

Employment Type and Its Relationship with the Distribution of U.S. Family's Full-Income

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How to cite this paper: El-Osta, H. S. (2026). Employment Type and Its Relationship with the Distribution of U.S. Family's Full-Income. *Theoretical Economics Letters*, 16, 740-772.

<https://doi.org/10.4236/tel.2026.164042>

Received: April 20, 2026

Accepted: August 8, 2026

Published: August 11, 2026

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Abstract

Total family income is a common measure of the economic well-being of U.S. families. However, this economic indicator is highly variable due mostly to temporary disturbances in some of the components of total family income. This paper uses a subset of data from the 2022 Survey of Consumer Finances to examine the dispersion in economic well-being based on a comprehensive indicator that combines income and annuitized wealth, which is referred to as 'full-income'. The contributions of the various components of full-income toward inequality are assessed for families based on whether the family reference person in the survey is self-employed or works for someone else. The paper also considers the role of age and education, the most common indicators used in the literature to measure human capital, in inequality assessment.

Keywords

Annuitized Wealth, Full-Income, Money Income, Survey of Consumer Finances, Economic Inequality

1. Introduction

The causes and consequences of the widening and trending disparities in the distributions of income and wealth among households in the United States have been examined extensively in the literature (see Kuznets & Jenks, 1953; Piketty & Saez, 2003; Saez & Zucman, 2016; Kuhn et al., 2020; Pew Research Center, 2020; Polacko, 2021; EBSCO, 2023).¹ Behind the rising income and wealth inequality in the U.S., where the concentration of wealth far exceeds that of income, and which is now substantially higher than in almost any other developed nation, are many

¹For information on EBSCO (2023). <https://www.ebsco.com/research-starters/economics/social-issues-income-inequality>

widely recognized causes. Among those causes are factors such as market forces, tax policies aimed at lowering tax progressivity, the eroding value of the minimum wage, the shrinkage in the rate of unionization, the decreased access to higher education, technological change, and globalization. While noting the severe disruption to economic activity that was caused by the COVID-19 pandemic between 2019 and 2022, a study by the Federal Reserve System (2023) found, nevertheless, an improvement in U.S. family finances, particularly with respect to net worth activity.² Specifically, and over this time period that witnessed the largest spike in unemployment in U.S. modern history, particularly among low-wage workers, real median family income rose by a relatively modest level of 3 percent, while real mean family income grew by 15 percent. In contrast, real median net worth surged up by 37 percent, and real mean net worth increased by 23 percent. The study's findings showed a strong and positive association between income and the educational level of the "household head," also referred to in the study as the "reference person." Specifically, both the median and mean incomes among families where the reference person had a college degree tended to be substantially higher than for those families where the reference person had less schooling. Findings also showed income to have followed a life-cycle pattern across all the age groups, as both median and mean incomes were essentially the lowest when the age of the reference person was either younger than 35 or 75 years and older compared to families of those reference persons in the other between-age groups.

As for the consequences of the rise in income and wealth inequality, evidence from the literature points out, from an economic perspective, to a decrease in economic growth resulting from a reduction in general demand, which leads, among other possible adverse outcomes, to reduced economywide spending and public investment (Economic Policy Institute, 2017 & 2022).³ Among the other cited consequences is an increase in the vulnerability of the financial sector as described by higher savings and higher investments in riskier assets by the wealthy, and by higher indebtedness by lower-income households. Besides income and wealth inequality being a potential source of economic instability by adversely impacting long-run economic growth, innovation, and investment, it is also viewed in the literature as a potential cause of social and political instability and of the stifling of upward social mobility (Galor & Zeira, 1993; Furman & Stiglitz, 1998; Stiglitz, 2012; Corak, 2013; Piketty, 2014; Bricker et al., 2018; Polacko, 2021; Dalaker et al., 2021). Research by Kuznets (1955) and Kaldor (1956) focused on within-country inequality and its link to growth, either by assessing how economic inequality impacts development, or by explaining the pattern of disparity in any single economy that may result because of progress.

Inequality in the distribution of income and wealth remains central to the multi-faceted U.S. policy debates that are related to social and economic outcomes.

²For more detail, see <https://www.federalreserve.gov/publications/files/scf23.pdf>.

³For more information, see, respectively, <https://files.epi.org/pdf/136654.pdf> and, <https://files.epi.org/uploads/248892.pdf>.

An important economic factor that warrants continued scrutiny when analyzing income and wealth inequality is the role of employment, which is influenced by both fiscal and monetary measures, in terms of both its nature and in terms of its strength in the U.S. job market. In the United States, self-employment, which is defined as working for oneself rather than for an employer, with its growing share of the working population, is by far the most common form of entrepreneurship, particularly for older adults and for individuals with disabilities, for women, and for people of color operating and/or launching new businesses (Center for American Progress, 2023).⁴ Halvorsen (2020), using empirical analysis based on a sample of more than 12,000, noted that for the oldest individuals with self-employment, in comparison to their counterparts with wage-and-salary work, they were more likely to identify themselves as African-Americans, to report poorer health, and to receive health insurance coverage from multiple sources than the younger group. A study by Aghion et al. (2019) has shown that self-employment income in the U.S. tends to be over-represented relative to wage income among the top 1% of all earners. Kaplan (2021), Bhandari et al. (2024), and Horwich (2025) showed self-employed individuals to have significantly higher average incomes and much steeper income growth, and higher wealth, than individuals with wage-earning jobs. Headd (2021) noted that self-employed, on average, are wealthier than the non-self-employed, with the implication of the potential benefit of business ownership in economic mobility. A study by Artola Blanco and Gómez-Blanco (2025) has pointed to the economic boom of the 1940s that witnessed a substantial rise in corporate and income taxes, a result of which was a relative decline in the number of corporations, and consequently, an alteration of the employment status of many highly paid workers from salaried to self-employed.

Both income and wealth are important indicators of the economic well-being of households, with the concept of 'income,' in general, referring to the command over goods and services. However, using money income as the sole indicator of the economic well-being of households is limiting as it fails to characterize the true economic standing of these households by considering all households as identical in terms of their economic resources, except for their incomes. While many studies have documented the nature and the trends in either income or wealth inequality in the United States, this paper adds to the literature an assessment of the nature of economic disparity based on a comprehensive economic

⁴The study by the Center for American Progress (2023) notes that the three most common industries among nonagricultural and unincorporated self-employed workers (i.e., when their businesses are not registered as legal entities separate from their owners) are professional and business services (22.4%), construction (18.5%), and education and healthcare services (11.5%). Examples of the types of self-employed workers in the professional and business services include sole proprietors, partnerships, and independent contractors (e.g., and as part of these three main business services, are lawyers, journalists, doctors, dentists, accountants, IT specialists, business/marketing consultants, freelance writers, editors, copywriters, plumbers, and electricians; among others). Also, agricultural work tends to constitute a major source of self-employment since around 7.6% of unincorporated self-employed workers tend to work in this field. For more detail, see <https://www.americanprogress.org/article/understanding-the-self-employed-in-the-united-states/>.

well-being measure, and based on whether the head of the household is self-employed or a paid employee. Specifically, the paper utilizes, based on the employment status of the family's economically dominant person and based on data from the 2022 Survey of Consumer Finances (SCF), a joint income-wealth measure, which is referenced henceforth as 'full-income'.⁵ Use of such a combined income and wealth measure, which is estimated by adding to income the estimated annuity value of the fungible parts of total net worth, provides a more complete accounting for all forms of economic gain, welfare, and the total consumption ability of U.S. families than either current income or wealth alone. The paper examines the contribution of the components of full-income (e.g., income from sources such as business, wages and salaries, rent, transfer payments, etc., and annuitized fungible wealth) to the inequality in its distribution. Consideration is also given to the roles of age and education, the most common indicators used in the literature to measure human capital (see [Mincer, 1958](#); [Schultz, 1960; 1963](#); [Lucas, 1988](#); [Castello-Climent, 2019](#); [Hershbein et al., 2020](#)), on the distribution of economic well-being and on economic growth.⁶ In the case of education, a commonly held view among economists is that economic inequality is driven, among other causes such as globalization and technological advancement, by differences in educational attainment among individuals, as higher labor income (i.e., from wages and salaries) tends to be higher among skilled and more educated workers ([Acemoglu, 2002](#); [Stiglitz, 2015](#); [Peterson, 2017](#)). The positive association between educational level, earnings, and wealth, which has been noted in the literature for the general population (see [Becker, 1975](#); [Bricker et al., 2020](#)), has also been found to exist among U.S. farm operators, as farmers with higher education had higher levels of income and wealth ([Mishra et al., 2002](#); [El-Osta, 2011](#)).⁷

2. Previous Literature

Many papers have been written on the effect of a combined income-wealth measure on the economic well-being of households, here in the U.S. and abroad. Following the founding work by [Weisbrod and Hansen \(1968\)](#), a study by [Radner \(1990\)](#) noted, based on the use of one-wave dataset from the longitudinal Survey of Income and Program Participation (SIPP), that the relative economic status of the aged improved when the measure of economic resources changed from the

⁵It is important to note that the precise sampling and analysis unit in SCF is the Primary Economic Unit (PEU). The PEU, which is defined as the economically dominant single person or couple (whether married or living together) within a household, in addition to all other financially interdependent family members. Within the family in SCF, the economically dominant person is referred to as the 'household reference person' [or 'head of household;' see [Aladangady et al. \(2023\)](#)], which is also denoted in this paper, interchangeably, as the 'survey respondent.' Also, the concept of full-income was first introduced in the original household model of Gary [Becker \(1965\)](#). Under Becker's definition, full-income is total economic potential of an individual or household, including both the market earnings and, unlike here in the paper, the economic value to leisure and unearned income from non-market activities.

⁶A study by [Mincer and Polack \(1974\)](#) extends the phrase of 'human capital' to include, in addition to the person's own education, a person's job experience.

