Rethinking inflation inequality: evidence from national accounts

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Abstract

Do low-income households systematically face higher inflation than high-income households? Contrary to prevailing narratives based on the consumer price index, our analysis using personal consumption expenditure price indices demonstrates that inflation inequality has been moderating. Using income-stratified PCE price indices consistent with national accounts, we find substantially smaller inflation gaps than CPI-based studies suggest. This convergence is driven by significant inflation in financial services, primarily impacting higher-income households. Recalculating real disposable personal income growth using corresponding PCE price indices, yields significantly flatter income growth gradients than previously found.

Keywords: price index, PCE, CPI, national accounts, inflation, inequality
JEL: D31,E21,E31,I31

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Do low-income households systematically face higher inflation than high-income households? This question has gained urgency as inflation reached multi-decade highs in 2021-2022. The prevailing finding, based on analyses using the Consumer Price Index (CPI), has been substantial and persistent differences in inflation experiences across the income distribution.

The CPI-based literature has evolved considerably over time (see Jaravel (2021) for a review). Early studies found modest differences across income groups.[1] McGranahan and Paulson (2006) concluded that "the CPI-U does a reasonable job of measuring the inflation experience of the demographic groups we investigate." Recent work consistently finds that low-income households face meaningfully higher inflation rates, relying on reweighting CPI elementary indices to reflect different budget compositions.[2] While methodologically sound, this approach faces scope limitations.

These limitations stem from a critical feature of the CPI: it captures mostly out-of-pocket consumer spending and does not represent total aggregate expenditure. The Federal Reserve prefers the Personal Consumption Expenditure (PCE) price index (Board of Governors of the Federal Reserve System, 2024), which includes expenditures on government-provided health care (e.g., Medicare and Medicaid), imputed financial services (bank fees), and other categories absent from household surveys (Garner et al., 2022). Moreover, alignment with national accounts aggregates mitigates concerns about under-reporting in surveys that could bias CPI weights (National Research Council, 2022).

To better measure inflation inequality consistent with aggregate income and expenditures, we build on previous research creating a new joint distribution of income and consumption (Gindelsky, 2024; Garner et al., 2025; Gindelsky and Martin, 2025). We integrate the Bureau of Economic Analysis' (BEA) income distributions with the Bureau of Labor Statistics' (BLS) detailed expenditure distributions. We then construct the first, national accounts consistent, income-stratified PCE price indices (IS-PCEPX) by disposable personal income (DPI) for 2000-2023.[3]

[1] National Research Council (2002), Cage, Garner and Ruiz-Castillo (2002), Hobijn and Lagakos (2005), and McGranahan and Paulson (2006)

[2] Cage, Klick and Johnson (2018), Jaravel (2018, 2024), Klick and Stockburger (2021, 2024), and Martin (2025). Another strand exploits barcode-level variation for more limited market baskets: Kaplan and Schulhofer-Wohl (2017), Jaravel (2018), and Argente and Lee (2021).

[3] Concurrent research by Carloni (2025) also constructs PCE price indices by income quintile, finding patterns conforming to persistently higher inflation for low-income groups. Their analysis differs from ours in using CBO-specific income definitions (not scaled to national accounts) and imputing implicit financial services expenditures based on CE-defined

Our findings reveal that inflation inequality is smaller and more dynamic than CPI-based studies suggest. During 2000-2012, the bottom income decile experienced annualized inflation of 0.3 percentage points higher than the top decile. However, this pattern reversed during 2012-2023, with the bottom decile experiencing *less* inflation than the top decile, driven primarily by rapid price growth in financial services and insurance (3.4 percent annually) that disproportionately affects higher-income households. We subsequently decompose differences in PCE- and CPI-based inflation inequality measures into ranking, formula, and scope effects.

The paper proceeds as follows. Section I describes our methodology for constructing indices and integrating income and expenditure distributions. Section II presents inflation patterns and real income growth across income groups, emphasizing changes across time periods, and compares our PCE-based measures with CPI-based approaches. Section III concludes.

1 Methodology

Our approach to constructing IS-PCEPX requires integrating two complex datasets: BEA's distributional personal income estimates and BLS's distributional personal consumption expenditure estimates. This section provides an overview of our data sources and prior methodology, then details the construction of our new IS-PCEPX using the chained Fisher formula.

