



Working Paper No. 372

THE LEVY INSTITUTE MEASURE OF ECONOMIC WELL-BEING

by

[Edward N. Wolff](#)

New York University and The Levy Economics Institute of Bard College,
New York

and

[Ajit Zacharias](#)

The Levy Economics Institute of Bard College, New York

February 2003

We wish to thank our colleagues at the Institute--Asena Caner, Thomas Hungerford and Dimitri Papadimitriou--for several useful comments. We have also benefitted from comments by Sheldon Danziger, Stephen Jenkins, Lars Osberg, and Daniel Weinberg. We are grateful for the excellent research assistance provided by Melissa Mahoney. The responsibility for any errors remains solely ours.

INTRODUCTION

The United States has expanded its lead over other advanced industrialized nations in terms of conventionally measured per capita income during the 1990s. A comparison of real GDP per equivalent adult between the U.S. and the other G-7 economies, based on the latest available Penn World Table, shows that the former grew much faster during the 1990s.¹ However, the well-documented increases in income and wealth inequality in the U.S. make it doubtful whether substantial segments of the population have benefited significantly from the fruits of the relatively rapid economic growth. It is also not clear that the level of economic well-being in the United States, if measured using a more comprehensive and realistic yardstick, have grown concomitantly with per capita income.

The project on economic well-being underway at The Levy Economics Institute investigates two issues in detail. First, how much has economic well-being increased in the United States as a whole and in different regions of the country over the postwar period and particularly in the 1990s? Second, how do levels of well-being in the U.S. compare to those of other advanced industrial nations? A rigorous examination of conventional and more inclusive measures of living standards is necessary to confront these questions. Based on these enquiries, we intend to develop a measure to be known as The Levy Institute Measure of Economic Well-Being (LIMEW), which will be published at regular intervals. In the first phase of the project, the measure will be constructed for the regions of the United States and the country as a whole. The second phase of the project will construct comparable measures for a few other member countries of the Organization for Economic Cooperation and Development (OECD).

The LIMEW has two crucial characteristics. First, its focus is limited to components that can be converted into money equivalents. Second, it is a household-level measure that is constructed for different quintiles or deciles of income distribution, which is in contrast to most of the similar indicators available today (which have been constructed for the total population or at

the mean).

This paper provides a discussion of the rationale and scope of the LIMEW. We begin by discussing our concept of economic well-being and its components. Next, we consider some alternative approaches. We conclude with an outline of the future course of our research.

A MEASURE OF ECONOMIC WELL-BEING

Basic Concept

Our measure of economic well-being is informed by the view that the access of individuals to the necessities and conveniences of life produced in an economy is mediated by three key institutions--market, household, and the state.² The magnitude of the access that can be exercised by the household is approximated by an income measure since household income should, in principle, reflect the resources that a household can command for facilitating current consumption or acquiring financial and physical assets. Gross money income--the yardstick used in the current official measures of poverty and income inequality--reflects the command over commodities. However, household money income does not reflect such command completely. As is well known, a part of the compensation of labor is in the form of fringe benefits (e.g. employer payments for the health insurance premiums for employees) that essentially constitute employer payments on the behalf of employees for commodities available in the market place.

In all modern economies, the state intervenes in determining the household's command over commodities. Apart from cash transfers that are included in gross money income, noncash transfers from the government to the households are similar to fringe benefits in the sense that they constitute government payments for commodities on the behalf of recipients. Through the system of direct (including negative income tax such as the Earned Income Tax Credit) and indirect taxes, the state affects the command that the household can exercise over commodities.

Admittedly, commodities only form a portion, though a critical one, of the entire set of goods and services produced and distributed in an economy. Apart from influencing the command over commodities, the state also plays a crucial role in the direct provisioning of the necessities and conveniences of life (as in the case of schooling and highways). Of course, it is also the case that state undertakes activities (judicial and legislative functions, space research, "corporate welfare" etc.) that do not result in the immediate provisioning of goods and services that can be consumed by the households. Such activities are, in our view, best viewed as social overhead or undertaken on behalf of the business sector of the economy. Yet another portion of the goods and services produced and consumed in the economy is the result of self-provisioning by means of nonmarket³ household work (childcare, cooking, cleaning etc.).

The three institutions discussed above form interdependent parts of an organic entity and household economic well-being is fundamentally shaped by the complex functioning of this entity. Accordingly, the LIMEW takes into account factor incomes and wealth, the net effect of taxes, transfers and some types of public expenditure, and household production. We believe that important insights on economic well-being which may not be available from using the official measure can be gained by means of such a comprehensive measure.

COMPONENTS OF THE LIMEW

Money Income and Wealth

The LIMEW differs from the official measure of money income in two respects. The first and perhaps the less important one (in quantitative terms) is that an attempt is made to include imputed values for fringe benefits received by the employed. The more substantial difference stems from the treatment of income from assets.

Property-type income included in the official measure consists of the actual receipts of interest, dividends, and rents.⁴ From our perspective, the actual income realized by the owners in a particular year is an incomplete measure of the economic well-being derived from the ownership of assets. Real assets such as homes typically last for several years and yield services to their owners, thereby freeing up resources that might have otherwise been spent on housing. Financial assets in the form of bank and non-bank balances earn property-type income and similar to accumulated balances in private welfare (e.g. private pension plans) and social insurance funds (e.g. Social Security) can serve as a source of economic security under normal conditions. For many households, liquid financial assets serve as temporary means to overcome periods of economic stress accompanied, for example, by the loss of a job (Wolff 2001).