⁷The study by [Bricker et al. \(2020\)](#), based on data from the 2019 SCF, noted that nearly 90 percent of the wealthiest 1 percent of families in the U.S. included a reference person with a college degree.

use of income alone to a combined income-wealth measure. Studies by [El-Osta and Morehart \(2008, 2009\)](#) have utilized, respectively, such a combined economic measure, based on cross-sectional U.S. data from the Agricultural Resource Management Survey (ARMS), to address the causes of poverty and on ways to mitigate the likelihood of its occurrence, and to analyze how this measure changes and affects social welfare over the life of farm operators.⁸ While the first study showed the importance of educational attainment of the farm operator in mitigating ‘absolute’ poverty based on the combined income-wealth measure, the second study noted that targeted farm programs would enhance social welfare if they are aimed towards cohorts where the age of the head of household is younger than 35 years.⁹ A study by [Petrov and Romaguera-de-la-Cruz \(2025\)](#) used longitudinal data from the Panel Study of Income Dynamics (PSID) for the purpose of disentangling the dichotomy between income and wealth when assessing economic insecurity among U.S. households. The study’s finding indicated that economic insecurity levels were larger when considering their combined economic well-being measure than when income alone was used.

A study by [Brandolini et al. \(2010\)](#) utilized data from the Luxembourg Wealth Study (LWS) to provide a comparative analysis across different countries to measure poverty based on income and based on other alternative economic indicators including a combined income-wealth measure. The study, which demonstrated that poverty measures change when asset information is included, suggested that policymakers should consider such a combined income and wealth measure in their analysis of poverty and social well-being. [Gallusser and Krapf \(2022\)](#) used tax data from the Swiss canton of Lucerne to study how measures of economic inequality change if a combined income-wealth measure is used in comparison to the use of income alone. Findings of the study indicated that when a joint income-wealth measure was used instead of the use of income alone, measured inequality was significantly higher. A decomposition of inequality showed that the underlying marginal distributions of labor income and annuitized wealth accounted for most of joint income-wealth inequality.

3. Data Sources, Measurement, and Inequality Decomposition

Data

Relevant nationally representative, cross-sectional data from the 2022 Survey of Consumer Finances (SCF) were used to create two main population subgroups based on the type of employment of the household’s reference person—whether self-employed or worked for someone else. Excluded from the analysis were fam-

⁸In 2022, about 1.2 million out of 3.2 million farm and ranch operators were self-employed ([Handwerker, 2025](#)).

⁹This measure of poverty compares household income with the cost of a basket of specific goods and services. Under this definition, and as used in the study, a family was considered in poverty if its pretax income-wealth measure in the year of the survey was below the official poverty threshold, which consists of three times the cost of a minimum adequate diet.

ilies of those survey respondents who in 2022 were students, disabled, retired, and those who were out of the labor force with age under or older than 65. The survey, which is triennial, collects detailed information on U.S. families' balance sheets, pensions, income, and demographic characteristics.¹⁰

As in other national or international surveys, missing data also tend to occur in SCF. To remedy this limitation, missing data, since 1989, are imputed in SCF five times using a stochastic-based multiple imputation technique where collected information is stored in five separate imputation replicates, also referred to as 'implicates'. For non-missing values in SCF, the reported information is repeated five times, with each entry recorded in one of the five implicates (see [Montalto & Sung, 1996](#); [Kennickell, 1998](#)).¹¹ In SCF, point estimates (e.g., mean, median, proportion, Gini coefficient) of samples are measured using all of the observations across all of the five implicates, in conjunction with the provided weight variable, in order to make the sample representative of all U.S. households.¹² In contrast, computation of reliable standard errors requires accounting for both imputation and sample variability errors (see [Appendix](#); [Fries et al., 1997](#)).

Economic Well-Being Measure

The indicator used of the economic well-being of the i^{th} family, which follows the initial derivation by [Weisbrod and Hansen \(1968\)](#), and as was implemented by [Wolfson \(1979\)](#), [Radner \(1990\)](#), [Wolff and Zacharias \(2009\)](#), [El-Osta and Morehart \(2009\)](#), [Brandolini et al. \(2010\)](#), [Gallusser and Krapf \(2022\)](#), and [Petrov and Romaguera-de-la-Cruz \(2025\)](#), among others, is based on full-income (Y) measure:¹³

$$Y_i = Y_{a,i} + (tc \cdot W_i) \frac{r}{\left[1 - (1+r)^{-n_i}\right]},$$

where,

tc = proportional adjustment factor (=0.98) reflecting transaction costs in-

¹⁰For more information on SCF, see <https://www.federalreserve.gov/econres/aboutscf.htm>.

¹¹The number of records in the full 2022 SCF sample, after the placement of both the repeated sets of five non-missing and five imputed missing values in the five separate implicates, was 22,975.

¹²To the extent that sum of the weights for each of the five individual implicates represents the entire U.S. population, correct population's point estimates, and totals, are achieved by simply dividing the SCF's weight variable by 5.

¹³While the primary unit of analysis used in this paper is Primary Economic Unit (PEU), which assumes perfect economies of scale when measuring FI, two other alternatives were also considered to check for the robustness of the results as shown in the following measures [see [Burkhauser et al., 1996](#); [OECD \(2008 & 2011\)](#); [El-Osta and Morehart \(2008, 2009\)](#); see [Appendix Table A1](#)]. (A) Per-capita $Y_i = Y_i/S_i$ where S_i is the number of individuals of the i^{th} family. The use of this type of income receiving unit assumes the absence of economies of scale where fixed costs can be shared by a larger-sized family. (B.) Equivalized $Y_i = Y_i/(S_i)^{0.5}$. Use of this measure based on a square-root scale to come up with a FI level per equivalent household member is used to adjust for household size, thus allowing for fair comparison of economic well-being across households ([OECD, 2019](#)). As computed in this paper, it implies that a family of four persons has needs twice as large as a family composed of only one person, thus reflecting economies of scale in which a larger family does not need proportionally more income to achieve the same living standard as a smaller one.

curred in the disposal of assets, set in the paper at 2 percent.¹⁴

n_i = life expectancy of the i^{th} household reference person.

r = Annuity interest rate, set in this paper at 2 percent.¹⁵

$Y_{a,i}$ = total family ‘adjusted-money’ income: =total family ‘money’ income, less income earned from interest and dividends (see Lerman & Mikesell, 1988). It includes, in addition to labor income, income from a business, net rent, social security, bonds, real estate, and income from all other sources. Since the reported income in SCF is for the previous year of the survey, Y_a is adjusted for inflation and is reflected in 2022 dollars based on Consumer Price Index Retroactive Series (R-CPI-U-RS).

W_i = The market value of the family’s financial resources (marketable net worth – home equity)¹⁶.

Life expectancy is assessed based on the family’s reference person’s own age and gender (CDC, 2021).¹⁷ The measure does not allow for bequeath beyond a surviving spouse if the survey’s respondent is married.

Inequality Decomposition

In this paper, inequality in the distribution of full-income measure (Y), with sample size n and with k number of contributing sources, is based on the concept of the ‘standard’ Gini coefficient (Pyatt et al., 1980; Lerman & Yitzhaki, 1985), and based on an added adjustment, as described by Lerman and Yitzhaki (1989), to account for the use of SCF’s survey weights. The estimation of the Gini coefficient of full-income, $G(Y)$, starts by first estimating the Gini coefficient of the k^{th} income component, $G(Y_k)$, also known as ‘pseudo-Gini’, which is done as in the following after, first, ranking Y_k in a non-decreasing order (see Lerman & Yitzhaki, 1989; Giorgi, 2011):

$$G(Y_k) = 2\text{Cov}[Y_k, F(Y_k)]/\bar{Y}_k, \quad (1)$$

¹⁴It is important to note that while the transaction costs are set in an ad hoc fashion at 2% due to the absence of data, they are set at this level with the understanding that they can vary by family where the disposal of the marketable assets may depend on the specific type of asset being disposed of.

¹⁵The interest rate of 2 percent, set as in Radner (1990), was lower than the rate that ranged between 2.9% - 4.4% in 2022 of 10-year Treasury long term corporate bond rates (see <https://fred.stlouisfed.org/series/DGS10> and <https://fred.stlouisfed.org/series/AAA>). In order to mitigate the arbitrariness in the setting of the annuity interest rate at 2 percent, and as was implemented by Weisbrod and Hansen (1968) in order to give a notion of the potential impact of various interest rates on the results, a sensitivity analysis of the effect of other levels of interest rates (e.g., 4%, 6%, and 8%) on the inequality of the distribution of full-income is provided in the paper (see Appendix Table A1).

¹⁶The concept of ‘marketable’ wealth was introduced by Wolff (1996) in assessing wealth inequality among eight OECD countries, and in studies by Wolff (2010, 2016) that analyzed the historical trends (periodically between 1983 and 2007; and yearly over the 1962-2013 time-period, respectively) in wealth inequality among U.S. households. As in Wolff (2010), the paper uses “non-home” wealth, which is a more restricted concept of wealth where net equity in owner-occupied housing (the primary residence only) is subtracted from net worth. This is done since one’s home, as noted by Wolff, is difficult to convert into cash in the short term, which allows primary homes to serve as a store of value. For closely related applications of the ‘marketable’ wealth measure of economic well-being, see Carlin (1973); Carlin and Reinsel (1973); Chase and Lerohl (1981); Lerman and Mikesell (1988); Gould and Saupe (1990); El-Osta and Morehart (2008, 2009); and El-Osta (2011).

