Cohort Analysis of Economic Well-Being in the United States

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December 2011

Preliminary draft: Please do not circulate, cite or quote without permission from authors

Abstract

In this paper, we examine the life-cycle economic disparities within and between population cohorts of households, defined by the age of the household's head, in the United States. We first look at all households and use data between 1972 and 2001 and then we focus on baby boomers for the time period between 1972 and 2007.We are specifically interested in understanding the changes in level and distribution of economic well-being within cohorts as each cohort ages as well as between cohorts as each cohort faces different market conditions and government policies that directly affect their well-being. Several important demographic changes that affect the labor supply have occurred in the time frame. Changes in government policies through the period, targeting population subgroups, in government transfers, such as social security and disability programs, in tax laws, as well as in government spending for public expenditures have important implications on both the level and distribution of economic well-being of cohorts. Moreover, changing demographics of household structure and participation in the labor force have major implications on levels of household production, another important component of well-being. This paper investigates the changes in economic well-being and inequality within and between cohorts using both official measures of well-being as well as The Levy Institute Measure of Economic Well-Being (LIMEW). LIMEW is a more comprehensive measure than official measures. The LIMEW includes taxes and non-cash transfers as well as the provision of public goods and the value of household production. The LIMEW also treats wealth as an economic resource rather than including only the income from wealth in the measure. Our results suggest that both within and between cohorts, inequality has been increasing for the time period. Younger cohorts face a larger gap at the beginning of their careers and the gap widens as cohorts age. The increasing gap at the start of the work-life that is carried through the life cycle suggests that cross-section estimates of inequality measures may be underestimating the challenges that younger cohorts face. Trends suggest that the resulting inequality will only deepen as each cohort ages currently affecting baby boomers.

1. Introduction

The decline in economic well-being and prospects of younger cohorts in comparison with older generations has been the subject of several empirical studies recently. Several measures of well-being, including household income, individual earnings, and income from other sources have gone down for young cohorts since the 1970s. Household income and earnings measures constitute a significant portion of economic well-being, but are not sufficient to assess the whole picture. The effectiveness of potential policy reforms on individuals and households' well-being rely on firm understanding of what constitutes the well-being of their targets. Money income (MI) is one of the most commonly used measures of economic well-being in considering the gaps between different population group, but is not sufficient to account for the household's overall command over, and access to, the goods and services. A more complete measure of well-being includes income from wealth, net government transfers, and value of household production, in addition to money income. In this paper, we provide such a comprehensive measure, The Levy Institute Measure of Economic Well-Being (LIMEW), and compare and contrast the changes in economic well-being and inequality within and between cohorts using both official measures as well as LIMEW in the United States between 1972 and 2001 for all cohorts followed by a more detailed look to baby boomers for the period from 1972 to 2007.

Disparities in economic well-being raise concerns about inequality in opportunity. For instance, children in households with few resources may not have access to the same quality education or health care as children in households who have more available resources. In effect, unequal opportunities may severely increase and perpetuate inequality across generations. In fact, several studies have found direct links between health and inequality through spatial concentrations of poverty, ethnic enclaves, and residential segregation, all detrimental to individual health (Wen, Browning, and Cagney 2003). Moreover, weakening social cohesion and holding back the formation of social capital beneficial to health as a result of increased inequality contribute to worsening health among the poor (Kawachi et al. 1997). A recent comprehensive study by Hildebrand and Van Kerm (2009) examine the effect of income inequality on individuals' health status in 11 European countries. They find consistent evidence that income

inequality is negatively related to health status in these 11 European Union countries for both men and women. Similar earlier studies in the United States have found the same link between health and inequality[1] and inequality and mortality[2]. In a related study, Lynch (2006) finds that the effect of income on health is strengthened for recent cohorts compared to previous ones. Another negative effect of inequality is the quality of education children receive. Poorer households cluster in poorer neighborhoods where local schools struggle from lower amounts of public finance which in turn transmits economic status across generations, leading to persistent economic inequality (Durlauf 1996). Even one is not interested in the overall distribution; inequality captures declining well-being of lower classes. For example, Iceland (1990) found that inequality contributed to increased poverty among Hispanics during 70s and 80s.

These negative effects may be less severe when certain safety nets are in place, such as access to free health care and education, social insurance for the elderly and unemployed etc. In the presence of these safety nets, the linkage between income inequality and negative outcomes may disappear. For example, Krueger and Perri (2006) find that the recent increase in income inequality did not transform into consumption inequality. Thus, it is important to account for these additional resources that households have access to on top of money income. In light of these issues, there is a push in both scientific community as well as those responsible for providing new policies to account for additional measures of household resources on top of income. Nicolas Sarkozy, president of France, created a commission in 2008, for an alternative measure of economic well-being that goes beyond gross domestic product and that includes measures for individual health and value of leisure among others. The commission on the Measurement of Economic Performance and Social Progress, headed by Joseph Stiglitz, Amartya Sen and Jean Paul Fitoussi completed and presented their report in September 14, 2009.[3] As Stiglitz suggested in the report, the issue of what parts of the economy statisticians measure could have profound effects on policy. Stiglitz stated that:

[1] Kennedy et al. (1998) and Mellor and Milyo (2002) found that state-level income inequality significantly affects self-reported health status. See Deaton (2003) for a recent review of the literature on the relationship between inequality and health.

[2] Daly et. al. (1998) finds a significant positive association between income inequality and mortality.
[3] The report is available online at http://www.stiglitz-sen-fitoussi.fr/en/index.htm.

'In an increasingly performance-oriented society, metrics matter. What we measure affects what we do. If we have the wrong measures, we will strive for the wrong things.'

The commission's suggestions have been echoed by many policymakers and economists. OECD Secretary-General Angel Gurria responded the report stating that:

'We need better measures of people's expectations and levels of satisfaction, of how they spend their time, of their relations with other people in their community. We need to focus on stocks as much as on flows, and we need to broaden the range of assets that we consider important to sustain our well-being.' [4]

The recently developed Levy Institute Measure of Economic Well-being (LIMEW) and its associated micro-datasets offer a comprehensive view of the level and distribution of economic well-being in the U.S. In this paper, we use LIMEW and compare it to other conventional measures of economic well-being in order to analyze the changes in level and distribution of economic well-being within cohorts as cohorts age as well as between cohorts as each cohort faces different market conditions and government policies that directly affect their well-being in the U.S. We provide our analysis for all cohorts for years between 1972 and 2001 followed by a closer look at baby boomers until 2007. The main components of the LIMEW are earnings, pensions, income from wealth, transfers, public consumption, taxes and value of household production. In this paper, we examine, using the database developed for the LIMEW, the disparities within and between several cohorts born 1918-1967 with a special emphasis on baby boomers, the structure of inequality among the cohorts, and how components of LIMEW affect the economic well-being over life-cycle and between generations. We compare LIMEW with the measure of gross money income.

The structure of the remaining of the paper is as follows: We first discuss the existing empirical literature on inequality and measures of economic well-being across cohorts in the United States since the 70s (Section 2). Then we describe the methodology and data sources for the LIMEW (Section 3). In section 4, we present our estimates of LIMEW measure and compare and contrast with existing measures for several cohorts born 1918-1967 in the United States. We then discuss the economic inequality between

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[4] http://www.forbes.com/feeds/afx/2009/09/14/afx6881340.html

and within cohorts over time in Section 5. We provide a more detailed analysis of baby boomers including data from 2007 in Section 6. Section 7 concludes the discussion.

2. Literature Review

While there is a discussion that whether cohort effects are as important as age and time effects when it comes to changing inequality, ie recent studies by Fukade (2008) and Heatcate et al (2005) both concluded that cohort effects are negligible once one controls for age and period effects (as cohort membership is a function of age and period), the exercise of looking at cohorts separately still is very useful and important given both demographical changes as well as changes in market conditions and policies that each cohort faces at different times of their lives. The period that we analyze in this paper (1972-2007) has witnessed several demographical shifts. From late 60s, there has been a sharp increase in single female headed households (Garfinkel, 1990). Moffitt and Rendall (1995) found significant increases in both numbers as well as spells of single female family headship especially among later cohorts. This increase significantly limits the available income sources for these households especially given the still present wage gaps between women and men (Blau and Kahn, 1994). The change in household structure coincided with increased labor force participation among women from forty percent to sixty percent[5]. The change in household structure and female labor force participation affects LIMEW measure not only by changes in wage income aspect but also the available time the adults in the household has for working as well as household production as LIMEW measure includes value of household production. In the same period, there has been a slowdown in the rate of growth of educational attainment that began with cohorts in the early 50s that has contributed to doubling of college-high school wage gap for the 30 year period from 70s to beginning of the century (Card and Lemieux, 2001). Changes in distribution of hours worked sharpened the rise in earnings inequality before 1982, but slowed down the increase afterwards (Heatcate et al, 2009).

Another important and significant demographical shift is the inclusion of baby boomers into labor force. Macunovich (1995) finds that changing age structure and increase in supply of younger workers caused a decline in entry wages of recent cohorts.

[5] Bureau of Labor Statistics

Baby boomers affect the overall distribution at many levels of LIMEW. Keister and Deb-Sossa (2001) found significant changes in wealth accumulation and wealth mobility among baby boomers compared to previous cohorts. Income from wealth is one component of LIMEW. Other notable demographic shifts, increase in immigration (Kopczuk et al, 2007), and changes in black/white earnings gap (Masterson, et al, 2009) played limited roles on overall distribution as well.

Understanding changes in lifetime well-being requires looking at cohorts separately. Cross-sectional analysis of returns to experience overestimates life-cycle opportunities of younger cohorts significantly. Haider (2001), employing panel data from Panel Study of Income Dynamics (PSID), found that lifetime earnings inequality increased during the 80s. Bowlus and Robin (2004) came to the same conclusion and found that lifetime earnings inequality has been persistent in the last 20 years with significant increases in the second half of the 90s. This is due to lower entry wages for recent cohorts compared to earlier cohorts (Macunovich, 1998) and lower returns to experience due to shorter spells, high frequency of switching jobs, and job insecurity among recent cohorts (Kamboruov and Manouski, 2009). These suggest cross section comparisons (age effects) and time-series comparisons (period effects) would be incomplete to explain what recent cohorts will face over their lifetime.

With respect to cohort analysis, empirical studies concentrate on conventional measures of well-being, namely household income and individual earnings. Main source of data comes from Luxemburg Income Study (LIS) data for these analyses. Osberg (2003) compares three different cohorts, pre-boomers (born 1930-45), baby-boomers (born 1946-59), and generation X (born 1960-75) for five countries, the United States, United Kingdom, Sweden, Germany, and Canada. He finds that each subsequent cohort at the bottom twenty percent of income distribution received a lower income compared to the previous cohort in the United States (and Britain) while in Canada and Sweden younger cohorts fared better compared to previous cohorts when they were at the same age. These results support the findings of Smeeding and Sullivan (1998) who looked at the relative position of later cohorts in the US, UK, and Sweden. They find that recent cohorts appear to be much worse off at the beginning of their careers during 90s compared to 70s. Both studies concentrate on household equivalent income, household

income divided by equivalent adults. The measure depends on several factors that are subject to change over a long period of time and across cohorts: Household composition, number of earners, hours of work, and changes in income from labor and capital. We discuss the household equivalent measures of our LIMEW components in this paper. Not only that later cohorts started at a lower income level, within cohort income inequality (as well as the consumption inequality) measures increase with age in the United States (Deaton and Paxson, 1994).

The most commonly studied component of well-being is wage earnings. Utendorf (1999) employs Social Security data to investigate earnings inequality and finds that inequality went up from 80s to mid-90s with a small decline in 88-92 periods. He attributes the large share of the increase to within-group inequality by birth cohorts even though between-group inequality was also increasing. Similarly, Lemieux (2000), using data from Current Population Survey, concludes that most of the growth in "unexplained" wage inequality occurred during the 80s and suggests that the magnitude and timing of the growth in inequality cannot be explained by shifts in demand due to changes in technology. The results are similar to other developed countries such as UK (Gosling et al, 2000) and Canada (Beaudry and Green, 2000; Germany Fitzenberger et al, 2001) where later cohorts faced lower entry wage levels and lower returns to experience resulting persistent between cohort inequality during the late 80s and 90s. While wages constitute a large portion of overall well-being, it does not account for all the resources an individual or a household has access to. LIMEW measure accounts other important monetary and non-monetary resources in order to understand the evolution of well-being across and within cohorts.

Cohort comparison of wealth and income from wealth is another aspect of well-being that found its place in the literature[6]. Greenwood and Wolff (1992) found that annual growth of mean wealth is consistently higher for younger cohorts than older ones. An earlier effort by Shorrocks (1975) constructed lifecycle value of wealth ownership for one single cohort. His findings suggest increased wealth inequality by age within the cohort, continuous increase in wealth for the top one percent of the distribution and

[6] See Keister and Moller (2000) for a recent review of research on wealth inequality specifically with respect to cohort effects and age.

decline after retirement for the rest. Sabelhaus and Manchester (1995) found that baby boomers accumulated more wealth than their parents. Laitner (2001) came to a similar conclusion, stating that wealth inequality has actually declined. Wolff (2002) suggests that inheritances and other wealth transfers tend to be equalizing in terms of the distribution of household wealth and the addition of wealth transfers reduces the inequality of wealth. In this paper, as a part of LIMEW, we take several cohorts and look at their wealth changes.

