

## XII MEASUREMENT AND COMPOSITION OF FARM HOUSEHOLD WEALTH

### XII.1 Introduction

Wealth is a potent component in the factors which determine the position of the agricultural community within society. Wealth is important because it gives rise not only to income in a variety of forms but because it also provides security, freedom of manoeuvre, and economic and political power. Within society as a whole, wealth seems to be much more unequally distributed than income and has a major influence on the overall degree of inequality (Atkinson, 1980). A political economy comparison of income and wealth distributions among farmers and the rest of society through time would be of great policy relevance in ways such as understanding the evolution of the accumulation of wealth through the life cycle of the household statistical unit, identifying important causes of wealth inequality specific to different social groups, and proposing methods for lessening the recent increase in the concentration of wealth (Juster and Kuester 1991; Juster *et al.*, 1999). How property ownership is regarded is an important part of any study of social inequality. "This is not only in the obvious sense that the distribution of material resources will in large part determine the character of that society's economic and political life, but also in the sense that such conceptions serve as important legitimising ideologies buttressing the stability of social life" (Newby *et al.*, 1978).<sup>1</sup>

In developing countries there is striking evidence about the large negative impact of assets (especially land), rather than inequality in wage incomes, on future growth (Deininger and Squire, 1998; Deininger and Olinto, 2002). They also point out that the unequal distribution of assets also affects the equal distribution of opportunities for building both physical and human capital assets in the future. In general, the distribution of assets is the key determinant of the income distribution (Alesina and Rodrik, 1994).

The importance of wealth as a contributor to the economic welfare of farm households in OECD Countries is well established. Attempts by governments to support the incomes of farmers tend to be capitalised into land values (the factor of production least elastic in supply), a phenomenon which results in landowning farmers and landlords often benefiting through capital gains (though this is probably not the intention) but with little improvement in incomes accruing to those without owned land. Changes in the value of assets (real capital gains) have been briefly mentioned as a component of personal income (Chapter X) for which measurement may be required.

However, the absolute value of wealth is also of interest. A common phenomenon in developed countries is for cases of low current income to be combined with substantial wealth, suggesting that the potential power of the household to consume will be misrepresented if only income is taken into consideration. A familiar pattern in developed countries is for the wealth of farmers to increase with age up to a plateau; in contrast, incomes first rise and then decline as old age is reached. Agricultural land is usually the main component among the assets. In part this wealth may represent provision for retirement. However, much of it is passed to succeeding generations, with important consequences for the distribution of assets in society. Succession in a family farm is an especially significant issue because, besides the transmission of

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<sup>1</sup> It should be noted that a multinational Luxembourg Wealth Study (LWS) now exists, forming a parallel to the Luxembourg Income Study (LIS), referred to at various points in this Handbook. The LIS, which began in 1983, has a database drawn primarily from household budget/income surveys and covers some 25 countries. The LWS, initiated in 2003, covers a smaller number of countries; publications of comparative studies of wealth distribution were intended to appear in 2005 ([www.lisproject.org](http://www.lisproject.org)).

assets, it involves the transfer of knowledge and management skills to the next generation, which may contribute towards maintaining farm household viability through time.

In developed countries statistics on the wealth of agricultural households are rarely available at present. In contrast, many countries have surveys of farm accounts, and these usually collect data on the value of assets used by the agricultural holding (farm business) and associated liabilities, enabling estimates to be made of their net worth. An important example is the EU's Farm Accountancy Data Network – FADN/RICA – that comprises individual national surveys in Member States using a harmonized methodology. Some countries (such as the United Kingdom) estimate aggregate balance sheets for their agricultural industries. There is some concern on both theoretical and practical grounds about the validity of balance sheets drawn up for such “fictional” units as the holding (Hill, 2000a). This centres on what an agricultural asset is (a particular problem when these serve both production and consumption functions, such as cars) and whether liabilities (which can only be transacted by real people or other legal entities) can be deemed to be attributable to the “holding.” There is also the issue of valuation of capital items, which will usually be according to market price, though, where no market exists or in some other circumstances, may be taken as use value or cost of production (Hill, 2000b). The valuation of farmland is a particular problem in countries in which there is public intervention in the land market, such as by restricting who can purchase or by applying differential rates of capital taxation according to the status of the new owner (OECD, 1998, 2004).

Many of these problems (though not that of valuation) are eased considerably if the complete household-firm is the unit for which the balance sheet is drawn up. Unlike the “holding,” the household is an institutional unit, and its net worth (wealth) will cover all its assets and liabilities. Though it will be important to be able to group the individual items by type and use, overall the picture will be more reliable as an indicator of the economic situation of the household and is likely to be a superior explanatory variable for behaviour, such as the decision to invest or to leave farming.

Any picture of the wealth of agricultural households will reflect the definitions chosen for the household and the classification system used to distinguish an agricultural household from one belonging to some other socio-professional group. These issues were discussed at length in the context of income measurement in Chapter IX and repetition here is not necessary. Consistency between the definitions used for the measurement of incomes and of wealth is obviously important when the two are to be combined to describe the economic situation of farm operators. However, it should be borne in mind that the complex patterns of asset ownership within families may mean that a definition of household that embraces a range of owners may be preferable and influence the decision about the appropriate unit for income measurement. For example, in a two-generation household where land belongs to the parents but farming operations are carried out by their children (who are the nominal earners of the entrepreneurial income), it may make sense to use the dwelling household as the basic unit for measuring both income and wealth.

One of the few developed countries capable of quantifying the household wealth of its farm operators, covering not only assets and liabilities associated with farming but also those held outside agriculture, is the United States.<sup>2</sup> Much of this chapter focuses on this example, which this Handbook regards as an illustration of “good practice.” Further details about the main data source used (the ARMS farm accounts survey) are given in Chapter XIII.3.1.1. Later the situation of statistics on the wealth of farm households in a range of developing countries is reviewed. The state of information there is often surprisingly good because the basic data are collected as part of general Living Standards Measurement Study (LSMS) questionnaires.

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<sup>2</sup> Another is Italy, though the number of agricultural cases in the Bank of Italy household survey is small. Some other countries, notably in Scandinavia, appear to have the necessary basic data but do not make estimates of wealth for their agricultural households.

### **XII.1.1 Wealth of farm households in the United States**

In the United States, wealth and the means by which farmers accumulate it have been of interest to policy officials, farmers, lenders, academics, and those with an interest in farming and rural affairs for many decades. In a 1923 American Economic Review paper, Gray reported an estimate of the net worth of farmers (Gray, 1923). This paper, prepared over eight decades ago, employed the traditional balance sheet accounting formulation: assets equal liabilities plus owner equity. Gray prepared an assessment of farm assets and liabilities to estimate net worth as the difference between assets and debt. Included in the measurement of assets were farm real estate, livestock, implements, crops on hand on January 1, the value of growing crops, and other items of farm capital such as supplies on hand and cash needed to run the farm. Farmer liabilities included the farm mortgage and debts other than those secured by real estate. Making this paper relevant to current considerations of household wealth measurement, Gray recognized that a complete accounting of wealth required an estimate of non-farm assets, and personal loans for such items as food and clothing. To estimate the net worth of farmers, Gray moved beyond the farm business to recognize personal and household assets and liabilities.

In the United States, balance sheet accounts were established for the farm sector in 1945 (USDA, 1945). Like Gray, the USDA balance sheet highlighted the need to include information for both farms and farm households. Thus, a consolidated balance sheet that included both farm and household items was developed. In 1980, the USDA created a new balance sheet account that separated the farm business and operator households. The balance sheet created in the 1940's treated the household and the farm business as a single entity. By 1980, the USDA recognized that many farmers were less dependent on farm income than previously. Likewise, household assets and income were influenced by factors outside the farm sector.

In this chapter, the uses made of wealth measures for farms and farm households are discussed. The reasons why estimates of net worth for farms are not synonymous with estimates of net worth for households that control farms are then highlighted. This is followed by a discussion of what is included in wealth measures developed for farm households. The chapter continues with a discussion of some added insights gained from wealth measurement as a companion indicator to household and business income statistics in the United States. The chapter concludes by looking at the measurement and composition of farm household wealth in developing countries.