¹⁷For more information, see <https://stacks.cdc.gov/view/cdc/132418>.

where $\bar{Y}_k$ is the weighted mean of Y_k , $F(Y_k)$ is cumulative distribution of Y_k and $\text{Cov}(\cdot)$ is the covariance between Y_k and $F(Y_k)$. This is followed by estimating the mid-interval of $F(Y_k)$ as in:

$$\hat{F}_i(Y_k) = \sum_{j=0}^{i-1} w_j + \frac{w_i}{2}, \text{ where } w_0 = 0, \quad (2)$$

where w_j is the inverse of the sampling weight for the j^{th} family which allows for the following:

$$\sum_{i=1}^n w_i = 1 \quad (i=1, \dots, n).$$

The Gini index for the k^{th} component of Y , as described in (1), and in the presence of survey weights is estimated, thus, as in:

$$G(Y_k) = 2 \left[\sum_{i=1}^n w_i (Y_{ik} - \bar{Y}_k) (\hat{F}_i(Y_k) - \bar{F}(Y_k)) \right] / \bar{Y}_k. \quad (3)$$

The Gini index for the ranked full-income measure, Y , which is equal to zero in the case of complete equality [i.e., when all Primary Economic Units (PEUs) have the same level of Y] and which tends to one in the case of complete inequality (i.e., one PEU has all of sample's Y), is estimated as:¹⁸

$$G(Y) = \sum_{k=1}^K G(Y_k) R_k \phi_k, \quad 0 \leq G(Y) \leq 1, \quad (4)$$

where,

$$R_k = \frac{\text{Cov}[Y_k, \rho(Y)]}{\text{Cov}[Y_k, \rho(Y_k)]}, \quad -1 \leq R_k \leq 1 \quad (4a)$$

$$\phi_k = \frac{\bar{Y}_k}{\bar{Y}}. \quad (4b)$$

In (4a), $\rho(Y_k)$ is the rank of Y_k , R_k is the “Gini correlation” between the k^{th} income source and the rank of Y . When $\rho(Y) = \rho(Y_k)$, R_k will take the value of 1, which will imply that Y_k is an increasing function of Y . In (4b), ϕ_k is the share of the k^{th} component of Y while $\bar{Y}$ is weighted mean of Y . The higher the level of correlation of the k^{th} income source and the overall rank of Y , the larger its impact on the inequality in the distribution of Y .

The “relative contribution” to inequality by the k^{th} source of Y , which is referred to interchangeably in the literature as ‘proportional contribution,’ is measured as:

¹⁸The Gini index assumes the presence of non-negative values. When negative observations are included, the value of the index becomes overstated, and potentially can exceed 1.0 in the presence of large number of these observations, rendering it not suitable in assessing inequality. Based on the 2022 SCF, total family full-income exhibited negative values for 0.20 percent of the self-employed reference persons, and for none amongst those with paid employment. For the components of full income analyzed, only the ‘Income from all other sources’ exhibited proportions of reference persons with negative values (0.70% and 0.10%, respectively, amongst the self-employed and those reference persons with paid employment). Any potential for overstating the extent of inequality in total full-income or in the income component with negative values should be minimal as these levels of observations with negative values, in terms of their proportions relative to the overall number of reference persons within these two groups, are too low to generate any measurable bias in the resulting inequality estimates.

$$P_k = \frac{G(Y_k) R_k \phi_k}{G(Y)}. \quad (5)$$

In (5), the larger is the product of $G(Y_k)$, $R(Y_k)$, and ϕ_k , the larger is the contribution to inequality in Y by the k^{th} source of the full-income measure Y .

The relative marginal effect of a small change (ε) in the full-income source k (all other components of Y remaining unchanged), as developed by Lerman and Yitzhaki (1985: p. 154), and as noted by Wodon and Yitzhaki (2002), is:

$$M_k = \frac{\left[\frac{\partial G(Y)}{\partial \varepsilon} \right]}{G(Y)} = \frac{\phi_k [R_k G(Y_k) - G(Y)]}{G(Y)} = P_k - \phi_k, \quad \sum_{k=1}^K M_k = 0. \quad (6)$$

This approach of measuring inequality in the distribution of economic indicators and of measuring the role of contributing components has been widely used in numerous studies, both nationally (e.g., Ahearn et al., 1985; Findeis & Reddy, 1987; El-Osta et al., 1995; Mishra et al., 2009, 2010; El-Osta, 2023) and internationally (e.g., El Benni & Finger, 2013; Lindner, 2015; Nguyen et al., 2020; Tu et al., 2024).

4. Results

Table 1 shows the summary statistics of economic wellbeing measures and of their components by the type of employment held by the family's economically dominant person as reported in 2022 SCF. The number of 'self-employed' families based on the SCF in 2022 was at about 14.7 million.¹⁹ In comparison, the number of families with employment status described as 'working for someone else' stood at about 74.5 million. While the total number of families represented in 2022 SCF was about 131.3 million, this paper excludes from the analysis about 42.1 million families of those survey respondents who in 2022 were out of the labor force, students/homemakers, retired/disabled.

4.1. Demographic Characteristics of Survey Respondents

Table 1 also shows the average value of the three indicators of economic wellbeing (i.e., income, annuitized wealth, and full-income). In the case of income, which is reported in the Table as "Reduced 'adjusted' family money income," its average for those 'self-employed' families in 2022 was 1.52 times higher than the corresponding average for those 'payroll-oriented' families (\$218,766 vs. \$144,361). Similarly, in regards to wealth, the average of the annuitized financial resources held by those 'self-employed' families was approximately 9.00 times higher than the average of the corresponding wealth held by paid-employed

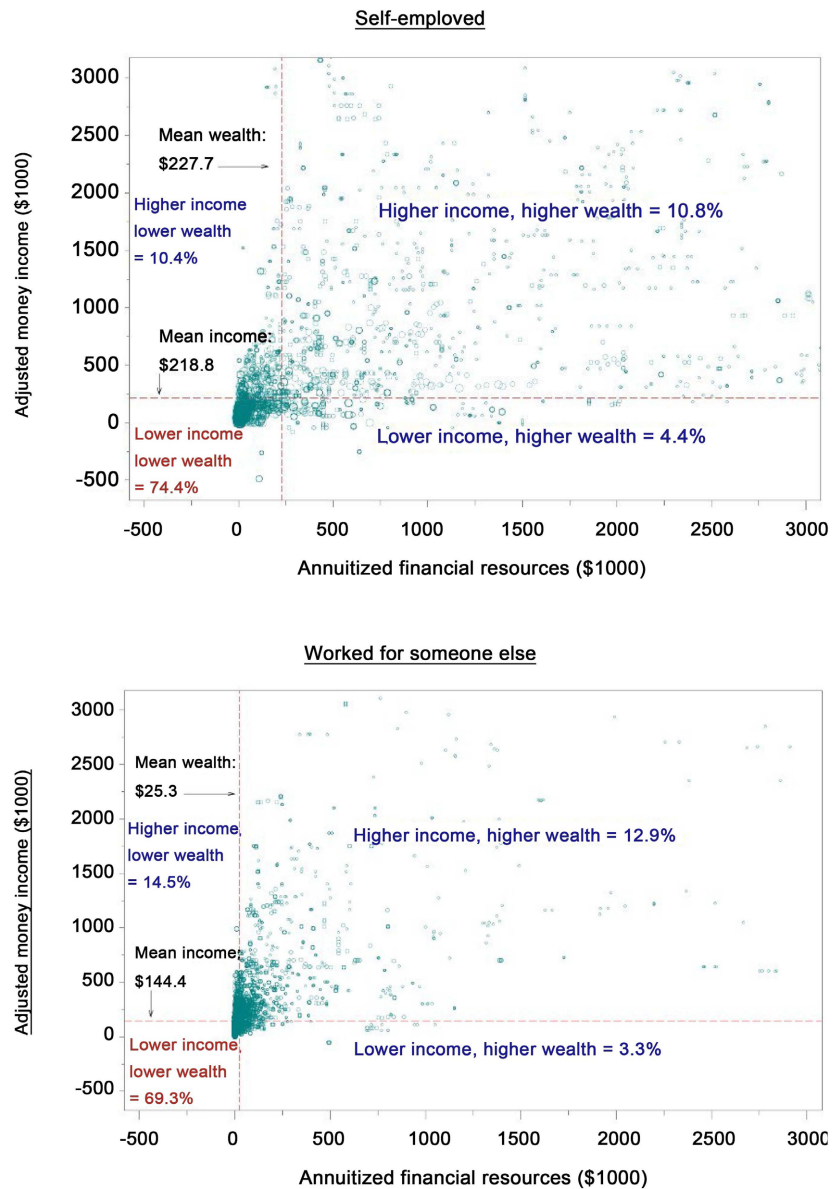
¹⁹According to SCF, a family's reference person is classified as self-employed based strictly on the primary job held that generates the most earnings, or on the job where most of the time is spent by the reference person during the survey period, rather than based on a count of all multiple income streams. If the reference person operates a business but also holds a wage-earning job, the person is classified as self-employed only if the business constitutes a primary job.

Table 1. Indicators of well-being and their components by employment status of survey respondents, 2022¹.