1.1 Data Sources Overview

Our analysis covers 2000-2023, constrained by the availability of integrated distributional estimates. The underlying data sources include the Current Population Survey Annual Social and Economic Supplement (CPS-ASEC) (for demographics and income) and Consumer Expenditure Survey (CE) (for spending patterns), augmented with various administrative sources for transfer programs and business income.

We construct both quintile and decile groupings based on equivalized DPI. All estimates use CPS-ASEC survey weights adjusted to account for the multiple imputation process and scaled to match national population totals.

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out-of-pocket spending, whereas we distribute them proportionally to asset balances, more closely reflecting their calculation in aggregate PCE and resulting in higher concentration among high-income households. As shown in Martin et al. (2024), these services have outsized impacts on PCE inflation among high-expenditure households.

1.2 Income Distribution

The foundation of our analysis rests on BEA's distributional personal income estimates. BEA's methodology, detailed in Gindelsky (2024), allocates approximately 75 distinct components of personal income from the National Income and Product Accounts (NIPAs) to households in the CPS-ASEC. Each component is distributed to households so that the weighted sums match aggregate totals from the NIPAs. The resulting totals, PI and DPI, are equivalized by dividing by the square root of household size, in order to compare households of different sizes to each other. Income quantiles are assigned based on equivalized income.

1.3 Expenditure Distribution

The BLS's distributional PCE research methodology, described in Garner et al. (2025), transforms CE survey data to align with national accounts definitions and totals.[4] BLS maps approximately 600 CE spending categories to 150 detailed PCE categories, addressing definitional differences—for example, CE captures out-of-pocket medical expenses while PCE includes third-party payments like Medicare and Medicaid. External data are used to impute expenditures for categories that are either out-of-scope or not well-covered in the CE, including third-party health care, financial services, and non-profit institution expenditures. A Pareto-based top-tail adjustment (recommended by Zwijnenburg, Grilli and Engelbrecht (2022)) is intended to mitigate bias from high-expenditure households' lower survey participation and under-reporting in the CE. Finally, all estimates are scaled so their weighted sums match official PCE aggregates category-by-category, ensuring consistency with national accounts while preserving observed expenditure heterogeneity.

This process yields PCE imputations for 150 product categories—somewhat aggregated from the 244 detailed products in NIPA tables but providing sufficient detail to capture key heterogeneity in categories like financial services and insurance. Some detailed patterns, such as different relative amounts spent on foreign and domestic auto across income groups, are not captured due to data limitations, but the framework reflects the essential drivers of distributional differences while maintaining data quality.

[4]The distributional PCE estimates are research series and not official BLS products.

1.4 Integration Method

Integrating the personal income and personal consumption expenditure distributions requires harmonizing two datasets with different sampling frames, definitions, and methodologies. We follow the approach developed in Gindelsky and Martin (2025).

We begin by constructing comparable income aggregates in both datasets by selecting concepts that are comparably defined in both surveys, including wages, salaries, self-employment, interest, dividends, and Social Security. We scale each to align with NIPA totals. This comparable income excludes certain PI components (like imputed financial services) that have no clear counterpart in the CE.[5]

We then employ multiple imputation with predictive mean matching to impute most category-level PCE to households in the CPS-ASEC (a few exceptions are discussed below). The predictive model incorporates key demographic and economic characteristics of reference persons: age, race, education, family size, urban residence indicator, and income source composition indicators (wages, self-employment, Social Security, etc.).

The matching process is constrained to ensure realistic donor-recipient pairs. Specifically, we only match households within the same decile of equivalized comparable income and the same housing tenure category (owner vs. renter). This ensures that expenditure patterns are imputed from households with similar economic circumstances and housing costs.

We handle overlapping concepts carefully to maintain consistency between income and expenditure sides. For example, rather than imputing third-party health expenditures from the CE, we allocate the health care components of personal income (Medicare, Medicaid, employer contributions) across PCE categories. Similarly, we replace PI rental income from owned housing with imputed rental equivalence from the CE to ensure housing costs are treated consistently. For more details, see Gindelsky and Martin (2025).

