results are by household. Performance of activities by individual members of the households could only be determined if hours spent by each member of those households were included. The results to follow will examine those who actually included estimates of hours spent by respondents and their spouses. In addition, the total number of individuals engaged in informal activities exceeds figures given above since in many cases both spouses did at least one of the activities.

Table II examines the hours spent in informal activities by men and women. Of those who reported hours, 40% of men and 25% of women who did activities to make money (and

who reported hours) spent an amount of time per year which exceeds one quarter the time spent in a typical job of 40 hours per week. Interestingly, the fraction of individuals involved in activities to make money who exceeded 500 hours per was more than twice that of those doing activities to save money. The hours distributions here actually more closely resemble hours spent in second jobs rather than primary jobs, a fact which may indicate that the role for informal activities might be more a trade between a second job and the informal activity than between a main job and the informal activity.

Since more women than men are in the sample, women appear less likely to engage in these informal activities, which might either represent a decreased preference for informal activities or that the informal activities in which they engage (e.g. household work) were not recorded. This may also indicate that women allocate their work across three sectors (formal, informal and household), while for men it is likely to be just two.

Tables III and IV examine how the above results break down by activity. Among all households doing activities to make money, raising animals and yardwork were the most common, with raising animals involving the most hours statewide. To make money, raising animals and yardwork were the most common, for men, and personal services, raising animals and crafts were most common for women. Among all households doing activities to save money, repairs were overwhelmingly the most common but remodeling and raising animals again involved the most hours for those who did them. In this breakdown, the importance of personal services can clearly be seen for women, for whom it is the most important single activity with more than one third of all hours to save money coming in the personal services category.

Table V includes estimations of the value of the hours of informal activity recorded above for men, women and households for the purposes of making or saving money. Note that the different valuation methods have different sample sizes. This is the result of the limitations of the methods used, and the comparisons as listed also give some idea of the results one might obtain if information were more limited and could not use the different valuation methods. Opportunity costs can only be determined if other wage information is included, and it is even rarer that one can consider after tax or travel cost in the calculations. Replacement costs can only be determined if one knows the specific activities performed. In this case, all relevant information for the different valuation methods was available to provide a comparison between them.

The results parallel the hours findings above. For the sample as a whole (all 1611), the value of the activities is around \$2000 per year per household, but twice this for those who actually participate in the activities themselves.

VI. Conclusion

This study has considered the level of informal activity in rural Wisconsin from a number of angles. It appears as though participation in the activities examined here is generally high (approximately 60%) and that hours are small, but not insignificant. While most do not have extensive hours in the informal sector, nearly a quarter of the sample has intensive involvement (i.e. greater than 500 hours per year).

Follow up work remains to be done on the underlying reasons behind this involvement. First, some multivariate analysis may help clarify some of the factors behind the differing levels

of involvement such as family structure, income, and program participation. Later work will then examine how this informal labor market participation might affect participation in the formal labor market.