Other sources of household income change the overall distribution. Heatcate et al (2009) finds that taxes and transfers compress the overall inequality especially at the bottom of the distribution while having little effect to the rest of the households. A recent paper by Berloffa and Bille (2007) investigates contributions of different sources of income on inequality across cohorts in Italy. They found that while wages have declined in real terms from 1989 to 2004, affecting recent cohorts, pension income has increased from older to younger cohorts. Overall, they concluded that well-being has not gone up for younger cohorts mostly due to increased housing rental costs they face recently. Smeeding and Sullivan (1998), using LIS data, finds that the United States lack behind other developed countries in social transfers amounting less than ten percent of the household income before retirement and reaching to sixty percent of household income afterwards. Their analysis, however, uses cross-section data from only one year which does not go into detail on how cohorts are affected overtime. Besides labor income, income from wealth, and net government transfers, LIMEW includes government expenditures and value of household production which was not studied within the cohort framework in previous literature[7].

3. LIMEW measure

The Levy Economics Institute Measure of Economic Well-being (LIMEW) is constructed as the sum of the base income; income from wealth; net government expenditures (transfers and public consumption, net of taxes); and household production

[7] Number of hours spent on household production stayed mostly constant over the period, as mothers' time in childcare, and in household production declined while fathers' time in these activities significantly increased for the period (Sanik, 1990), so any effect on cohort comparison would be due to change in household structure.

(Table 1). We draw our data from the public-use version of the files used by the Census Bureau to estimate official measures of well-being. The calculation of base income uses values reported in the Census files for the relevant variables, without any adjustment. Additional information from Federal Reserve surveys on household wealth and surveys on time-use are incorporated into the Census files via statistical matching to estimate income from wealth and value of household production. Information from a variety of other sources, including the National Income and Product Accounts and several government agencies is utilized to arrive at the final set of estimates.[8]

We begin with money income and subtract the sum of property-type income (interest, dividends, and rents) and government cash transfers (e.g., Social Security benefits. We, then, add imputed income from wealth to base income. Our income from wealth measure is different than the property-type income consisting of the actual receipts of interest, dividends, and rent in the official gross money income measure. We believe that annual property income is an incomplete measure of the economic well-being derived from the ownership of assets. Owner-occupied housing yields services to their owners over many years, thereby freeing up resources otherwise spent on housing. Financial assets, can, under normal conditions, be a source of economic security in addition to property-type income.

Also our approach to the valuation of income from wealth is different from the conventional methods suggested in the literature (e.g. Weisbrod and Hansen, 1968). First, we distinguish between home and wealth from other sources. Housing is a universal need and home ownership frees the owner from the obligation of paying rent, leaving an equivalent amount of resources for consumption and asset accumulation. 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).[9] Second, we estimate the benefits from non-home wealth using a variant of the standard lifetime annuity method.[10] We calculate

[8] For details regarding the data sources and methods used to estimate these components, see Wolff, Zacharias and Caner (2004).

[9] This is consistent with the approach adopted in most national income accounts.

[10] This method gives a better indication of resource availability on a sustainable basis over the expected lifetime than the standard bond-coupon method. The latter simply applies a uniform interest rate to the value of non-home wealth. It thereby assumes away differences in overall rates of return for individual

an annuity based on a given amount of wealth, an interest rate, and life expectancy. The annuity is the same for the remaining life of the wealth holder and the terminal wealth is zero. (In the case of households with multiple adults, we use the maximum of the life expectancy of the head of household and spouse in the annuity formula.) Moreover, in our method, we account for differences in portfolio composition across households. Instead of using a single interest rate for all assets, we use a weighted average of asset-specific and historic real rates of return,[11] where the weights are the proportions of the different assets in a household's total wealth.

In the next step we add net government expenditures—the difference between government expenditures incurred on behalf of households and taxes paid by households. This is equivalent to the social accounting approach in the literature (Hicks, 1946, Lakin 2002). Government expenditures included in the LIMEW are cash transfers, non-cash transfers, and public consumption. These expenditures, in general, are derived from the National Income and Product Accounts (NIPA Tables 3.12 and 3.15). Government cash transfers are treated as part of the money income of the recipients. In the case of government non-cash transfers, our approach is to distribute the appropriate actual cost incurred by the government among recipients of the benefit.[12] The fungible value method is based on the argument that the income value for the recipient of a given non-cash transfer is on average less than the actual cost incurred by the government in providing that benefit (see, for e.g., Canberra Group, 2001, 24,65). This valuation method involves estimating how much the household could have paid for the medical benefit, after meeting its expenditures on basic items such as food and clothing, with the maximum payment for the medical benefit set equal to the average cost incurred by the government.

We do not use the fungible value approach because of its implication that recipients with income below the minimum threshold receive no benefit from the service

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households ascribable to differences in household portfolios. It also assumes that the amount of wealth remains unchanged over the expected (conditional) lifetime of the wealth holder.

[11] The rate of return used in our procedure is real total return (the sum of the change in capital value and income from the asset, adjusted for inflation). For example, for stocks, the real total return would be the inflation-adjusted sum of the change in stock prices plus dividend yields.

[12]For Medicare and Medicaid—by far the biggest items in this list—the relevant cost is the "insurance value" differentiated by risk classes.

(like health care). This implication is inconsistent with our goal of measuring the household's access or command over products. Further, unlike the social accounting method, the fungible value method would not yield the actual total government expenditure when aggregated across recipients. Such a feature is incompatible with our goal of estimating net government expenditures using a consistent methodology.

The other type of government expenditure that we include in LIMEW is public consumption. We begin with a detailed functional classification of government expenditures. We then exclude certain items because they fail to satisfy the general criterion of increasing the household's access to goods or services. These items generally form part of the social overhead (e.g. national defense). Other expenditures such as transportation are allocated only in part to households because part of the expenditure is also incurred on behalf of the business sector. The household sector's share in such expenditures can be estimated on the basis of information regarding its utilization (for example, miles driven by households and businesses). The remaining expenditures (such as health) are allocated fully to households.

We, then distribute the expenditures for each functional category among households. The distribution procedures followed by us build on earlier studies employing the government cost approach (e.g., Ruggles and Higgins, 1981). Several expenditure items are distributed on the basis of estimated patterns of utilization or consumption, while others are distributed equally among the relevant population.

The third part of net government expenditures is taxes. Our objective is to determine the actual tax payments made by households. We do not consider tax incidence in our analysis. Our approach is consistent with the government cost approach. We align the aggregate taxes estimated in the micro data with their NIPA counterparts, as we did for government expenditures. We include only taxes paid directly by households, including federal and state personal income taxes, property taxes on owner-occupied housing, and payroll taxes (employee portion). Taxes on corporate profits, on business-owned property, and on other businesses, as well as non-tax payments, are not allocated to the household sector because they are paid directly by the business sector.

The final component of LIMEW is the imputed value of household production. Three broad categories of unpaid activities are usually included in the definition of

household production: (1) core production activities, such as cooking and cleaning; (2) procurement activities, such as shopping for groceries and for clothing; and (3) childcare activities, such as caring for babies and reading to children. These activities are considered as "production", since they can be assigned, generally, to third parties apart from the person who performs them, although third parties are *not* always a substitute of the person, especially for the third activity.[13]

Our strategy for imputing the value of household production is to value the amount of time spent by individuals on household production using the replacement cost based on average earnings of domestic servants or household employees (Kuznets, et al 1941; Landefeld and McCulla, 2000). Research suggests that there are significant differences among households in the quality and composition of the "outputs" of household production as well as the efficiency of housework (National Research Council, 2005, Ch. 3). The differentials are correlated with household-level characteristics (such as wealth) and characteristics of household members (such as the influence of parental education on childrearing practices, e.g., Yeung and Stafford, 2003). Therefore, we modify the replacement-cost procedure and apply to the average replacement cost a discount or premium that depends on how the individual (whose time is being valued) ranks in terms of a performance index. Ideally, the performance index should account for all the factors relevant in determining differentials in household production and the weights of the factors should be derived from a full-fledged multivariate analysis. Given the absence of such research findings we incorporated three key factors that affect efficiency and quality differentials—household income, educational attainment, and time availability—with equal weights attached to each.

4. Level and Composition of Well-being among Cohorts

We begin with some basic demographic information on the composition of the population by age and other demographic characteristics. We use data from four different time periods, 1972, 1982, 1992, and 2001 initially adding 2007 data for baby boomers. Our unit of analysis is the household. We define cohorts by the year of birth of household's head. In order to align the ten year gaps between our time periods and the

[13] The third-party principle is sometimes ambiguous in the case of such personal care activities as shaving (see Organisation for Economic Co-operation and Development 1995: 11).

ages of cohorts, we define six different cohorts born in 10 year intervals from 1908 to 1967[14]. Cohort 1 is the oldest cohort that we are analyzing; born in 1908-1917 and was 55-64 years old in 1972. Cohort 6 is the youngest cohort, born in 1958-1967[15]. As we mentioned in the literature review, one of the important changes that affect cohorts differently is the household structure. For that, in addition to unadjusted values, we provide all our results adjusted for equivalence scale using three parameter scale suggested by Betson (1996). We restrict our analysis to age groups 25-74. The largest cohort in the data set is cohort 5 (coinciding to late baby boomers), consisting more than one quarter of overall population in 1982 and beyond (Figure 1.1). The fraction of middle age groups (35-44 and 45-54) has been increasing in the population as baby boomers age (cohort 4 and 5). Percentages will shift towards the older age group as these cohorts age in the near future.

In terms of the demographic composition of cohorts, there have been some significant changes over the 1972-2001 Periods (Figure 1.2). Share of non-Hispanic whites declined below 75% in 1992 of the cohort born in 1958-67 compared to 87% for the first cohort we analyze (born 1908-17). The decline was gradual from one 10 year cohort to another until the most recent cohort. Most of the recent change is due to increased Hispanic and Asian population through immigration. The share of married couples at any given age has declined for each subsequent cohort (Figure 1.3). While 81% of Cohort 4 (born 1938-47) were already married at the beginning of their career, by the last cohort we analyze the percentage has declined to 55%. We also observe that rate of married couples declined for each cohort as the cohort ages until recently. Cohort 5 (born 1948-57) and Cohort 6 (born 1958-67) have much stable rates of married households as these two cohorts age. Proportion of single female headed households has shown the opposite trend, increasing from 6% for older cohorts up to 15% for recent cohorts (Figure 1.4). Household structure affects several components of LIMEW. Another important transition is the schooling. There is a significant continuous decline in percentage of high school dropout household heads from as high as 52% for the oldest

[14] Each cohort is represented by a different color throughout the tables and figures. List of colors and corresponding cohorts are listed in a footnote at tables section.
[15] In a very loose mapping according to our cohort definitions, Cohort 4 and Cohort 5 coincide with baby-boomers while Cohort 2 and Cohort 3 coincide to pre-boomers.

cohort to 13 percent for recent cohorts (Figure 1.5) coinciding with increase in percentage of college educated household heads (Figure 1.6). However as previously noted in the literature review, the growth of the ratios have declined significantly after 1982 and size of population with college degree peaked at below 30% for recent cohorts.

We next look at life cycle changes in the well-being of cohorts according to the standard CPS measure of gross money income (MI) and LIMEW (Table 2 and 3). All numbers are adjusted to 2010 dollars. Table 2 presents unadjusted and equivalence scale adjusted values of mean and median MI for 10 year interval age groups for four time periods between 1972 and 2001. Table 3 presents unadjusted and equivalence scale adjusted values of mean and median LIMEW. We concentrate on six different cohorts born in 10 year intervals from 1908 to 1967. Cohort 1 is the oldest cohort that we are looking born in 1908-1917 and was 55-64 years old in 1972. Cohort 6 is the youngest cohort, born in 1958-1967. Note that we observe older cohorts for only later stages of their life-cycle, while younger cohorts are observed at earlier stages. We include households with heads age 25-74. By design, LIMEW values are larger than MI. Mean MI for all households (with heads aged 25-74) was $57,911 whereas mean LIMEW was $85,312 in 1972. Mean MI increased by 1 percent to $58,505 in 1982 while mean LIMEW declined by 4 percent to $81,509[16]. Between 1982 and 1992, mean MI went up by another 9 percent to $64,014 and mean LIMEW increased by 14 percent to $93,603. The big jump for both measures occurred between 1992 and 2001 when mean MI increased by 21 percent to $68,269 and mean LIMEW increased by 24 to $115,920. Median MI, on the other hand, recorded a 3 percent decline between 1972 and 1982 and moderate increases at 7 percent between 1982 and 1992 and 11 percent between 1992 and 2001 suggesting that gains in MI occurred mostly at the upper tale of the income distribution. We observe a similar trend in median LIMEW which declined by 7 percent between 1972 and 1982, increased by 12 percent between 1982 and 1992, and by 14

[16] Equivalence scaled mean MI increased at a faster rate in this time period. ES scaled mean MI went up by 6 percent between 1972 and 1982, 12 percent between 1982 and 1992, and 23 percent between 1992 and 2001. Similarly equivalence scaled mean LIMEW had a positive increase by 7 percent between 1972 and 1982 compared to the decline in unadjusted mean LIMEW. ES scaled mean LIMEW went up by12 percent between 1982 and 1992, and 21 percent between 1992 and 2001.