### **XII.2 Selected uses of farm and household wealth measures**

With wealth estimates for farmers dating to the early 1900's, a key question becomes "why the long-standing interest in the development of measures of wealth for both the farm business and the farm household?" A summary of uses made of wealth measures for farms and farm households helps respond to this question.

There are at least three main uses of farm-level net worth information. The first addresses questions about asset ownership and management. Who owns the physical assets, particularly land, and who is farming the land? This reflects the issue of who owns or controls agricultural resources and is important to assessing changes in farm structure. A variety of public policy issues may arise from trends in asset ownership, including potential barriers to entry for farmers. Many of the benefits and costs of government policies are tied to asset ownership or control. Links between public programs and asset ownership raise issues about the distributive effects of government policies. A second use centres on the financial position, or solvency, of businesses and, when combined with income, establishing measures of business profitability and liquidity. When farms confront eroded asset values relative to debts or when they have insufficient funds to meet debt service commitments, farm failures may arise and erode the quality of lender portfolios.

Spillover of farm problems into the lending sector can affect rural communities more broadly, especially if banks begin to close or if they are unable to meet commitments to non-farm customers. A third use of farm wealth data focuses on access to credit. Of interest in the United States is the availability of credit and financial services to small and beginning farm businesses. Information about the farm balance sheet, particularly lender market shares among different sizes of farming operations, and net worth helps inform this issue.

Measures of farm household net worth have several uses in the estimation and analyses of household economic status and wealth management issues. These include: (1) providing information about assets which are an income source and debt which requires an expenditure from the household; (2) giving a measure of economic resiliency or the ability to withstand unanticipated financial shocks, including a potential source of funds to support consumption; (3) providing insight, based on the composition and accumulation of holdings, into how farmers build wealth; (4) establishing a capital stock to underpin decisions about retirement, financial security in later life, and the transfer of assets to a new generation of farmers; and (5) giving a basis for deriving more comprehensive measures of household economic well-being than can be attained through use of an income indicator alone.

As a source of income and expenditure of the household, assets and debts affect both the credit and debit sides of the household income statement. Assets are a source of property income in the form of interest, dividends, and rents. Assets may also be a source of service-related earnings of the farm holding that are in addition to income from production of agricultural commodities. Interest paid on debt is an expense, which may belong to the farm or to the household depending upon where debt is held. Taking into account the debt position and income level of the household may dramatically alter perspectives about the debt service capability of a farm business. Off-farm incomes of households, including property income, may make debt service commitments look less problematic than they would if made on the basis of farm earnings alone (McElroy *et al.*, 2002). But, household debt for non-farm purposes may also expose farm businesses to potential financial difficulty. Moreover, if a large share of household income is devoted to debt service, households have fewer resources for purchasing goods and services (Dynan *et al.*, 2003). Knowledge of the full set of assets and debts at both the farm and household levels, and total income from all sources, is necessary to accurately evaluate business and household solvency and to assess the ability of each to meet its financial commitments.

In addition to providing a potential source of property income and influencing debt status, measures of net worth provide a portrait of the economic resources available to households at a given point in time (Bureau of the Census (U.S.), 2003; Bureau of the Census (U.S.), 1994).

**Wealth is a measure of the level of financial or economic resources that a household and its members have available at a given point in time.**

Wealth provides a capacity to draw down assets to generate an infusion of funds to sustain consumption when faced with an unanticipated economic or financial shock or to respond to a new business opportunity. Given that farm households, on average, spend a large portion of available work time and other resources participating in off-farm activities, shocks can emanate from either the non-farm or farm sectors of the economy, as well as from a wide variety of household events. The ability of a household to adjust to a financial or economic shock may be enhanced by the ability to sell, lease, or redeploy assets such as land or other capital.

The composition of a household's portfolio may affect how it responds to changes in government policy or some other event. For example, a household that owns only machinery and equipment and leases land would not benefit from rising land values. In fact, if rents rise because of higher land values, the household may face higher costs and lower incomes. Meanwhile, households that own land may see their net worth rise. Of course, it is also possible, as the widespread United States farm financial crisis of the 1980's illustrated, for land values to erode. This left farms and their controlling or ownership households in a difficult financial position, if not bankrupt. Knowledge of the composition of household net worth provides a basis for evaluating how effects of public policy or changes in the farm economy may be transmitted throughout the farm sector and rural areas.

In addition to accumulating wealth as a precaution against financial shocks, households also save to support financial security in retirement. Information about net worth and its composition may help identify segments of the farm community that may encounter difficulty in sustaining consumption and meeting basic needs without significant ongoing sources of income from earnings or from transfers from government or other sources.

Wealth measures are also important to understand household economic well-being. Aside from using assets or wealth in current production or to generate income in the form of interest, dividends or rents, a household can also realize gains or losses from the sale of assets. Even if not sold, household wealth could be converted to an annuity value and combined with income to provide a more robust estimate of consumption that household resources could support if assets were converted to cash. Hathaway makes this point by noting that, "changes in real wealth due to changes in asset values have much the same characteristics as current income in that they can be saved (i.e., used to increase net worth) or they can be consumed (via sale or borrowing) without decreasing net worth (Hathaway, 1963). Whether taking stock of performance or debt service capability, examining the ability to sustain consumption and provide for basic living needs, or deriving indicators of economic well-being, household wealth measures improve the perspective (gained solely from the use of income measures or farm business measures) of the economic status of farm households and their members.

### **XII.3 Differences in wealth measurement for farms and farm operator households**

Farm households can be defined in a wide variety of ways. For example, in the United States, a farm household is defined as the domicile of the primary operator of the surveyed farm establishment. This includes individuals living in the operator's residence who share the financial resources of the farm operator. A shortcoming of the United States' farm household wealth collection through the Agricultural Resource Management Survey (ARMS) is that data are collected only for the primary operators of United States farms and their households. Ideally, data used to construct household wealth estimates would provide coverage for all households contributing assets and sharing in production risks. To provide the flexibility needed to classify households, data regarding the characteristics of households, household members, and the farms they operate are also collected. This enables households to be categorized into groups needed to address specific questions.

### **XII.4 Connection between farms and households in wealth measurement**

Farm households accumulate wealth through a variety of avenues. One way is to consume less than is earned over a period of time. Another is through increasing asset values, due to changes in the conditions

governing supply and demand for the asset and changes in the services associated directly or indirectly with the asset. A third way is through gifts, transfers or inheritances. The concept underlying the collection of data to measure wealth and wealth accumulation of farm households is that the farm can be separated from the households associated with farming. The farm business is viewed as an establishment, or an economic unit, that produces agricultural output or other goods and services. Operators of farms use assets acquired from households and other legal entities to generate output and contribute to value added within the economy (see Figure XII.1). As business establishments, farms utilize assets provided by multiple legal entities, including households and other businesses. Likewise, farm households may decide to allocate their assets in a variety of outlets. The farm business may be only one component of the household portfolio.

Business linkages are not only important in establishing the flow of resources to the farm, but are also valuable in helping understand the distribution of farm income and wealth. For example, of the 2.1 million U.S. farms in 2002, 209,000 rented land under a share-rent arrangement. Under typical share-rent arrangements, landlords provide a share of operating inputs in addition to land. Yet, other farms are organized as partnerships or family corporations and over 50,000 grew commodities under a contract arrangement with another entity. The variety of business organizations and arrangements being used by farmers suggests that the net worth of either the farm sector or farm businesses cannot be assumed to belong entirely to farm households. Data collection must discern whether all farm assets and liabilities accrue to a single, or primary operator's household (see Figure XII.2). Meanwhile, households allocate their own resources to multiple uses. This means that measures of farm household wealth need to reflect portfolio decisions that take into account assets and/or liabilities outside the farm (see Figure XII.3).

