

**Measuring The Distribution Of Well-Being:
Why Income and Consumption Give Different Answers**

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I. Introduction

The issue of how resources are distributed across age and income groups has once again surfaced as a focal point of public policy analysis -- this time in the context of conflict between strained government budgets and stagnation in economic well-being for certain population subgroups. There is some evidence that the link between macro-economic growth and the economic well-being of the lowest income groups has been severed (Cutler and Katz, 1991), which suggests an increased role for government transfers if the gap between rich and poor is to be kept from growing too wide. Hanratty and Blank (1994) confirm this by showing that the reduction in poverty rates in Canada (relative to the U.S.) in the 1980s was attributable to more generous government transfers -- not earnings growth. Similarly, Wolfson and Murphy (1994) found income distributions to be less dispersed in Canada than in the U.S., highlighting the fact that the number of extremely poor in Canada is much lower, again attributing the differences to transfers.

In addition to the income-dimension of the resource distribution question, there are growing concerns about economic well-being across age groups. The original impetus for expanding social insurance for the elderly was to increase their incomes -- a goal which has been basically accomplished. For the U.S., Hurd (1990) shows that there has been strong improvement in the relative incomes of people aged 65 or older during the last few decades, but the income of a typical elderly person is still below that of younger people -- a result we confirm here, for Canada. However, Gokhale, Kotlikoff, and Sabelhaus (1995) found that the growth rate of consumption for the average person over age 65 has been much higher than for other age groups -- so much that relative consumption of older people has surpassed that of other age groups. Also, Sabelhaus and Manchester (1995) show that consumption gains for young

adults (aged 25 to 44) between 1960 and 1989 were much smaller than their income gains -- this means that consumption growth for other age groups must have out paced income growth, because aggregate consumption grew faster than income in the U.S. for the same time period.

Normative analysis of how economic resources are distributed across or within income and age groups traditionally focuses on comparing annual cash incomes. Yet, it has been cautioned that cash income is a flawed indicator of economic well-being and that a direct, consumption-based measure of well-being is more suitable for an analysis of relative economic standing. There are good reasons to suppose that consumption and income measures of the level of economic resources will differ across population subgroups (Slesnick, 1991, p.3). First, differentials in effective tax rates across income or age groups directly affect the relationship between income and consumption. Second, if people smooth consumption over time because of transitory income or life-cycle considerations, consumption to income ratios will change accordingly. Finally, some outlays -- particularly payments for durable goods -- are a type of saving in the form of pre-payment for future consumption. Thus, it is easy to predict that consumption distributions (given income) will be less skewed than income distributions. However, there is less reason to suspect that income and consumption measures should diverge over time. The factors mentioned above that affect the gap between income and consumption levels would have to change in order to cause changes in the relative income and consumption distributions across age and income groups.

The goal of this paper is to investigate the extent to which a consumption-based measure of resource distribution differs from the traditional income-based approach. Using Canadian Consumption Data, we present evidence that consumption and income give very different impressions of resource

distribution across age and income groups at any point in time. Moreover, we conclude that differential trends in effective tax rates, saving rates, and in durable goods purchases have affected trends in relative income and consumption across groups. Therefore, consumption measures may in fact give a different impression about levels and changes in relative economic well-being over time.

The paper is structured as follows. The second section points out the most commonly cited ramifications of using cash income as an indicator of economic well-being and reviews recent efforts to extend or substitute the traditional income measure. Section three discusses the data, concept and results of our empirical analysis for Canada. It starts with a brief sketch of the Canadian Family Expenditure Survey. In order to establish our income baseline, we then show that the FEX data are comparable to published Survey of Consumer Finance (official income statistics) data in levels and over time. It is also made explicit that trends in income across age groups and time are not sensitive to the kind of techniques used in adjusting income status for family-composition. Next, we construct our consumption measure of economic well-being, indicate the magnitudes of the tax, saving, and imputation adjustments of cash income and unfold how these adjustments affect levels and trends in estimated economic well-being. Section four summarizes our findings.