Item	Self-employed	Worked for someone else
Sample size	4,995	11,385
Number of families	14,737,492	74,527,192
Share of families	16.5	83.5
Average (\$2021)		
Family money income²	277,153*	141,388
Business income	36,833*	1,963
Income from other businesses or net rent	80,880*	3,785
Labor income (wages and salaries)	62,535*	119,751
Interest and dividends income	13,189*	2,295
Income from sale of stocks, bonds, real estate	61,575*	5,539
Income from social security, other transfer income	16,738*	4,327
Income from all other sources	5,404	3,728
Average (\$2022)		
'Adjusted' family money income³	299,579*	152,829
Business income	39,813*	2,122
Income from other businesses or net rent	87,424*	4,091
Labor income (wages and salaries)	67,595*	129,441
Interest and dividends income	14,256*	2,481
Income from sale of stocks, etc.	66,557*	5,987
Income from social security (SS), bonds, real estate	18,092*	4,677
Income from all other sources	5,841	4,030
Family balance sheet		
Marketable assets	3,586,610*	780,573
Financial:	1,130,533*	338,847
Checking, savings, etc.	144,276*	42,617
Stocks, bonds, savings bonds, CDs, mutual funds	561,285*	111,666
Retirement Instruments (IRAs, 401k), etc.	424,972*	184,564
Non-financial:	2,456,078*	441,726
Vehicles	50,578*	36,358
Dwelling	498,672*	285,913
Other residential and nonreal estate, business, etc.	1,906,828*	119,455
Debts	196,433*	150,819
Housing debt	127,119*	109,795
Other real estate	27,061*	9,993
Credit card, installment loans, and all other debts	42,252*	31,031
Marketable net worth (NW)	3,390,177*	629,755
Home equity (HE)	371,553*	176,118
Financial resources (NW-HE)	3,018,625*	453,637
Family full-income	446,479*	169,629
Reduced 'adjusted' family money income ⁴	218,766*	144,361
Annuitized financial resources (at 2% interest rate)	227,713*	25,267

¹Data source: Federal Reserve Board, Survey of Consumer Finances (SCF), 2022. Sum of the components of the indicators of well-being may not sum to their respective totals due to rounding. ²Family money income is measured before tax and for the calendar year before the survey (2021). ³Adjusted family money income is lagged income from prior year adjusted to current survey year's dollars using CPI-U-RS. ⁴Reduced 'adjusted' family money income is total family money income less income from interest and dividends and from sale of stocks. * indicates means across items based on employment type are statistically different at the 5% level of significance. Standard errors used in the computation of difference in means tests were computed based on variance estimation method with 999 bootstrapped replicate weights (see **Appendix** for detailed description of the utilized method).

families (\$227,713 vs. \$25,267). **Figure 1** shows that when these two components of full-income by 'self-employed' families are considered separately, and based on the family's location relative to their corresponding means, a much larger proportion of these families, compared to the 'non-self-employed families, falls in the 'lower-income' and 'lower-wealth' quadrant (74.4% vs. 69.3%). Similarly, the figure also shows a lower proportion of self-employed families, in comparison to families with paid employment, falling in the 'higher-income' and 'higher-wealth' category (10.8% vs. 12.9%).



Data source: 2022 Survey of Consumer Finances (SCF)

Size of the bubble depicts the size of survey weight:

sum of the weights in SCF is the number of households in the U.S. for the selected sample

Figure 1. Distribution of survey respondents by employment status relative to their respective mean reduced 'adjusted' money income and annuitized financial resources, 2022.

Table 2 presents both personal and economic characteristics of the survey respondent in the 2022's SCF, by type of employment, for the full sample and based on two selected sub-samples that are separated by their own respective median full-income. While nearly 63% of the survey's reference persons in both types of employment in 2022 were married or were living with a partner, those who were self-employed tended to be significantly older, based on their average age and based on their lower proportion of being younger than 35, than their non-self-employed counterparts (53.0 vs. 44.3 years; and nearly 18% vs. 29%, respectively). In addition, a significantly higher proportion of self-employed reference persons, in comparison to those with paid employment, tended to have a college degree or beyond. In terms of the economic difference between families based on their employment status, families with self-employment averaged a significantly higher full-income than those families with paid employment, with their significantly larger average of annuitized financial resources, as shown in **Table 1**, being the dominant single contributor to their significantly larger average of full-income (\$446,479 vs. \$169,629; or 2.6 times larger). **Figure 2** shows an increasing, yet significantly larger contribution towards the average of full-income by annuitized financial resources, as opposed to the contribution of reduced 'adjusted' family money income, for self-employed families compared to those families with paid employment, across the ranked quintiles of the full-income distribution.²⁰ The larger economic gain by self-employed families as indicated by their significantly larger level of mean full-income, in comparison to families who worked for someone else, explains, as shown in **Figure 3**, the shift to the right of its cumulative probability distribution. **Figure 3** also demonstrates that this larger economic gain by the self-employed families in 2022 benefited mostly the families at the top of the full-income distribution, as evident with the higher percentage of those families with a level of full-income below the mean level (at 83%), in comparison to the percentage of families with paid employment with such a lower full-income level (at 75%).

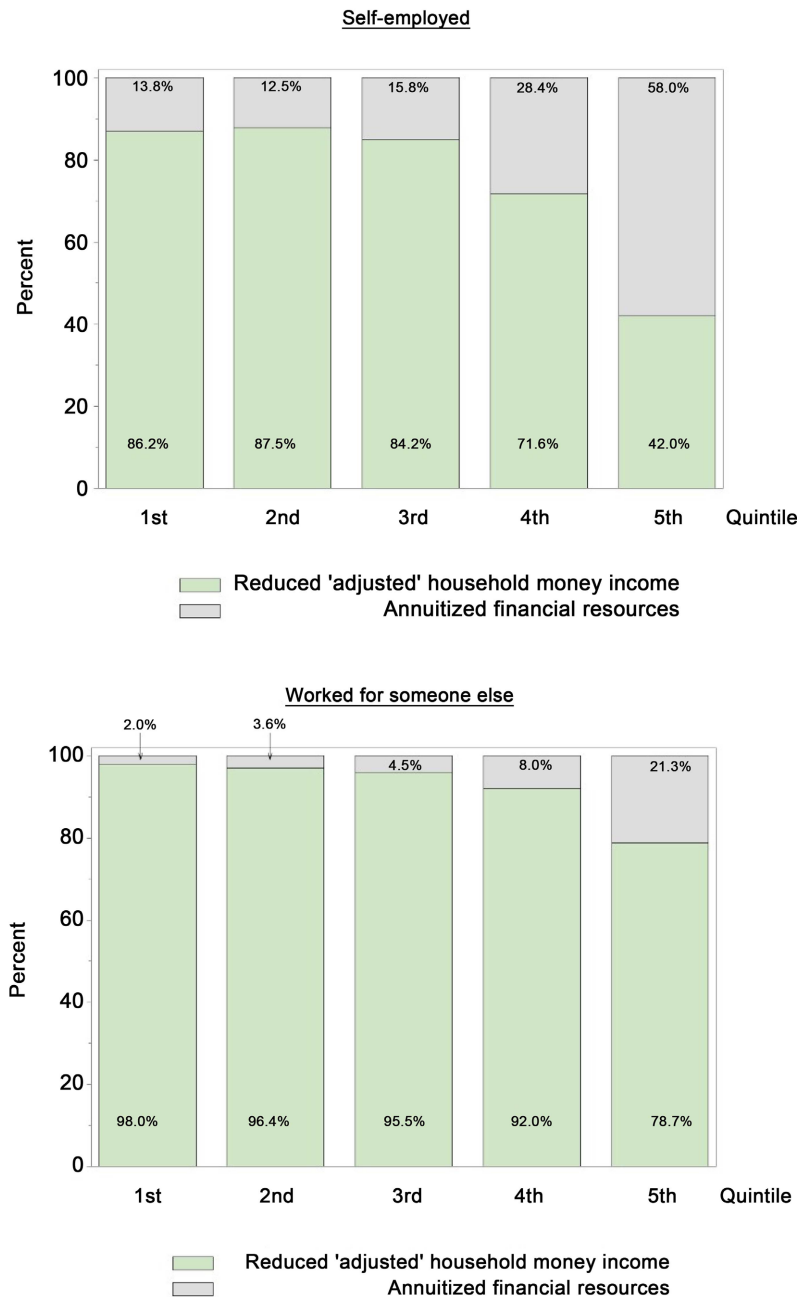
In splitting the distributions of full-income by employment type into two parts based on the respective medians, self-employed reference persons in the lower-half portion of the distribution, in comparison to their counterparts in the upper-half portion of the distribution, tended to be much younger, and with a significantly lesser likelihood of their gender and marital status being, respectively, in the 'male' and 'married' categories. Similarly, self-employed reference persons in the bottom-half of the full-income distribution were significantly less likely than those in the top-half of the distribution to have a college degree or higher. In terms of economic standing, families of self-employed reference persons in this lower part of the distribution reported a significantly lesser mean full-income, at

²⁰For families with self-employment, the share of annuitized financial resources in 2022 rose from 13.8% in the first quintile of the full-income distribution to 58.0% in the fifth quintile. In comparison, the share of this income-wealth component for the families with paid employment for these two respective quintiles rose from a mere 2.0% to 21.3%.

Table 2. Characteristics of survey respondents by employment status, and by sub-samples separated by the respective 50th percentile (median) of ‘full-income’, 2022.

Item	Self-employed	Worked for someone else
Number of families	14,737,492	74,527,192
Share of families	16.5	83.5
Full sample		
Age of reference person (mean)	53.0 ^a	44.3
Age: younger than 35 (%)	17.9 ^a	28.5
Education: college degree or higher (%)	49.9 ^a	44.2
Gender: male (%)	81.1 ^a	76.2
Marital status: married or living with a partner (%)	63.5	63.4
Family full-income (mean)	446,479 ^a	169,629
Family full-income (median)	108,659 ^a	97,293
Selected full-income percentiles¹:	Bottom 50%	Bottom 50%
Age of reference person (mean)	48.5 ^{a,b}	42.1 ^c
Age: younger than 35 (%)	26.6 ^{a,b}	36.1 ^c
Education: college degree or higher (%)	33.8 ^{a,b}	26.9 ^c
Gender: male (%)	69.1 ^{a,b}	63.7 ^c
Marital status: married or living with a partner (%)	45.2 ^{a,b}	41.6 ^c
Family full-income (mean)	49,932 ^{a,b}	55,409 ^c
	Top 50%	Top 50%
Age of reference person (mean)	57.6 ^a	46.4
Age: younger than 35 (%)	8.8 ^a	21.0
Education: college degree or higher (%)	66.0 ^a	61.5
Gender: male (%)	93.0 ^a	88.7
Marital status: married or living with a partner (%)	81.8 ^a	85.3
Family full-income (mean)	843,103 ^a	283,727

¹Source: Author’s calculations based on data from Federal Reserve Board, Survey of Consumer Finances (SCF), 2022. ^a indicates means across items based on employment type are statistically different at the 5% level of significance. ^b indicates means across items based on selected full-income percentiles (‘Bottom 50%’ vs. ‘Top 50%’) in the ‘Self-employed’ column are statistically different at the 5% level of significance. ^c indicates means across items based on selected full-income percentiles (‘Bottom 50%’ vs. ‘Top 50%’) in the ‘Worked for someone else’ column are statistically different at the 5% level of significance. Note: Standard errors used in the computation of tests of difference in means were computed based on variance estimation method with 999 bootstrapped replicate weights.