## **XII.5 Data to support estimates of household net worth**

Farm households use a wide variety of livelihood strategies, saving, and investment choices. This means that both farm and non-farm sources of wealth should be considered in constructing estimates of household net worth. Each segment of the household balance sheet has its own challenges and can be inherently difficult to measure. Work with data for all United States households has demonstrated that wealth is not simple to measure (Bowles and Bosworth, 2001). Households typically have a list of assets and multiple sources of both business and personal debt (see Table XII.1).

**The Handbook recognizes that farm households may have multiple sources of farm and non-farm assets and/or liabilities. To help ensure accuracy and completeness of estimates, net worth measures should take into account both farm and non-farm sources of wealth. Estimates of net worth should also recognize that farm wealth may not be entirely owned by farm households.**

Estimates of net worth for United States farm households can be developed from two major surveys: The Survey of Consumer Finances (SCF) and the Agricultural Resource Management Survey (ARMS). The SCF is a cross-section survey conducted every three years by the Federal Reserve (Kennickell, 2000). Since the focus of the SCF is on household wealth, it contains detailed questions on financial assets, non-financial assets, and debts. The SCF contains limited information about linkages between farm businesses and their households. Sample size also limits its use in examining wealth for farm households. In 2001, the latest year available, fewer than 300 farm households were included.

**Table XII.1**  
**Average wealth of farm operator households by farm typology group, 1999**

Item	Limited-resources	Retirement	Residential/lifestyle	Farming occupation/lower-sales	Farming occupation/higher-sales	Large	Very large	All
Number of farms	127,738	297,566	931,259	479,925	175,370	77,314	58,403	2,147,576
Per cent of farms	5.9	13.9	43.4	22.3	8.2	3.6	2.7	100
Farm total assets	84,147	347,772	299,934	512,282	810,706	1,230,336	2,212,028	468,385
Farm total debt	6,590	7,002	28,398	32,561	109,313	205,558	442,800	49,322
Farm net worth	77,557	340,770	271,536	479,720	701,392	1,024,778	1,769,229	419,063
Operator household share of farm assets	83,600	336,644	290,023	485,049	747,020	1,103,458	1,799,418	435,438
Operator household share of farm debt	6,534	6,913	27,938	31,683	104,470	190,427	368,129	45,939
Operator household share of farm net worth	77,066	329,731	262,085	453,366	642,551	913,031	1,431,288	389,498
Operator household off-farm assets	66,752	218,860	236,907	161,769	132,167	199,793	259,502	198,219
Cash, money market accounts, etc	17,542	61,028	36,898	46,193	32,556	38,343	49,228	41,200
IRAs, Keough, 401K, etc	11,969	50,939	67,447	38,539	27,555	39,439	50,138	50,663
Corporate stock, mutual funds, etc	12,590	50,838	48,774	36,126	35,830	61,065	70,145	44,048
Other nonfarm assets	*24,650	56,055	83,788	40,912	36,225	60,945	89,993	62,309
Operator household off-farm debt	5,872	12,151	37,248	17,558	13,004	27,644	32,919	25,061
Operator household off-farm net worth	60,880	206,709	199,659	144,212	119,162	172,149	226,584	173,159
Operator household net worth	137,945	536,440	461,744	597,577	761,713	1,085,180	1,657,872	562,657

Source: 1999 USDA Agricultural Resource Management Survey.

\* indicates that the standard error of the estimate is greater than 25 per cent and less than or equal to 50 per cent.

The ARMS is an annual cross-section survey that contains information about the farm, the farm operator and his or her household. Income, consumption, and wealth are collected concurrently from the same sample unit. Estimates of farm household wealth produced by the USDA rely on the ARMS since all types and sizes of business operations are included along with the households of the primary or senior farm operator. SCF results provide a basis for comparing estimates of wealth for farm households derived from ARMS with estimates for all United States households.

To construct estimates of household net worth, data collection starts with the farm business. The goal is to measure the value of business assets by component, to identify liabilities, and to establish ownership and control of assets used in production. The largest and most important component of farm business assets, land, is valued by asking for the values of component parts. This is done for two reasons. First, dwelling values, especially the operator dwelling, are used to impute an annual rental value that becomes a part of the estimates of income. Second, the value of land and buildings rented to, and rented from, others helps determine the amount of assets controlled in the business operation. The farm business balance sheet is completed by asking about other assets used in the business. Beginning and end of year values are determined for crops, livestock, production inputs, costs sunk into growing crops, and accounts owed to the business. End of year values are collected for items such as tractors, machinery, trucks and cars owned by the operation. For trucks and cars, an effort is made to obtain the share of their value that is associated with the farm. End of year values of assets are used in constructing the business balance sheet. Change in value from beginning to end of year contributes to value added and to the development of an accrual based measure of business income.

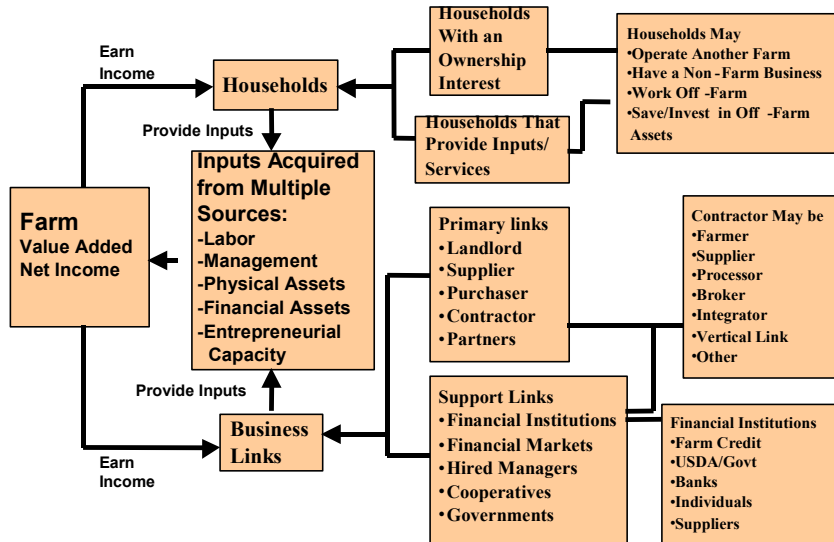
Farm debt is collected next, following the organization of a standard balance sheet. First, inquiries are made about loans taken and repaid during a calendar year. Not all farms have loan balances. Many do use loan funds during the year, but repay them by year-end. Collecting information about intra-year production loans helps put interest expense reported for the farm into perspective. For the five largest loans, sufficient data are collected to estimate the amount of debt service on the loan. Details about the purpose of the loan are established, including the per cent for farm purposes. These questions help align the estimate of farm debt with asset values and with business net income.

Once farm asset values and debt have been established, farm net worth is calculated by subtracting debt owed by the farm from total farm assets. When there are multiple farm households associated with a business, farm net worth is allocated among households to avoid overstating wealth estimates for any one household.

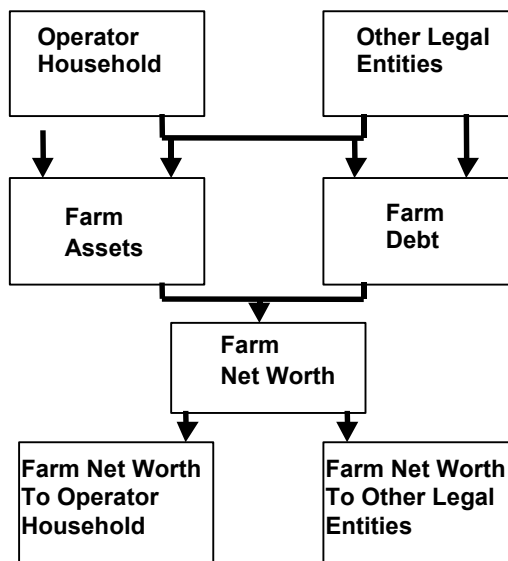
To complete an estimate of net worth for the household, the value of non-farm assets and debts are collected. As with the farm business, the ARMS is designed to inquire about household non-farm assets first. Non-farm assets are grouped into four categories: financial assets, business holdings, real estate, and other assets not reported elsewhere.