Of course, if gross money income and wealth were perfectly correlated, there would be no need to consider wealth as an independent determinant of well-being. However, several studies have shown that while there is correlation, it is far from perfect and its degree differs significantly across demographic groups (e.g. Radner and Vaughan 1987). Adding wealth, a stock variable, to a measure of well-being where all the other components are flow variables requires the conversion of wealth into a flow variable.⁵ Several studies have attempted to develop, on the basis of alternative conversion methods, a composite measure of income and wealth (e.g. Weisbrod and Hansen 1968). Generally, these studies do not distinguish between housing wealth (owner-occupied housing) and other types of wealth (primarily financial wealth). In our approach, such a distinction is made because shelter represents a universal need and hence benefits from owner-occupied housing are reckoned in terms of the replacement cost of the services derived from it, i.e., a rental equivalent.⁶

We estimate the benefits from wealth other than owner-occupied housing (non-housing wealth) by using a variant of the standard lifetime annuity method. The standard method consists of calculating an annuity amount on the basis of a given amount of wealth, rate of interest and life expectancy. The calculated amount is such that: (a) this amount is the same for all the remaining years of life of the wealth holder; and, (b) the amount of wealth is brought down to zero at the expected end of the wealth holder's life. (In the case of households with multiple adults, the life expectancy that we use in the annuity formula is the maximum of the life expectancies of the head of the household and spouse.) The modification we make to the standard procedure is that we attempt to take into account the differences in portfolio composition across individuals. Thus, instead of using a single rate of interest for all assets, we employ a weighted average of asset-specific, historic rates of return,⁷ with the weights given by the proportions of different assets in the total household wealth. Our rationale for employing this method is that, as compared to the alternative bond-coupon method, it is a better indicator of the resources available to the wealth holder on a sustainable basis over his or her expected lifetime.

Taxes

The approach taken here with respect to taxes paid by households, which may be called the social accounting approach, differs from the approaches generally found in the existing literature in at least two respects.⁸ We do not use a specific theoretical model of tax incidence to form assumptions regarding "who paid the taxes;" nor do we aim to assess the so-called "welfare losses" or "deadweight losses" associated with taxes. This does not mean that our answer to the question of who bears a particular tax would be necessarily different from the ones reached by other approaches; it is only to be noted that we may arrive at the same answer due to entirely different reasons.

Most existing empirical studies aimed at answering the question "who paid the taxes" can be classified into two categories. Studies in the first category, the seminal example of which is the work done by Joseph Pechman and his coworkers at the Brookings Institution (e.g. Pechman and Okner 1974), involve two steps in the allocation of taxes. First, assumptions are made regarding the incidence of various taxes on different categories of factor incomes and types of consumer expenditures. Such incidence assumptions are generally derived from a specific theoretical framework, a combination of theoretical predictions and empirical findings from testing theoretical predictions, or when theoretical arguments and empirical evidence are inconclusive, just plain arbitrarily. In the second step, taxes are distributed across households, grouped into different income groups, in accordance with the incidence assumptions and, when appropriate, other household-level characteristics (e.g. family size) relevant to the determination of tax liability.

Several criticisms have been advanced against this type of study. A key issue is the sensitivity of estimated tax burdens to the incidence assumptions. Since models of incidence produce different results depending on whether they are static or dynamic, assume perfectly or imperfectly competitive markets, and a host of other specification details, this issue affects the validity of the whole exercise (Whalley 1984). Another criticism is that different theoretical models are used to decide on the incidence of different taxes, rather than deriving it from a single model. Some have also argued that by equating tax burden with actual tax payments, the approach does not allow for the assessment of welfare losses to households or the deadweight loss associated with the tax system (Fullerton and Metcalf 2002: 26).

The second category of studies has aimed to overcome these deficiencies by constructing computable general equilibrium (CGE) models that allow for estimating the effects of all types of taxes simultaneously on factor and product prices. A CGE model does not need to make assumptions regarding the incidence of particular types of taxes because their incidence is determined endogenously (e.g. Ballard, *et al.* 1985). Further, being based on explicit utility-maximizing behavior of households, such a model can also assess welfare losses from taxes suffered by different types of households and the deadweight loss from taxation. Sometimes, these models adopt a multi-period (lifetime or intergenerational) perspective on tax burden that is supposedly superior to the traditional approach of estimating tax burdens based on annual data (e.g. Altig, *et al.* 1997; Fullerton and Rogers 1993).

While we share the reservations expressed in the literature regarding the first group of studies, we believe that some of them apply also to the CGE models. Thus, the specification of the underlying utility and production functions in a CGE model involves a degree of arbitrariness that may not be significantly different than what was involved in the traditional incidence assumptions (Whalley 1984: 678). Questionable assumptions of continuous full employment and perfectly competitive markets are generally made in both approaches to determine incidence.

Apart from their apparent differences, incidence is determined analytically from a comparison of equilibrium positions in both approaches. In the first category of studies, this comes in the form of a priori assumptions on the basis of which calculations are undertaken, while in the CGE approach, incidence is determined from the equilibrium solution of the model. It is the absence of this crucial feature, common to both approaches, that distinguishes the social accounting method followed by us.⁹ The rationale for this method lies in the recognition that the concept of tax payment is important in its own right. This concept is generally well understood and is a matter of serious concern to individuals, businesses and governments. It should also be emphasized that the concept is not always the same as statutory incidence. The public generally understands that when someone buys a bottle of wine, the buyer pays an excise tax out of his own pocket, although government statistics will not record it as a tax paid by the buyer.

The position that we are taking is hardly new. Several decades ago Ursula Hicks proposed the same approach. She noted that for social accounting purposes the identity of the taxpayer could be found by common sense for most taxes "without any elaborate mechanism of two- or three-tier shifting." Further, she argued that it was important to allocate actual taxes paid among taxpayers in different income groups on an accounting basis and characterized such calculation as "essentially one of the distribution of actual revenue collected during the period; it is not concerned with what happens as a result of consumers' incomes having been laid out in this manner." (Hicks 1946: 46-7).

This approach seems to have fallen into oblivion among mainstream economists. However, it is implicit in the methods used by the Office for National Statistics, U.K., to assess annually the effects of taxes, transfers, and some items of public expenditure on household income (Lakin 2002: 43-46) and also in the accounting of consumption taxes paid by households undertaken at the OECD for generating estimates of net social expenditure (Adema 2001: 19). In an important contribution, Dilnot *et al.* have argued a position similar to the one advanced by us by interpreting the distribution of actual tax payments as an accounting characteristic of a given equilibrium (Dilnot, *et al.* 1990: 213). They have also proposed a method by which, in an open economy, indirect business taxes on intermediate goods (a particularly difficult-to-allocate-tax) can be allocated using detailed data on input-output relationships and final consumption patterns without comparisons of equilibrium positions. Similar exercises of allocating indirect business taxes on final goods have been carried out before using input-output methods to break down a dollar's worth of final demand to its value-added, import and indirect tax components (e.g. Campbell 1975). While Dilnot *et al.* characterize the actual distribution of tax payments as a property of a given equilibrium, there is in fact no need to assume any equilibrium because an accounting relation is a relation that holds true irrespective of whether the economy is thought to be in equilibrium or not.