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II. Income and Consumption Measures of Economic Well-Being

Direct and indirect approaches to the measurement of economic well-being

Most of the literature on the measurement of economic well-being starts out by positing the so called direct “standard-of-living approach” against the indirect “resource-based” approach (Ringen, 1988). According to the resource-based concept of economic well-being, economic status is contingent upon income, wealth, capabilities and other economic or non-economic means. Advocates of this approach emphasize that resources are a precondition for satisfying needs. They hold that levels and distributions of economic resources implicitly measure the levels and distributions of utilities within and across population subgroups. Critics of the resource-based concept caution that it fails to consider that there are different ways to appropriate resources and more and less effective ways in spending them. Proponents of the standard-of living approach claim consumption to be the intrinsically logical measure of relative economic standing because resources are not sought after in their own right but are ultimately used to meet consumption needs. However, the standard of living approach with its focus on revealed preferences implicitly adopts the notion of perfect consumer sovereignty (Merz et al., 1993).

Little can be added to the established discussion of direct and indirect approaches to the measurement of well-being on a conceptual or meta-level. Given that both, resource-related and consumption-related indicators, closely fit their underlying basic approaches, the latter could be taken as complements rather than mutually exclusive substitutes. However, public policy heavily relies on standard income statistics to judge levels and changes of economic well-being for various population subgroups. Our rationale for exploring the “metrical fit” of a cash income measure as opposed to a consumption indicator

of well-being is to shed light on the potential bias in policy formulation that is likely to ensue from choosing just one -- and not even the most perfect one -- among a variety of indicators.

Problems of annual pre-tax cash income as a measure of well-being

There are several problems with using the standard pre-tax annual-cash income measures for assessing economic well-being (Cutler/ Katz, 1994, 61, Johnson/ Shipp, 1995, S.4, Citro/ Michael, 1995, S.210-214). To begin with, income underreporting and a growing shadow economy (including household production) question the reliability of official income surveys. Moreover, cash income measures do not cover income in-kind as well as other types of economic and non-economic resources that make needs end. Asking for the metrical fit of cash-income indicators attention should further be directed at three wedge factors that are likely to distort the level and distribution of economic well-being as it is measured by the simple income indicator compared to relying on consumption indicators. First, if effective tax rates vary across income and age groups, or over time, the conclusions about relative economic standing will be biased. Second, there are problems with timing of income and consumption -- if people "smooth" consumption in the presence of transitory or life-cycle based income variability, then the distribution of annual income will show more dispersion than the distribution of annual consumption. Finally, there are issues of "prepayment" for the durable-goods component of consumption. People generally build up a stock of durable consumption goods over their working years -- paying off the principal on a mortgage is the most obvious example -- and consuming the rental value of the good with little or no measured cash payments later in life.

Extending the simple cash income measure

Taking account of these problems, empirical analysis has constantly been improving and broadening the range of indicators used for measuring economic well-being. A number of new income measures include additional income

components. Smeeding et al (1992) analyze the distributional impact of public in-kind transfers for several European countries, the United States and Canada. The analysis builds on data from the Luxemburg Income Study (LIS), which date back to the late 1970s and early 1980s. The results confirm that tax burdens and the pattern of transfer entitlements clearly change over the household life cycle. Thus, estimating each household's net cash equivalents for education, health and housing, and adding these to the household monetary income reduced income differences across income and across age groups. Public health and education programs improved the relative well-being of lower income quintiles. Also, as would be expected, young age groups benefited most from public expenditures on education whereas older age groups were found to be net beneficiaries of public health programs.¹

Burkhauser et al (1994) develop a **multi-period** permanent income measure to study the change in relative economic standing for German and U.S. households in the years 1983 to 1988. Their permanent income measure adds imputed housing consumption to household's average money income. Income inequality is found to be less pronounced when applying a multi-period measure compared to measuring income distribution with the standard single period income measure. The decrease in measured income inequality is due to eliminating transitory changes in income. The single period measure tends to overstate the income level of the highest quintile and understates the relative income of the lowest quintile. Low income households show to be more susceptible to negative transitory income shocks. Again, considerable progress is being made in improving the standard cash income measure of relative well-being, first by covering other types of quasi-income and second by taking a long term perspective.