percent between 1992 and 2001[17]. Next, we look at mean and median measures of well-being by cohorts and age. Note that we observe earlier cohorts only at old ages; cohort 1 is observed only between 55-74, cohort 2 is observed between 45-74, cohort 3 is observed between 35-74; whereas later cohorts are observed at younger ages; cohort 4 is observed between 25-64, cohort 5 is observed between 25-54, and cohort 6 is observed between 25-44. Mean MI for cohort 6 at age 25-34 was $55,827, for cohort 5 was $52,765, and for cohort 4 was $57,061. Mean MI for cohort 6 increased rapidly by 52 percent within a decade as this cohort aged[18]. The raise is considerably high compared to cohort 5 which enjoyed a 33 percent increase and cohort 4 which enjoyed a 15 percent increase only. Gains in mean LIMEW for cohort 6 in the time period was even larger at 65 percent going up from $74,177 to $122,188. Mean LIMEW for cohort 5, between age 25-34 and 35-44, increased by 44 percent from $66,586 to $95,586. Cohort 4 enjoyed even a smaller gain, only 13 percent, between age 25-34 and 35-44 from $79,189 to $89,561[19]. All observed cohorts (cohort 3, 4, and 5) enjoy an increase in mean LIMEW (1 percent, 21 percent, and 33 percent respectively) and in mean MI (8 percent, 20 percent, and 31 percent respectively). We observe that later cohorts enjoy a faster growth in mean MI and LIMEW compared to earlier cohorts[20]. Mean MI starts the decline between 45-54 and 55-64 (observed for cohorts 2, 3, and 4) and this decline continues between 55-64 and 65-74 (observed for cohorts 1, 2, and 3). The decline however is faster in earlier cohorts compared to later cohorts. This life cycle effect of declining income at the later ages is not observed in LIMEW. Mean LIMEW declines between 45-

[17] Equivalence scaled median MI recorded a positive growth between 1972 and 1982 at 4 percent rate and increased faster than unadjusted median MI in the following two decades. Similarly equivalence scaled median LIMEW also recorded a growth at 6 percent rate between 1972 and 1992, and 12 percent rate between 1982 and 1992. However, ES scaled median LIMEW increased at a much lower rate of 7 percent between 1992 and 2001 suggesting most of the observed increase in LIMEW in the decade was due to changing family size and structure.

[18] Median MI increased moderately for cohort 6 in the decade by 36 percent. While Median MI increased more moderately compared to mean MI for earlier cohorts as well, the difference between the growth of mean MI and median MI is extremely large for cohort 6 suggesting that this latest cohort face a much longer tale on the right side of the distribution compared to earlier cohorts.

[19] Gains in equivalence adjusted MI and LIMEW between age 25-34 and 35-44 are more moderate for all cohorts suggesting some of the gains at this point of the lifetime of households are due to changes in household structure, ie many household heads transition from being single to getting married and having children both of which positively contribute to household earnings as well as government expenditures and household production.

[20] This trend holds for median MI and LIMEW as well as equivalence scaled mean and median MI and LIMEW.

54 and 55-64, but goes up rapidly between 55-64 and 65-74. Moreover, the decline between 45-54 and 55-64 is smaller for later cohorts and the growth between 55-64 and 65-74 is larger for later cohorts.

Nest, we discuss the components of LIMEW.

Base Income

Base income excludes both transfers and property income. Mean Base Income follows a life-cycle trend increasing until for ages 45-54 and moderately declining at ages 55-65 and sharply declining after the household head reaches the retirement age (Table 3, Panel A). While the same life cycle trend occurs for all cohorts, recent cohorts face steeper increases in Mean Base Income as the cohort ages.

Income from Home and Non-home Wealth

We define income from home wealth as the difference between imputed rent and annuitized value of mortgage debt (Panel B). Income from home wealth has declined for recent cohorts at the beginning of their careers compared to previous cohorts as homeownership rates have declined for 25-34 age groups among recent cohorts. Income from home wealth goes up as each cohort ages as households reduce their mortgage debt as they age. Recent cohorts, starting at a lower level of income from home wealth, persistently receive lower income from home wealth throughout their entire life cycle.

Mean Income from non-home wealth increased in a dramatic fashion in 2001 due to the surge in the stock market. The increase was across the board, i.e., occurred for all ages contributing to especially households during their retirement years. The income from non-home wealth increases rapidly by age as older people have shorter life expectancy increasing the annuity rates of aging cohorts. The large difference of the recent cohorts' income from non-home wealth is a reflection of the greater relative stock holdings of the recent cohorts at older ages as well as the stock market gains of the period.

Government Expenditures and Taxes

The largest component of government cash transfers, by far, is the retirement benefits. It is not surprising that 65-74 age-groups receive three times the average cash

expenditures for all cohorts (Panel D). Within each cohort, government cash transfers remain very close in real values for age groups below 55. Recent cohorts have a higher mean of cash transfers at older ages. Government Non-cash transfers, on the other hand, has gone up almost fourfold in forty years on average and five times at the beginning of the working career for recent cohorts (Panel E). Medicaid and Medicare spending, two largest items of non-cash transfers have been expanded in size during the time period, benefiting recent cohorts. Public Consumption expenditures have gone up at a relatively stable rate after a decline in 1982 (Panel F). Education is the largest component of public consumption and expenditures on education are assigned to households with children at school. Public consumption expenditures top at ages 35 to 44 given most households have school aged children at this age. Taxes went up relatively at a low rate for all cohorts until 2001 when due to large gains in base income as well as non-home wealth tax burden for all households, especially working age households, went up (Panel G). Taxes follow a similar life cycle trend with base income, increasing until the retirement age and declining afterwards.

Household Production

The last component of LIMEW, value of household production, after a decline in 1982, increased for every age group (Panel H). There appears no significant cohort effect on value of household production.

Several components as a percentage of LIMEW provide life-cycle changes that stay similar between cohorts. Base income starts at 68 percent for cohort 4, 75 percent for cohort 5, and 72 percent of cohort 6 of mean LIMEW. The percentage declines slowly as each cohort age until cohorts reach to 65-74. At 65-74, base income drops very fast as a percentage of LIMEW, to 23 percent for cohort 1 and 2 and 22 percent for cohort 3 (Figure 2.1). Income from wealth, on the other hand, goes up for all cohorts as the household heads age. Income from wealth was 7 percent of mean LIMEW for cohort 4 at the beginning of their life cycle and went up to 28 percent by age 55-64. Similarly income from wealth was 5 percent for cohort 5 and went up to 19 percent by the time this cohort reached age 45-54. Interestingly, income from wealth as a percentage of mean LIMEW went down for cohort 6 from 12 percent to 9 percent between 25-34 and 35-44

(Figure 2.2). Income from wealth went up to 31 percent of mean LIMEW for cohort 1, 41 percent for cohort 2, and 31 percent for cohort 3 at age 65-74. We do not observe any underlying trend between cohorts for these changes confirming previous literature that value of wealth; therefore income from wealth; is unstable and subject to change from one period to another.

Among the three observed cohorts, tax burden was the highest for cohort 5 with 19 percent of mean LIMEW at age 25-34, followed by cohort 6 with 17 percent and cohort 4 at 16 percent. Taxes as a percentage of mean LIMEW went up for each of these cohorts as each cohort ages (Figure 2.3). Taxes did not follow a specific trend for different cohorts; rather it went up for all cohorts until around retirement age and then declined afterwards.

Similarly government transfers are at same levels across cohorts (Figure 2.4). Transfers took a higher percentage of mean LIMEW for later cohorts. In fact, the share of transfers in mean LIMEW increased at younger ages from previous to recent cohorts (4 percent for Cohort 4 at age 25-34 to 7 percent for Cohort 6 at the same age). The change may be attributed to declines in money income for younger cohorts at the beginning of their careers combined with change in policy towards increase in transfers to single headed households during the period. Government transfers stayed at relatively stable at low levels until cohorts reach older ages. Approximately 9 percent of mean LIMEW coincided to transfers for Cohort 2, 3, and 4 at age 55-64 compared to 6 percent for Cohort 1 at the same age. Transfers increase dramatically after retirement. The share of transfers in mean LIMEW was 28 percent for Cohort 1, 27 percent for Cohort 2, and 24 percent for Cohort 3 at age 65-74.

Public consumption (the largest item being education expenditures for children coinciding 51 percent of public consumption in 2001), followed a life cycle trade going up as households reach middle age peaking at 35-44 for all cohorts, mostly due to presence of school aged children in the household, and then dropped afterwards (Figure 2.5). Changes from one cohort to another is almost negligible but a slight drop is observed from previous cohorts to recent cohorts at age 35-44 and onward.

Lastly, value of household production is constant over time and across cohorts (Figure 2.6). Though there has been a decline in number of hours household adult members spent on household production, the increase in price of these activities kept the value constant.

Disparities between Demographic Subgroups

Demographic gaps in LIMEW are not as large as money income as additional items such as public expenditures are distributed more equally among households. Additional expenditures narrow white non-white gap. Mean Gross Money Income ratio between Non-white and white declined from Cohort 1 to Cohort 4. Members of Cohort 1 were receiving 62 percent of their white counterparts on average (Figure 3.1) while the gap narrowed to 72 percent for Cohort 4. Recent cohorts however experienced an increase in the discrepancy where the gap once again went up to 68 percent for Cohort 6. Within cohort discrepancy between these groups stayed stable and increasing at older ages for each cohort. LIMEW discrepancy was less dramatic but still persistent between the racial groups. Non-white members of Cohort 1 were making 66 percent of white households and gap narrowed to 80 percent for Cohort 4. The gap continued to narrow for later cohorts but the trend reversed in 2001 when the gap widened for both Cohort 4 and 5. This number increased to 87 percent for Cohort 6.

Education

Education is by far the main determinant of wages. Returns to college education compared to getting a high school degree increased in the last 40 years. Mean money income for a household with college graduate head at age 25-34 was 35 percent higher than the household with high school graduate head for Cohort 4 (Figure 4.1). The premium increased to 68 percent for Cohort 6. Each new cohort faced a higher discrepancy between college educated households and households with less education even at the start of their careers. Moreover college premium went up by age for all cohorts widening the gap at the end of their respective careers. The gap between mean values was at around one hundred percent, meaning households with college educated heads made double of households whose heads had high school diploma, in 2001. As discussed in the literature review and mentioned in discussion of demographic shifts, this may be attributed to recent decline in growth of supply of college graduates (Figure 4.2).

Between cohort differences in LIMEW of college premium is lower but persistent. Cohort 4 showed a 20 percent college premium at the beginning of their careers while the gap went up to 28 percent on average for Cohort 6. The gap widened as cohorts aged as we have seen in money income measure, but at a faster rate compared to money income. For the latest cohort that we observe at old age (Cohort 3), households with college graduate heads received 90 percent more than households with high school graduate heads at retirement age.

A cohort effect is evident in single female headed household and married household money income gap. As the share of single female headed households went up in the population with each subsequent cohort, the gap widened (Figure 5.1). While female headed households of cohort 4 were receiving half of married households' income on average in 1972 at age 25-34, the share went down to 39 percent for cohort 6. Gaps seem to have gone down after age 45 for all cohorts. This change may be explained by enlarged pool of single female headed households as a result of divorces. Government transfers help the gap to close down the measured gap in LIMEW, 72 percent for cohort 6, almost half of the gap in money income (Figure 5.2). Moreover, both age effects as well as cohort effects that are present in money income do not hold for LIMEW. The share of LIMEW went up to 72 percent at the beginning of their careers of single female headed households for cohort 6 compared to 66 percent for cohort 4. The gap fluctuated by age rather than following a clear life cycle trend.

5. Inequality within and between Cohorts

Mean and median statistics on MI and LIMEW raise questions regarding inequality within and between cohorts. Demographic gaps in LIMEW within and between cohorts are lower compared to other two measures that we have discussed so far. Therefore, it is natural to ask whether the measured gap in inequality between the groups is sensitive to the measure of well-being used. In this chapter, we address these questions using several measures of inequality. Note however that, this is not a substitute for a causal analysis, but rather a preliminary, yet essential step in understanding inequality within and between cohorts.

We first start with comparing the spread of the distribution using 90/50 and 50/10 percentile ratios (Figures 5.1 through 8.3) for mean incomes, adjusted and unadjusted[21]. Figure 5.1 through 5.3 compare 90/50 ratio for all three measures of well-being presented. 90/50 ratio is higher for MI compared to LIMEW. Both measures suggest a life cycle increase in inequality between the middle class and upper class. Moreover, each recent cohort start their careers at a higher inequality and the inequality persistently went up even after retirement age is reached. This suggests that the upper income households have strengthened their position in the income distribution, especially compared to middle classes according to both LIMEW and MI measures. If the trend continues, the gap between the middle class and upper class will widen even further for younger cohorts. Also this suggests that looking at the inequality at cross-section level profoundly undermines the overall picture that shows deepening inequality among younger cohorts that start their careers recently as gaps are persistent over the life cycle. One important notable difference between the changes in MI and LIMEW is the rapid change in the gap in 2001 LIMEW exceeding the MI gap. This is due to large financial gains of upper classes with stock market boom of the start of the century. The difference between how LIMEW accounts for other wealth (excluding home) compared to MI better captures the stock market boom gains and inequality created by this event. Adjusting for equivalence scale (Figures 6.1 and 6.2) does not change this trend, but reduces the rate of change. Still 90/50 ratio increased within each cohort, suggesting that demographic shifts and change in household structure played a lesser role to a structural shift that resulted the decline of the middle class in the 30 year period.