1.5 Index Construction

With integrated datasets providing income quantile specific expenditure shares, we construct income-stratified PCE price indices following a similar approach to Klick and Stockburger (2024) and Jaravel (2024)'s method of re-weighting CPIs. We re-aggregate the detailed PCE subindices from

[5]The comparable income aggregate is only used for the statistical match between the CE and CPS-ASEC.

NIPA Table 2.4.4U using household group-specific expenditure shares. Most of these indices are themselves based on consumer price indices or producer price indices produced by BLS (Bureau of Economic Analysis, 2024). Combining weights from adjacent years, we adhere to the BEA's methodology of using the chained Fisher formula, which is the geometric average of the well-known Laspeyres and Paasche formulas.

The Fisher formula for group g's inflation in year t relative to year $t-1$ is:

$$P_{gt}^{F} = \sqrt{\left(\sum_{i} s_{i,t-1,g}\left(\frac{p_{it}}{p_{i,t-1}}\right)\right)\left(\sum_{i} s_{itg}\left(\frac{p_{it}}{p_{i,t-1}}\right)^{-1}\right)}, \tag{1}$$

where $s_{itg} = x_{itg}/\sum_i x_{itg}$ represents group g's expenditure share for detailed product i in year t, x_{itg} is group g's PCE for product i, and p_{it} represents the product's PCE price index from NIPA Table 2.4.4U.

Crucially, the price relatives $p_{it}/p_{i,t-1}$ are identical across all income groups due to limitations in the source data underlying the p_{it}—these represent the full population and so the group subscript is omitted. Differences in inflation across income groups arise solely from the interplay between group-specific expenditure shares (s_{itg}) and product-specific inflation rates.

As discussed above in subsection C, our set of categories is somewhat aggregated from the 244 detailed products in the NIPA tables. Some detailed PCE categories have no counterpart in the CE (such as those for non-profit institutions serving households), and some are more disaggregated in the PCE (such as foreign and domestic autos), or are particularly noisy in survey data (such as pleasure aircraft). In some cases, therefore, our indices reflect expenditure share differences by group at the more aggregated level (like new automobiles), but do not reflect detailed patterns such as different foreign vs. domestic compositions by group.

While the main IS-PCEPX are constructed using the Fisher formula, we use a couple of other index formulas for supplementary analyses. First, the first decile to tenth decile inflation gap decompositions in Figure 2 are based on the Tornqvist formula, written

$$P_{gt}^{T} = \exp\left\{\sum_{i} 0.5\left(s_{i,t-1,g} + s_{itg}\right)\ln\left(p_{it}/p_{i,t-1}\right)\right\} \tag{2}$$

We use the Tornqvist here due to the advantages of its multiplicative form. The Tornqvist and the Fisher second-order approximate each other (Diewert, 1978).[6] The gap (in natural logs) between groups g and g' is then

[6]Tornqvist versions of the IS-PCEPX are nearly identical to those that use the Fisher

additive across categories as

$$\ln P_{gt}^{T} - \ln P_{g't}^{T} = \sum_{i} \Delta w_{it,g,g'} \ln \left(\frac{p_{it}}{p_{i,t-1}} \right), \tag{3}$$

where $\Delta w_{it,g,g'} = 0.5 \left(s_{i,t-1,g} + s_{itg} \right) - 0.5 \left(s_{i,t-1,g'} + s_{itg'} \right)$.

Table 2 uses the Lowe (or modified Laspeyres) formula to estimate the impact of scope, weight, and other methodology differences between the IX-PCEPX and related CPIs by holding index formula constant. The Lowe can be written

$$P_{gt}^{Lo} = \sum_{i} s_{i,b,t-1,g} \left(\frac{p_{it}}{p_{i,t-1}} \right), \tag{4}$$

where b is an earlier weight reference period and

$$s_{i,b,t-1,g} = \left(x_{ibg} \frac{p_{i,t-1}}{p_{i,b}} \right) / \sum_{i} \left(x_{ibg} \frac{p_{i,t-1}}{p_{i,b}} \right) \tag{5}$$

are period-b expenditure shares which have been adjusted to reflect price change from b to year $t-1$.[7] Unlike the Fisher or Tornqvist, the Lowe has fixed expenditure weights that do not account for consumer substitutions in the face of relative price change (Bureau of Labor Statistics, 2023).