Another strand of literature focuses on the development of **„hybrid-measures“**, **combining income, wealth and liabilities to reflect household's financial status.** The empirical studies of Radner (1993) and van den Bosch (1996) show that

¹ In order to analyze changes over time either panel surveys or a series of cross-section surveys for the same set of countries would be required. Currently, a comprehensive set of panel data is not available for cross country research but its construction is under way in the context of the Luxembourg "PACO project".

adding annuitized wealth components **to** standard income measures impacts on the level of overall well-being as well as on the relative position of age and income groups.

Consumption-related measurement of economic well-being

A variety of studies makes use of consumption-related indicators to investigate levels and trends of economic well-being, inequality and poverty, deriving results from both income and consumption measures. Some writers apply expenditures as a proxy for consumption, whereas others develop complex consumption measures that include adjustments for income in-kind or for the consumption of durable consumer goods. It is interesting to note the methodological convergence between studies that focus on broadening income measures and those that apply sophisticated consumption measures: Very similar adjustments are being suggested for income in-kind or the value of owner occupied housing.

Cutler/ Katz (1991) and Johnson/ Shipp (1996) discuss U.S. trends in inequality using both, income and consumption measures. Cutler and Katz analyze changes in the countries' expenditure, consumption and income distributions across the years 1960-61, 1973-73, 1984 and 1988. A consumption indicator is derived from total expenditures by subtracting insurance spending ("savings character") and adding in an adjustment for the consumption of durable goods. The authors net out actual spending on owned homes and vehicles, which occurs irregularly and thus biases annual expenditure data. To take account for the consumption of durable commodities they estimate rental values for these items. The study confirms that expenditures are distributed more equitably than income and that consumption is even more equally distributed than both income and expenditures. Income based measures do however properly reflect changes in relative economic well-being over the long run. The housing imputation is found to improve the relative economic position of the elderly.² The more recent paper by Johnson and Shipp (1996) focuses on how macro-economic shocks have affected inequality. The authors present evidence for the U.S. that income inequality is more sensitive to changes in unemployment and inflation than consumption inequality.

² Cutler and Katz use Data from the American Consumer Expenditure Survey (CEX). The quality of these data has deteriorated over the last decade compared with CPS (Consumer Population Survey), see Appendix, pp.60-61 and p.68)

In his study of U.S. poverty, Slesnick (1993) finds that current income overstates poverty and that poverty patterns look different when using consumption instead of income measures. The author uses consumption data from the CEX instead of CPS income statistics to calculate poverty head counts. Consumption comprises out of pocket expenses, food stamps, meals and rent received as pay, and an adjustment for the consumption of durable goods. Gifts and cash contributions as well as contributions to pensions and social security are not taken into account. Results of this study show consumption based poverty rates to be lower than poverty rates that are based on either CPS or CEX income statistics. Consumption poor and income poor households look very different. About 40% of the income poor are found to be homeowners. Furthermore, income poor households enjoy considerable service flows from durable consumer items. Consumption poor households have fewer physical assets and their relative expenditure on necessities is substantially larger. Similarly, Johnson and Shipp (1995) (for the U.S.) as well as McGregor and Borooah (1992) (for Great Britain) confirm considerable differences in measured poverty when applying consumption or expenditure statistics on the one hand and current disposable resources on the other.³

While previous studies set the scene for consumption-based measurement of well-being our analysis for Canada undertakes to further clarify the extent to which measured inequality and poverty responds to adjustments of the standard cash income indicator. For this purpose, we focus on how consumption relates to income and demographic status, controlling for income. That is, we compare average consumption levels within income groups, in order to determine how much bias there is in the income classifier. This is somewhat different than Cutler and Katz (1991), Mayer and Jencks (1991) or Slesnick (1993), who create similar consumption measures at the household-level, but then compare consumption distributions. That approach does not indicate how much bias exists in the income classifier, particularly when, as indicated by

³ Johnson and Shipp use the American CEX, McGregor and Borooah the 1985 British Family Expenditure Survey.

Sabelhaus (1993), there is significant measurement error for income in the expenditure data used.