Data source: 2022 Survey of Consumer Finances (SCF).

Figure 2. Primary components of full-income, by quintiles, and by employment status of survey respondents, 2022.

nearly 6.0% of the corresponding reported level by their counterparts in the upper part of the distribution (\$49,932 vs. \$843,103). For families in the lower half of the distribution where the reference persons had worked for someone else in 2022, in comparison to their counterparts in the upper half of the distribution, **Table 2** shows a similar pattern of personal and economic characteristics as those characteristics that were found for the self-employed persons. A case in point is the sig-

nificantly lower mean full-income reported by this group of families, which stood at about 20% of the level reported by families in the upper part of the distribution (\$55,409 vs. \$283,727). **Table 2** also shows a significant difference in the estimates of both personal and economic characteristics of the survey respondents in the 2022's SCF when the full sample is separated by their type of employment, and based on two selected sub-samples that are divided by the full sample's median full-income.²¹



Data source: 2022 Survey of Consumer Finances (SCF).

Figure 3. Cumulative distributions of full-income by employment status of survey respondents, 2022.

4.2. Distributional Effects of Different Sources of Full-Income

As described earlier in **Table 1**, U.S. families receive income and wealth from a variety of sources, with the contributed amounts of those sources (or components) to their corresponding total levels tending to vary by the type of employment held by SCF's reference person. A comparison of marginal impacts of the various sources of a combined income-wealth economic measure could allow assessment of the effectiveness of different policies/strategies in reducing disparity in a more robust economic well-being measure among U.S. families. Considering the differ-

²¹For example, the average age across the two employment types in the lower half of the full-income distribution is 48.5 years vs. 42.1 years, and the proportion of the survey respondents with a college degree or higher is at 33.8% and 26.9%, respectively. Similarly, the average age across the two employment types in the upper half of the full-income distribution is 57.6 years vs. 46.4 years, and the proportion of the survey respondents with a college degree or higher is at 66.0% and 61.5%, respectively. Yet another example shows the average level of full-income across these employment types in the lower half of the full-income distribution at \$49,932 vs. \$55,409, and correspondingly, at the upper half of the distribution at \$843,103 vs. \$283,727.

ences in the livelihood strategies among U.S. families, and how these families react to both market and macroeconomic conditions, it is expected that the influence of marginal changes in financial sources on the distribution of total full-income will differ by the type of the income-wealth source, and by the extent of the family's dependence on each one of these sources. To accomplish this, a dispersion-decomposition technique is used to assess how much of the inequality in the distribution of full-income is attributed to each of the components of this economic well-being measure. Specifically, this technique uses a 'marginal impact' measure to assess the effect of a one-percent increase in each income-wealth source on the inequality of full-income. The selected sources that comprise the full-income measure include two broad types: family money income, adjusted by subtracting the income received from interest and dividends and from the sale of stocks, and annuitized financial resources, which are assessed at an annuity interest rate of 2 percent. In all, six separate components were analyzed in terms of their contribution to inequality and their marginal impacts on the distribution of full-income.

Table 3 presents the results of the inequality decomposition of full-income of U.S. families by the employment status of the survey respondent based on SCF, 2022. The Gini indices for total full-income for the self-employed families and for those families who worked for someone else were 0.767 and 0.541, respectively, which indicated a lower level of income-wealth inequality for those families of respondents with paid employment by nearly 30 percent.²²

²²Two general results' features are important to discuss. First, the robustness of the results concerning the inequality decomposition of full-income under alternative units of analysis other than based on a per-family basis, and the sensitivity of the findings under varied levels of interest rates when measuring annuitized financial resources, by type of employment of the survey respondents, are presented in **Appendix Table A1**. As shown in the Table, the results of significantly higher mean full-income and higher Gini index that were found for self-employed families, at annuity interest rate of 2% (and at 4% - 8%), were robust as these levels continued to be higher than their corresponding levels for families with paid employment when the unit of analysis was shifted, instead of per-family basis, towards either a per-unit or an equivalized basis. The importance of attending to household size in studies that examine income and wealth distributions to avoid distorting estimated age differences in spending, particularly since older-aged households tend to be smaller than younger-aged households, has been addressed by **Butrica and Gordon (2006)**. Despite the robustness of these results based on the type of measurement for full-income by the employment status of the survey respondents, it is relevant to note that unlike the values of the Gini indices that stayed nearly at the same level under these three varied measures of full-income, the mean values tended to differ. The Table demonstrates also the sensitivity of the results of higher mean full-income and higher Gini index that were found for self-employed families, in comparison to families with paid employment, regardless to whether the unit of analysis was on a per-family basis, or based on either a per-unit or an equivalized basis, as both of these levels continued to be higher while at the same time their corresponding levels rose higher as annuity interest rate of 2% rose to 4%, 6%, and 8%. Second, the estimated 95% percentile-based confidence intervals of histograms of the Gini indices of full-income, based on 999 bootstrap replicate samples, for the self-employed (*A*) and for those with paid employment (*B*), were not overlapping (see in **Appendix Figure A1**). The lower and upper limits of these confidence intervals by employment type (i.e., 2.5th and 97.5th percentiles), respectively, were [(0.754, 0.779) and (0.530, 0.553)]. Since the confidence intervals of the Gini indices of full-income across these two sub-samples were not overlapping, a conclusion that the mean difference ($d=0.226$) in these estimates across the two sub-samples was statistically significant [i.e., the null hypothesis $H_0: \hat{\theta}_A - \hat{\theta}_B = 0$ was rejected ($\alpha = 0.05$)]. A similar conclusion of statistical significance (at the 5% level) was also reached based on difference in means test across the Gini indices based on employment type, where standard errors used in the means tests were computed based on variance estimation method with 999 bootstrapped replicate weights.

Table 3. Inequality decomposition by sources of total family ‘full-income’ by employment status of survey respondents, 2022¹.

Income Components	Share of Total Full Income (ϕ_k)	Gini Index (G_k)	Correlation with Full-Income (R_k)	Relative Contribution to Inequality (P_k)	Relative Marginal Effect ¹ (M_k)
Self-employed					
Family full-income	1.0000	0.7666*	1.0000	1.0000	0.0000
Business income	0.0892*	0.8988*	0.4780	0.0500*	-0.0392*
Income from other businesses or net rent	0.1958*	0.9626*	0.9019*	0.2217*	0.0259*
Labor income (wages and salaries)	0.1514*	0.8036*	0.7498*	0.1190*	-0.0324*
Income from SS, bonds, real estate	0.0405*	0.8373*	0.4791*	0.0212*	-0.0193*
Income from all other sources	0.0131*	1.3445	0.3624	0.0083	-0.0048
Annuitized financial resources	0.5100*	0.8902*	0.9789*	0.5798*	0.0698
Worked for someone else					
Family full-income	1.0000	0.5414	1.0000	1.0000	0.0000
Business income	0.0125	1.1064	0.4922	0.0126	0.0001
Income from other businesses or net rent	0.0241	1.0919	0.7727	0.0376	0.0135
Labor income (wages and salaries)	0.7631	0.5157	0.9593	0.6973	-0.0658
Income from SS, bonds, real estate	0.0276	0.9250	0.3137	0.0148	-0.0128
Income from all other sources	0.0238	1.0666	0.3170	0.0148	-0.0089
Annuitized financial resources	0.1490	0.8687	0.9326	0.2229	0.0739

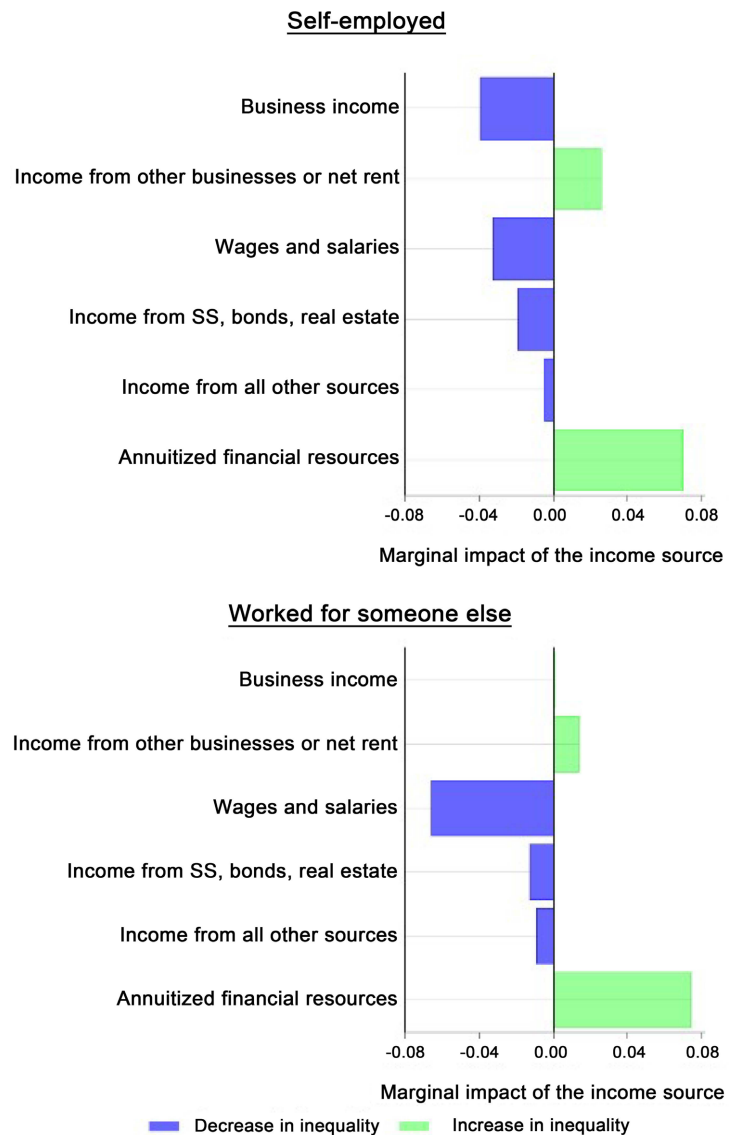
¹Source: Author’s calculations based on data from Federal Reserve Board, Survey of Consumer Finances (SCF), 2022. * indicates estimates across items based on employment type are statistically different at the 5% level of significance. Standard errors used in the computation of difference in means tests were computed based on a variance estimation method with 999 bootstrapped replicate weights.