2 Results

Our IS-PCEPX reveal a more nuanced picture of inflation inequality than suggested by previous CPI-based studies. While we confirm that lower-income households face higher inflation rates on average, the differences are substantially smaller and have been converging over time. This section presents our main findings on inflation patterns across income groups, changes over different time periods, and the underlying drivers of these patterns.

2.1 Overall Inflation Patterns Across Income Groups

The overall pattern of IS-PCEPX confirms that lower-income households face higher inflation, but the gradient is modest. Over the full 2000-2023

formula and available from the authors upon request.

[7] Prior to 2023, the BLS used biennial weight reference periods. Since 2023, they have used annual weight reference periods which lag the index estimation period by two years (Bureau of Labor Statistics, 2022).

period, annualized inflation ranged from 2.28 percent for the bottom quintile to 2.15 percent for the fourth quintile, before rising slightly to 2.21 percent for the top quintile. The maximum difference between any two quintiles is just 0.13 percentage points annually—substantially smaller than differences found in CPI-based studies.

Table 1 shows the composition of PCE expenditure and inflation rates by major category over our full sample period (2000-2023), revealing the expenditure patterns that drive these inflation differences.[8] The data reveal several components with relatively low variation across the income distribution (such as gas and motor vehicles) and others with significant heterogeneity. Lower-income households devote larger expenditure shares to necessities with moderate inflation rates: food and beverages represent 10.1 percent of expenditures for the bottom quintile compared to 6.3 percent for the top quintile, while housing and utilities account for 20.0 percent versus 17.3 percent, respectively.

Conversely, higher-income households allocate substantially more to categories that experienced rapid price growth. Financial services and insurance represent 11.0 percent of top-quintile expenditures but only 4.5 percent for the bottom quintile—a 2.4-fold difference. This category experienced fast inflation over the sample period at 3.4 percent annually, significantly exceeding the 2.2 percent average PCE inflation rate calculated for this period. Health care shows the opposite pattern, accounting for 18.6 percent of bottom-quintile expenditures versus 11.4 percent for the top quintile, with inflation of 2.4 percent annually.

The contribution of financial services (largely out-of-scope for CPI) to our results motivates a deeper comparison to the CPI measures constructed by Jaravel (2024). As shown in Table 2, the CPI shows much larger differences across income groups, with the bottom quintile experiencing 2.76 percent annual inflation compared to 2.47 percent for the top quintile - a gap of 0.29 percentage points, more than twice as large as our PCE-based findings. However, the CPI differs from the PCEPX among many dimensions including formula, expenditure scope, and weights.

The decomposition in Table 2 is constructed by re-calculating the IS-PCEPX sequentially and measuring the difference in average annual inflation between steps. The first step, using estimates based on the CE, is to compute PCEPX by quintile of equivalized CE income (as done in Jaravel (2024) and Klick and Stockburger (2024)), thereby estimating the impact of ranking on this versus DPI. Then, the formula effect is estimated by changing the

[8] Recall that PCE shares reflect expenditures by and on behalf of households.

formula from the Fisher to the Lowe, similar to McCully and Stewart. (2007). The scope effect is estimated by re-calculating the index after dropping categories not included in the CPI and adding back in categories not included in the PCE.[9] Finally, even after adjusting for scope, the IS-PCEPX and CPIs differ due to the sources of data used for the weights (McCully and Stewart., 2007; Garner et al., 2022), as well as the elementary price indices used in a handful of cases, and to a small degree due to data frequency (the underlying CPIs are computed monthly while our IS-PCEPX are annual). Bureau of Economic Analysis (2025) suggests the weight differences are most important among these factors.

The decomposition in Table 2 reveals that while weight effects are most important for the average difference in PCEPX and CPI inflation across all groups, scope effects (differences in what categories are included) account for much of this divergence in the *pattern* of inflation differences across groups (-0.08 percentage points per year for the bottom quintile, but over three times as large at -0.25 for the top quintile). Formula and ranking effects play smaller roles as well, though not nearly to degree of scope.