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III. The Metrical Gap Between Income and Consumption - Empirical Estimates for Canada

Canadian Family Expenditure Surveys and the Matched Data Set

The data we use for measuring both income and consumption are from the periodic Family Expenditure Survey (FEX). Our analysis covers three of the survey years which have nationally representative sampling frames -- 1969, 1982, and 1992. Some 10.000 interviews have been conducted in each of these survey years. The sample represents persons that live in private households in the ten Canadian provinces but excludes residents of the Yukon, of the North-West Territories and of Indian Reserves. Furthermore, the survey does not cover persons that live in collective households such as old-age homes, hospitals or prisons. There is no evidence for significant coverage problems or response error. In 1992 the sample response rate reached 73.8%. The FEX refers to the calendar year prior to the survey year. It reconstructs household membership and includes records for part-year households.⁴

FEX is defined as pretax income, inclusive of income supplement, unemployment benefits, child tax credits and tax credits for goods and services. FEX total consumption is a sum of 13 expenditure categories, including spending on durable consumption goods, value added taxes, tips and customs duties.⁵ We impute our consumption measure from FEX total current consumption, adjusting for the service flow received of the stock of housing and of the stock of vehicles (see below). Our matched data file for the 1969, 1982 and 1992 survey years comprises demographic, income, wealth and 43 consumption variables that are comparable over time.

⁴ Household size thus has to be defined as the number of „year-equivalent persons“ (sum of weeks of household membership divided by 52 for each full-year and part-year household member).

⁵ „Expenses incurred during the survey year for food, shelter, household operations, household furnishings and equipment, clothing, transportation, health care, personal care, recreation, reading materials, education, tobacco products and alcoholic beverages, and a miscellaneous group of items.“ (Statistics Canada, 1994, p.182) (See also: Statistics Canada, 1992, p.115)

Quality of FEX Income Data

Contrasting income and consumption measures and discussing various wedge factors that separate both measures requires an unbiased income baseline to start from. In order to underline the quality of FEX income data it is important to consider how well the FEX income data, which are not the standard income data in Canada, match comparable figures from the income-oriented Survey of Consumer Finances (SCF). This is somewhat complicated by the fact that the sampling unit for the FEX⁶ differs from the sampling unit in the SCF, which is the traditional "family." The main difference is that families include only related people. The FEX considers two roommates who share groceries and like each other to form a purchasing unit. In the SCF, because the two are unrelated, the incomes of the roommates would not be considered together for determining poverty status or any other official statistic. Our measure of economic well-being adopts the FEX spending unit concept.

We can compare one number across the surveys for two of the years -- average per capita before-tax income, which is not affected by sampling unit. The FEX values for 1982 and 1992 are \$16,089 and \$17,509 (in 1992 dollars), respectively. The published SCF values for the same periods are \$16,258 and \$17,830 -- both within two percent. There are no published SCF data for 1969.

Although poverty levels are not comparable, we also investigate whether trends in poverty statistics using the FEX are consistent with the SCF. Using the 1992 Low Income Cutoff (LICO) thresholds, which are based on the share of income that is spent on necessities⁷, we find that the income-based poverty rate

⁶ The unit of analysis prior to 1990 was a „spending unit“ which is „a group of people living in the same dwelling who depend on a common pooled income ... or one financially independent individual living alone“; no family ties required . In 1990 the FEX adopted the household concept which is defined as „a person or group of persons occupying one dwelling unit“ (Statistics Canada, 1994 and 1992).

⁷ Statistics Canada imputes Low Income Cut-offs (LICOs) using consumption budget information from the periodic Family Expenditure Surveys. A LICO designates an income level at which a household's income share

in the FEX rose slightly from 13.0 percent in 1982 to 14.0 percent in 1992. The corresponding SCF-based published rate actually fell slightly from 17.1 to 16.8 percent. However, across-group trends in poverty rates showed the same patterns -- the poverty rate for people over age 65 fell from 31.6 percent in 1982 to 23.2 percent in 1992 in the FEX, and from 29.4 percent to 20.6 percent in the SCF published tables. Though there are subtle differences in the estimates, we conclude that the FEX satisfactorily tracks the official income data.

Family composition adjustment

Table 1 displays summary statistics on income across age groups for 1969, 1982 and 1992. We present estimates of average and median income that are adjusted for family composition in three ways. The rationale is to show that the exact adjustment method does not affect the conclusions about within and across group income growth.

At one extreme, the per-adult measures can be thought of as counting spending on children as consumption, while at the other extreme per-capita measures count spending on children as a reduction in the disposable income of the parents. Neither of these methods allows for economies of scale. In a shared living arrangement consumption usually deviates from the sum of what would be consumed individually if each member of the household was living alone. Therefore, the concept of per-adult equivalent income has gained increasing currency in the empirical analysis of economic well-being.