Likewise, 50/10 ratio is persistent across age groups (deepening until late-career) with sharp declines after retirement age is reached (Figures 7.1 and 7.2). This shows the positive effect of the redistributive nature of the social security system. In fact, the ratio declines very rapidly from 1972 to 1982. Once again the ratio is larger for MI compared to LIMEW. Changes from one cohort compared to another are less obvious unlike 90/50 ratio measures. This is in line with the previous findings in the literature, as discussed before, that the recent change in inequality is mostly due to large upper class gains

[21] Median ratios are very similar in both size and trends. We are not presenting them here, but results are available per request.

relative to the rest of the population. In fact, both MI and EI ratios align for almost all cohorts representing life-cycle changes that did not shift structurally from one cohort to another[22].

Table 5 presents Thail Index and Gini Index to measure the degree of inequality in MI and LIMEW between and within the cohorts. Thail index is useful for separating the within and between group inequality. We find that almost all the inequality can be attributed to within cohort inequality (Table 5) for both measures for all four years. Secondly, inequality has been increasing among all cohorts as they age. Moreover younger cohorts started their career at higher inequality compared to previous cohorts. These are the same exact trends that we observed looking at mean and median values as well as 90/50 and 50/10 ratios. For example among cohort 4, in 1972, the Gini ratio of the money income was 0.313. The value increased as the cohort aged topping at 0.474 when the cohort reached closer to the retirement age. Unlike 50/10 ratios we do not observe any drop in either Gini or Thail for either LIMEW or MI (Table 18). The gap in inequality (as well as the degree of inequality) for both measures reached to the highest levels in 2001 when the Gini ratio for the oldest group was 0.476 for MI and 0.471 for LIMEW.

Gini ratio for MI was larger for all cohorts compared to LIMEW emphasizing the equalizing effects of taxes and transfers that cannot be captured in MI. Gini ratio for LIMEW increased rapidly superseding MI at later ages. This emphasizes one major empirical difference between how we measure income from home and other wealth compared to how it is measured in MI.

6. Level and Composition of Well-being among Baby Boomers

Baby boomers are defined as people who are born between 1946 and 1964. Baby boomers have important demographic effects that determine policy and overall markets given their size. In this chapter, we analyze level and composition of well-being among baby boomers more closely. We also include 2007 data in order to capture more recent developments for this particular population. We define households with heads that belong are born between 1946 and 1964 as baby boomers. The median ages for baby boomers

[22] While not shown here, adjusting for equivalence scale reduced the ratio especially during early and mid-careers of the last two cohorts. As cohorts aged, 50/10 ratio went down until the later years of lifetime with the exception of Cohort 2 that was dramatically affected by the 1982 recession.

those are observed in the dataset are 24 in 1972, 29 in 1982, 37 in 1992, 46 in 2001, and 52 in 2007. Following baby boomers from 1972 through 2007 give us a clear picture of their adult working lives.

We present median values of LIMEW and MI for baby boomers and their equivalence scaled counterparts as well as weekly market and housework hours and median values for 1972 to 2007 in Table 6. Median LIMEW was $56,031 in 1972 and increased by 70 percent to $95,287 in 2007. The gains, however, were not linear. Median LIMEW went up by only 5 percent between 1972 and 1982, increased 35 percent between 1982 and 1992, and another 20 percent between 1992 and 2001. It declined by 2 percent between 2001 and 2007[23]. Median MI, on the other hand, increased from $40,966 to $66,238 between 1972 and 2007 with a rate of 62 percent. Once again, the gain was not linear as MI went up by 10 percent in the first ten years, followed by 30 percent and 18 percent increases in the following periods with a 4 percent decline in the last six year period. A part of the increase in median LIMEW and MI may be attributed to hours of work which went up by 2 percent in the first ten year period, followed by 22 percent and 9 percent gains before declining by 17 percent. Weekly hours spent on housework also went up by a total of 20 percent in the time period with a similar non-linear trend where it went up by 7 percent, 17 percent, and 4 percent in consecutive periods before declining by 8 percent.

We further disaggregate mean LIMEW into its components in Table 7. Mean LIMEW for baby boomers increased by a higher margin of 112 percent between 1972 and 2007, from $59,350 to $125,989, compared to median LIMEW's 70 percent increase. The increase was not linear. Mean LIMEW went up by 10 percent between 1972 and 1982 followed by 39 percent increases between 1982 and 1992 as well as between 1992 and 2001. There was no increase in mean LIMEW in the last six years of our data. Largest item in LIMEW have always been base money income (Panel B). However share of base money income, after a brief increase to 74 percent of LIMEW in 1982, declined from its 70 percent share in 1972 as baby boomers aged to 62 percent share in 2007. Instead, share of income from wealth gained significantly especially in the last decade

[23] Equivalence adjusted LIMEW had a very similar trend with the exception of 2001-2007 period where it went up by 7 percent.

which went up from 5 percent in 1972 and 1982 and 9 percent in 1992 up to 19 percent in 2001 and 2007. Share of government transfers were relatively constant over time with an increase from 5 percent share to 7 percent share by 2007. Government expenditures followed a similar life cycle trend as we discussed in the previous chapter which started at 10 percent of overall LIMEW going up to 14 percent by 1992 and declined afterwards to 9 percent by 2007. Taxes were relatively stable at around 19 percent after starting at 15 percent in 1972. Share of household production started at 26 percent but then declined rapidly to 21 percent in 1982 and stayed around this level for the remaining of the time period. When we look at what explains the growth in LIMEW over time period, we observe that much of the gain came from base money income which contributed by 61 percent to mean LIMEW growth followed by income from wealth which contributed to the growth by 36 percent and household production which explained 21 percent of mean LIMEW growth (Panel C). Taxes had a negative 25 percent impact on LIMEW growth whereas Public consumption contributed only 10 percent and government transfers explain 9 percent of the overall growth.

Next we look at the mean LIMEW for middle class, defined by the third quintile of the overall distribution, and its components in Table 8. Mean LIMEW for middle class baby boomers increased by a much lower margin of 71 percent between 1972 and 2007, from $55,975 to $95,620. Once again, the increase was inherently nonlinear and mostly concentrated to the middle periods. Mean LIMEW for middle class increased by 7 percent, 36 percent, 20 percent in consecutive ten year periods before declining by 2 percent between 2001 and 2007. Largest share of mean middle class LIMEW was also base money income (Panel B), but once again declining from 73 percent of LIMEW in 1972 to 66 percent of LIMEW in 2007. Contrary to mean LIMEW, share of income from wealth did not increase dramatically going from 3 percent in 1972 and 1982 and 4 percent in 1992 to 7 percent in 2001 and 2007. Share of government transfers went up faster compared to its share in mean LIMEW with an increase from 6 percent share to 10 percent share by 2007 with nearly all the increase occurring in the last period. Government expenditures, once again, followed a life cycle trend and started at 10 percent of overall LIMEW going up to 17 percent by 1992 and declined afterwards to 12 percent by 2007. Share of taxes in absolute terms actually went up by 3 percentage points

from 15 percent at the beginning of the period to 18 percent by 2007. Share of household production started at 22 percent, declined temporarily to 19 percent, only to go up to 24 percent in the last two periods. Once again much of the growth in LIMEW can be explained by base money income which contributed by 39 percent to mean middle class LIMEW growth. Income from wealth contributed much less by only 9 percent whereas household production explained a larger 18 percent share of mean middle class LIMEW growth (Panel C). Taxes had a negative 17 percent impact on LIMEW growth whereas public consumption contributed and government transfers explain much larger share of LIMEW growth, at 11 percent and 10 percent respectively, compared to the income from wealth share of the overall growth.

We turn our attention to several key household characteristics and how LIMEW and MI discrepancy among households according to these characteristics evolved over time (Figure 9.1 and Figure 9.2). Red bar represents the ratio between mean value for non-white headed baby boomer households and white headed baby boomer households. Gaps between the white households and non-white households measured by MI were much larger than gaps in LIMEW for all years. Mean LIMEW for a non-white household was 15 percent less than the mean LIMEW for a white household among baby boomers in 1972. The gap stayed almost the same in 1982 but it started to increase slowly in 1992 and went up to 26 percent in 2001. The gap was persistent in 2007 at 23 percent. Gap between non-white households and white households was 24 percent in 1972 and it increased rapidly to 30 percent in 1982. This discrepancy only deepened in 1992 to 33 percent and stayed around 30 percent until recently. We observe higher discrepancy between the white and non-white households among baby boomers as the cohort ages.

Mean LIMEW for households with college graduate heads was 12 percent higher than mean LIMEW for households with high school graduate heads in 1972 as can be seen from green bar. The gap between college graduates and higher graduates continued to increase as baby boomers age, going up to 33 percent in 1982, 42 percent in 1992, and 70 percent in 2001 following a moderate decline to 66 percent in 2007. Mean MI showed even a larger discrepancy going up from 12 percent in 1972, to 55 percent in 1982, 71 percent in 1992, 97 percent in 2001 and 100 percent in 2007.

Gap in mean LIMEW between single female headed households and married households was 29 percent in 1972 (Figure 9.1). The difference in means went up as baby boomers aged, going up to 35 percent in 1982, 33 percent in 1992, 43 percent in 2001 and 40 percent in 2007. While MI measure shows a larger discrepancy as the mean MI for single female headed households was nearly half of mean MI for married households in 1972, the trend is in the discrepancy is somewhat different. The gap widened in 1982 when mean MI for single female headed households was 59 percent less than married households but started to decline afterwards. However, the discrepancy only went back to its 1972 levels in 2007.

We present Gini coefficients among baby boomers (multiplied by 100) for LIMEW and MI in Figure 10. A Gini coefficient closer to 0 represents a more equal distribution whereas closer to 100 represents more inequality. Gini coefficient for MI was always larger than for LIMEW and the trend over time for both were the same. Gini coefficient for LIMEW among baby boomers was 27.6 in 1972 compared to 33.4 for MI. Gini for both measures went up as baby boomers aged. The big jump for both measures was in 2001 when Gini for LIMEW went up to 41.4 in 2001 compared to 30.9 in 1992 and continued to increase to 42.6 in 2007. A similar but less drastic change occurred in MI which went up from 37 to 43.5 in the nine year time period. In the early three periods Gini between two measures were apart by almost 7 points. In 2001, the coefficients for two measures converged with the difference declining to only 2 points. As we have discussed before, the large increase in share of income from wealth in LIMEW for households in right tail of the distribution in the last decade negated the equalizing forces of government net spending and household production that previously make LIMEW a more equal measure of well-being.

7. Conclusion

Understanding changes in economic well-being and disparities between and within cohorts heavily rely on the methodology one uses to measure them. Gross money income, the most widely used official measure of well-being, is an incomplete measure of resources available to households at different stages of their lives. Recent calls for a more

comprehensive measure of the economic well-being throughout the academic and policy world is an indication that new measures will be in place.

LIMEW measure suggests slightly altered picture of economic well-being compared to the official measures among cohorts. While both measures we have discussed suggest an increased inequality among recent cohorts and the inequality deepening as each cohort ages, LIMEW suggests a relatively lower level of inequality but a significantly increasing one during middle ages, especially for later cohorts. This is especially most striking among baby boomers among who share of income from wealth increased rapidly for wealthier households in the last decade. LIMEW measure suggests a larger gap between the upper class and middle class compared to MI. Especially during the 1992-2001 periods, upper class gained relatively larger amounts thanks to rapid increases in financial markets that did not have a significantly positive effect on the middle class. These gains and corresponding inequality have affected recent cohorts, specifically baby boomers. Trends suggest that the resulting inequality will only deepen as each cohort ages currently affecting baby boomers.

Our findings suggest that concentrating on cross sectional data without acknowledging different trends that affect subsequent cohorts differently result underestimation of growing inequality among recent cohorts that are sure to be carried over their lifetime. We find evidence, using a conventional measure like MI and an alternative measure in LIMEW, that inequality is higher among recent cohorts affecting baby boomers deeply. Moreover, poor-rich gaps widen as households age as well as the discrepancy between key household types such as whites vs. non-whites, college educated vs. high school graduates, and single female headed households vs. married households. While transfers and public consumption expenditures reduced the inequality in the past, inequality in a more comprehensive measure in LIMEW almost caught the increased inequality in a more restrictive measure like money income.