A few economists also adopted the social accounting approach in some form or other in their analysis of the welfare state (e.g. Shaikh and Tonak 1987). The main focus of this line of inquiry was to determine the extent to which the welfare state, through its income-support policies and public expenditures, enhanced the real income of an average household or real labor income. This type of analysis involved the allocation of government expenditures and taxes among households or different categories of factor income using some criterion. While different studies employed different criteria, the underlying premise was that of incidence in a social accounting sense--the distribution of actual taxes and government expenditures--rather than incidence as a comparison of equilibrium positions.

These arguments in favor of the social accounting approach to incidence do not imply that ad hoc assumptions would not have to be made at all in its practical implementation. However, in principle, such assumptions can be generally avoided if we have adequate information. It may also be noted that there is no single "correct" way of doing social accounting, as evident, for example, in the substantial variety that exists in the practices of national income accountants across the world.

The application of this approach to the major types of taxes led us to the following decisions regarding allocation:

Personal income taxes, nontaxes ¹⁰ *and taxes on owner-occupied housing.* Allocated entirely to tax payers.

Payroll taxes paid by employees. Allocated entirely to employees.¹¹

Consumption taxes. Allocated to consumers on the basis of shares in the consumption of specific items or total personal consumption.

Taxes on corporate profits, taxes on business-owned property, other business taxes (e.g. severance tax) and nontaxes. Not allocated to the household sector because they are considered as paid out of the incomes of the business sector.

Government Expenditures

Three kinds of government expenditures are included in the LIMEW. Cash transfers, such as old-age pensions and public assistance, are included in the gross money income measure. Additionally, imputed values are included for noncash transfers and certain public expenditures. The approach taken by us in making these imputations may be described as a social accounting approach to expenditure incidence, in the sense discussed in the previous section on taxes.

This approach has been used in two similar, yet different contexts. The first is in connection with examining "benefit incidence," where the central question has been how the size distribution of personal income is affected by government expenditures on goods and services (for an early example and references to still earlier studies, see Gillespie 1965). The second group of studies addresses the issue of the "social wage" and focuses on how such expenditures alter the functional distribution of income (e.g. Shaikh and Tonak 1999). In both contexts, the approach is used as a method that sheds light on the ultimate distribution of actual (or ex post) economic well-being across income classes or social classes, after accounting for taxation and government spending. This approach may be hard to reconcile with the neoclassical approach to public finance, in which, strictly speaking, benefits from public expenditure can be allocated to individuals only if their preferences are known (see, for example, Aaron and McGuire 1970) and the individuals bearing the burden of indirect taxes can be identified only if the full, general equilibrium effects can be traced out. In contrast, the approach followed by us is basically similar to the government-cost approach.¹²

The application of this approach with respect to noncash transfers is performed in two steps. First, the recipients of major noncash transfers (medical, housing, energy and food benefits) are identified on the basis of information already contained in the income survey; in the second step, government expenditures are allocated among the recipient households based on relevant characteristics (such as the number of recipients in the household, age of the recipient, geographical location of the household etc.). In the case of noncash transfers for which recipients are not identified in the income survey, imputations are made, to the extent possible, on a program-by-program basis regarding participation based on eligibility criteria and administrative data on enrollments rates before the expenditure amounts are allocated.

An important feature of this approach is that the total benefits received by individuals will, in principle, add up to the total amount that the government has spent on providing the same benefits. Since our main interest is in assessing the impact on economic well-being that actual government expenditures have, we find this feature attractive. It is also consistent with our treatment of taxes.

Admittedly, this method is subject to a number of criticisms. One frequently stated objection is that adding in the government cost of noncash transfers to money income makes the household appear better off than it really is, especially in the case of households with relatively low money income. In particular, the estimates of such augmented income for low-income households have been found to be very high relative to the official poverty thresholds and this led to an artificial reduction in the poverty rates (U.S. Bureau of the Census 1993:viii).

We do not find this criticism particularly convincing. First of all, the LIMEW is not designed to measure poverty. Indeed, it might well be the case that poverty cannot be measured meaningfully with the LIMEW because it is hard to define thresholds with respect to several components included in it. (e.g. how can the minimum acceptable highway expenditures per household be defined?). Second, as pointed out in the National Academy of Sciences report, the whole process of comparing income including the value of noncash benefits (irrespective of how it is calculated) with the official poverty thresholds is logically unsound because it violates the consistency required in the definition of the poverty threshold. Thus, if medical in-kind benefits are considered as part of household resources, then medical expenses should also be considered as part of the expenses required to stay out of poverty (Citro and Michael 1995:205).

Another objection stems from the supposition that the contribution to individual well-being made by an in-kind benefit is, on the average, less than the average cost incurred by the government in providing that benefit (Canberra Group 2001: 24,65). The

logical corollary of this proposition is that a cash transfer is more effective than in-kind provision. In practice, this method of imputation (often referred to as the fungible value or cash equivalent value method)¹³ would involve estimating how much the household could have paid for the in-kind benefit, after meeting its expenditures on some basic items (such as food, clothing etc.), with the maximum payment for the benefit set equal to the average cost incurred by the government. An important consequence is that households with incomes below the minimum threshold and participating in the government program are presumed to receive no benefit from a government service that they actually consume. Thus, from the point of view of measuring the household's access or command over commodities, this method of imputation is not desirable.

Further, the theoretical motivation behind the imputation procedure is rather weak. It can be maintained only in the case of certain simplified welfare-theoretic models involving a variety of stringent assumptions regarding the good or service in question and the underlying individual utility functions. It has been argued, for example, that in the case of medical care (the dominant type of noncash transfer in the U.S. in terms of government expenditures), the assumptions made in the simple models regarding perfect information are unlikely to hold in practice (Arrow 1963). Similarly, if individual utility functions are interdependent (say, for example, the rich derive utility from their own consumption and the consumption of an in-kind benefit by the poor), then social welfare may be maximized by providing the benefit in kind rather than in cash (Barr 1987:89-90). In general, if the gaps between private and social benefits from individual behavior and the mismatch between the pristine world of perfect information and perfect markets and the messy, more realistic world of second- or third-best are acknowledged and incorporated in the model, it is no longer clear that the fungible-value method of imputation is the appropriate one (Munro 1992; Blackorby and Donaldson 1988:698).