The adult equivalent income captures both, economies of scale in household production and the sharing of resources among household members. Household income is deflated by a score that is less than one for each

that is spent on necessities exceeds by more than 20% the share spent on necessities by all households of equal size that are located in a comparable urban/rural area.

additional household member – how much less depends on whether or not special consideration is given to young, old or disabled persons. The majority of equivalence scales assigns different weights to adults and children. A variety of scales has been suggested, assuming different scale elasticities of household production and attaching different “equivalent factors” to different types of household members.⁸ Our per-adult equivalent income measures are derived from the scales used by Statistics Canada for its calculation of a needs-adjusted low income measure (LIM).⁹

The pattern of income growth in Canada between 1969 and 1992 is remarkably insensitive to the method used to adjust for family composition, both within and across groups. All of the adjustment measures point to (1) converging income distributions, as medians grew faster than means, and (2) relatively higher income growth for people over age 65. In every case, the annual growth rate for average income out paced the growth rate for median income by a few tenths of a percentage point between 1969 and 1992. Average income grew 1.7, 2.3, and 2.4 percent per year, respectively, using the per-adult, per-adult equivalent, and per-capita adjustment methods. The corresponding median growth rates were 2.0, 2.5, and 3.1 percent, which, starting from an income distribution that is skewed to the left, indicates a convergence of incomes using any of the three adjustment methods.

The pattern of change across age groups are also invariant to the family-composition adjustment used. Growth rates for average income of people 65 and older are always roughly double those of the younger age groups. Average per-adult equivalent income of people 65 and older rose from 48 percent of the corresponding value for younger people in 1969 (\$9,023 v. \$18,968) to 74

⁸ For an extensive comparative study of equivalent scales see Buhmann et al, 1988. See also Merz et al, 1993.

⁹ The first adult in a household contributes a value of one to the unit’s income deflator, and all subsequent adults add a value of .4. The first child in a single-parent household also gets a value of .4, but all subsequent children (and the first child in a two-parent household) are being assigned person weights of .3.

percent of the corresponding value in 1992 (\$22,083 v. \$29,675). The growth of median incomes showed a similar pattern across age groups, but all uniformly higher than the averages, which again indicates convergence of incomes over time.

Though the different adjustment methods in Table 1 give somewhat different impressions of relative income-based economic well-being, it is important to note that they all tell basically the same story over time. In the next section we begin deriving consumption-based measures of well-being. For this purpose we hold the composition-adjustment fixed so that we can isolate the differences between income and consumption-based measures. We choose the per-adult equivalent adjustment of household income to account for differences in household composition.

Estimating the Wedge Between Pretax Income and Consumption

This section develops a FEX based consumption indicator of well being. The approach focuses on showing how four adjustments to the income series each affect the gap between consumption and income. As has been pointed out in section II, taxes, savings and the service flow from durable consumption items have to be considered as major wedge factors between pretax cash income and consumption. Our adjustments to the FEX income address these three concerns in order. Table 2 shows the effect of implementing the adjustments for the entire sample in each of the three years.

The first adjustment is for personal taxes paid, which we define to include all personal income taxes, unemployment insurance payments, and contributions to Canada and Quebec Pension Plan (CQPP). This is the largest adjustment in each year, and has grown from 12.9 percent of income in 1969 to an income share of 22.8 percent in 1992.

The second adjustment in Table 2 corrects for differences between after tax income and consumption. It is best described as account balancing because it does not only incorporate a saving component but also measurement error and cash flows (such as gifts) which are not necessarily related to either income or spending. Nevertheless, in what follows we refer to “saving“. In the aggregate, saving as a percent of gross cash income is generally small -- 3.3 percent in 1969, and 3.4 percent in 1992. The before-tax saving rate was 9.2 percent during the 1982 recession year. The 1982 saving rate reflects an extreme tightening of Canadian monetary policy, which greatly curtailed borrowing and increased net saving. Less change occurred in gross saving for the same year. The adjustment for 1992 is likely to be affected by the introduction of a 15% value added tax in 1991 and the concurring change in relative prices. A major change in consumption taxation impacts on „saving“ due to a periodic increase of the account balance adjustment.