2.2 Time Period Differences and Dynamic Patterns

The most striking finding emerges when we examine how inflation inequality has evolved over time. Figure 1 provides two complementary views of this evolution. Panel (a) tracks annual inflation rates for the bottom decile, top decile, and overall population throughout the sample period, revealing the annual dynamics underlying the transformation. Throughout most of the sample period, the bottom and top deciles tracked closely with the overall population inflation rate, but notable divergences occurred during specific years. The 2008 financial crisis period shows heightened inflation inequality, with the bottom decile experiencing significantly higher inflation—likely reflecting the uncharacteristic drop in financial services prices. However, the most recent years show a striking reversal, with the top decile experiencing notably higher inflation rates, particularly evident in 2021-2022.

Panel (b) shows cumulative IS-PCEPX inflation by income decile for two distinct periods: 2000-2012 and 2012-2023. During 2000-2012, IS-PCEPX inflation followed the familiar pattern documented in CPI studies: a clear

[9]To accomplish this, we use McCully and Stewart. (2007) and Bureau of Labor Statistics (2024) to determine which categories are out-of-scope to each concept. The replication package from Jaravel (2024) was used to derive quintile-specific expenditure weights for the non-PCE items, as well as to generate the CPI estimates by equivalized income printed in the last row.

downward gradient from low- to high-income households. Panel (b) shows the bottom decile experienced cumulative inflation of approximately 31 percent compared to 27 percent for the top decile—a gap of about 4 percentage points over the 12-year period. This translates to roughly 0.3 percentage points higher annual inflation for the lowest-income households, consistent with the direction (though smaller in magnitude) of findings from CPI-based research.

However, the 2012-2023 period tells a dramatically different story. The downward gradient not only disappeared but showed signs of reversing. Panel (b) reveals that cumulative inflation was relatively flat across most of the income distribution, with the top decile experiencing slightly higher inflation than middle-income groups during this later period. The convergence is so pronounced that by the end of our sample period, inflation inequality had significantly diminished in the tails.

2.3 Drivers of Convergence

Figure 2 provides a decomposition of the inflation difference between the bottom and top deciles across the two time periods, revealing the underlying drivers of this evolution. As described in Section I, this decomposition is based on the Tornqvist price index formula. During 2000-2012, the inflation gap was driven primarily by gasoline and other energy goods, food and beverages, and housing costs—categories where lower-income households faced disproportionate price increases. The positive contributions from these sources created the familiar pattern of higher inflation for low-income households.

However, during 2012-2023, financial services and insurance emerged as the dominant factor, contributing negatively to the inflation gap (meaning it increased inflation more for higher-income households). This single category more than offset the continued positive contributions from traditional sources of inflation inequality, driving the overall convergence in inflation experiences.

The convergence stems from two primary factors: the rapid growth in financial services prices and the compositional differences in expenditure across income groups. Financial services and insurance prices grew at an exceptional pace during the latter part of our sample period—3.4 percent annually, faster than most major expenditure categories. This category includes imputed services from financial intermediation—charges that banks and other financial institutions implicitly levy for services like payment processing, account maintenance, and credit provision. In the NIPAs, these

imputed services are calculated based on the difference between interest received and paid by financial institutions, scaled by measures of financial activity and asset holdings.

Higher-income households are disproportionately exposed to financial services inflation for several reasons. They maintain larger and more complex portfolios of financial assets, engage in more frequent financial transactions, and utilize sophisticated banking services. They are also more likely to hold assets that generate imputed financial services, such as checking accounts, money market funds, and brokerage accounts. As Table 1 shows, financial services and insurance represent more than twice the expenditure share for top-quintile households (11.0 percent) compared to bottom-quintile households (4.5 percent).

2.4 Real Income Growth Implications

The implications of these findings extend beyond inflation measurement to our understanding of real income dynamics across the distribution. Figure 3a compares real disposable personal income growth across quintiles, deflating nominal income growth using either group-specific IS-PCEPX (light bars) or the aggregate PCEPX (as produced by BEA, dark bars).

Using income group-specific deflators has a modest impact on the real income growth gradient. While the bottom quintile experiences slightly higher growth than the top under the aggregate, deflator, this pattern is reversed for the group-specific deflator. However, the magnitudes are very small. Over the full 2000-2023 period, the gap in real income growth between the bottom and top quintiles is approximately 1-2 percentage points using either approach, with group-specific deflators showing a slightly larger gap than when using the aggregate deflator.