The third type of government expenditure that we consider as part of our measure of well-being are some public expenditures. In deciding to allocate these expenditures to the household sector we attempt to follow, as much as possible, the general criterion that a particular expenditure must be considered as incurred directly on behalf of the households and as expanding their consumption possibilities. The implementation of the approach is carried out in two stages.

We begin with a detailed functional classification of government expenditures (excluding transfer payments) and exclude certain functions entirely because they fail to satisfy the general criterion. Most such functions form part of general social overhead and their major effect is to keep the ship of state afloat (e.g. national defense, general public service, law courts and prisons, etc.). Expenditures under other functional categories also may not meet the general criterion fully because part of such expenditures can be considered as being incurred on behalf of the business sector (e.g. transportation, energy, natural resources etc.). We estimate the household sector's share in such expenditures using data on the utilization or consumption of services or goods provided via the expenditures.¹⁴ Finally, expenditures under certain functional categories are considered as incurred completely on behalf of the household sector (e.g. education, health, etc.).

In the second stage, the relevant totals for each functional category are distributed among the households. The distribution procedures followed by us build on the earlier studies employing the government cost approach (see, for example, Ruggles and O'Higgins 1981) in that some expenditures are distributed, in the same way as the split was made between the household and other sectors, on the basis of estimated patterns of utilization or consumption¹⁵ and some expenditures are distributed equally among the relevant population.¹⁶

Household Production

Economists have long recognized that individuals and households engage in unpaid, nonmarket activities to produce, enhance and consume the necessities and conveniences of life available to them (e.g. Reid 1934). In a modern capitalist economy where income from paid work is the preponderant form of income and the nonlabor inputs into unpaid activities are typically purchased with money, these activities do not, for the vast majority of households, constitute an alternative to paid work in the sense that they can be repeated indefinitely without earning some labor income. For those households dependent on transfers or property income as the main source of income, the same asymmetry appears between money income and unpaid work, with the former setting the conditions and constraints within which the latter is performed and regulated.¹⁷

Three broad categories of unpaid activities are usually included in the definition of "household production." They are:

- Core production activities such as cooking, cleaning etc.
- Distribution activities such as shopping for groceries, clothes etc.
- Childcare activities such as feeding and bathing babies, reading to children etc.

The rationale for considering the above activities as "production" is attributed to a crucial feature common to all these activities:

they can be generally assigned to persons other than the one who actually does them or be performed by "third parties."¹⁸ In the case of the first two types of activities, this feature may be obvious, but it also holds for childcare when we recognize that what the "third parties" may replace is *not* the intimate personal and emotional bond that exists between the parent and child (Reid 1934: 14-15).

Because the measure of well-being we are proposing is based on the command over the necessities and conveniences of life exercised by individuals and households, it is quite natural to include those resulting from household production (as defined above) in our measure. Ideally, we would like to add to household income, the value of the net output of household production. Two approaches have been conceived to arrive at an estimate of the net output: one starting from the quantity vector of household production and the corresponding price vector of market substitutes, and the other starting from the quantities of inputs required for each type of household production and their corresponding prices (Chadeau 1992: 90). In practice, it is difficult to take the first approach because, even ignoring problems of measurement, adequate information generally does not exist on the outputs of household production--the types and numbers of meals prepared, pounds of laundry cleaned, square feet of lawns mowed and so on. On the other hand, at least partial information, in the form of time spent by individuals on household production, exists to implement the second approach. In the United States, three national surveys have been conducted on patterns of time-use (Robinson and Godbey 2001) and we utilize them to obtain estimates of time spent on household production.

Within the second approach to valuation itself, there are three different alternatives for valuing the time spent by individuals on household production.

- *Replacement cost using average earnings of domestic servants or household employees.* ¹⁹
- *Replacement cost using specialist wages.* The procedure here is to use different market wage rates for different types of household production such as valuing²⁰ time spent in childcare using average wages of daycare workers.²⁰
- *Opportunity cost or forgone earnings* using either the potential wage (i.e. estimated on the basis of²¹ individual characteristics such as age, education etc.) or actual wage.²¹

In our view, the opportunity cost method is not appropriate to approximate the value of household production because it fails to recognize that wages are occupation-specific. A Ph.D. economist and a high-school dropout will obviously earn the same wage if they were to flip burgers at McDonald's; there is no compelling reason to think that their labor inputs into say, scrubbing a bathtub, should be considered any different (Goldschmidt-Clermont 1993: 422). The asymmetry noted before between paid work and household work also precludes the key underlying assumption of the opportunity cost approach--the substitutability between paid and unpaid work. Replacement cost using specialist wages is also problematic for several reasons;²² the main consideration here is that the rhythm, organization and intensity of the labor process of specialist workers are completely distinct from the work performed at home by members of the households.²³

By the principle of choosing the lesser evil, replacement cost using the employee compensation of a private household employee appears to be the best available method that can be implemented. Therefore, we adopt this method of valuation for household production in the LIMEW.²⁴ Admittedly, this method comes with its own problems and some of them are noted below. The net result of the biases resulting from these problems is hard to judge.

The range of activities included under household production exceed the normal activities of a private household employee so that using the wage of the latter may tend to understate the value of labor time spent on household production. An opposite type of bias may arise from the possible superiority of a professional in performing a variety of normal housekeeping functions. In the contemporary United States, a significant proportion of private household employees are in the "underground economy" who work for relatively lower pay and as a result, the average earnings reported in official statistics are bound to be an overstatement of actual earnings of these workers. Finally, roughly 95 percent of these workers are women²⁵ and the gender disparity in earnings will be reflected in the valuation of household production when we use their earnings.