Asset values are followed by household debt owed outside the business. Like assets, debt is collected in four parts. The ARMS obtains information about mortgages on the operator's dwelling. Dwelling values are included in the farm balance sheet if the dwelling is owned by the farm. If it is not a part of the farm, the dwelling is included in household assets and debt is reported as a part of household debt. The remaining debt questions ask about other real estate loans, debt associated with other businesses that are not part of the farm, and personal loans such as credit cards, automobile loans, or any other household debts. Non-farm asset values combined with non-farm debt give an estimate of farm household net worth from non-farm sources. Household net worth is the summation of farm and non-farm components.

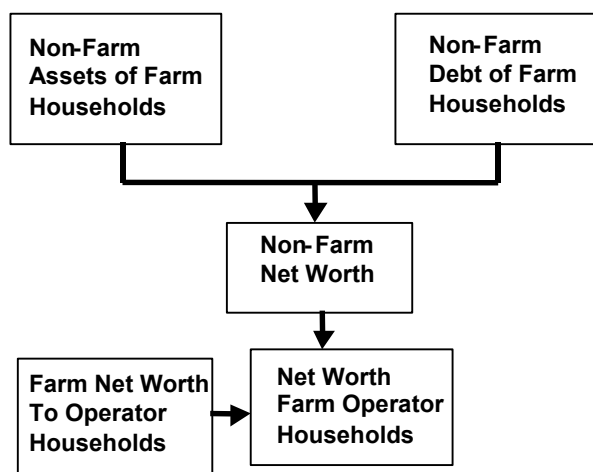
**Figure XII.1**  
**Modern Farms Use Inputs from a Variety of Sources who in return share in Output and Income**



**Figure XII.2**  
**Households Share Farm Net Worth with other providing Inputs**



**Figure XII.3**  
**Operator Households' Net Originates from Farm and Non-Farm Assets and Liabilities**



To facilitate collection of non-farm assets and debt, the respondent is not asked to report specific dollar amounts. Instead, respondents are asked to select from among 31 codes that reflect a dollar range. Codes for dollar categories have been used to report off-farm income, assets and debt, and consumption expenditures in the ARMS since 1986. Experience suggests that reporting codes have made questions viewed as personal less intrusive to respondents and enumerators. As a result, there is little non-response on these items. Refusal codes also help distinguish between a valid zero and a known positive (but missing) value thereby improving estimates of household wealth. Codes for dollar categories have also been used in other data collections to help facilitate reporting of household wealth data (Jappelli and Pistaferri, 2000).

**The Handbook recognizes that household net worth is the summation of farm net worth (assets minus debts) and non-farm net worth (assets minus debts).**

## **XII.6 Extending analyses of household economic status and well-being**

Measures of wealth can complement use of money or other income measures for evaluating business or household economic or financial performance. This section discusses how household wealth estimates can help extend analyses of household economic well-being based on income measures.

**Capital gains as income.** Household incomes may include income from property and transfers. Realized property income has typically been included in measures of household income as interest and dividends. Household assets, whether associated with their farm or in other forms, may be subject to gains

or losses in value from a variety of macro- and microeconomic events, policies, or programs. Whether or how capital gains should be considered in the measurement of farm or household income is open to discussion (see Chapter X of this Handbook, and Hottel and Gardner, 1983; Brinkman, 1980; Hill, 2000b, 2002; Canberra Group, 2001).

At the household level, if net worth increases during an accounting period, the increase results from household savings, receipt of transfers, or changes in the marketable value of holdings. Given a similar starting point, households with increases in net worth are likely to be in a better longer-term financial position than are households with static or declining net worth. In examining the well-being or longer-term viability of households, it may also be helpful to know whether any drawdown in wealth levels was planned (making use of resources accumulated in an earlier period) or involuntary (the result of some shock).

While the Canberra Group did not include the value of unrealized asset gains in either the ideal or practical measure of disposable income advanced in its report and recommendations, it did recognize that such gains could have a significant impact on household economic well-being. The Canberra Group noted that including an imputed income stream from these gains would provide additional perspective of the household's command over resources. The group also noted, however, that if the focus is on whether a household can meet its everyday needs, the relevant approach is to include only realized gains and losses on holdings. The Group recognized that collecting data needed to estimate capital gains through surveys would be difficult and would increase respondent burden. They recommended the use of a satellite account to report income estimates that included measures of capital gain (Canberra Group, 2001).

The United States Census Bureau recently released a satellite account that extends money estimates of income for all households in the United States to include realized gains and losses (Denavas *et al.*, 2002). The Census Bureau has also begun to recognize the effect of including unrealized capital gains in measures of income, at least to the extent that including an annuity based on equity held in home ownership is reflective of property holdings.

**Household savings.** Farming, as largely a self-employment industry, faces a variety of business and financial risks. Business risk arises from changes in production or prices, while financial risk emerges from the fixed financial commitments of the farm. Savings help add to household wealth and provide a buffer or cushion to manage either planned expenditures, such as educating children, or unplanned events, such as crop failure or a medical problem confronting a household member. For both planned and unplanned events, savings provide a source of household liquidity. In addition, accumulated savings provide a source of financial security in later life when earned income is typically lower.

Savings are a measure of flow over a defined period. In contrast, wealth is a measure of stock defined at a point in time. Savings can be measured in several ways (Juster *et al.*, 1999; Mishra and Morehart, 1998). One way is to take the difference between household income and expenditures, establishing a direct link between household earnings and wealth accumulation (see Chapter X). A second method is to sum new funds put into household assets with the amount of debt that has been repaid. Or, alternatively, savings can be measured as the difference in net worth during a period of time, revised to reflect gains or losses in asset values and transfers received by the household. Considerable difficulties with respect to survey use have been recognized for the last two measurement methods (Juster *et al.*, 1999).

**Measures of household well-being.** An individual's economic status has been defined as command over the potential to consume goods and services (Hill, 2000b, 2002). Measures of **economic well-being** that include all potential sources of income from the use of labour and owned assets have been calculated for households (Chase and Lerohl, 1981; Carlin and Reinsel, 1973; Wolfe *et al.*, 2004a; Wolfe *et al.*, 2004b; Salant *et al.*, 1986). In this case, the ability to acquire goods and services is viewed as being reflected not

only in the money income available to the household but also by the money that could be raised by converting the household's stock of assets to income. This could be accomplished in a variety of ways, including drawing down savings, selling assets, or borrowing using assets as collateral.

The ARMS has been used to jointly consider income and wealth in assessing the economic well-being of farm households in the United States. One approach involves qualitative categorizing of household income and wealth based on median non-farm household levels of income and wealth (McElroy *et al.*, 2002; Mishra *et al.*, 2002). Farm households were grouped depending on whether they had higher or lower amounts of income and wealth when compared with the median for non-farm households.

Another approach yields a quantitative measure whereby estimates of wealth are converted to an annuity and the annual equivalents of annuity payments are summed with estimates of annual money income. Challenges in determining an annuity value of wealth include decisions about the length of life expectancy, rate of interest, and measure of net worth. A particular problem in determining life expectancy for households occurs when assets are owned by operators and another person or persons. In these cases it is difficult to decide whose life expectancy to use. For example, in the United States, information about farm household money income and wealth has been used to produce an index based on a two-dimensional measure of economic well-being. This is achieved through use of a formula such as the following:

$$\text{Economic Well-Being Indicator} = \text{Household Income} + \text{Annuity Value of Net Worth}$$

Formulas used to generate an annuity typically require the choice of a finite time horizon. One option is to assume that no household would consume assets at a rate that would leave household members in an impoverished state. The measure of net worth to use is also an important consideration. Farm households, like other self-employed households, own assets that provide the basis for generating current money income. To avoid double counting, farm production assets and household durable goods are generally excluded from measures of net worth used in constructing composite indicators of well-being.