More importantly, the convergence in inflation experiences over time means this flattening effect has grown stronger in recent years. During the latter part of our sample period, differential inflation has become less crucial for understanding real income growth patterns across the distribution.

Figure 3b extends this analysis by comparing different combinations of income measures and price indices over 2005-2023. The figure shows that the choice between PI and adjusted money income (AMI), a more narrowly defined measure similar to Census Bureau definitions[10], matters more for real growth patterns than the choice between IS-PCEPX and group-specific

[10]For a full breakdown of AMI, see Fixler and Johnson (2020).

CPI deflators.[11] This suggests that income, which includes transfers and in-kind benefits, is crucial for understanding differences in growth.

The results demonstrate that while inflation inequality is present and measurable, its contribution to overall income inequality trends has been smaller and more dynamic than commonly understood and described. For our available time period, the story is not one of persistent, large disadvantages for low-income households, but rather of modest differences that have been converging over time as the structure of the economy and patterns of price growth have evolved.

3 Conclusion

Using the first income-stratified PCE price indices consistent with national accounts, we find inflation inequality has recently been converging rather than persisting. While the bottom decile experienced 0.3 percentage points higher annual inflation than the top decile during 2000-2012, this pattern reversed during 2012-2023. Leveraging a national accounts approach, we find annual gaps of 0.13 percentage points, compared with 0.29 percentage points in earlier research (Jaravel, 2024).

The choice of price index (PCE vs. CPI) can fundamentally alter conclusions about distributional patterns. The comprehensive nature of PCE captures expenditures at the national level, including those not directly made by households. Accordingly, we find a convergence in inflation, which stands in contrast to results from CPI-based studies. The primary driver of this pattern is rapid inflation in financial services and insurance, which disproportionately affects higher-income households due to their greater exposure to financial intermediation services.

Our analysis faces several limitations. As with other research exercises tying income to expenditures, the integration of BEA income distributions with BLS expenditure distributions requires harmonizing different data sources, potentially introducing measurement error. However, in order to create indices that represent national accounts (broad concepts), a degree of imputation is necessary. Our 2000-2023 period may not capture longer-term patterns, but allows us to focus on the more recent years, and thus the trend.

The integration of income and expenditure distributions within national accounts provides a template for extending distributional analysis to other

[11] This difference is especially pronounced in the bottom quintiles, due to the inclusion of health in PI, which drives the results. Results available upon request.

economic measures. The prominence of financial services inflation highlights the need for better understanding how the financial sector affects household experiences across the income distribution. Our methodology enables inflation inequality analysis using the Federal Reserve's preferred price index, potentially informing research on monetary policy and distributional effects.

Tables and Figures

Table 1: PCE Composition and Inflation, 2000-2023
All values are expressed as percentages

		Eq. DPI quintiles					
Category	All	0-20%	20-40%	40-60%	60-80%	80-100%	**Inflation**
Goods							
Motor vehicles & parts	4.2	3.2	3.7	4.3	4.6	4.3	**1.2**
Food & beverages (off-premises)	7.7	10.1	8.9	8.2	7.7	6.3	**2.4**
Gasoline & other energy goods	2.9	3.1	3.2	3.2	3.1	2.4	**4.0**
All other goods	18.7	18.0	18.2	18.7	19.1	18.8	**-0.3**
Services							
Housing & utilities	18.1	20.0	18.7	18.3	17.9	17.3	**3.1**
Health care	15.9	18.6	20.8	18.7	15.8	11.4	**2.4**
Financial services & insurance	7.7	4.5	5.3	6.1	7.2	11.0	**3.4**
All other services	24.8	22.5	21.2	22.5	24.6	28.5	**2.7**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**2.2**

Note: The first part of this table provides the composition of PCE, in major categories, for all households, and then by quintile, as ranked on equivalized DPI. The numbers are averages for the full period (2000-2023). The final column provides the annualized change in the PCE price index from 2000-2023 for each item.