The impacts of marginal changes in the components of full-income on overall inequality are reported in the final column of **Table 3** and are displayed in **Figure 4**. As shown in Equation (6) above, the marginal impact of each of the six sources of the income-wealth measure on its level of inequality is measured as the difference between the relative contribution to overall inequality and the corresponding share of total full-income for each of these sources. Considering the lower level of the relative contribution of labor income to overall inequality ($P_k = 0.697$) in comparison to its larger share ($\phi_k = 0.763$), results show that a 1 percent increase in this full-income component for those who had worked for someone else in 2022, all else being equal, would have decreased the inequality in the distribution of full-income by 0.066%. In contrast, a 1 percent increase in the labor income of the self-employed survey respondents, considering its lower level of relative contribution to overall inequality ($P_k = 0.119$) when compared to its larger share ($\phi_k = 0.151$), would have decreased the inequality in the distribution of full-income by 0.032%. A major contributing factor to the lower inequality reducing marginal impact by

the labor income component of full-income of the self-employed survey respondents (-0.032%), in comparison to the higher inequality reducing marginal impact of this component for those with paid employment (-0.066%), is its higher level of inequality in its distribution as represented by its significantly higher pseudo-Gini index (G_k), at 0.804 vs. 0.516. Yet another contributing factor to the lower inequality-reducing marginal impact by this component for the self-employed respondents, in comparison to those with paid employment, is the lower correlation with full-income (R_k), at 0.750 vs. 0.959. Similarly, a 1 percent increase in the business income of the self-employed survey respondents, considering its lower level of relative contribution to overall inequality ($P_k = 0.050$) when compared to its larger share ($\phi_k = 0.089$), would have decreased the inequality in the distribution of full-income by 0.039%. As for the respondents with paid employment, a 1% change in this source of full-income resulted in a negligible change in inequality. Other components with a decreasing marginal impact on the inequality of the distribution of full-income, however, at, respectively, smaller, or nearly negligible levels, and regardless of the respective employment status of the survey respondents, are incomes from social security (SS), etc., and income from all other sources.²³

In terms of the wealth-based income component that resulted in an increase in the inequality of this distribution, **Table 3** shows that a 1 percent increase in annuitized financial resources would have increased the inequality in the distribution of full-income for those self-employed survey respondents and for those respondents with paid employment, respectively, by nearly the same amount, at about 0.070% and 0.074%. The fact that a marginal increase of 1 percent in annuitized financial resources increases inequality, regardless of which of the two population subgroups is considered, is not surprising considering its high levels, respectively, of shares in total full-income (ϕ_k ; 0.510 and 0.149), of pseudo-Gini index (G_k ; 0.890 and 0.869) and of correlation with full-income (0.979 and 0.933). The high levels of correlation (R_k) between this financial resource and total full-income indicate that a higher share of this wealth-based income source is owned by richer families in both subpopulation groups. Specifically, families of self-employed survey respondents who were in the top 10 percent category of full-income distribution in 2022 accumulated 80.39 percent of all the annuitized financial resources. In comparison, the share of this source of wealth by families of those survey respondents with paid employment who were in this top-level full-income category was at 72.64 percent. For corresponding families in the bottom 10 percent of the full-income distribution, and regardless of the employment status of their survey respondents, the share of annuitized financial resources was nearly negligible, at around 0.20 percent.

²³Each of the respective high values of the pseudo-Gini indices (G_k) for the income received from all other sources in the two population sub-groups (1.345 vs. 1.067), which reflects a high level of inequality, is due to the large proportions of families in both sub-groups with a zero level of this income source (73.40% vs. 78.42%).



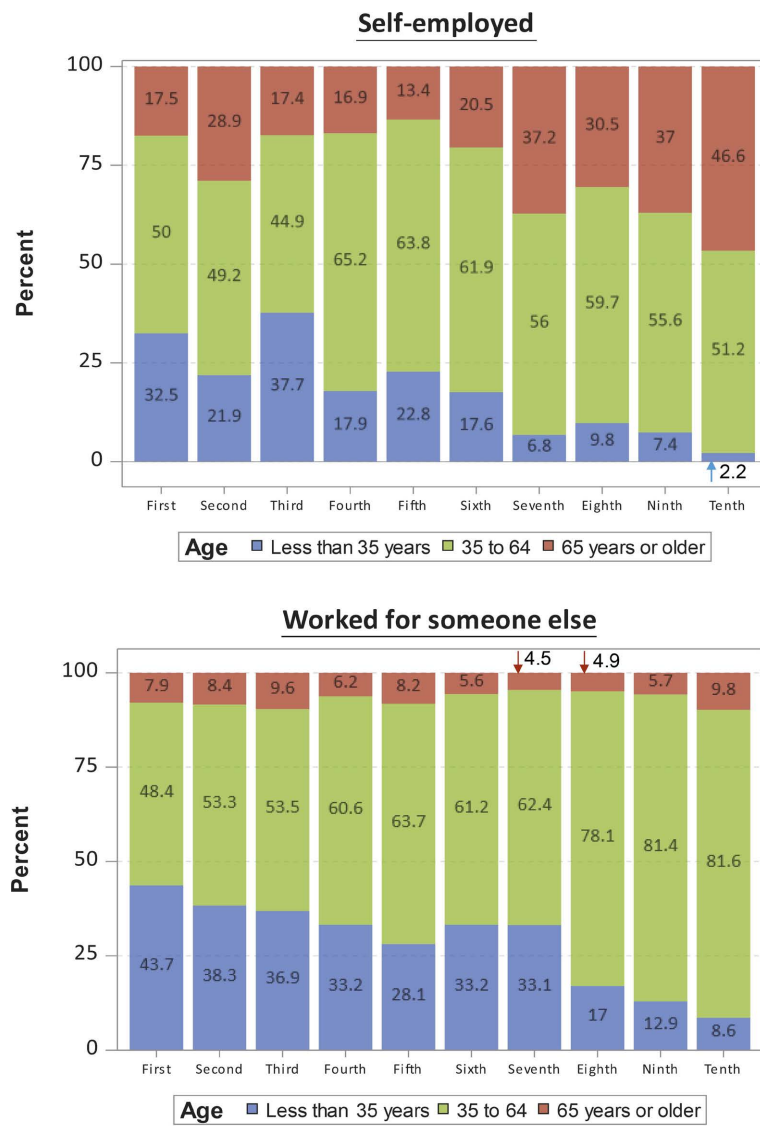
Data source: 2022 Survey of Consumer Finances (SCF).

Figure 4. Impact of a 1-percent change in sources of ‘full-income’ on inequality of full-income by employment status of survey respondents, 2022.

4.3. Distribution of Full-Income in the Context of Survey Respondents’ Age and Education

The inequality in the distribution of full-income reported in **Table 2** may be related, as noted earlier in the case of income and wealth, among other factors, to the distributions of age and to the level of education of the survey respondents. As shown in **Figure 5**, for families of respondents who were self-employed in 2022, and dramatically more so than for families where the survey respondents had worked for someone else, higher proportions of their respondents were in the top decile of the full-income distribution when the respondents were aged 65 years or older (at 46.6% vs. 9.8%). For families who were in the bottom decile of the full-income distribution, the proportion of survey respondents who were aged 65 or

older was dramatically higher when the survey respondent was self-employed instead of having worked for someone else (at 17.5% vs. 7.9%). The figure also shows that the age category of the survey respondents ranked second-in-dominance in the lower decile of the full-income distribution, regardless of their employment status, was when age was younger than 35 years, with the proportion of those respondents with self-employment being much lower than for those with paid employment (at 32.5% vs. 43.7%, respectively).

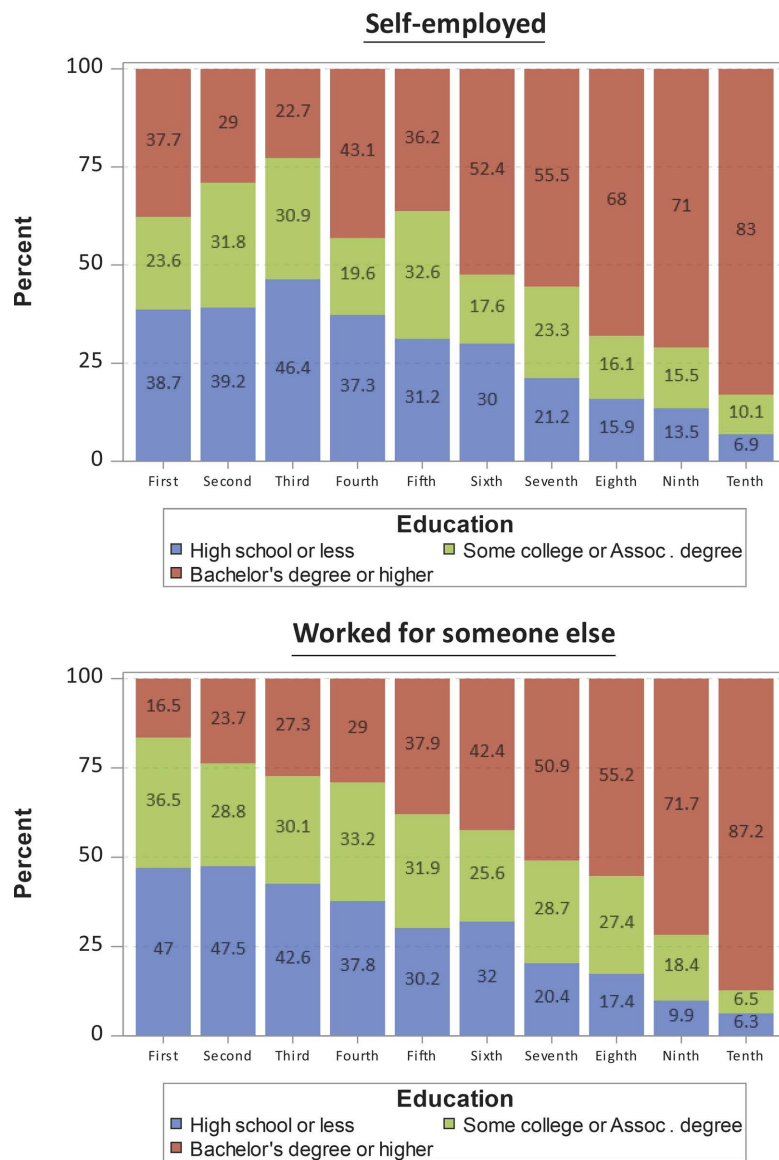


Data source: 2022 Survey of Consumer Finances (SCF).