**Farm household portfolio composition and liquidity.** Liquidity is concerned with the ability of households to generate enough funds to meet financial obligations as they come due. It is measured by examining the farm and household balance sheets to determine whether current assets, if sold, would be sufficient to pay current liabilities. Financial analysts usually use the term "current" to mean some relatively short period of time of up to a year. The relationship between current assets and liabilities provides an indication of the amount of internal capital farm households have available for business and household operation. With households allocating financial resources to farm and non-farm uses, an accurate perspective of the amount of funds available for the business to acquire a needed input, to handle an emergency, or to repay a short-term debt may require information about both farm and household sources of assets and liabilities.

Farm households maintain a varied portfolio of assets, however, farm assets, and particularly farmland, still dominate their balance sheets. With diversified household portfolios, the degree of solvency of farm businesses that can draw on household assets or liquidity may be under estimated by looking solely at farm business balance sheets. Non-farm net worth may be used to relieve farm liquidity constraints. The opposite situation can arise when farm equity is used as collateral for consumption or to fund non-farm enterprises. Moving from a business to a household perspective, composition of the portfolio indicates household's use of funds and funding priorities, particularly as they move through stages of the farm-family lifecycle.

## XII.7 Measurement and composition of household wealth in developing countries

Measurement of household wealth in developing countries utilizes the same financial concept implemented in other countries. Household wealth is the difference between the value of all assets, farm and non-farm, owned by the household and liabilities owed by the household to any of a variety of lenders. Differences in estimation may lie mainly in the types of assets owned by households and the sources of debt utilized. Information on household wealth for developing countries comes principally from separate modules within their Living Standards Measurement Study (LSMS) questionnaires, in particular those covering their (non-agricultural) household enterprises, agriculture, savings, and credit. This subsection presents a brief description of the existing measurement of rural household assets and liabilities, as captured by multitopic LSMS household surveys in a small sample of developing countries.

### XII.7.1 Household enterprises module

Among developing countries LSMS questionnaires mostly contain a module exploring the dynamics and activities of **non-agricultural household enterprises** (which, for simplicity, are referred to in Chapter 18 in Grosh and Glewwe (2000) as “household enterprises”). These modules gather information on the portion of a household’s income and employment derived from non-agricultural self-employment. More extensive versions have also collected information on the involvement of household enterprises with credit (Vijverberg and Mead, 2000). Most household enterprises fall into one of two major categories: Many, probably the majority, of these enterprises generate only minimal income that is barely sufficient to enable their owners to survive; examples are food preparation, sewing, shoe shining, and street vending. Other household enterprises, sometimes referred to as *microenterprises*, generate incomes that are substantially higher. In contrast with survivalist enterprises that rely almost exclusively on unpaid family members (and often consist of one person working alone), microenterprises are more likely to use hired workers. Examples of microenterprises are furniture making, manufacturing, and wholesaling (Vijverberg and Mead, 2000).

Business assets are an important determinant of the performance of an enterprise. Enterprise performance can be measured not only by labour productivity or by the absolute amount of income generated but also in terms of the percentage return to investments in the enterprise. And an enterprise’s start-up and subsequent performance depend heavily on the entrepreneur’s ability to acquire the assets needed to be competitive in the sector. If one of the purposes of a particular survey is to investigate the credit needs of small-scale private enterprises, it is important to collect information about business assets.

Business assets come in two forms: fixed assets and inventories. **Fixed assets** include land, buildings, tools, machinery, furniture, and vehicles used by the labour force. **Inventories** consist of raw materials, intermediate goods that need to be further processed, and finished products ready for sale. While recent enterprise income can be analysed using the current value of business assets, in order to analyse income over 12 months, additional information on sales and purchases of assets is needed.<sup>3</sup> For land and buildings, any expenditure on improvements may be counted as assets purchased. The “normal” quantity of inventories is difficult if not impossible to measure, hence the LSMS questionnaires ask only for current values. Asking for current market value of assets is a common practice in preparing balance sheet estimates for businesses and households.

<sup>3</sup> Assuming that transactions took place on average a half year ago, the typical value of business assets in use over the past 12 months can be approximated by the following:  

$$([\text{current value of assets}] + [\text{value of assets sold}])/2 - [\text{value of assets purchased}]/2.$$

For many purposes, the most important question about fixed assets is not so much what assets are **owned** by the enterprise but rather what assets it **uses**. An entrepreneur may rent, own, or borrow assets from a neighbour or relative or from another enterprise operating in the household. Experience with previous LSMS data sets indicates that a significant proportion (about one fourth) of household enterprise owners report owning no assets, and those that do own assets often share them with household members or with other household enterprises; this is particularly the case with vehicles. If an asset is shared, it contributes not only to the income of the enterprise that owns it but also to the income of other enterprises that use it or to general household welfare. In light of this fact, it is necessary to devise a way to account for the complex sources and uses of business assets (Vijverberg and Mead 2000).

### Box XII.1

#### Modules on (non-agricultural) household enterprises

The **China** Living Standard Survey (CLSS), 1995-1997, gathers data on household non-farm businesses for the *three* most important enterprises operated by the household. It collects data on the ownership, type of business, investment and its sources for each enterprise. It also records information on **assets** and inventory.

The **Côte d'Ivoire** Living Standards Survey (CILSS), 1985-1988, collects information on the *three* most important businesses per household. Information on **the value of productive assets and stocks** is also recorded.

The **Ghana** Living Standards Survey round four (GLSS 4) 1998-1999 gathers information on **assets** of the non-farm enterprise and solicits information on 'net income and inventory of enterprise'.

The **Morocco** Living Standards Survey (MLSS), 1990-1991, provides information on the identification of home enterprises; on fixed-place (home or shop) enterprises expenses; ambulatory enterprises expenses; enterprises with formal accounting procedures receipts; enterprises without formal accounting procedures receipts; capital and loans.

The **South Africa** Integrated Household Survey (SAIHS), 1994, asks about whether any member of the household owns other property or a share of other property (e.g. business property); how much it is worth; and whether any rent is being received.

The **Vietnam** Living Standards Survey (VLSS), 1997-1998, collects information on ownership, sales and purchases of **assets** and other durable goods.

The **Zambia** Living Conditions Monitoring Survey (ZLCMS), 1996, asks about what assets the household owns. This refers to **household assets** that are in good working condition and are used by the household in the production of goods and services. In the event an individual is running more than three activities the respondent is asked to specify up to *three* of the most important business activities.

## XII.7.2 Agriculture module

The agriculture module in LSMS surveys includes only the activities of the farm that involve crop (annuals and perennials) and livestock production. It omits hunting, fishing, and gathering activities as well as the processing of agricultural products. Those activities can be treated as non-farm enterprise activities and should be included in the household enterprise module of an LSMS.

The agricultural module has generally had several objectives: measuring net income from the household's production of crops and livestock; and measuring **the value of household agricultural assets** such as land, animals, and equipment etc. (Reardon and Glewwe, 2000).

**Box XII.2****Modules on agriculture – selected developing countries**

**China** records information on different **agricultural inputs and agricultural assets**, e.g., farm machines and equipment.

**Côte d'Ivoire** records for each type of livestock the number of and value of **livestock** currently owned and the number of and value of livestock sold, purchased and lost over the past year. It asks for a list of the main small **tools** used and owned by Ivorian farmers. It also asks about the value of the current stock of each type of **farm equipment** (not tools) such as tractors, carts, vehicles and draft animals

**Ghana** covers **agricultural assets** such as land, livestock and equipment. The land referred to covers all **land owned** by the household whether for agricultural or non-agricultural purpose, including land rented out to other persons.

The **India** – Uttar Pradesh and Bihar – Survey of Living Conditions (ISLC), 1997-1998, seeks information on livestock owned and **farming assets** owned.

**Morocco** asks about the size and current value of the land plots; the ownership and income of livestock; and agricultural equipment and loans.

**Peru** asks about the market value of any agricultural equipment that is owned.

**South Africa** asks about the persons in the household having the right to use (having access to) any land for arable farming or for stock farming. It also asks whether the household owns, or farms with, any **animals** and seeks information on the presence of poultry of any kind. Furthermore, it asks whether the household owns mechanized **farm equipment** or non-mechanical farm tools.