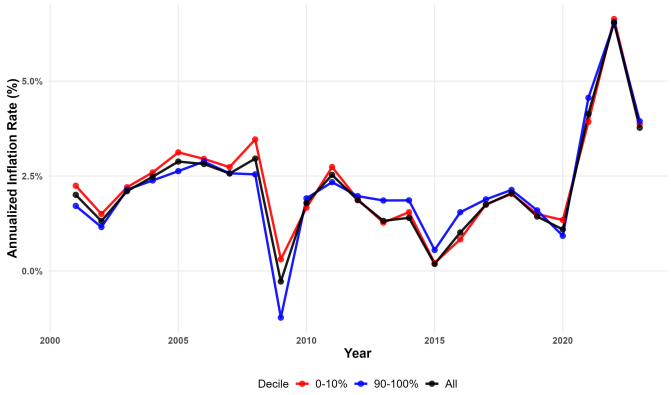
Table 2: Price Index Decomposition (2000-2023)
All values are expressed as percentages

Price Index Decomposition	Quintile of Equivalized Income					
	All	0-20%	20-40%	40-60%	60-80%	80-100%
PCE Price Index	**2.20**	**2.28**	**2.23**	**2.18**	**2.15**	**2.21**
+ Ranking effect	0.00	0.06	0.06	-0.01	-0.01	-0.04
+ Formula effect	0.14	0.12	0.10	0.15	0.12	0.17
+ Scope effects	-0.15	-0.08	-0.06	-0.09	-0.13	-0.25
+ Weight/other effects	0.35	0.38	0.37	0.39	0.42	0.38
Equals: CPI (Derived from Jaravel (2024))	**2.54**	**2.76**	**2.70**	**2.61**	**2.55**	**2.47**

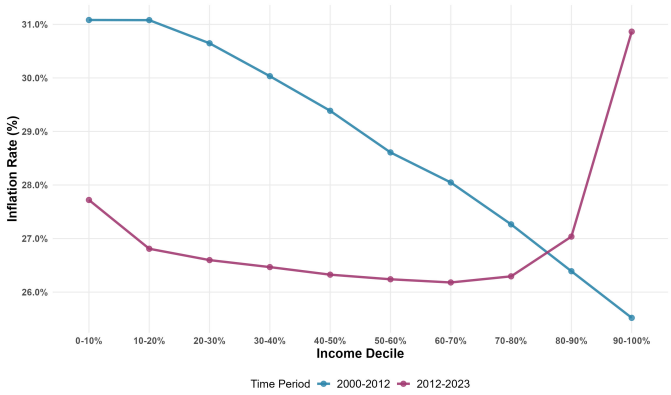
Note: This table provides data users an decomposition of the differences between the PCE price index and the CPI, as applied to the current exercise, both for the full population and the stratification by quintile. The PCE Price index for All is the official BEA measure. The overall decomposition is extended to the quintile level, beginning with quintiles constructed using equivalized DPI, and then subsequently reconstructed for each row. The final row is CPI, ranked on equivalized family income as defined in the CE, as reconstructed from the data files provided as part of the Distributional CPI (D-CPI) project (Jaravel, 2024). Beginning with PCE, the first adjustment is change in average inflation due to the "ranking effect", from calculating the PCEPX by CE family income using the CE. Next, the "formula effect" is derived from re-calculating the PCEPX using the CPI's Lowe formula. Next, the "scope effect" refers to including (excluding) items definitionally in CPI (PCE) to reconcile the indices. Finally, "weight/other effects" is computed as the remainder between the scope-adjusted PCEPX and the indices constructed from the Jaravel (2024) replication files.

Figure 1: PCE Price Inflation by Income Decile (2000-2023)