The remaining two adjustments are for durable goods, each with two offsetting components. The goal of the adjustments is to replace the annual cash outlay information in the FEX with an imputed value that more closely reflects current consumption. In the case of housing the imputed value is six percent of the market value of the owned home, net of costs of owning. In the case of autos, we use a regression-based imputation of replacement costs using actual auto expenditure information in the survey.

Comprehensive resource measures of economic well-being usually include an adjustment for housing consumption, reasoning that owner occupied housing increases disposable resources that can be spent on non-housing consumption. Accordingly, the housing adjustment is meant to reflect the amount “saved“ by homeowners compared to households of renters. The standard estimate of owner’s quasi-income is the rental value of their homes,

which is the rent that would be charged net of specific costs of homeownership (property taxes, mortgage payments). Given that depreciation usually is taken into account when deciding on rental charges, renters and owners do likewise pay for the maintenance of housing, such that the costs of maintenance are not included in the imputation of „quasi-income“ advantages for owners. Adopting the income oriented approach to measuring economic status, the rental equivalent can also be considered as the equivalent to a rate of return on a safe investment in financial assets of the amount that is invested in housing.

Taking a direct „use-oriented“ perspective, the emphasis is on homeowners actual consumption use of housing in a given period. The latter could best be monetarized by households willingness to pay for living (or staying) in owned premises. As the FEX does not offer any information on such counterfactual payments, the equivalent rental value of the home is chosen as a second best estimate of annual housing consumption. It can be considered is a shadow price for renting living quarters of similar quality and replaces homeowners' actual housing cost.

The six percent of value housing imputation in Table 2 has been used in other consumption-oriented studies. Robb and Burbidge (1989) as well as Robb, Magee, and Burbidge (1992) use the same method for imputing housing consumption in their synthetic-cohort estimates of age-consumption profiles. The six percent roughly represents the counterfactual private market rent that would have to be paid for the owned home and which also includes a charge for depreciation. For this reason we do not only net out homeowners' mortgage and property tax payments but also maintenance cost that have been reported in each of the survey years.

As the fraction of housing in the owner-occupied sector and housing values relative to incomes have grown, the imputed value has risen from 7.2 percent of

income in 1969 to 11.2 percent in 1992. The sum of housing-related outlays -- maintenance, property taxes, insurance, mortgage interest, and other expenses -- grew steadily from 6.7 percent of income in 1969 to 8.6 percent by 1992. The difference between the imputation and cash outlays -- the net imputation -- has risen from 0.5 percent on income in 1969 to 2.6 percent in 1992.

The imputation for consumption of autos is based on an approach used in Cutler and Katz (1991). We regress expenditures on new and used autos (for the subset of the population reporting auto purchases) on pre-tax income, non-auto expenditures, non-auto expenditures squared, family size, and age in each of the three years. This allows us to estimate each purchasing unit's expenditures on auto purchase, which we then multiply by the number of reported vehicles and by an (assumed) annual replacement factor of 20 percent. The net automobile imputation is small, in each of the three years -- the stock of autos was growing moderately faster than income in 1969, but moderately slower in 1982 and 1992.

The bottom line in Table 2 shows aggregate consumption as a percent of aggregate income in each of the three years. Our estimated consumption fell from 83.2 percent of income in 1969 to 77.1 percent by 1992, driven mainly by the increase in effective tax rates, but partially offset by increases in the net durables imputations.

Before turning to the income and age-specific trends in consumption in the next section, it is important to note that the consumption measure in Table 2 and the rest of the paper does not conceptually include some potentially important components. The measures do not count government and employer-provided consumption items that do not show up on the household survey like for example the provision of amenity infrastructures, education programs or health care. Gokhale, Kotlikoff, and Sabelhaus (1995) show that government

and employer-provided medical care explains about half of the shift in the relative age-consumption distribution in the U.S. during the last thirty years. Basically, people over 65 are consuming a lot more, but about half of the relative increase is in medical care, most of which is not measured in the survey data. The same holds true for the FEX, though the presence of national health insurance in Canada somewhat mitigates the problem, because medical outlays at the household level are low for the entire population.