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Tables

Table 1. LIMEW By Component
Money income (MI)
Less : Property income and Government cash transfers
Equals: Base income
Plus : Income from assets
Annuity from nonhome assets
Imputed rent on owner-occupied housing
Less : Annuitized value of debt
Less : Taxes
Income taxes
Payroll taxes (employee portion)
Property taxes
Plus : Cash transfers
Plus : Noncash transfers
Plus : Public consumption
Equals :
LIMEW

We use the following colors to identify each cohort:

	Cohort 1 (1908-17)
	Cohort 2 (1918-27)
	Cohort 3 (1928-37)
	Cohort 4 (1938-47)
	Cohort 5 (1948-57)
	Cohort 6 (1958-67)

Table 2. Household Money Income (in 2010 dollars)

	Mean				Median			
	1972	1982	1992	2001	1972	1982	1992	2001
	A. Unadjusted							
All households (25-74)	57,911	58,505	64,014	77,925	51,465	49,699	53,304	59,085
25-34	57,061	52,765	55,827	68,269	54,390	47,531	48,300	55,392
35-44	66,391	65,734	70,267	84,828	60,550	58,984	62,153	65,624
45-54	68,670	71,377	78,586	92,134	62,036	63,276	69,070	71,503
55-64	55,746	60,959	65,534	78,380	46,938	49,699	52,872	56,184
65-74	33,738	39,906	44,181	51,323	23,224	29,011	31,589	34,713
	B. Equivalence-scale adjusted							
All households (25-74)	69,400	73,623	82,677	102,178	59,658	62,271	68,927	77,525
25-34	69,176	69,859	73,934	91,837	61,781	61,327	63,532	72,153
35-44	69,661	74,612	83,960	101,965	60,586	64,609	72,501	77,746
45-54	76,592	80,238	96,636	116,356	68,321	70,415	83,841	92,436
55-64	74,595	81,466	90,210	112,261	69,645	67,492	74,448	83,276
65-74	51,418	61,528	67,435	78,916	59,658	46,117	50,816	55,821

Table 3. LIMEW by Age (in 2010 dollars)*

	Mean				Median			
	1972	1982	1992	2001	1972	1982	1992	2001
	A. Unadjusted							
All households	80,754	77,495	89,497	112,205	68,842	64,313	73,374	84,184
All households (25-74)	85,312	81,509	93,603	115,920	74,469	69,136	77,765	88,973
25-34	79,189	66,586	74,177	95,205	74,683	62,206	67,501	80,771
35-44	98,210	89,561	95,586	122,188	91,179	81,415	86,739	100,141
45-54	97,719	98,931	108,470	127,480	84,691	84,232	88,297	95,487
55-64	78,996	81,446	100,013	107,402	64,972	65,393	75,486	78,719
65-74	66,563	76,013	94,811	125,996	48,967	55,146	72,081	84,550
	B. Equivalence-scale adjusted							
All households	96,953	97,117	114,922	146,492	83,560	82,517	95,249	111,432
All households (25-74)	99,623	99,184	116,856	146,863	86,762	84,909	97,559	113,604
25-34	91,513	83,653	92,161	119,408	84,248	76,661	83,314	99,402
35-44	97,917	96,858	108,408	138,710	88,160	87,132	96,812	112,848
45-54	104,207	106,325	127,038	153,585	93,177	91,998	106,707	119,598
55-64	103,941	105,164	133,028	148,646	87,977	88,228	104,463	114,527
65-74	102,523	114,996	142,297	194,040	77,380	86,988	111,854	133,282

* LIMEW equals base money income plus income from wealth plus government transfers and expenditures minus taxes

Table 4: Mean Values of LIMEW by Component (in 2010 Dollars)

A. Household Base Income	1972	1982	1992	2001
All (25-74)	51,568	50,445	56,361	70,087
25 to 34	54,371	49,900	53,290	65,843
35 to 44	62,722	61,554	66,500	80,680
45 to 54	63,650	65,514	72,343	86,057
55 to 64	48,372	50,044	54,937	67,551
65 to 74	16,947	17,580	21,991	27,336
B. Income from Home Wealth				
All (25-74)	3,988	4,180	4,567	4,638
25 to 34	2,881	1,999	1,909	2,924
35 to 44	4,213	3,886	3,846	4,756
45 to 54	4,713	5,796	5,798	4,930
55 to 64	4,091	5,369	6,434	3,999
65 to 74	4,238	5,204	6,640	7,509
C. Income from Nonhome Wealth				
All (25-74)	8,148	8,106	11,272	19,222
25 to 34	2,766	1,549	1,649	8,729
35 to 44	5,609	5,128	5,118	14,777
45 to 54	8,378	10,677	15,023	20,430
55 to 64	11,376	10,680	21,427	18,656
65 to 74	15,889	18,253	22,693	44,332
D. Government Cash Transfers				
All (25-74)	4,446	5,085	5,401	5,101
25 to 34	2,450	2,274	2,630	2,210
35 to 44	2,484	2,547	2,788	2,530
45 to 54	3,154	3,176	3,432	3,076
55 to 64	4,415	5,628	6,023	5,990
65 to 74	12,538	15,540	16,921	18,021
E. Government Noncash Transfers				
All (25-74)	1,140	2,071	3,425	4,386
25 to 34	671	1,214	2,764	3,215
35 to 44	774	1,308	2,176	3,098
45 to 54	659	1,348	2,132	2,907
55 to 64	651	1,746	2,937	4,202
65 to 74	3,830	6,010	9,145	12,137
F.Public Consumption				
All (25-74)	9,589	8,655	9,952	11,490
25 to 34	9,398	8,362	10,248	11,863
35 to 44	15,703	13,402	14,497	17,100
45 to 54	11,069	10,284	10,681	11,995
55 to 64	5,892	5,664	5,915	6,450
65 to 74	3,911	3,802	4,339	4,818
G. Taxes				
All (25-74)	13,337	14,204	15,710	21,110
25 to 34	12,628	12,572	12,760	16,882
35 to 44	15,265	17,003	17,992	23,593
45 to 54	16,682	18,825	21,653	26,911
55 to 64	13,733	15,481	16,444	21,961
65 to 74	6,112	5,958	7,348	10,538
H. Household Production				
All (25-74)	19,768	17,170	21,461	26,263
25 to 34	19,279	13,860	17,444	21,292
35 to 44	21,972	18,738	21,985	27,248
45 to 54	22,776	20,959	24,174	29,534
55 to 64	17,935	17,796	21,882	26,591
65 to 74	15,323	15,581	22,956	25,661

Table 5: Inequality within and between Cohorts, 1972-2001								
Money Income								
	1972		1982		1992		2001	
Age	Thail	Gini	Thail	Gini	Thail	Gini	Thail	Gini
25 to 34	0.17	0.31	0.21	0.35	0.25	0.37	0.42	0.41
35 to 44	0.23	0.35	0.22	0.36	0.23	0.37	0.47	0.43
45 to 54	0.26	0.37	0.25	0.37	0.24	0.38	0.45	0.43
55 to 64	0.35	0.42	0.33	0.41	0.34	0.42	0.55	0.47
65 to 74	0.54	0.45	0.47	0.44	0.51	0.45	0.63	0.48
Within Group Inequality	0.269		0.272		0.284		0.492	
Between Group Inequality	0.019		0.015		0.015		0.014	
LIMEW								
	1972		1982		1992		2001	
Age	Thail	Gini	Thail	Gini	Thail	Gini	Thail	Gini
25 to 34	0.15	0.27	0.17	0.27	0.16	0.29	0.99	0.35
35 to 44	0.19	0.30	0.36	0.30	0.21	0.30	0.52	0.38
45 to 54	0.40	0.36	0.46	0.36	1.08	0.38	0.64	0.43
55 to 64	0.43	0.40	0.52	0.38	1.78	0.42	0.83	0.43
65 to 74	0.77	0.42	0.86	0.42	1.21	0.41	2.14	0.47
Within Group Inequality	0.334		0.449		0.859		0.910	
Between Group Inequality	0.009		0.010		0.008		0.006	

Table 6 Economic Well-Being and Work among Baby Boomers 1972-2007, in 2010 Dollars

Median values in 2010 constant dollars

	1972	1982	1992	2001	2007
Alternative Measures					
LIMEW	56,031	59,758	80,786	97,224	95,287
MI	40,966	45,236	58,765	69,216	66,238
Addendum A: Weekly hours of work (median values)					
Market work	44	45	55	60	50
Housework	34	36	43	44	41
Total	86	91	104	109	101
Addendum B: Equivalence scale adjustment					
Equivalent LIMEW	73,835	74,600	93,400	116,845	124,564
Equivalent MI	54,250	58,641	71,008	86,551	88,556
	1972-1982	**1982-1992**	**1992-2001**	**2001-2007**	**1972-2007**
Alternative Measures					
LIMEW	7%	35%	20%	-2%	70%
MI	10%	30%	18%	-4%	62%
Addendum A: Weekly hours of work (median values)					
Market work	2%	22%	9%	-17%	14%
Housework	7%	17%	4%	-8%	20%
Total	6%	15%	5%	-8%	16%
Addendum B: Equivalence scale adjustment					
Equivalent LIMEW	1%	25%	25%	7%	69%
Equivalent MI	8%	21%	22%	2%	63%

Table 7: Components of Economic Well-Being among Baby Boomers, Mean Values in 2010 Dollars

A. Mean values

	1972	1982	1992	2001	2007
Base money income	41,656	48,034	63,374	84,018	78,077
Income from wealth	2,722	3,460	7,940	23,491	24,132
Government Transfers	3,110	3,534	5,064	5,962	8,675
Public consumption	5,812	8,378	13,057	13,716	11,755
Taxes	-9,139	-12,020	-16,816	-25,685	-24,267
Household production	15,190	13,724	20,894	28,610	27,463
Total	59,350	65,111	90,258	125,629	125,989

B. Percent share

	1972	1982	1992	2001	2007
Base money income	70%	74%	70%	67%	62%
Income from wealth	5%	5%	9%	19%	19%
Government Transfers	5%	5%	6%	5%	7%
Public consumption	10%	13%	14%	11%	9%
Taxes	-15%	-18%	-19%	-20%	-19%
Household production	26%	21%	23%	23%	22%
Total	100%	100%	100%	100%	100%

C. Contribution to Growth in LIMEW mean value by component (in percentage points)

	1972-1982	1982-1992	1992-2001	2001-2007	1972-2007
Base money income	11%	24%	23%	-5%	61%
Income from wealth	1%	7%	17%	1%	36%
Government Transfers	1%	2%	1%	2%	9%
Public consumption	4%	7%	1%	-2%	10%
Taxes	-5%	-7%	-10%	1%	-25%
Household production	-2%	11%	9%	-1%	21%
Total	10%	39%	39%	0%	112%

Table 8: Components of Economic Well-Being among Baby Boomers Middle Class, Mean Values in 2010 Dollars

A. Mean values

	1972	1982	1992	2001	2007
Base money income	40,723	42,873	55,876	67,203	62,781
Income from wealth	1,524	2,047	3,564	7,208	6,711
Government Transfers	3,636	4,261	5,747	6,623	9,817
Public consumption	5,868	8,603	14,067	14,310	11,213
Taxes	-8,292	-9,593	-13,201	-16,901	-17,552
Household production	12,515	11,483	18,143	23,396	22,628
Total	55,975	59,674	80,934	97,462	95,620

B. Percent share

	1972	1982	1992	2001	2007
Base money income	73%	72%	69%	69%	66%
Income from wealth	3%	3%	4%	7%	7%
Government Transfers	6%	7%	7%	7%	10%
Public consumption	10%	14%	17%	15%	12%
Taxes	-15%	-16%	-16%	-17%	-18%
Household production	22%	19%	22%	24%	24%
Total	100%	100%	100%	100%	100%

C. Contribution to Growth in LIMEW mean value by component (in percentage points)

	1972-1982	1982-1992	1992-2001	2001-2007	1972-2007
Base money income	4%	22%	14%	-5%	39%
Income from wealth	1%	3%	5%	-1%	9%
Government Transfers	1%	2%	1%	3%	11%
Public consumption	5%	9%	0%	-3%	10%
Taxes	-2%	-6%	-5%	-1%	-17%
Household production	-2%	11%	6%	-1%	18%
Total	7%	36%	20%	-2%	71%

Figures:

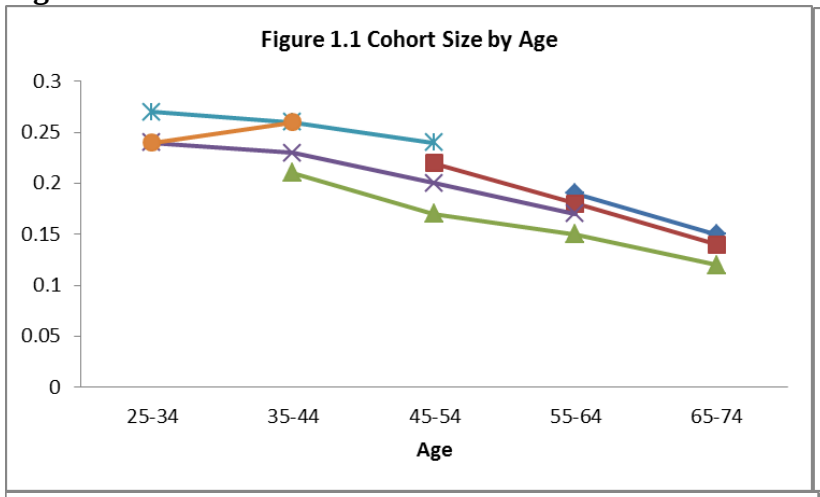
Figure 1.1 Cohort Size by Age
0.3
0.25
0.2
0.15
0.1
0.05
0
25-34
35-44
45-54
55-64
65-74
Age