(a) Average Annual Inflation: Decile Comparison

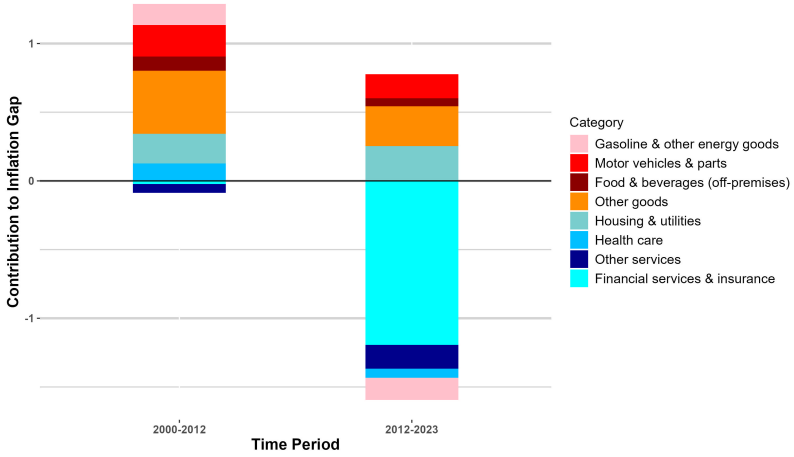


(b) Cumulative Inflation By Period



Note: This figure examines inflation by decile in two ways. Panel (a) shows annual inflation for the bottom decile (0-10%), top decile (90-100%), and whole distribution. Income deciles are based on equivalized DPI. Panel (b) shows cumulative inflation by decile for two periods.

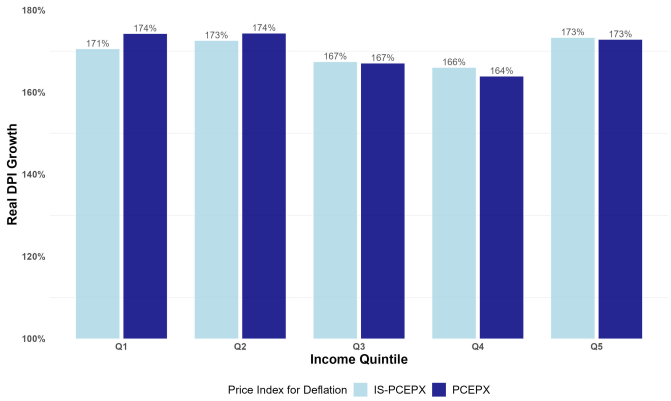
Figure 2: Decomposition of Inflation Gap by Time Period
Comparison of Bottom Decile (0-10%) to Top (90-100%)



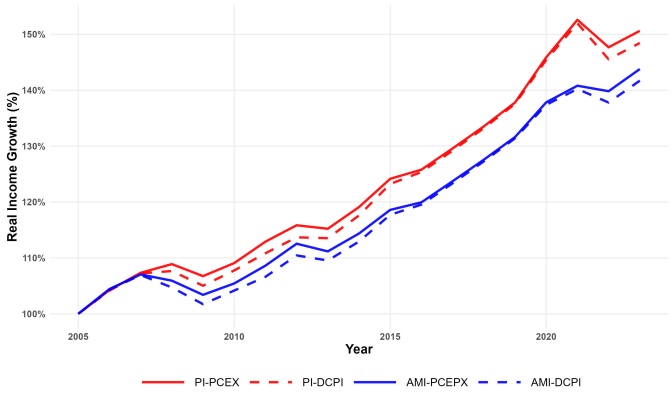
Note: This figure shows a Tornquist-formula decomposition of inflation differences (in natural logs) between the bottom income decile and top income decile across two time periods. The decomposition breaks down the overall inflation gap into contributions from specific expenditure categories, where positive values indicate categories in which low-income households experienced higher inflation than high-income households. Income deciles are based on equivalized DPI.

Figure 3: Measuring "Real" Income Growth (2000-2023)

(a) Real DPI: Comparing PCEPX and IS-PCEPX



(b) Comparing Income Definitions and Price Indices



Note: This figure compares real growth under different definitions of income and price indices. Panel (a) compares growth in DPI by quintile, deflated alternatively by IS-PCEPX (light columns) and PCEPX (dark columns). The height of each column represents cumulative growth in income over the period. The y-axis is truncated at 100% at the bottom. Quintiles are based on equivalized DPI. Panel (b) shows the differences in income growth, deriving from income definitions and price indices, using four lines: (1) PI-PCEX: growth in PI, deflated by PCEPX [red solid], (2) PI-DCPI: growth in PI, deflated by CPI [red-dashed], (3) AMI-PCEPX: growth in adjusted money income (AMI), deflated by PCEPX [blue solid], and (4) AMI-DCPI: growth in AMI, deflated by CPI. AMI is a subset of CPI, similar to the definition of money income used by the census bureau, but scaled to national accounts totals. It excludes health care, financial imputations, and some welfare transfers including in PI, but not in money income. This series is available for 2005-2023 because the income-group CPIs are source from the BLS and are available only back to 2005, and accordingly, 2005 is the base year.

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