A COMPARISON

The LIMEW can be thought of as an extended income concept. Comparing it to two comprehensive income definitions put forward recently (Smeeding and Weinberg 2001; Canberra Group 2001) brings out this point clearly (see Table 1).²⁶

Levy Institute	Smeeding-Weinberg	Canberra Group
Household income	Household income	Household income
Wages and salaries	Wages and salaries	Wages and salaries
Fringe benefits (e.g. employer provided health insurance)*	Fringe benefits*	Fringe benefits*
Self-employment income	Self-employment income	Self-employment income
Private pensions	Private pensions	Private pensions
Income from other private welfare funds (e.g. private disability income)	Income from other private welfare funds	Income from other private welfare funds
Interpersonal transfers	Net Interpersonal transfers	Net Interpersonal transfers
Annuity from (non-home) net worth*	Property-type income (e.g.dividends) plus net realized capital gains	Property-type income (e.g.dividends)
Rent from owner-occupied housing*	Return on equity in owner-occupied housing*	Rent from owner-occupied housing*
Government cash transfers	Government cash transfers	Government cash transfers
<i>Less:</i>	<i>Less:</i>	<i>Less:</i>
Income taxes*	Income taxes*	Income taxes*
Payroll taxes*	Payroll taxes*	Payroll taxes*
Property taxes on owner-occupied housing*	Property taxes on owner-occupied housing*	Property taxes on owner-occupied housing and automobiles*
Consumption taxes*		
	Mandatory work expenses*	
<i>Plus:</i>	<i>Plus:</i>	<i>Plus:</i>
Government noncash transfers*	Government noncash Transfers*	Government noncash transfers*
Public expenditures allocated to households*		
Household production*	Household production (only goods produced for own-consumption)*	Household production (only goods produced for own-consumption and barter)*
<i>Equals:</i>	<i>Equals:</i>	<i>Equals:</i>
Levy Institute Measure of Economic Well-Being	S-W Net Total Income	C-G Adjusted Disposable Income

Notes: * indicates values that can only be imputed in income surveys. S-W Net Total Income refers to a comprehensive income definition outlined in Smeeding and Weinberg (2001:4). C-G Adjusted Disposable Income refers to one of the income definitions elaborated in Canberra Group (2001:18).

All three approaches are similar in that they begin with some concept of household income, then subtract taxes, and finally, add in some imputed values to arrive at a final measure of income that appropriately reflects the household's economic well-being. There are three main differences between the LIMEW and the others. First, our treatment of non-housing wealth--the rationale for which was discussed before--replaces the usual measure of property-type income (dividend, interest etc.) with an

estimated annuity from net worth for non-housing wealth.

Second, we add in public expenditures allocated to households and subtract indirect taxes paid on personal consumption. With respect to public expenditures, Smeeding and Weinberg suggest that if beneficiaries can be identified and valuation made, these expenditures should be included in the definition of income under non-cash government transfers (Smeeding and Weinberg 2001:11). The Canberra Group also includes some of the public expenditures (e.g. education, cultural and recreational services, etc.) we intend to allocate to households among "social transfers in kind", referred to here as noncash government transfers (Canberra Group 2001:23). However, the LIMEW probably includes more categories of public expenditures than intended in both the approaches. With respect to consumption taxes, Smeeding and Weinberg take the position that they should not be subtracted from household income (Smeeding and Weinberg 2001:11), while the Canberra Group suggests that such a procedure may be followed if the objective is to determine "the total redistributive effect of government intervention in the form of benefits and taxes on income distribution" (Canberra Group 2001:24). Our approach is consistent with the suggestion made by the Canberra Group and was adopted because we want to measure the total effect (in an accounting sense) of government intervention on the level and distribution of economic well-being.

Finally, while recognizing the importance of household production to well-being, both the other approaches make a distinction between goods and services produced by the household for its own consumption (Smeeding and Weinberg 2001:8; Canberra Group 2001:19). The value of goods is recommended to be included in household income while services are not to be included because of valuation problems. In an advanced capitalist economy like the U.S., hardly any goods are produced within the household and the bulk of unpaid, household activities consist of services. Following the recommendation would thus amount to ignoring household production altogether. Furthermore, we consider the distinction between goods and services as not fundamental to the definition of production. This consideration is reflected in our conception of household production--which coincides with the definitions found in most studies of the subject--and our decision to include it in the LIMEW for reasons discussed before.

ESTIMATING THE LIMEW FOR THE U.S.

Ideally, the measure should be constructed on the basis of detailed information regarding household money income and wealth, receipts of noncash transfers from government and business sectors, consumption patterns of private and public goods, and uses of time. A unified database of this nature does not exist and, perhaps, will never exist, given the known difficulties involved in gathering survey information on any single type of information, such as consumption expenditures, mentioned above. Consequently, the information base required for the calculation of our measure had to be built from a variety of sources.

Our basic strategy is to begin with the public use microdata available from the March CPS Annual Demographic Supplement (ADS). A detailed set of estimates are then made regarding each component of the measure not covered in the ADS by using two other sources of information: data from other household surveys (such as unofficial time-use surveys) and publicly available administrative data compiled by official agencies (such as information on per-pupil expenditures in elementary education available from the U.S. Department of Education). Purists might, quite justifiably, feel uncomfortable with the type of estimates we plan to undertake. However, our belief is that we have to attempt to identify the best available sources of information and design estimation techniques that can be subjected to a variety of sensitivity tests.

ALTERNATIVE APPROACHES

To adequately survey the alternative approaches and to do justice to the great deal of careful scholarship that has been devoted to the development of these alternative indicators would take a separate volume and is hence not attempted here. While we share the views of those involved in this research program with respect to several important issues and place our own work squarely in this tradition of scholarship, we also think that there are certain features of this endeavor that may be problematic or can be improved upon. These may be illustrated by considering the three major approaches to construction of well-being indexes: the aggregate approach, the indicators approach and the subjective approach.

The distinguishing feature of the aggregate approach is that it results in a summary monetary measure of well-being of the nation. Usually, the strategy employed is to start with standard macroeconomic categories, such as personal consumption or the GDP, and then modify it by adding items (valued in money) believed to enhance well-being and subtracting items believed to be detrimental to well-being. The most well-known and regularly published index belonging to this family is the Genuine Progress Indicator, estimated by the nonprofit organization Redefining Progress. In our view, there are two key problems with this approach. First, what may be considered as bad or good for well-being is largely a decision made by the researcher and this renders the index of a substantially arbitrary character. Second, and more importantly, in a society marked by considerable

economic inequality, any average measure by itself is misleading. This is the case, even if the degree of inequality, say, as measured by the Gini or Atkinson coefficient of income distribution is added to the index. Fundamentally, our interest is in studying trends in economic well-being not only at the average level, but also how these trends reproduce disparities among different social and demographic groups, and income classes.