Figure 5. Distribution of families across deciles of 'full-income' by age and by employment status of survey respondents, 2022.

With regards to the potential linkage between education and economic well-being, and as demonstrated in **Figure 6**, higher proportions of families of survey respondents with a college degree and with paid jobs, in comparison to those families with self-employment, were in the top decile (at 87.2%, and 83.0%, respec-

tively) rather than in the bottom decile of the full-income distribution (at 16.5%, and 37.7%, respectively). The importance of higher level of education, particularly to those families with more dependence on labor income, as in the case of families with paid employment and where such income source comprised nearly 76% of average full-income in 2022, may contribute in explaining its sizeable equalizing impact on the distribution of full-income for these families (i.e., $M_k = -0.066$; **Table 3**).



Data source: 2022 Survey of Consumer Finances (SCF).

Figure 6. Distribution of families across deciles of 'full-income' by education and by employment status of survey respondents, 2022.

5. Summary and Conclusion

This paper utilized data from the 2022 Survey of Consumer Finances (SCF) to examine the inequality in the distribution of a combined income and wealth meas-

ure among U.S. families, with workers who were either self-employed or who worked for someone else. The economic measure used, which is referenced in the paper as full-income, is calculated as the sum of income, updated from the previous year's level to the current year of the survey, and lifetime annuities from the financial resources that were available for these families in 2022. Full income, as noted in the cited literature, is a useful measure of the economic well-being of families because, by jointly considering income and wealth in a single measure, it most simply describes the ability of the family to support a stable living standard.

The paper found, using the concept of the Gini index, that full income is more unequally distributed for families of self-employed than for families of paid workers. This result was also found robust when the unit of analysis was on a per-capita or on an equivalized basis, instead of on a per-family basis. In utilizing inequality decomposition method based on the Gini index following the original technique as was developed by Lerman and Yitzhaki (1985), findings indicated that labor income (i.e., income from wages and salaries) was an income source with a decreasing marginal impact on the inequality in the distribution of full-income; although the impact was much smaller for families with self-employed workers compared to those with paid employment. For families with self-employed workers, the leading income component with a decreasing marginal impact on the inequality in the distribution of full-income was income obtained from running a business. In contrast, the full-income source from annuitized financial resources had an increasing, yet nearly identical, marginal impact on inequality for both types of families. Despite its adverse impact on inequality, and as noted in the literature considering that entrepreneurship embraces a wide array of economic activities, this wealth-based component of full-income could increase the likelihood of self-employment by alleviating financial constraints and by reducing the potential risk of business failures, thus impelling job creation and business vibrancy (see NBER, 2020).²⁴ A study by Wolff and Zacharias (2009) based on multi-year SCF datasets, and as in this paper, based on a combined income-wealth measure along with a similar Gini decomposition method, has demonstrated the importance of the role that inequality in a wealth-based component plays in shaping overall economic inequality. Findings from the study indicated wealth annuities tend to be much smaller for younger family earners than for older ones since younger earners are likely to have lower wealth levels in addition to longer remaining life expectancy. A result of this is that wealth-based annuities generally have a more dis-equalizing effect for older breadwinners than for younger ones.²⁵

Among the study's findings with a policy-related perspective were the roles of age and education in terms of their potential association with the inequality in the distribution of full income. In terms of age, and regardless of employment status,

²⁴For more information, see https://www.nber.org/system/files/working_papers/w27452/w27452.pdf.

²⁵A paper by Wolfson (1979) utilized a multi-year Canadian data to examine the impact of family income under alternative definitions of income, including a combined income and annuitized wealth measure, on inequality, and the incidence of low income for different age groups, with the added adjustments to family size. Findings indicated the presence of significant effects based on such adjustments that varied by age.

findings in 2022 indicated a significantly higher proportion of family providers who were younger than 35 years in age who were in the lower half portion of the full-income distribution in contrast to being in the upper respective part of the distribution (**Table 2**). The findings also showed that this age category, irrespective of the employment status of the family earners, was ranked second in dominance of being in the lower decile of the full-income distribution (**Figure 5**). The finding of a more dis-equalizing effect of wealth-based income source among older earners that was reached by Wolff and Zacharias (2009) could be generalized in this paper, especially for those self-employed earners. Specifically, based on the 2022 SCF used in this paper, the shares of annuitized wealth-based income component for the self-employed earners who were younger than 35 years, between 35 - 64 years, and 65 or older were at, respectively, 1.5%, 36.2%, and 62.3%. In contrast, the corresponding shares of this income component for the paid earners who were younger than 35 years, between 35 - 65 years, and 65 or older were at, respectively, 3.6%, 70.1%, and 26.4%; which reveal that unlike in the case of the self-employed, paid earners aged 65 or older were less dependent on this type of income source than their self-employed counterparts. In terms of average levels, the annuitized wealth-based income component for the self-employed earners who were younger than 35 years, between 35 and 65 years, and 65 or older were at, respectively, \$19,822, \$147,813, and \$533,901. The corresponding averages of this annuitized income component for paid earners in these age groups were, respectively, \$3,160, \$27,489, and \$94,267.

As for the role of education, and for both types of employment, a significantly lower proportion of family jobholders who reported having a college degree or higher were in the lower half part, as opposed to being in the upper half part, of the full-income distribution (**Table 2**). For family jobholders in the top decile of the full-income distribution, and especially for those who worked for others, having a Bachelor's degree or higher was by far the dominant education category (**Figure 6**). Previous published research has shown that education, as in the case of age, which often is expressed as labor market experience, is a factor that tends to increase income inequality (Mincer, 1958). As noted in the study, earnings grow at varied rates over a person's life cycle, with the rate for such growth being faster for more educated workers. In consequence, income gaps between individuals with different ages and experience levels tend to expand over time. A study by Hershbein et al. (2020) found, based on data from the 1980 and 2019 Current Population Survey (March CPS), that increased rates of bachelor's (BA) degree or higher would profoundly increase economic security for persons with lower incomes, reduce poverty, and reduce gaps between the lower and the 90th percentiles of the earnings distributions. The findings, however, showed that increases in college attainment would not significantly reduce inequality at the very top of the distribution. In the context of this paper, and in terms of educational attainment of self-employed and paid earners, the extent of those with at least a college education was nearly identical across the two types of employment for those who were

younger than 35 years (at 44.5% vs. 43.9%, respectively). The proportion of those with this type of advanced level of education among those aged 65 or older across these two types of employment was different (at 64.3% and 47.1%).

A study by [Aghion et al. \(2019\)](#) has noted that successful self-employment creates substantial potential to become extremely wealthy, and that innovation, particularly by new entrants, while it drives higher top income inequality, also fosters social mobility in the United States. Previous research on the motivation to enter self-employment and on its potential rewards and consequences, as noted by [Stenard \(2019\)](#), has been mixed, particularly with regard to whether workers enter such a type of employment to maximize their pecuniary or their non-pecuniary benefits. The study's own findings noted, based on longitudinal data covering over 28,000 scientists and engineers, that in general, those paid workers who transition to self-employment experience improvements in their non-pecuniary outcomes (e.g., being one's own boss, autonomy, flexibility, skill variety, decrease in job stress, lack of grading in the work environment) but not in their pecuniary outcomes. Empirical results of a study by [Hamilton \(2000\)](#) on the differentials in earnings in self-employment and paid employment suggested that while entrepreneurs enter and stay in business even though they have both lower initial earnings and lower growth in earnings than in paid employment, they do so because the nonpecuniary benefits of self-employment are substantial. A study by [Schneck \(2023\)](#) stated that while households tend to smooth their consumption over time, such practice might be especially practicable for households of paid employees since wages of such workers are usually rigid over time. In contrast, consumption smoothing for households of self-employed earners might be more challenging because incomes of these earners are more volatile and less downward rigid over time. Thus, the motivation and the potential impact on the economic well-being of families by their income earners are likely to be different based on the selection of type of work by their income earners, with the potential for such differences being amplified based on the age and education of these earners.