**Vietnam** collects information on household's control over different plots of **land of different tenures**. It collects information on **livestock, poultry and other animals** that are either consumed by a household or generate income. It collects information on **hand tools**, and information on **implements and farm machinery** owned by the household, and any rental revenues obtained from them.

**XII.7.3 Savings module**

The savings module is an essential part of a multitopic household survey like the LSMS. This module gathers data on **the value of the household's stock of financial assets**. Such data are necessary to accurately estimate **household wealth**. And the savings module can collect information on both the types of financial assets held by households and recent transactions in such assets during the period of the survey, providing information that is directly relevant for analysing household savings (Kochar, 2000).

The savings modules in most multipurpose household surveys (including many LSMS surveys) typically collect information only on **financial assets and liabilities**. The data set generally includes information on the household's **non-financial assets** in other modules of the survey (Kochar, 2000).

It is widely believed that **the low return on assets** in developing economies partly reflects the fragmented nature of capital markets and, hence, the inability of households to hold assets that yield the highest rates of return. The levels and (especially) the forms in which households save affect household incomes, particularly in countries where agricultural or non-farm enterprises constitute a major source of household income (as is the case in most developing economies).

Income from agricultural or non-farm enterprises reflects, in part, the household's **ownership of physical capital or "productive" assets** such as the machinery and tools used in such enterprises.

Investment in such assets represents an act of saving, thereby linking savings and portfolio choices to household income (Kochar, 2000).

As noted above, there are alternative ways to measure savings: two of these are by subtracting consumption from household income or by observing changes in stocks of individual assets. For this reason, data on financial assets are best collected in the savings module. There are **difficulties** inherent in each of the two ways of measuring savings. A lack of data on important assets is a problem when measuring savings using data on asset transactions. And the difference between income and consumption does not always provide a reasonable estimate of savings, often because of weaknesses in the design of the income and consumption modules (Kochar, 2000).

Data on stocks of assets are also necessary to estimate **household wealth**. Experience has shown that the accuracy of estimates of household wealth can be improved if households are asked about the value of different types of assets rather than being asked to provide an estimate of their total wealth (Kochar, 2000).

**Box XII.3**  
**Savings modules**

**China** asks the household to list different places (e.g., banks, credit union, loan to enterprises) to put away money which will not be used for a while, and to estimate the maximum amount of money that could be taken from own assets when faced with, for example, some kind of disaster or the need to build a new house.

**Côte d'Ivoire** records the total value of all savings.

**Ghana** collects information on loans, assets and savings information about the household's savings account and the current value of savings is collected.

The **Jamaica** Survey of Living Conditions (JSLC), 1997, included questions about how often the respondent saved, financial assets, and other assets.

**Vietnam** asks households to list different **types of savings**, if any. The respondent is also asked to total the current value of all the different forms of savings that he/she has.

#### **XII.7.4 Credit modules**

Not covering all of the sources and types of credit in a multitopic household survey can lead to serious mis-measurement of credit use. Thus it is essential for surveys to ask questions about every conceivable source and variety of credit to ensure that the full extent of credit use is accurately measured. While basic information on borrowing has been collected in many past LSMS surveys, few surveys have included detailed questions about credit sources or even general questions about using supplier credit for productive purposes. Questions on the use of supplier credit have most frequently been found in inquiries about agricultural enterprises, but even in these cases very few questions were included (Scott, 2000).

Analysis of the data from the few surveys that have addressed this issue in depth have shown that it is vital to include explicit questions about the sources and types of credit and about the purposes to which it is put (see Table XII.2). Only when these questions are included will surveys yield enough data to give an accurate picture of total credit use (Scott, 2000).

**Table XII.2**  
Types of Credit Information Obtained by Selected LSMS Surveys

Country	Loans				Trade credit					
	Mortgage	All loans	Specific loans	By source		Agriculture	Non-agricultural enterprises	Food	Other consumption	Service
				Implicit	Explicit					
Ecuador 1994	○	●	● <sup>a</sup>	●	●	●				
Ghana 1987/8	○	●	●	●	●	●				
Ivory Coast 1985	○	●	●	●	●	●				
Kyrgyz Rep. 1996	○	●	●	●	●	●	●		●	
Peru 1985	○	●	●	●	●	●				
Pakistan 1991	○	●	●	●	●	●	●	●		
South Africa 1994	○	●	●	●	●			○	○	
Vietnam 1992/3	○	●	●	●	●	●				

● Indicates that the questionnaire contained thorough questions on this topic.  
○ Indicates that the questionnaire partially covered this topic.  
a. Only agricultural loan information was collected.

Note: This table only shows whether each questionnaire included questions asking if the household had obtained credit of a specific type. The table does not show whether the design of the questionnaire would yield the data necessary to calculate the size of the loan, the total cost of credit, or other loan terms.

Source: Relevant LSMS questionnaires.

#### Box XII.4 Credit modules

**China** collects general information on the number of different sources the household has ever borrowed money from. Information on the amount of the loan, interest, collateral requirement, repayment schedule and reason for borrowing is requested for each instance of borrowing. The survey also gathers information on enterprise **debt and its structure** (e.g., bank loan, loan from collective or cooperative foundation, and private loan).

**Côte d'Ivoire** records the total amount of **loans** provided by the household to others, total amount **borrowed** from institutions or from other people.

**Ghana** obtains information on loans contracted or negotiated by the household in terms of money or goods.

**India** aims at ascertaining **the net debt position of the household**. The total amount currently outstanding that the household owes to others is also recorded.

**Morocco** asks questions about borrowing, lending and savings.

**Peru** asks about any financial transaction undertaken in the last 12 months; the amount of the **loan** remaining to be paid.

**South Africa** asks whether any member of the household **owes cash or goods** to any institution or to an individual who is not a household member; the amount owed; and the monthly payment.

**Vietnam** collects information on the amount of **indebtedness** of household members to people or institutions outside of the household. If money or goods have been borrowed, or borrowed and repaid by any household member in the last 12 months, information is collected on those loans, including the source and amount of loan, interest, side payments, collateral, repayment schedule, reason for borrowing, and number of loans from the same source. It also collects similar information on the amount household members have lent to people outside of the household.

## XII.8 Conclusions

In developed countries, while balance sheets for farm businesses are frequently encountered in association with surveys of farm accounts, information on the wider assets, liabilities and net worth of the households that operate farms is confined to a very few. This represents a substantial gap in knowledge about the economic situation of farm household-firms and one which is of significance both to agricultural policy in OECD Members and to explaining behavioural responses and adjustment patterns. The importance of agricultural land to the asset mix and the relevance of changes in its value to the longer-term rewards earned by its owners, in turn a reflection of the support policies applied to agriculture, makes the present information lacuna particularly worrying.

The results that are obtained for household wealth are dependent on the definitions adopted for a household and the basis of classifying them into agricultural or non-agricultural. This parallels the situation experienced when measuring incomes, and there is no need to repeat the issues covered in Chapters IX and X. A range of specific issues relates to asset identification and valuation, but a detailed exploration of these must await a subsequent edition of this Handbook. It is anticipated that the Luxembourg Wealth Study may be useful in pointing to a harmonized wealth methodology for agricultural households, performing a role similar to that of the Canberra Group in household income measurement (see Chapter X). Another similarity with income statistics is that data sources vary between countries. The extension of farm accounts surveys to cover household wealth (in addition to agricultural assets and liabilities) has attractions for some countries, though there are well-known difficulties in securing information about households from a survey based on farms (see Chapter XIII). Some countries may prefer other types of microeconomic data sources, such as administrative registers or household surveys. A detailed review of potential data is an obvious next step which a later Handbook should consider.

In developing countries, notwithstanding some non-sampling measurement error problems, the work done in the countries cited in this chapter suggests that it is already feasible to construct balance sheets for the agricultural households found there. A possible format is provided in Annex 8.

Despite the relatively limited state of development of wealth statistics compared with income statistics (though household incomes are by no means yet at a satisfactory state in many countries), it is possible to make a clear statement of the desirability of having them.