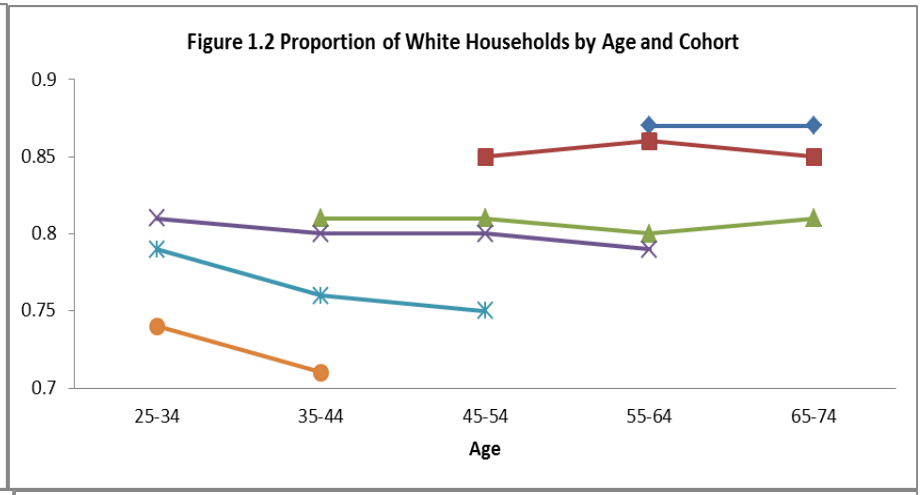
Figure 1.2 Proportion of White Households by Age and Cohort
0.9
0.85
0.8
0.75
0.7
25-34
35-44
45-54
55-64
65-74
Age

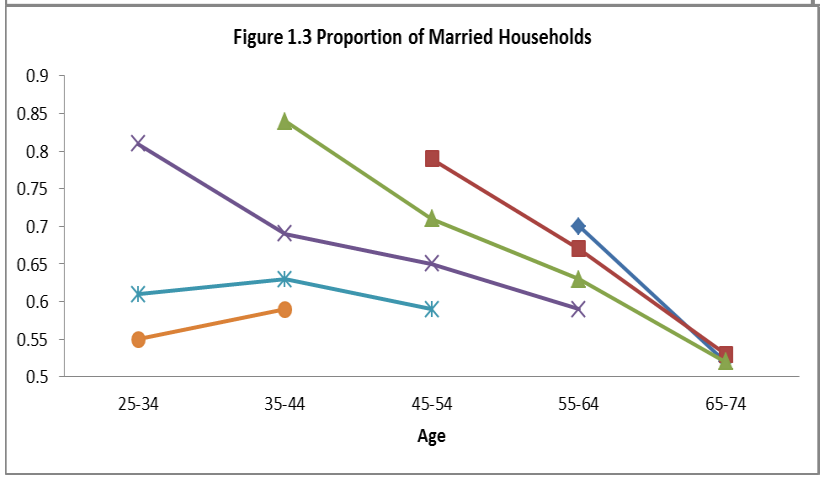
Figure 1.3 Proportion of Married Households
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
25-34
35-44
45-54
55-64
65-74
Age

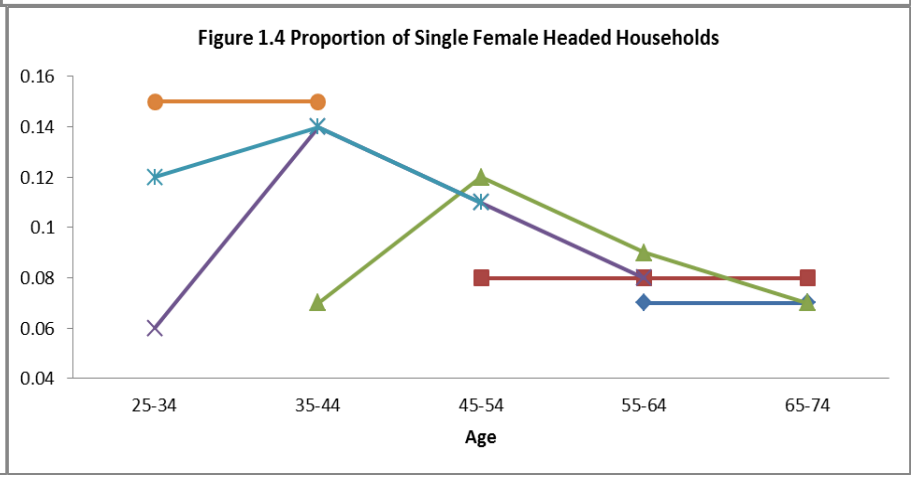
Figure 1.4 Proportion of Single Female Headed Households
0.16
0.14
0.12
0.1
0.08
0.06
0.04
25-34
35-44
45-54
55-64
65-74
Age

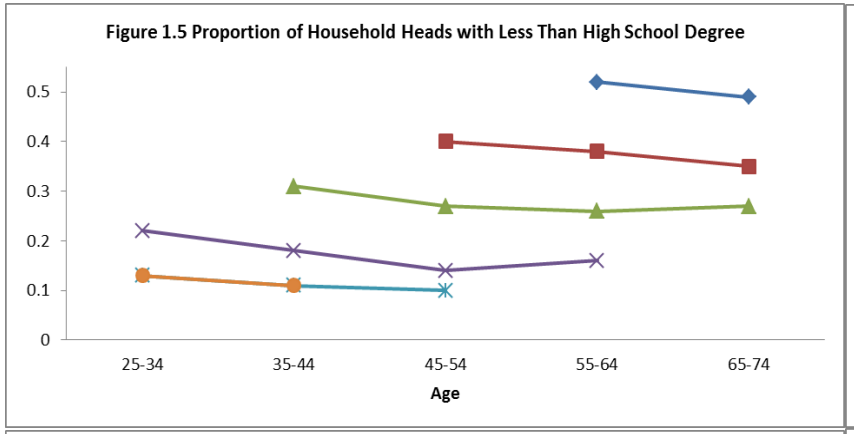
Figure 1.5 Proportion of Household Heads with Less Than High School Degree
0.5
0.4
0.3
0.2
0.1
0
25-34
35-44
45-54
55-64
65-74
Age

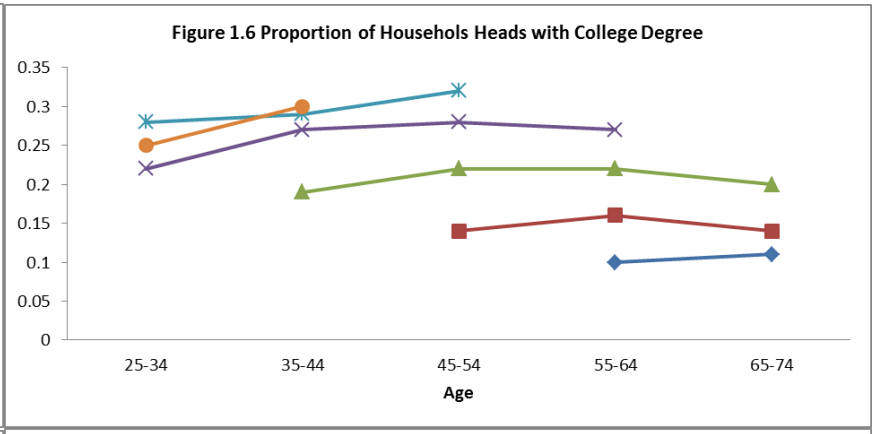
Figure 1.6 Proportion of Housekols Heads with College Degree
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
25-34
35-44
45-54
55-64
65-74
Age

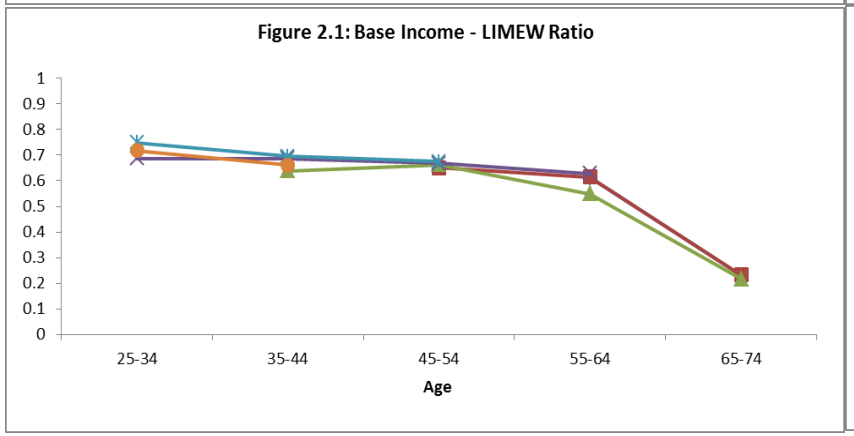
Figure 2.1: Base Income - LIMEW Ratio
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
25-34
35-44
45-54
55-64
65-74
Age

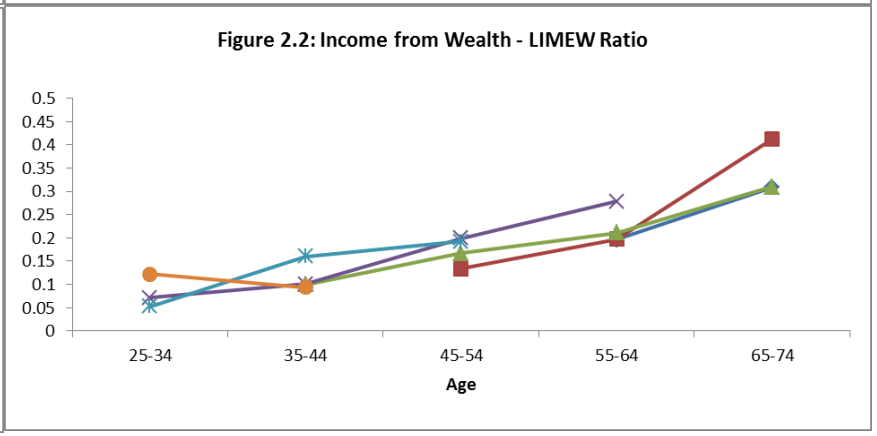
Figure 2.2: Income from Wealth - LIMEW Ratio
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
25-34
35-44
45-54
55-64
65-74
Age

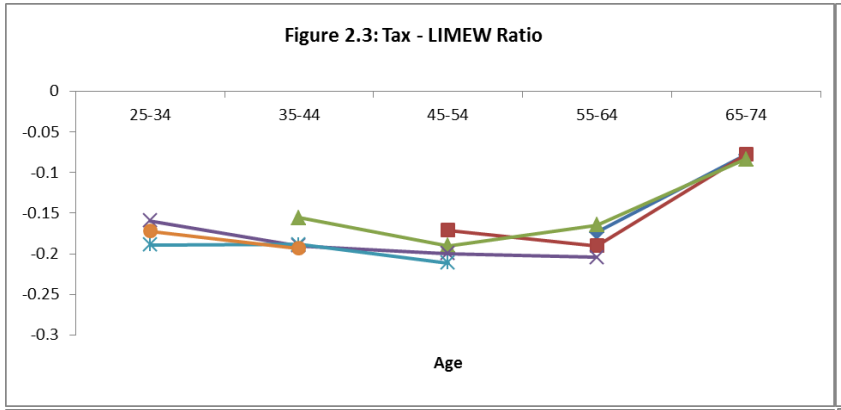
Figure 2.3: Tax - LIMEW Ratio
0
-0.05
-0.1
-0.15
-0.2
-0.25
-0.3
25-34
35-44
45-54
55-64
65-74
Age

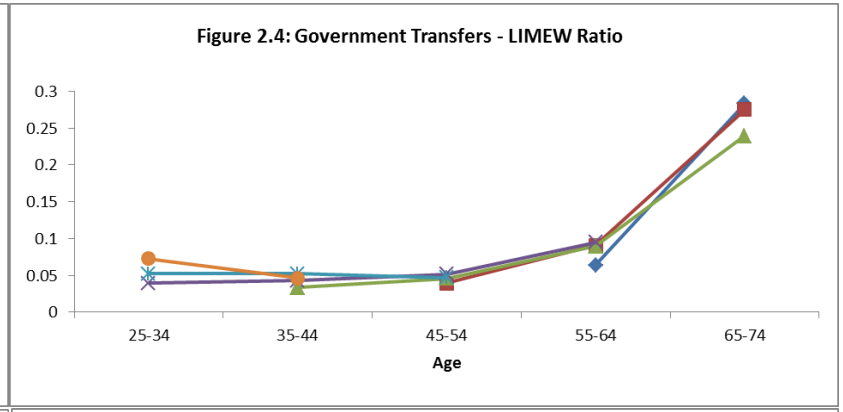
Figure 2.4: Government Transfers - LIMEW Ratio
0.3
0.25
0.2
0.15
0.1
0.05
0
25-34
35-44
45-54
55-64
65-74
Age

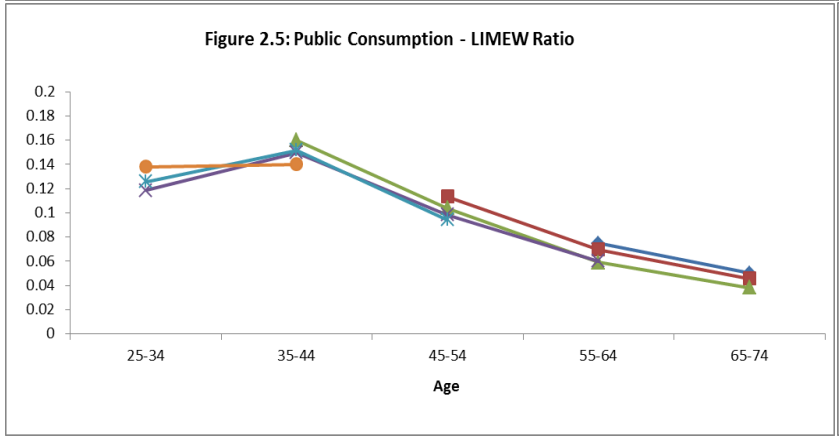
Figure 2.5: Public Consumption - LIMEW Ratio
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
25-34
35-44
45-54
55-64
65-74
Age