Income and Consumption Across Groups and Time

Whether or not consumption gives a different answer about the distribution of economic resources hinges on whether the four adjustments described in the last section differ across the groups we are considering. If everyone has identical effective tax rates, saving rates, and net durables imputations, income and consumption will be perfectly correlated. We will now present evidence that there are remarkable differences in the adjustments across income quintiles and age groups, and that those adjustments have indeed changed over time.

Table 3 shows effective tax rates across income quintiles and age groups in each of the three years. (In Table 3, and all subsequent tables, people are classified into income quintiles using the per-adult equivalent adjustment.) The increase in overall effective tax rates shown in Table 2 -- about 10 percentage points between 1969 and 1992 -- affected every age and income group. The absolute change in effective tax rates was smaller for the bottom two income quintiles, but within a couple of percentage points for the top three income groups. The increase in effective tax rates was generally smaller for families with a head age 65 or older, though the top two income groups in that category also experienced increases on the order of ten percent.

Our account-balancing saving measure as a percent of income is displayed in Table 4. The most striking result is the similarity in saving rates by income quintile between 1969 and 1992. Saving rates by income quintile in 1992 are all within 2.2 percentage points of the corresponding 1969 value. There are some important changes over time for the elderly sub-group, whose saving rates now are generally higher than in the earlier period. It is also interesting to note that the increase in saving rates associated with the 1982 recession occurred for all income and age groups, which could be attributable to greater uncertainty about the future.¹⁰

The net housing imputation has a large impact on levels and trends in both age and income resource distributions. In 1992, the lowest income elderly receive a net imputation of 15.3 percent of their before-tax income, as compared to less than 2 percent for all but the poorest non-elderly. The bottom quintile non-elderly have a net imputation of 3.0 percent, which is twice that of any other income group.

The growth in the overall housing imputation shown in Table 2 was fairly small -- from about .5 percent to about 2.6 percent of income. But, as shown in Table 5, the change in the imputation for households headed by someone over 65 was about 7 percentage points. The aggregate change is dominated by the change in the net imputation for the young, which is only 1.6 percent of income. Thus, everything else constant, an income-based measure will understate the relative income gains of people over 65 by about 5 percentage

¹⁰ One of the sour points in our discussion of the „saving“ adjustment is precautionary saving, which is co-determined by the income risk as well as risk aversion. Depending on the degree of uncertainty faced saving thus is likely to vary across population subgroups. The difference between the saving rates of the elderly and non-elderly groups could be attributable to behavioral differences in precautionary saving. Given that we make use of cross-sectional consumption data we are not able to control for behavioral changes over time.

points. Some of the consumption increase that is displayed for the elderly population may pertain to a higher return to housing wealth.

Our imputation for auto consumption across age and income groups is shown in Table 6. Again, the imputation increases the consumption of old relative to young, and poor relative to rich, because of differential tendencies to buy cars in a given year. The impact is not nearly as large as housing, however, at less than 4 percent of income for even the low-income elderly population.

The net result of applying the four sets of adjustments across income and age groups is given in Table 7, which shows overall consumption-income ratios. As observed in Table 2, the aggregate consumption -income ratio fell from 83.2 percent in 1969 to 77.1 percent by 1992 -- the result of about 10 percentage points more in taxes, less a few percentage points in increased consumption imputations. Interestingly, consumption-income ratios across age and income groups show very similar overall changes, even though the individual adjustments differed noticeably across groups. Three factors were in many cases offsetting -- the elderly poor are getting much higher housing imputations, but are also dissaving less, and paying a little more in taxes. The only group whose consumption growth exceeded income growth is the bottom quintile of the young.

Income and Consumption As Indicators of Relative Economic Well-Being

The derivation of consumption to income ratios across income, age, and time indicated that the two measures give different impressions about the distribution of economic well-being. Results are now presented in a way that shows how conclusions about relative economic standing are affected by the choice of measures.

Tables 8 and 9 display, respectively, relative income and relative consumption per-adult equivalent across the groups we have been studying, for each of the three years. (Any of the relative incomes can be multiplied by the corresponding average income per-adult equivalent in Table 1 to get an absolute amount. The consumption values can be derived using the absolute income values in Table 1 and consumption-income ratios in Table 7 or Table 2.) Each cell entry is the ratio of that group's average income or consumption to the overall population average.