The indicators approach typically includes a variety of noneconomic variables, such as health, environment and educational attainment, in addition to variables usually considered as economic.²⁷ Some researchers prefer to combine these different indicators to form a composite index (e.g. Liu 1976), while others report national performance with respect to these different indicators (e.g. Henderson, Lickerman et al. 2000). While we certainly believe that well-being is a multidimensional category, we are also skeptical about the indicators approach. While the details and implementation of the indicators approach are apparently very different from the aggregate approach, essentially it too underplays the distribution of well-being among social groups and possesses a similar arbitrariness with respect to which indicators are to be included and whether the changes in the indicators can be considered "good" or "bad." A further problem arises in the case of composite indexes--noted even by those who construct such indexes--with respect to the weights attached, either explicitly or implicitly, to the different indicators.

The subjective approach initially arose in social research primarily with a view to supplement the indicators approach that included only descriptive indicators (Land 1983). If surveys of households and individuals can reveal how important they consider the different indicators of well-being, then that information can be used in assigning weights to these indicators in a social welfare function. Some conceive of this approach, however, as complete in itself (e.g. Campbell, Converse et al. 1976). By using the results from a survey asking people directly about their satisfaction or happiness about several aspects of their lives, an index can be formed by appropriate statistical methods. This may then be cross-tabulated or related via a statistical model with "objective" characteristics of individuals or households such as their income, education, and race or ethnicity. While we consider the subjective approach as useful in certain contexts, we are not inclined to adopt it as our primary measure of well-being. We believe that the United States is characterized by historically shaped, deep and entrenched social, economic, racial and gender inequalities. As pointed out by Nobel laureate Amartya Sen, subjective perceptions of well-being among those who need to survive in such a society are powerfully shaped by ideological mechanisms and cultural norms which justify and rationalize inequalities (Sen 1989).

CONCLUSIONS

Our efforts in developing a measure of economic well-being are motivated by two central concerns. First, there is substantial room for improving existing official measures of the level and distribution of household economic well-being. This is the case for comparing economic well-being of a single country over time as well as comparing well-being across countries. Second, developing alternative measures is crucially important for the formulation and evaluation of a variety of social and economic policies.

The present phase of the research program has focused on the conceptual, methodological and data problems raised by a careful consideration of the first concern mentioned above, in the context of the United States. While the most widely used official measure of economic well-being in the United States--gross money income as measured in the Annual Demographic Supplement (ADS) of the Current Population Survey conducted by the Census Bureau--has several well-known limitations, we are struck by the fact that there does not appear to be an alternative measure that is regularly available and constructed using household-level information. As discussed before, we hope to fill this gap by developing a measure of economic well-being for the United States.

We believe that the LIMEW will have uses for social and economic policy in a variety of areas. The overall measure and its distribution among significant demographic groups will offer a different "picture" regarding economic well-being. Further, the dataset underlying the measure can be used to analyze the role of the different components in shaping well-being and how these components interact with demographic and economic characteristics. Thus, for example, given the recent research findings that black-white gaps in wealth ownership continue to be far higher than income gaps (Wolff 2001), we can analyze the extent to which wealth contributes to the black-white gaps in overall well-being. The interdependence of the components of well-being (such as that between income from paid work and imputed value of household production in a subset of population) necessarily implies spillover effects of policies directed at specific components and the approach behind the LIMEW can be quite useful in addressing questions of this type.

There are two principal strands of research that we intend to pursue to complement our effort devoted to the construction of the measures of economic well-being.

The first line of research is undertaken on the basis of our conviction that economic well-being as measured by us is not the only relevant aspect of human well-being. The latter is a multifaceted phenomenon and we intend to study some crucial relationships between our measure of economic well-being and a variety of household and individual-level indicators of well-being. Such indicators would typically pertain to what Amartya Sen has famously called "achievements." They would include, for example, trends in job satisfaction and leisure time. It would also be fruitful to examine the relationship between the distribution of health status and the distribution of extended income for all households and households in specific regions and demographic groups. Similar enquires could also be conducted for several indicators of environmental quality, such as air pollution. With regard to the latter, there is an extensive literature on measuring "Green GDP," though such measures have been aggregate in nature. In the future, we may consider ways of distributing gains and losses from changes in environmental status on household well-being.

The second strand of research reflects our belief that policies aimed at influencing aggregate economic performance have effects on household economic well-being. In turn, household economic well-being also has effects on aggregate economic performance. By their very nature, these effects are neither symmetric nor do they operate with similar time lags. The Levy Institute has a well-known macromodel that we employ for strategic analyses of the U.S. economy. The information base that we develop for the measure of economic well-being may be, with appropriate reconciliation, transformed to provide a disaggregation of the household sector in the Levy Institute macromodel. At the first stage of our research in this area, we intend to investigate how such an approach can be used to analyze the distributional impact of fiscal, monetary and trade policies.

REFERENCES

- Aaron, Henry and Martin McGuire. 1970. "Public Goods and Income Distribution." *Econometrica* 38(6): 907-920.
- Adema, Willem. 2001. "Net Social Expenditure, 2nd Edition." Labor Market and Social Policy Occasional Papers No. 52. OCDE.
- Altig, David, Alan J. Auerbach, Laurence J. Kotlikoff, Kent A. Smetters, and Jan Walliser. 1997. *Simulating U.S. Tax reform*. Working Paper 6248. Cambridge, Mass.:National Bureau of Economic Research.
- Arrow, Kenneth J. 1963. "Uncertainty and the Welfare Economics of Medical Care." *American Economic Review* 53: 941-73.
- Asimakopulos, A. and J. B. Burbidge. 1974. "The Short-Period Incidence of Taxation." *The Economic Journal* 84(334): 267-88.
- Aslaksen, Iulie, Trude Fagerli, and Hanne A. Gravningsmyhr. 1998. "An Input-Output Approach to Unpaid Household Production and Consumption in Norway." *Economic Survey* 3: 24-30.
- Ballard, Charles L., Don Fullerton, J. B. Shoven, and John Whalley. 1985. *A General Equilibrium Model for Tax Policy Evaluation*. Chicago: University of Chicago Press.
- Barr, Nicholas. 1987. *The Economics of the Welfare State*. Stanford: Stanford University Press.
- Blackorby, Charles and David Donaldson. 1988. "Cash Versus Kind, Self-Selection, and Efficient Transfers." *The American Economic Review* 78(4): 691-700.
- Campbell, A., P. E. Converse, et al. 1976. *The Quality of American Life: Perceptions, Evaluations and Satisfaction*. New York: Russell Sage Foundation.
- Campbell, Harry F. 1975. "An Input-Output Analysis of the Commodity Structure of Indirect Taxes in Canada." *Canadian Journal of Economics* 8(3): 433-41.
- Canberra Group. 2001. "Expert Group on Household Income Statistics: Final Report and Recommendations." Ottawa.
- Chadeau, Ann. 1992. "What is Households' Nonmarket Production Worth?" *OECD Economic Studies* 18(Spring):

85-101.