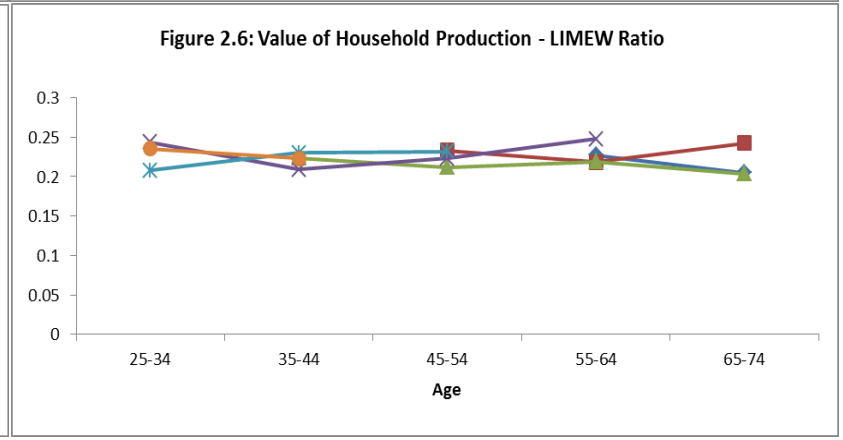
Figure 2.6: Value of Household Production - LIMEW Ratio
0.3
0.25
0.2
0.15
0.1
0.05
0
25-34
35-44
45-54
55-64
65-74
Age

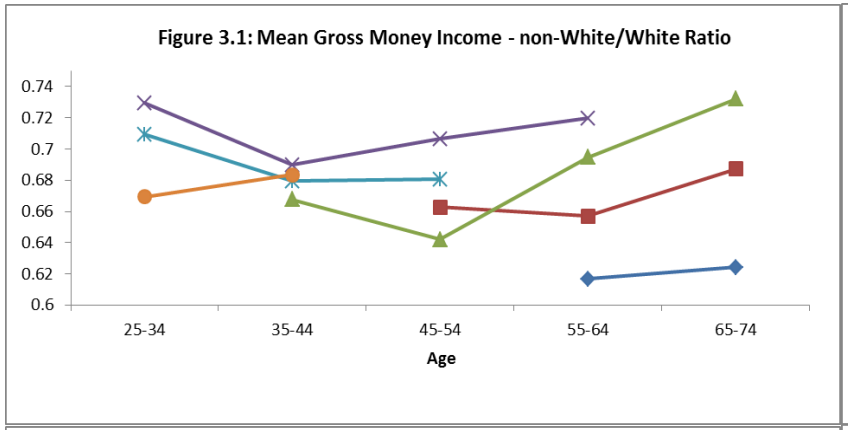
Figure 3.1: Mean Gross Money Income - non-White/White Ratio
0.74
0.72
0.7
0.68
0.66
0.64
0.62
0.6
25-34
35-44
45-54
55-64
65-74
Age

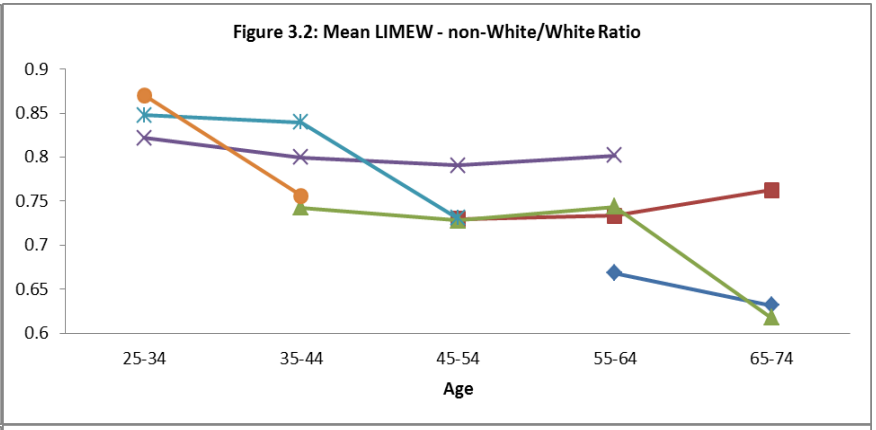
Figure 3.2: Mean LIMEW - non-White/White Ratio
0.9
0.85
0.8
0.75
0.7
0.65
0.6
25-34
35-44
45-54
55-64
65-74
Age

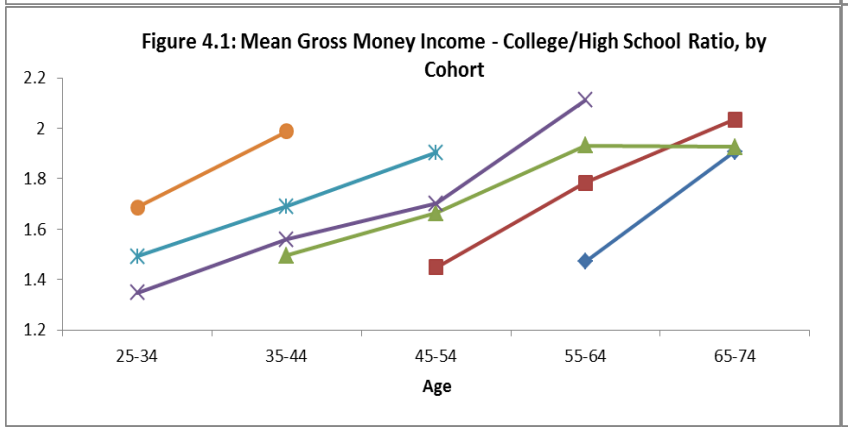
Figure 4.1: Mean Gross Money Income - College/High School Ratio, by Cohort
2.2
2
1.8
1.6
1.4
1.2
25-34
35-44
45-54
55-64
65-74
Age

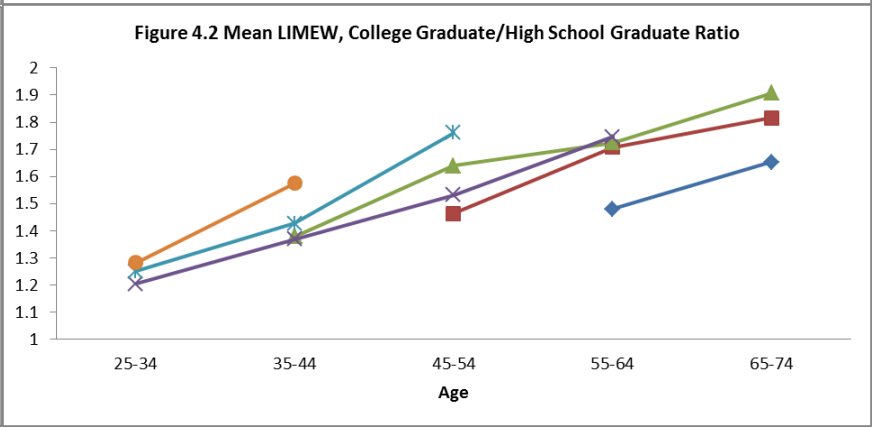
Figure 4.2 Mean LIMEW, College Graduate/High School Graduate Ratio
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
25-34
35-44
45-54
55-64
65-74
Age

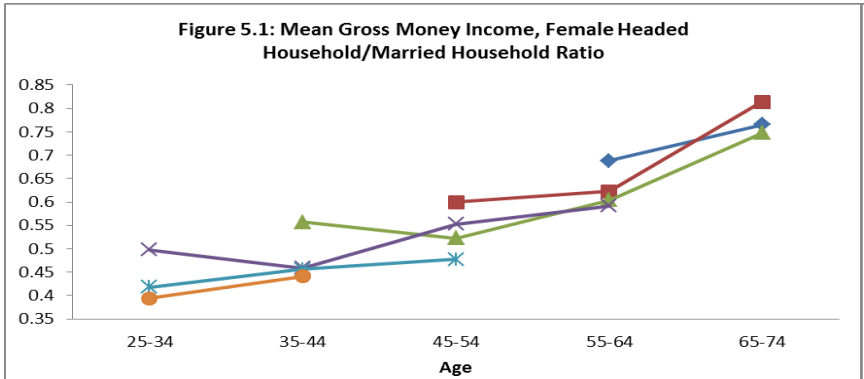
Figure 5.1: Mean Gross Money Income, Female Headed Household/Married Household Ratio
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
25-34
35-44
45-54
55-64
65-74
Age

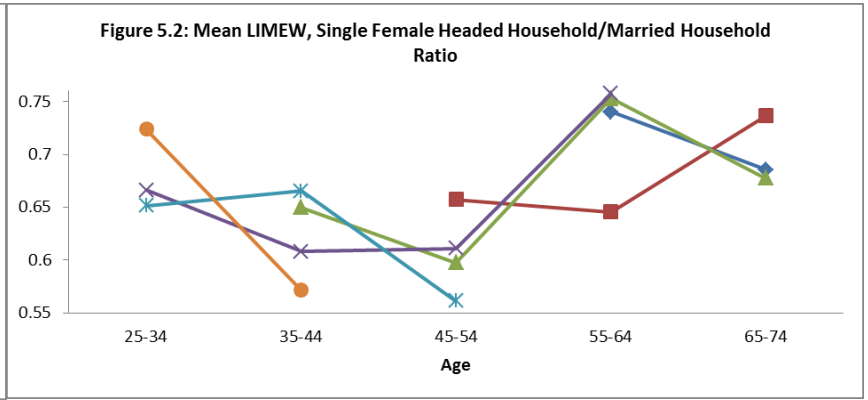
Figure 5.2: Mean LIMEW, Single Female Headed Household/Married Household Ratio
0.75
0.7
0.65
0.6
0.55
25-34
35-44
45-54
55-64
65-74
Age

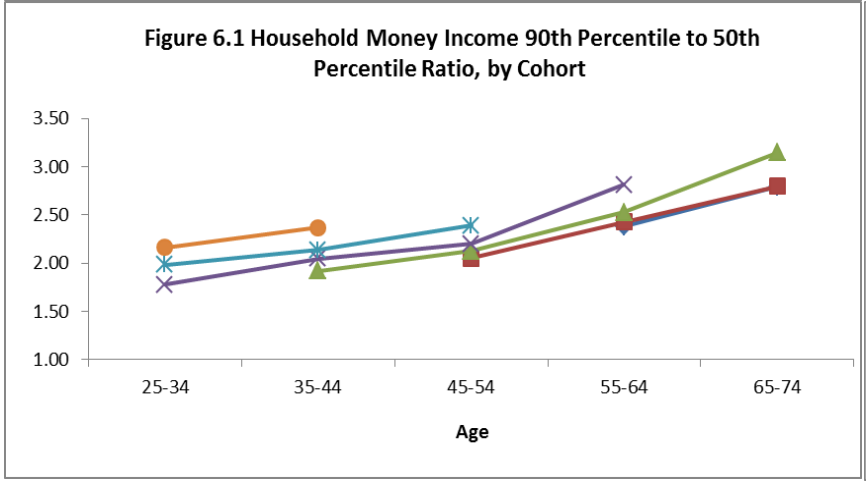
Figure 6.1 Household Money Income 90th Percentile to 50th Percentile Ratio, by Cohort
3.50
3.00
2.50
2.00
1.50
1.00
25-34
35-44
45-54
55-64
65-74
Age

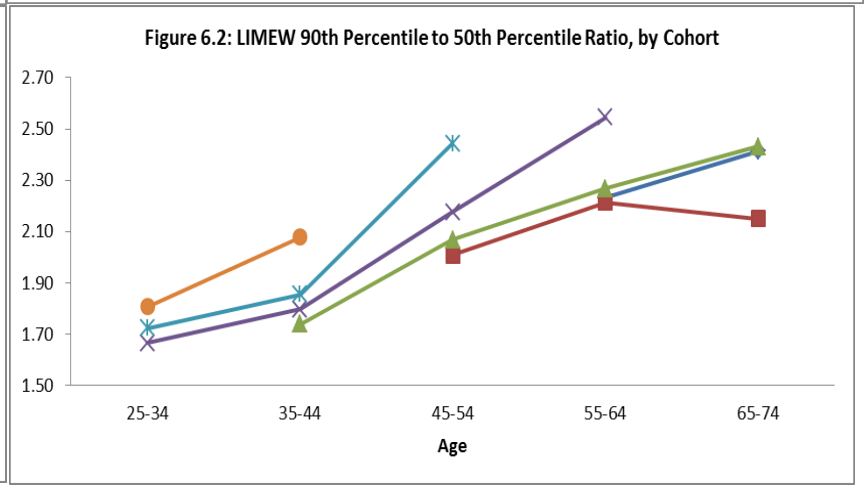
Figure 6.2: LIMEW 90th Percentile to 50th Percentile Ratio, by Cohort
2.70
2.50
2.30
2.10
1.90
1.70
1.50
25-34
35-44
45-54
55-64
65-74
Age