The choice of income or consumption gives very different answers about relative economic well-being across groups, and somewhat different answers about trends in well-being over time. In any given year, relative consumption levels for the bottom quintile are perceptibly larger than relative incomes levels. For example, in 1992, incomes of the poorest twenty percent of the population were only 35.4 percent of the overall average. But, consumption for the same group was 57.9 percent of the overall average. This ratio existed for both young and old.

The impact of using consumption to measure well-being across age groups is equally striking. The relative incomes of elderly people in 1992 were only 76.8 percent of the overall average, but their consumption levels were 91 percent of the overall level. These differences reflect the fact that effective tax rates, durables imputations, and saving all work to increase the relative consumption of older people.

The choice of consumption as a measure of economic well-being also affects conclusions about change over time. Consumption and income gains across groups and over time are generally well correlated, though there are some important exceptions. Average relative incomes for the poorest twenty percent of families headed by someone less than 65 did not change much between 1969

and 1992, rising only from 32.3 to 36.2 percent. But relative consumption for this group rose markedly, from 47.1 to 58.4 percent. Thus, the gains in relative incomes are only a part of the story of improved economic well-being for the lowest income groups.

The relative income of the bottom quintile elderly rose 20 percentage points between 1969 and 1992 -- for all elderly, the relative increase is over twenty percentage points. But these increases only capture part of the relative gain for older people -- their relative consumption levels increased by more than 30 percentage points.

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IV. Conclusions

Annual, before-tax income is a standard indicator used to measure the distribution of economic well-being across a population. It is among the most commonly used official income statistics and co-determines the design of anti-poverty programs or income policies. Notwithstanding, extended income measures as well as consumption based measures are gaining increasing currency in scientific analysis of economic well-being. Our findings suggest that a consumption-based measure gives very different answers about relative economic standing across income and age groups, and somewhat different answers about trends in resources over time. Against this background, policies of income redistribution and poverty alleviation that rely on standard income statistics alone might be unwise. The results indicate clearly that income is only part of the story about economic well-being -- redistribution of resources should be based on a broader notion of economic well-being.

The consumption measure displays different results than the simple cash income measure, even though there are reasons to believe the conclusions are biased against our assertion. The adjustments for the consumption of durable commodities covers only two out of multiple types of household durables. If extended to the flow of services for furniture, leisure equipment and household appliances the consumption measure would be higher. Also, if government in-kind consumption was imputed the distribution of resources would become less skewed. This is true across income groups, because equal and free provision of public services for all income groups will raise everyone's consumption by the same amount, and therefore reduce the disparity in relative consumption. It is also true across age groups, and especially time as the case of health care demonstrates. Rising health care costs and more elderly living longer indicates

that relative consumption for these age groups that consume more medical care will be higher.

The general tendency for consumption to be less dispersed than income is well known. However, this difference is much smaller, when opposing consumption and different types of comprehensive „permanent“ income measures, instead of comparing current money income and consumption. Also, it has to be cautioned that consumption data are by no means less prone to measurement error than income data and that consumption surveys are conducted less frequently than income surveys. Neither income nor consumption measures take account of financial wealth or a change in relative asset prices over time, which could further add to explaining different levels and trends in well-being across population subgroups.

In conclusion, the major findings do not relate to the fact that there is a difference between the two types of measures but to what kind of adjustments make the difference: taxes, savings and the purchase of durable consumption goods as a prepayment for future consumption. We are showing the continuum of measures from gross income to consumption. By measuring both, income and consumption, one is able to chart differences in effective taxation, savings and investment in consumer durables and to highlight their respective importance in determining relative economic well-being.

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Abstract

Annual, before-tax income is the most common official statistic used to measure economic well-being and therefore underlies the design of most anti-poverty programs or other redistributive economic policies. Notwithstanding, extended income measures as well as consumption based measures are gaining increasing currency in scientific analysis of economic well-being. Our findings suggest that a consumption-based measure gives very different answers about relative economic standing across income and age groups, and somewhat different answers about trends in resources over time. More importantly, by explicitly measuring the relationship between income and consumption across groups and time, we are able to evaluate how differences in effective taxation, saving rates, and investment in consumer durables affect the alternative measures of economic well-being.

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