**This Handbook recognizes that the wealth situation of the households that operate farms should be assessed. This includes, in addition to the assets and liabilities directly related to agriculture, those that household members hold outside the farm business.**

### References

- Alesina, A. and D. Rodrik (1994). "Distributive Politics and Economic Growth". *Quarterly Journal of Economics*, 108: pp.465-90.
- Atkinson, A. B. (ed.) (1980). "Wealth, Income and Inequality". Oxford University Press, Oxford.
- Bowles, T. J. and R. C. Bosworth (2001). "Farm Household Wealth: Measurement, Structure, and Determinants". Presented Paper, Western Agricultural Economics Association Meetings, Logan Utah, July.
- Brinkman, G. L. (1980). "Reflections on Farm Income in the 1970's". *Can. J. of Agr. Econ. CAES Annual Mtgs. Proceedings*. Aug.
- Bureau of the Census, U.S. Dept. of Commerce (2003). "Census Bureau Survey Gauges Household Wealth". *Statistical Brief, Econ. and Stat.* Oct.
- Bureau of the Census, U.S. Dept. of Commerce (1994). "Household Wealth and Asset Ownership: 1991". *Statistical Brief, Econ. and Stat. Admin.* Feb.
- Canberra Group (2001). "Expert Group on Household Income Statistics. Final Report and Recommendations". Ottawa. ISBN 0-9688524-0-8.
- Carlin, T. A. and E. I. Reinsel (1973). "Combining Income and Wealth: An Analysis of Farm Family Well-Being". *Amer. J. of Agr. Econ.* Vol. 55, No. 1. pp.38-43. Feb.
- Chase, L. and M.L. Lerohl (1981). "On Measuring Farmer's Economic Well-Being". *Can. J. of Agr. Econ.* pp.225-232, July.
- Deininger, K. and L. Squire (1998). "New Ways of Looking at Old Issues: Inequality and Growth". *Journal of Development Economics*. 57 (2), pp.257-285.
- Deininger, K. and P. Olinto (2002). "Asset Distribution, Inequality and Growth". World Bank, Land Policy Unit Working Paper.
- DeNavas-Walt, C., R. W. Cleveland, B. H. Webster Jr. (2002). "Income in the United States: 2002". *Current Population Reports*. U.S. Census Bureau, U.S. Dept. of Commerce Econ. Stat. Admin.
- Dynan, K., K. Johnson, and K. Pence (2003). "Recent Changes to a Measure of U.S. Household Debt Service". *Federal Reserve Bulletin*. pp.417- 426, Oct.
- El-Osta, H. and M. J. Morehart (2002). "The Dynamics of Wealth Concentration Among Farm Operator Households". *Agr. and Res. Econ. Rev.*, April.
- Fries, G., M. Starr-McCluer and A. E. Sunden (1998). "The Measurement of Household Wealth using Survey Data: An Overview of the Survey of Consumer Finances". *Fed. Res. Brd. of Gov.*, March.
- Gale, F. (2002). "The Graying Farm Sector Legacy of Off-Farm Migration". *Rural America*. Vol. 17, Issue 3, Fall.

- Gray, L.C. (1923). "Accumulation of Wealth by Farmers". *Amer. Econ. Rev.*, March.
- Grosh, M. and P. Glewwe, Eds. (2000). "Designing Household Survey Questionnaires for Developing Countries: Lessons From 15 years of the Living Standards Measurement Study". Washington D.C., World Bank.
- Hathaway, D. E. (1963). "Improving and Extending Farm-Nonfarm Income Comparisons". *Journal of Farm Economics*. Vol. 45 No 2. May.
- Hendricks, L. (2001). "Bequests and Retirement Wealth in the United States". Preliminary Paper. Department of Economics, Arizona State University. Dec.
- Hill, B. (2000a). "The illusory nature of balance sheets in agricultural economic statistics: a note". *Journal of Agricultural Economics*, 51(3), pp.463-467.
- Hill, B. (2000b). "Farm Incomes, Wealth and Agricultural Policy, 3<sup>rd</sup> Edition". Aldershot; Avebury. ISBN 0-7546-1132-9. pp.375.
- Hill, B. (2002). "Measures of Economic Status- Combining Income and Wealth Into a Single Measure of the Potential Command Over Goods and Services". Workshop on the Farm Household-Firm Unit: Its Importance in Agriculture and Implications for Statistics, Imperial College, Department of Agricultural Sciences, Wye, 2002.
- Hottel, B. J. and B. L. Gardner (1983). "The Rate of Return to Investment in Agriculture and Measuring Net Farm Income". *Amer. J. Agr. Econ.* August, pp.553-557.
- Jappelli, T. and L. Pistaferri (2000). "The Dynamics of Household Wealth Accumulation in Italy". CSEF Working Paper No. 27. Oct. 1999, Revised March 2000.
- Juster, T. and K. Kuester (1991). "Differences in the Measurement of Wealth, Wealth Inequality and Wealth Composition obtained from Alternative U.S: Wealth Surveys". *Review of Income and Wealth*, 37,1, pp.33-62.
- Juster, T. F., J. P. Smith and F. Stafford (1999). "The Measurement and Structure of Household Wealth". *Labour Economics Report* 6, pp.253-275.
- Kennickell, A. B. (2000). "Wealth Measurement in the Survey of Consumer Finances: Methodology and Directions for Future Research". *Am. Assoc. Public Opinion Res.* Portland, Oregon, May.
- Kochar, A. (2000). "Savings. Designing Household Survey Questionnaires for Developing Countries". M. Grosh and P. Glewwe (Eds.) *Lessons from 15 years of Living Standards Measurement Study*. Washington D.C., World Bank. 2: pp.183-209.
- McElroy, R., R. Strickland, J. Ryan, C. McGath, R. Green, K. Erickson, and W. McBride (2002). "Value Added and Net Farm Income Down for 2002". *Agricultural Income and Finance Outlook*. U.S. Dept. of Ag. AIS-79. Sept. 2002.

- Mishra, A. K., El-Osta, H. S., Morehart, M. J., Johnson, J. D. and Hopkins, J. W. (2002). "Income, Wealth, and the Economic Well-Being of Farm Households". Farm Sector Performance and Well-Being Branch, Resource Economics Division, Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 812.
- Mishra, A. K. and M. J. Morehart (2001). "Off-Farm Investment of Farm Households: A Logit Analysis". *Agricultural Finance Review*, Vol. 61 No. 1. Spring.
- Mishra, A. K. and M. J. Morehart (1998). "Farm Household Savings". NC-221 Annual Mtgs. Louisville, KY, Oct.
- Monke, J. (1998). "The 1997 Tax Law: New Incentives for Farmer's to Invest for Retirement". *Ag. Outlook. Econ. Res. Ser.*, U.S. Dept of Ag. Dec.
- Morehart, M. (2002). "Balance Sheets for Household-Firms in Agriculture. Workshop on the Farm Household-Firm Unit: Its Importance in Agriculture and Implications for Statistics, Imperial College, Department of Agricultural Sciences, Wye.
- Newby, H., Bell, C., Rose and Saunders, P. (1978). "Property, Paternalism and Power". Hutchinson. London.
- OECD (1998). "Adjustment in OECD Agriculture: Reforming Farmland Policies". OECD, Paris. ISBN 92-64-16027-2.
- OECD (2004). "Non-sectoral Policies for the Agriculture and Agro-Food Sectors: Taxation and Social Security". Working Party on Agricultural Policies and Markets. AGR/CA/APM(2004)13/Rev1. OECD, Paris.
- Reardon, T. and P. Glewwe (2000). "Agriculture. Designing Household Survey Questionnaires for Developing Countries". M. Gosh and P. Glewwe (Eds.) *Lessons from 15 years of the Living Standards Measurement Study*. Washington, D.C., World Bank. 2: pp.139-181.
- Roberts, M. and N. Key (2003). "Who Benefits from Government Farm Payments?" *Choices*, August.
- Salant, P., M. Smale and W. Saupe (1986). "Farm Viability: Results of the USDA Family Farm Surveys". U.S. Dept. of Agr. *Econ. Res. Ser., Rural Dev. Res. Report No. 60*. July.
- Scott, K. (2000). "Credit. Designing Household Survey Questionnaires for Developing Countries". M. Gosh and P. Glewwe (Eds.) *Lessons from 15 years of Living Standards Measurement Study*. Washington D.C., World Bank. 2: pp.211-248.
- U.S. Department of Agriculture (1989). "Major Statistic Series of the U.S. Department of Agriculture: The Balance Sheet, Vol. 11". U.S. Dept. of Ag. *Econ. Res. Ser. No. 671*. May.
- U.S. Department of Agriculture (1945). "The Balance Sheet of Agriculture, 1945". Washington, D.C.: *Miscellaneous Publication MP 0583*.
- Vijverberg, W. P. M. and D. C. Mead (2000). "Household Enterprises. Designing Household Survey Questionnaires for Developing Countries". M. Gosh and P. Glewwe (Eds.) *Lessons from 15 years of the Living Standards Measurement Study*. Washington D.C., World Bank. 2: pp.105-137.