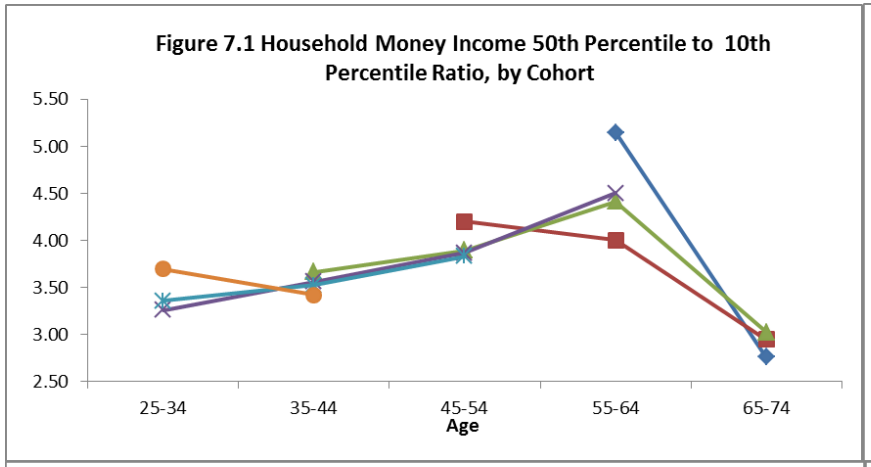
Figure 7.1 Household Money Income 50th Percentile to 10th Percentile Ratio, by Cohort
5.50
5.00
4.50
4.00
3.50
3.00
2.50
25-34
35-44
45-54
55-64
65-74
Age

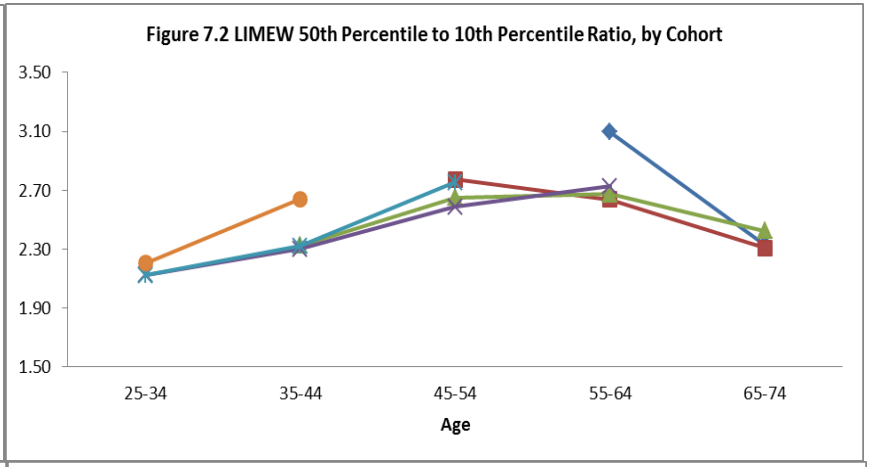
Figure 7.2 LIMEW 50th Percentile to 10th Percentile Ratio, by Cohort
3.50
3.10
2.70
2.30
1.90
1.50
25-34
35-44
45-54
55-64
65-74
Age

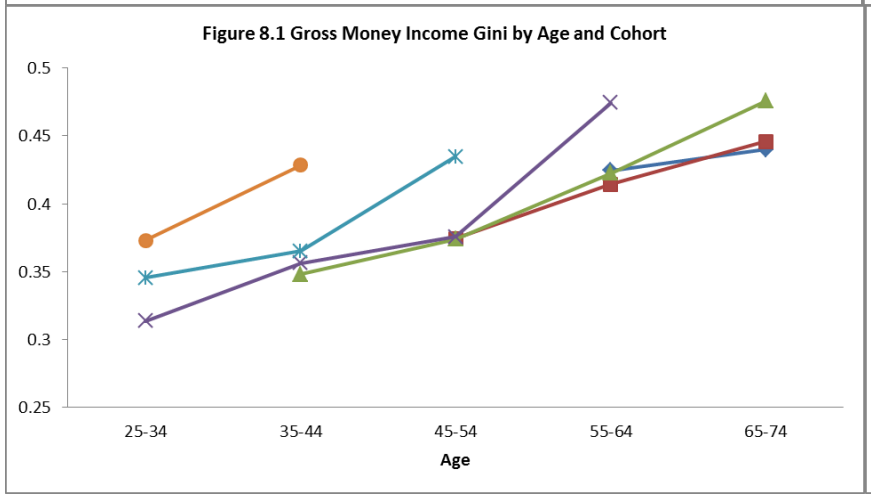
Figure 8.1 Gross Money Income Gini by Age and Cohort
0.5
0.45
0.4
0.35
0.3
0.25
25-34
35-44
45-54
55-64
65-74
Age

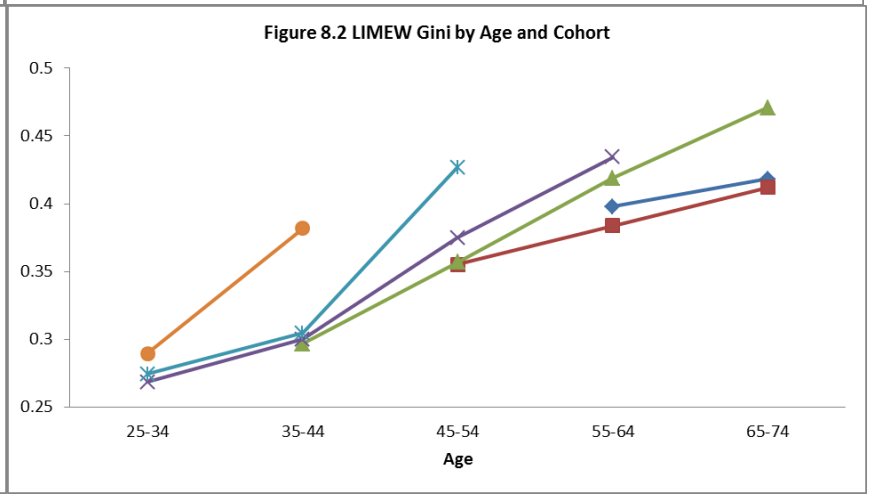
Figure 8.2 LIMEW Gini by Age and Cohort
0.5
0.45
0.4
0.35
0.3
0.25
25-34
35-44
45-54
55-64
65-74
Age

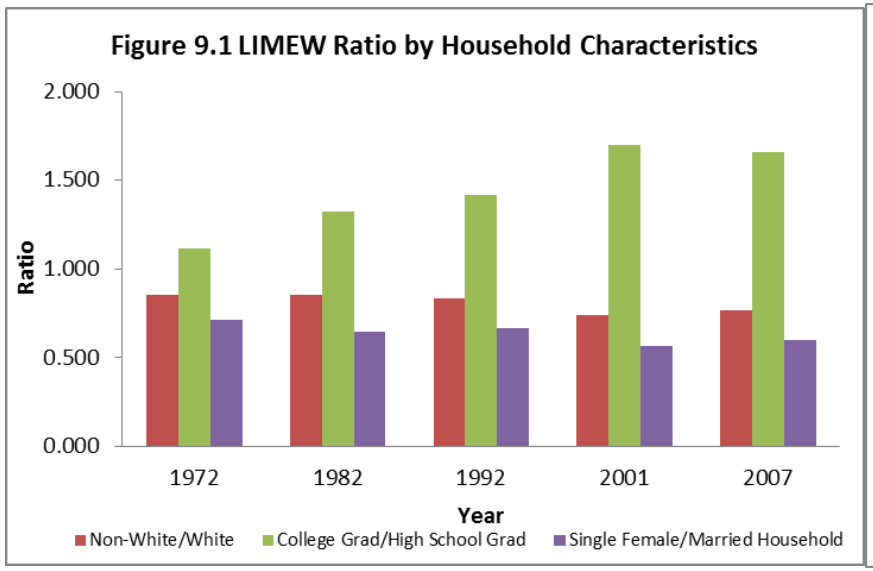
Figure 9.1 LIMEW Ratio by Household Characteristics
2.000
1.500
1.000
0.500
0.000
Ratio
1972
1982
1992
2001
2007
Year
Non-White/White
College Grad/High School Grad
Single Female/Married Household

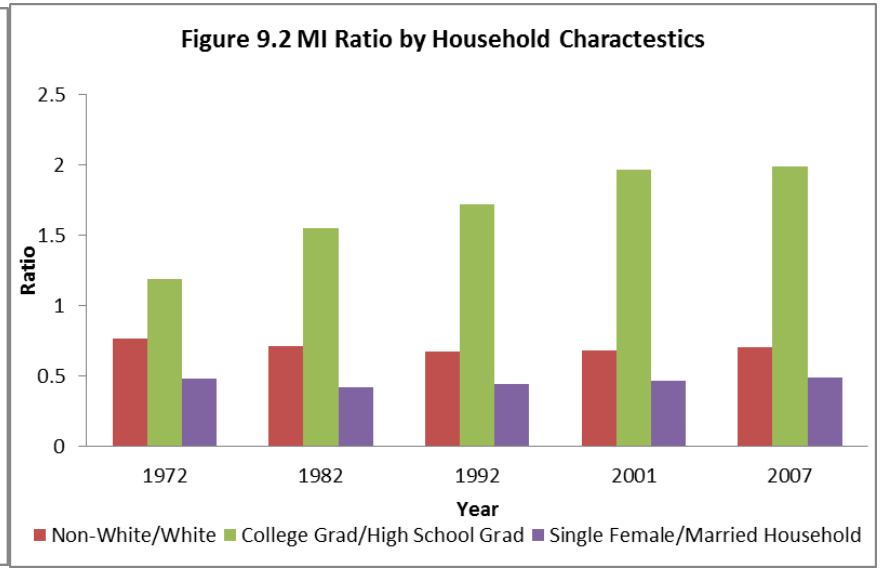
Figure 9.2 MI Ratio by Household Charactestics
2.5
2
1.5
1
0.5
0
Ratio
1972
1982
1992
2001
2007
Year
Non-White/White
College Grad/High School Grad
Single Female/Married Household

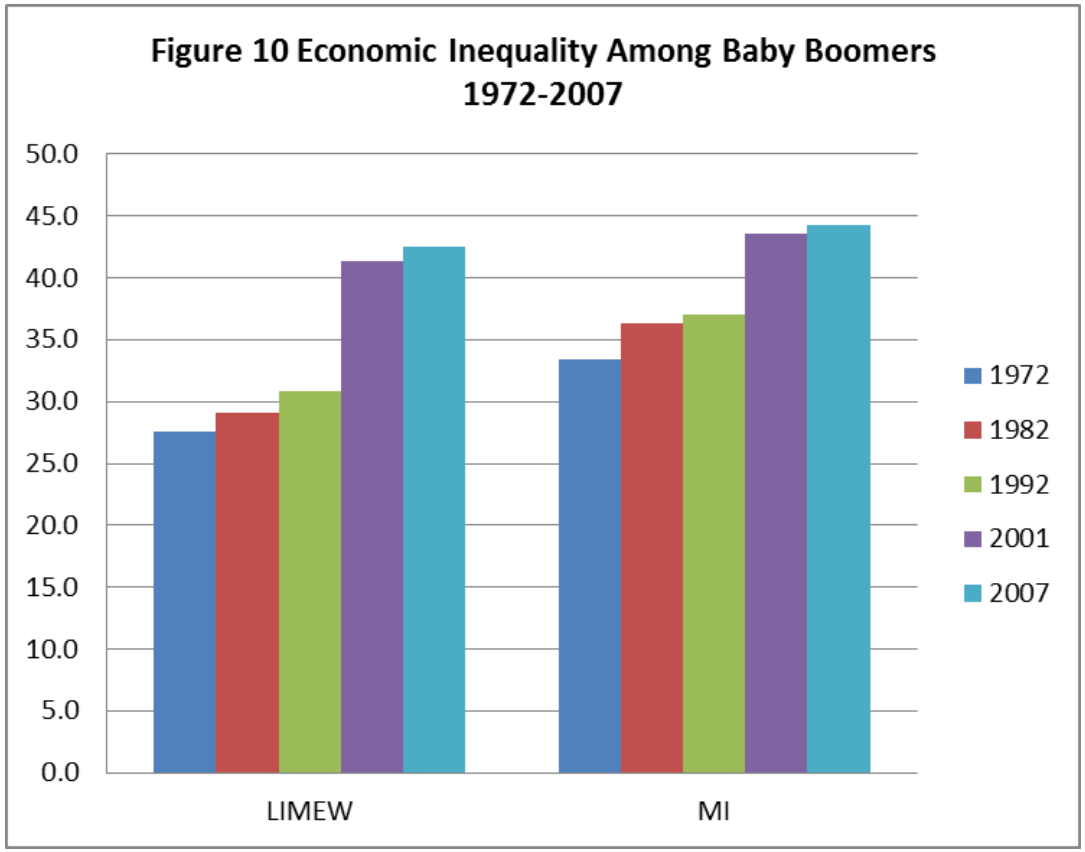
Figure 10 Economic Inequality Among Baby Boomers
1972-2007
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
LIMEW
MI
1972
1982
1992
2001
2007