Citro, Constance and Robert Michael, eds. 1995. *Measuring Poverty: A New Approach*. Washington, D.C.: National Academy Press.

Dilnot, Andrew, John Kay, and Michael Keen. 1990. "Allocation of Taxes to Households: A Methodology." *Oxford Economic Papers* 42: 210-30.

Dome, Takuo. 1992. "Ricardo's Theory of Tax Incidence: A Sraffian Re-Interpretation." *Cambridge Journal of Economics* 16(1): 43-53.

Dome, Takuo. 1998. "Adam Smith's Theory of Tax Incidence: An Interpretation of His Natural-Price System." *Cambridge Journal of Economics* 22(1): 79-89.

Ehrenreich, Barbara. 2001. *Nickel and Dimed: On (Not) Getting by in America*. New York: Metropolitan Books.

Fullerton, Don and Diane L. Rogers. 1993. *Who Bears the Lifetime Tax Burden*. Washington, D.C.: The Brookings Institution.

Fullerton, Don and Gilbert E. Metcalf. 2002. *Tax Incidence*. Working Paper 8829. Cambridge, Mass.: National Bureau of Economic Research.

Gillespie, W. 1965. "The Effect of Public Expenditure on the Distribution of Income: An Empirical Investigation." In *Essays in Fiscal Federalism*. Richard Musgrave, ed. Washington, D.C.: Brookings Institution.

Goldschmidt-Clermont, Luisella and Elisabetta Pagnossin-Aligisakis. 1999. "Households' Non-SNA Production: Labour Time, Value of Labour and of Product, and Contribution to Extended Private Consumption." *Review of Income and Wealth* 45(4): 519-29.

Goldschmidt-Clermont, Luisella. 1993. "Monetary Valuation of Non-Market Productive Time: Methodological Considerations." *Review of Income and Wealth* 39(4): 419-33.

Gram, H. N. 1998. "Necessaries, Conveniences and Luxuries." *The Elgar Companion to Classical Economics*. Heinz D. Kurz and Neri Salvadori. Vol. 2. 162-166. Cheltenham: Edward Elgar.

Henderson, Hazel, Jon Lickerman, et al., eds. 2000. *Calvert-Henderson Quality of Life Indicators*. Bethesda, M.D.: Calvert Group.

Heston, Alan, Robert Summers, and Bettina Aten. 2002. Penn World Table Version 6.1, Center for International Comparisons at the University of Pennsylvania (CICUP), October.

Hicks, Ursula K. 1946. "The Terminology of Tax Analysis." *The Economic Journal* 56(221): 38-50.

Kuznets, Simon Smith, Lillian Epstein, and Elizabeth Jenks 1941. *National Income and Its Composition, 1919-1938*. New York: National Bureau of Economic Research.

Lakin, Caroline. 2002. "The Effects of Taxes and Benefits on Household Income, 2000-1." Social Analysis and Reporting Division, Office for National Statistics, U.K. <http://www.statistics.gov.uk/>

Land, Kenneth. 1983. "Social Indicators." *Annual Review of Sociology* 9: 1-26.

Landefeld, J. Steven and Stephanie H. McCulla. 2000. "Accounting for Nonmarket Household Production Within A National Accounts Framework." *Review of Income and Wealth* 46(3): 289-307.

Laramie, Anthony J. and Douglas Mair 2000. *A Dynamic Theory of Taxation: Integrating Kalecki into Modern Public Finance*. Cheltenham, U.K.: Edward Elgar.

- Liu, Ben-Chieh. 1976. *Quality of Life Indicators in U.S. Metropolitan Areas*. New York: Praeger.
- Marx, Karl 1963. *Theories of Surplus Value, Vol. 1*. Moscow: Progress Publishers.
- Munro, Alistair. 1992. "Self-Selection and Optimal In-Kind Transfers." *The Economic Journal* 102: 1184-96.
- Murphy, Martin. 1978. "The Value of Nonmarket Household Production: Opportunity Cost Versus Market Cost Estimates." *Review of Income and Wealth* 24(3): 243-55.
- Murphy, Martin. 1982. "Comparative Estimates of the Value of Household Work in the United States for 1976." *Review of Income and Wealth* 28(1): 29-43.
- Organisation for Economic Co-operation and Development. 1995. *Household Production in OECD Countries: Data Sources and Measurement Methods*. Paris: OECD.
- Osberg, Lars and Andrew Sharpe. 2002. "The Index of Economic Well-being." *Indicators: The Journal of Social Health* 1(2): 24-62.
- Pechman, Joseph A. and Benjamin A. Okner. 1974. *Who Bears the Tax Burden?* Washington, D.C.: The Brookings Institution.
- Radner, Daniel B. and Denton R. Vaughan. 1987. "Wealth, Income, and the Economic Status of Aged Households." In E. Wolff, ed. *International Comparisons of the Distribution of Household Wealth*. New York: Oxford University Press.
- Reid, Margaret, G. 1934. *Economics of Household Production*. New York: John Wiley.
- Robinson, John P. and Geoffrey Godbey. 2001. *Time for Life: The Surprising Ways Americans Use Their Time*. University Park, Penn.: The Pennsylvania State University Press.
- Ruggles, Patricia and Michael O'Higgins. 1981. "The Distribution of Public Expenditure among Households in the United States." *Review of Income and Wealth*, 27(2): 137-64.
- Ruggles, Patricia. 1991. "The Impact of Government Tax and Expenditure Programs on the Distribution of Income in the United States." In *Economic Inequality and Poverty: International Perspectives*. Lars Osberg, ed. Armonk, N.Y.: M.E. Sharpe. 220-45.
- Sen, Amartya. 1989. "Cooperation, Inequality and the Family." *Population and Development Review* 15(Supplement on Rural Development and Population: Institutions and Policy): 61-76.
- Shaikh, Anwar and Ahmet Tonak. 1987. "The Welfare State and the Myth of the Social Wage." In *The Imperiled Economy, Book I: Macroeconomics from a Left Perspective*. Robert Cherry, ed. New York: Union for Radical Political Economics.
- Shaikh, Anwar M. and E. Ahmet Tonak. 1999. "The Rise and Fall of the U.S. Welfare State." In *Political Economy and Contemporary Capitalism: Radical Perspectives on Economic Theory and Policy*. Ron Baiman, et al. eds. Armonk, N.Y.: M.E. Sharpe. 247-65.35
- Smeeding, Timothy M. and Daniel H. Weinberg. 2001. "Toward a Uniform Definition of Household Income." *Review of Income and Wealth* 47(1): 1-24.
- Smith, Adam. [1776] 2000. *The Wealth of Nations*. New York: Modern Library.
- U.S. Bureau of the Census. 2001. *Statistical Abstract of the United States: 2001 (121st edition)*. Washington, D.C.
- U.S. Bureau of the Census. 1993. *Measuring the effect of benefits and taxes on income and poverty: 1992*. Washington, D.C., U.S. Government Printing Office.