Wolfe, E. N., Ajit, Z. and Asena C. (2004a). “Levy Institute Measure of Economic Well-Being Concept, Measurement, and Findings: United States, 1989, 1995, 2000 and 2001”. The Levy Economic Inst. of Bard College. May.

Wolfe, E. N., Ajit, Z. and Asena C. (2004b). “Levy Institute Measure of Economic Well-Being Concept, Measurement, and Findings: United States, 1989 and 2000”. The Levy Economic Inst. of Bard College. February.

**The following is a complete list of references for the Developing Countries referred to in the Boxes of this chapter:**

### **China**

Documentation for the China - Hebei and Liaoning Living Standards Survey

<http://www4.worldbank.org>

China Living Standards Survey, 1995 – 1997. Basic Information Document. February 2003

<http://www4.worldbank.org>

People's Republic of China. North and Northeast China Rural Survey. Farm Household Survey Form. 1995.

<http://www4.worldbank.org>

China (Hebei and Liaoning). Village Survey Form, 1997.

<http://www4.worldbank.org>

### **Côte d'Ivoire**

The World Bank/Institut National de la Statistique, (1996). “Côte d'Ivoire living standards survey (CILSS) 1985-88. Basic information for users of the data”.

August 6, 1996. <http://www.worldbank.org/html/prdph/lms/country/ci/docs/ciinfo.pdf>

Documentation for the 1988 Cote d'Ivoire Living Standards Survey

<http://www.worldbank.org/html/prdph/lms/country/ci/ci88docs.html>

### **Ghana**

Ghana Statistical Service (1999). “Ghana Living Standards Survey Round four (GLSS 4) 1998/99. Data user guide”. <http://www4.worldbank.org/afr/poverty/pdf/docnav/02684.pdf>

Documentation for the 1998/99 Ghana Living Standards Survey.

<http://www.worldbank.org/html/prdph/lms/country/gh/gh989doc.html>

“Ghana Living Standards Survey 4 (with Labour Force Module). Household Questionnaire Part A”.

<http://www4.worldbank.org/afr/poverty/pdf/docnav/02459.pdf>

“Ghana Living Standards Survey 4 (with Labour Force Module). Household Questionnaire Part B”.

<http://www4.worldbank.org/afr/poverty/pdf/docnav/02460.pdf>

### **India (Uttar Pradesh and Bihar)**

World Bank (1998). “Survey of Living Conditions Uttar Pradesh and Bihar. December 1997 - March 1998. Introduction to Datasets”.

<http://www.worldbank.org/html/prdph/lms/country/india/UP-Bihar%20SLC%20introduction.pdf>

Documentation for the 1997-98 Uttar Pradesh and Bihar Survey of Living Conditions.

<http://www.worldbank.org/html/prdph/lms/country/india/upbhdocs.html>

“Survey of living conditions Uttar Pradesh and Bihar. Household Questionnaire. December 1997-March 1998”.

<http://www.worldbank.org/html/prdph/lsms/country/india/slc-hh97.pdf>

### **Jamaica**

World Bank (2002). “Jamaica Survey of Living Conditions (JSLC) 1988-2000. Basic Information”. Development Research Group, Poverty and Human Resources. The World Bank May 2, 2002.

<http://www.worldbank.org/html/prdph/lsms/country/jm/docs/binfo2000.pdf>

### **Morocco**

World Bank (2003). “Morocco Living Standards Survey (MLSS) 1990/91. Basic Information”. Development Research Group, Poverty and Human Resources. The World Bank. April 1999, Updated January 2003. <http://www.worldbank.org/html/prdph/lsms/country/mo91/docs/mo91binf.pdf>

Documentation for the 1991 Morocco Living Standards Survey.

<http://www.worldbank.org/html/prdph/lsms/country/mo91/mo91docs.html>

“Morocco Living Standards Survey (MLSS) 1990/91. Household Questionnaire (Enquête nationale sur le niveau de vie des ménages)”. [In French Only] (winzipped).

### **Peru**

World Bank (1994). “Documentation for the 1994 Peru ENNIV Survey”.

<http://www.worldbank.org/html/prdph/lsms/country/pe94/pe94docs.html>

(1997) “National Survey of Households Living Standards Measurement May - July 1994. PERU LSMS 1994 QUESTIONNAIRE”, by Suhas D. Parandekar. February 13, 1997.

<http://www.worldbank.org/html/prdph/lsms/country/pe94/docs/pe94hhq3.pdf>

### **South Africa**

World Bank (1994). “Documentation for the South Africa Integrated Household Survey”.

<http://www.worldbank.org/html/prdph/lsms/country/za94/za94docs.html>

“South Africa Integrated Household Survey. Household Questionnaire”.

<http://www.worldbank.org/html/prdph/lsms/country/za94/docs/za94hh85.pdf>

### **Vietnam**

World Bank (2001). “Vietnam Living Standards Survey (VLSS), 1997-98. Basic Information”. Poverty and Human Resources Division, The World Bank, April 2001.

<http://www.worldbank.org/html/prdph/lsms/country/vn98/vn98bif.pdf>

“Documentation for the 1997/98 Viet Nam Living Standards Survey”.

<http://www.worldbank.org/html/prdph/lsms/country/vn98/vn98docs.html>

General Statistics Office. (1997). “Vietnam Living Standards Survey (VLSS), 1997-98. Household Questionnaire. Part A”. <http://www.worldbank.org/html/prdph/lsms/country/vn98/VIE09A.pdf>

General Statistics Office. (1997). “Vietnam Living Standards Survey (VLSS), 1997-98. Household Questionnaire. Part B”. <http://www.worldbank.org/html/prdph/lsms/country/vn98/VIE09B.pdf>

General Statistics Office. (1997). “Vietnam Living Standards Survey (VLSS), 1997-98. Household Questionnaire. Part C”. <http://www.worldbank.org/html/prdph/lsms/country/vn98/VIE09C.pdf>

General Statistics Office. (1997). “Vietnam Living Standards Survey (VLSS), 1997-98. Household Questionnaire. Part D”. <http://www.worldbank.org/html/prdph/lsms/country/vn98/VIE09D.pdf>

General Statistics Office. (1997). “Vietnam Living Standards Survey (VLSS), 1997-98. Household Questionnaire. Part E”. <http://www.worldbank.org/html/prdph/lsms/country/vn98/VIE09E.pdf>

General Statistics Office. (1997). “Vietnam Living Standards Survey (VLSS), 1997-98. Interviewers' Instruction Manual”. <http://www.worldbank.org/html/prdph/lsms/country/vn98/manualint.pdf>

**Zambia**

World Bank (1997) “Zambia, 1996 Living Conditions Monitoring Survey I. Survey Information”. Africa Databank.

<http://www4.worldbank.org>

Central Statistical Office “LCMS96 - Enumerator's Instruction Manual”.

<http://www4.worldbank.org/afr/poverty/pdf/docnav/00462.pdf>

Central Statistical Office “LCMS96 - Household Questionnaire”.

<http://www4.worldbank.org>