A study by [Mitchell \(2004\)](#), based on longitudinal survey data of men born in the United States between 1940 and 1974, found that over the course of their careers, the existence of not only widened gaps over time in the earnings between more educated and less educated workers, but such gaps were also wider among younger men in comparison to those of older men. To the extent that findings based on the 2022 SCF pointed to the importance of the role that both age and education of both self-employed and paid workers play regarding their association with the distribution of their respective full incomes, future research on the inequality in this economic measure would benefit if based on categories of age and education. This is particularly important since programs by the Federal government that have the potential in lowering inequality in such an economic measure, through tax relief and transfers of income, among others, are likely to have varied impacts based not only on the choice of the job that is held by the income earner but also by the earner's age and education (see URBAN INSTITUTE, 2016; PIIE,

2020).²⁶ Future research would also benefit from examining, in more detail, the potential contribution of the components of full-income to social welfare in the United States. Specifically, such proposed research would break down the population of families into age and educational subgroups, using an extended Gini decomposition method (see Yitzhaki, 1983; Stark et al., 1988) that allows inequality in the distribution of full-income to be progressively assessed under varying degrees of aversion to inequality while reflecting the Rawlsian criterion of fairness (see Rawls, 1972).²⁷

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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²⁶As listed in the study by PIIE (see, <https://www.piie.com/microsites/how-fix-economic-inequality>), Federal government programs which are tailored to helping low-income individuals in the United States where income inequality ranks highest among advanced economies include the following types of policies: 1) Social Security income for individuals when they retire or if they are disabled and cannot work; 2) Earned Income Tax Credit; 3) Supplemental Nutrition Assistance Program; 4) Medicaid and Medicare; 5) Housing subsidies; 6) Trade Adjustment Assistance; and 7) Child and Dependent Care Tax Credit. The study by the URBAN INSTITUTE (see, <https://www.urban.org/2016-analysis/seven-promising-policies-reduce-wealth-inequality>) identified promising policies to shrink wealth inequalities in the U.S. which include, for instance, exerting a limit on mortgage interest tax deduction and the use of revenues to provide a credit for first-time homebuyers, and the establishment of automatic savings in retirement plans.

²⁷This proposed method would evaluate the distribution of full-income based on, as noted by Rawls, the economic welfare of the poorest in the society.

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Appendix

(A.1.a): Standard error estimation: When working with SCF data, use of basic methods to calculate standard errors can overestimate the reliability of estimates unless imputation and sample variability errors are accounted for. Imputation error can arise as missing data in the SCF are imputed five times, where each missing survey response will have five separate and successive imputed observations (called “implicates”) that are selected from a random process to approximate the distribution of the missing data in the final dataset. For non-missing values, the ‘implicate’ will have the reported value repeated five times (see Kennickell, 1998). To the extent that the provided 999 replicate weights in SCF are not intended to be used with subsamples of the data, estimated standard error to capture the sampling variability for the two selected subsets of data, where the survey respondents either were self-employed or worked for someone else, is done based on newly created sets of replicate weights. The process involved the use of the bootstrap method to create 999 resampled datasets, with replacement, for each of the two selected subsamples with corresponding 999 resampled replicate weights. Use of the bootstrap method in the estimation of the standard error of statistics in a data set (e.g., θ_i , $i = 1, \dots, n$), which is done without the need to impose any assumption to the nature of the underlying distributions, makes the estimation of the standard error of the selected elements of the data more reliable (see Efron, 1979). The standard error for a given estimated statistic used in this paper, and in each of the two selected subsamples, is estimated as in (see Bricker et al. 2018):

$$\sigma_{\hat{\theta}} = \left\{ \frac{6}{5} * \sigma_{\text{Imputation}}^2 + \sigma_{\text{Sample}}^2 \right\}^{\frac{1}{2}}, \text{ where,}$$

$$\sigma_{\text{Imputation}}^2 = \frac{1}{I-1} \sum_{i=1}^{I=5} (\hat{\theta}_i - \hat{\theta})^2, (i = 1, \dots, 5), \text{ and,}$$

$$\sigma_{\text{Sample}}^2 = \frac{1}{S-1} \sum_{i=1}^{S=999} (\hat{\theta}_i - \hat{\theta})^2, (i = 1, \dots, 999), \text{ are the respective imputation and sample variances (see Fries et al., 1997), and where the weighted mean based on SCF's survey weight, } W, \text{ is: } \hat{\theta} = \frac{1}{\sum_{i=1}^n W_i} \sum_{i=1}^n W_i \theta_i, (i = 1, \dots, n). \text{ While the}$$

weighted mean $\hat{\theta}_i$ for each of the five imputation subsets is computed based on the survey weight W , the weighted mean $\hat{\theta}_i$ for each of the 999 bootstrap replicate samples is calculated based on the computed corresponding 999 bootstrap weights. In turn, the $100(1-\alpha)\%$ confidence interval (ci) for $\hat{\theta}$, based on α level of statistical significance and on the sample size of the combined five imputation subsets and the subsamples with corresponding 999 resampled bootstrap-based replicates, is estimated as: $\text{ci}_{\hat{\theta}} = [\hat{\theta} - Z_{1-\alpha/2} \sigma_{\hat{\theta}}; \hat{\theta} + Z_{1-\alpha/2} \sigma_{\hat{\theta}}]$, where $Z_{1-\alpha/2}$ is $(1-\alpha/2)^{\text{th}}$ percentile of the standard normal distribution.

(A.1.b): Hypothesis test of the difference between two means (i.e., H_0 : $\hat{\theta}_A - \hat{\theta}_B = 0$; H_A : $\hat{\theta}_A - \hat{\theta}_B \neq 0$), where A and B denote, respectively, the subsamples where the employment status of the family's reference person is either ‘self-

employed' or 'worked for someone else'. The method here involves the estimation of two 95% confidence intervals of the sampling distributions of two estimates ($\hat{\theta}_A$ and $\hat{\theta}_B$) that are measured at the 2.5th percentile and the 97.5th percentile of two respective subsamples. If the two confidence intervals for $\hat{\theta}_A$ and $\hat{\theta}_B$ based on significance level α do not overlap each other, this provides evidence against the null hypothesis H_0 . This method that underlies the construction of the respective confidence intervals, which is known as a bootstrapped normal-approximation confidence interval, has the limitation of using only the standard deviation of $\hat{\theta}_i$ ($i = A, B$) rather than utilizing the entirety of the sampling distribution of $\hat{\theta}_i$ (see Mooney & Duval, 1993).²⁸ For demonstration, the histograms of the boot-strap-based sampling distributions of the estimated Gini indices of full-income in the two selected sub-samples based on employment type are shown below (see footnote 12)²⁹:

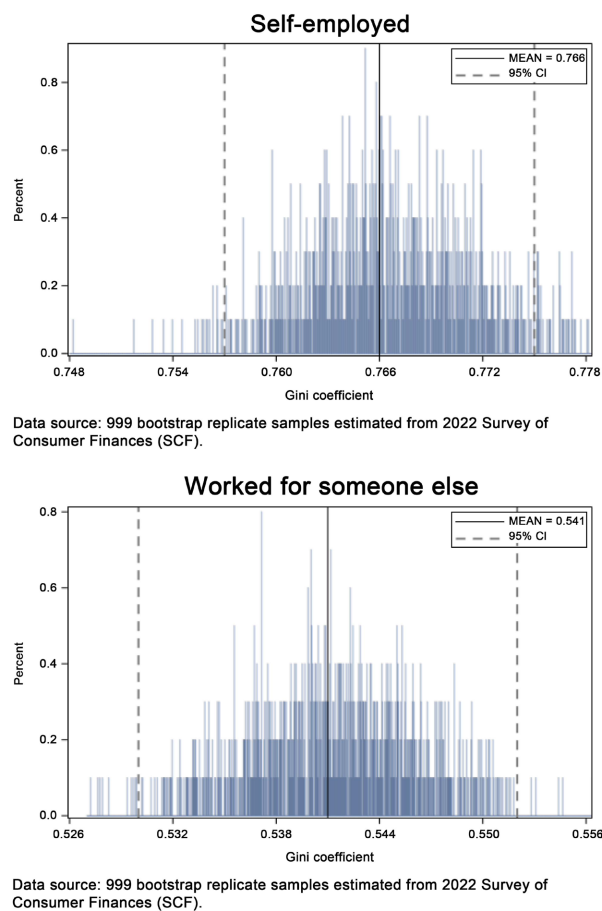


Figure A1. Histograms of Gini coefficients of full-income by employment status of survey respondents, 2022.

²⁸The dependence of this method on the normality assumption should not pose a problem since the sampling distribution of $\hat{\theta}_i$, due to the underlying large number of replicate samples used in this paper, is normal enough for the method to be valid.

²⁹In this chart, the two confidence intervals for $\hat{\theta}_A$ and $\hat{\theta}_B$ [(0.754, 0.779) and (0.530, 0.553), respectively] based on significance level α do not overlap.

Table A1. Inequality measure and mean of ‘full-income’ (FI) under various levels of interest rates (r) employment status of survey respondents, 2022 (transaction costs = 2%).

	FI ($r = 2\%$)	FI ($r = 4\%$)	FI ($r = 6\%$)	FI ($r = 8\%$)
Family FI				
<u>Self-employed</u>				
Gini index	0.767*	0.772*	0.778*	0.783*
Mean full income (\$)	446,479 [#]	483,593 [#]	524,011 [#]	567,313 [#]
<u>Worked for someone else</u>				
Gini index	0.541	0.549	0.558	0.566
Mean full income	169,629	175,441	181,888	188,866
Per-capita FI				
<u>Self-employed</u>				
(A)				
Gini index	0.776 ^A	0.781 ^A	0.786 ^A	0.790 ^A
Mean full income (\$)	218,660 ^a	236,626 ^a	256,142 ^a	277,014 ^a
<u>Worked for someone else</u>				
Gini index	0.540	0.548	0.556	0.565
Mean full income	72,016	74,498	77,244	80,212
Equivalentized FI				
<u>Self-employed</u>				
(B)				
Gini index	0.769 ^B	0.775 ^B	0.780 ^B	0.784 ^B
Mean full income (\$)	305,704 ^b	330,974 ^b	358,449 ^b	387,855 ^b
<u>Worked for someone else</u>				
Gini index	0.528	0.536	0.545	0.554
Mean full income (\$)	107,008	110,701	114,792	119,218

Source: Author's calculations. *,#,A,a,B,b indicate estimates across each pair of corresponding items based on employment type are statistically different at the 5% level of significance [e.g., * indicates statistical difference for Gini index across employment types for family FI (0.767 vs. 0.541), and, similarly, # indicates statistical difference for mean family FI across employment types (\$446,479 vs. \$169,629)]. Standard errors used in the computation of tests of difference in estimates were computed based on variance estimation method with 999 bootstrapped replicate weights.