Walsh, Vivian. 2000. "Smith after Sen." *Review of Political Economy*. 12(1): 5-25.

Weisbrod, Burton A. and W. Lee Hansen. 1968. "An Income-Net Worth Approach to Measuring Economic Welfare." *The American Economic Review* 58(5): 1315-1329.

Whalley, John. 1984. "Regression or Progression: The Taxing Question of Incidence Analysis." *The Canadian Journal of Economics* 17(4): 654-82.

Wolff, Edward N. 2001. "Racial Wealth Disparities: Is the Gap Closing?" Annandale-on-Hudson, N.Y.: The Levy Economics Institute of Bard College.

NOTES

1. Real GDP per equivalent adult in the U.S. was \$37,256 in 2000 (in 1996 PPP dollars), roughly 26 percent higher than its 1990 level (Heston et al., 2002). The equivalence scale employed in the comparison assigns a weight of unity to those over the age of 15 and a weight of half to those aged 15 or below.
2. "Every man is rich or poor according to the degree in which he can afford to enjoy the necessities, conveniences, and amusements of human life." Smith [1776] 2000). A contemporary discussion of the notion of necessities and conveniences of life may be found in Gram (1998) and Walsh (2000).
3. The term "nonmarket" is used here in the sense that the activities in question do not result in the production of goods or services that can be sold by the household in the market, i.e., a commodity.
4. In the March CPS, rental income can be income from renting land or buildings (including rent from roomers or boarders), royalties, estates or trusts.
5. Radner and Vaughan (1987) use another approach, which is to construct a two-dimensional criterion, based on both income and wealth, for classifying households into low-status, middle-status, and high-status categories.
6. This is consistent with the recent recommendations of the international expert committee on household income statistics (Canberra Group 2001:120-1) and the approach adopted in most national income accounts. An alternative approach frequently used in relation to owner-occupied housing is to estimate the return on home equity. As noted above, this approach implicitly assumes that owner-occupied housing is similar to financial assets.
7. The rate of return used in our procedure is total return--the sum of the change in capital value and income from the asset. For example, for stocks, total return would be the sum of the change in stock prices plus dividend yields.
8. We deal here only with approaches that aim to allocate *all* taxes paid by households as distinct from empirical studies that deal with the incidence of a particular tax, such as the excise tax on alcohol.
9. Another common ground is that both approaches are based on some version of marginalist theory of value and distribution. Alternatives to the marginalist approach exist, as exemplified by recent rehabilitations of classical theories of taxation (e.g. Dome 1992; Dome 1998) and Kaleckian theories (Asimakopulos and Burbidge 1974; Laramie and Mair 2000).
10. Nontaxes here refer to items such as motor vehicle license fees and taxes on personal property (other than owner-occupied housing).
11. Payroll taxes paid by employers make no difference to the level of after-tax household income because they are considered, at the same time, as an addition to household income and as a tax liability.
12. A discussion of some key problems in the allocation of government expenditures among households may be found, *inter alia*, in (Ruggles 1991, pp. 221-227).
13. This is the method that is currently employed by the U.S. Census Bureau in its estimation of the imputed values of Medicaid and Medicare.
14. For example, in the case of highways we split the expenditures between the business and household sectors using estimates from highway cost allocation studies that split expenditures between vehicle types.
15. Continuing the example of highways in the previous footnote, the expenditure total allocated to the household sector is distributed among the households by us on the basis of estimated person-miles traveled. The latter are estimated from household surveys of personal travel.
16. The relevant population may be the entire U.S. population (as in the case of distributing federal expenditures on National Institutes of Health) or a specific demographic group (e.g. expenditures on Indian Health is distributed among Native Americans).
17. Marx had pointed out the asymmetry noted here in his discussion of productive and unproductive labor: "It (i.e., households dependent on wage income) can only cook meat for itself when it has produced a wage with which to pay for the meat; and it can only keep its furniture and dwellings clean, it can only polish its boots, when it has produced the value of furniture, house rent and boots."(Marx 1963: 166).

18. The third party principle is ambiguous sometimes in the case of personal care activities, such as shaving (see Organization for Economic Co-operation and Development 1995: 11).
19. For an early example of this method, see Kuznets, et al. (1941:432-433). A recent example of a similar method using the employee compensation of household employees may be found in Landefeld and McCulla (2000).
20. For example, one study has used (among other methods) average wage rates from 27 occupations as market equivalents of various types of housework (Murphy 1982: 40-41).
21. Examples of the applications of this procedure for Norway can be found in Aslaksen, *et al.* (1998), and for the U.S. in Murphy (1978).
22. See, for example, the discussion in Chadeau(1992: 93), and Goldschmidt-Clermont(1993: 423).
23. For a graphic, first-hand description of the labor process in the house cleaning industry in the contemporary U.S., see (Ehrenreich 2001: 51-101).
24. This is also the method that has been followed in the study sponsored by the United Nations Development Program (conducted for the Human Development Report Office) on the grounds that the labor performed by this type of worker offers the closest match in terms of the labor process involved in household production (Goldschmidt-Clermont and Pagnossin-Aligisakis 1999).
25. This percentage, calculated using the CPS data, appears in U.S. Bureau of the Census (2001: 382, Table 593).
26. We have omitted the great amount of detailed income categories found in the two sources and also grouped items in a somewhat different manner for our purposes here.
27. At times, only economic variables categorized under different headings are included in the composite index (e.g. Osberg and Sharpe, 2002).

Preliminary draft. Please do not quote or cite without permission.