The Polarization of Personal Saving

FCSM
October 2024

Marina Gindelsky
Bureau of Economic Analysis

Robert Martin
Bureau of Labor Statistics

Research Question

- Income and consumption are **both** key determinants of well-being
  - Need to go beyond single-dimension inequality (Garner and Short 2013, Fisher et al. 2022)
  - Gain insights into how tax and transfers will impact their relative rankings and spending patterns (estimate marginal propensity to consume) (Fisher et al. 2020, Kaplan and Violante 2014).
- Saving relates income and consumption directly for the same households
- Existing estimates of saving use data and measurement concepts which are not consistent with national accounts

Q: How do we distribute personal saving to households, such that income, consumption, and saving allocations sum to aggregate economic growth?

- ➢ Construct a household-level joint distribution of income and consumption, such that the values sum to national accounts totals

Why a national accounts framework?

- Household level effects (micro) add up to economy-wide impacts (macro)
- Tax and transfer policy are done at the macro level, but have micro implications
- Stiglitz et al. (2009) report: push to go “Beyond GDP” and emphasize well-being
- Combining work of OECD Groups
  - Expert Group on Disparities in National Accounts (EGDNA): Distribute national accounts totals to households
  - Expert Group on Income, Consumption, and Wealth (EGICW): Create a joint distribution of income, consumption, and wealth
- Build on significant volume of previous independent distributional work with a few joint distribution exercises (see BLS Working Paper #575)

Data: 2004-2022, 2017 is reference year for results

- Macro aggregates: National Income and Product Accounts (**NIPA**) by BEA
  - **Income:** Personal Income (**PI**) and Disposable Personal Income (**DPI**) [NIPA table 2.9]
  - **Consumption:** Personal Consumption Expenditures (**PCE**)[1]

- Microdata
  - **Income:** Annual Social and Economic Supplement of the Current Population Survey (**CPS**)
    - 2022: 56,839 households: detailed income questions (2021 survey year)
  - **Consumption:** Consumer Expenditure Survey (**CE**)
    - 2022: 6,310 consumer units with ≥2 interviews: expend. occurring Nov. 2021 –Feb. 2023

- [1]As in other distributional exercises (see below), here the term "consumption" is used as shorthand to mean "consumption expenditure". However, these two concepts are not quite equal. For instance, as measured in the national accounts and microdata, consumption expenditures do not include inter-household transfers of goods or services.

PI Methodology Overview

- **PI** is the income received by persons from participation in production, government and business transfers, service flows from homeownership, and holding interest-bearing securities and corporate stock
- **DPI (PI – taxes)** is closest to the measure of economic resources available to households to purchase goods and services
- Strategy (see Technical document and working paper for details)
    1. Identify a NIPA total to be distributed (over 70 components of PI)
    2. Identify CPS variable (s) (+ outside data) to allocate component
    3. Sum all household components (wages, business income, interest, dividends, imputed interest, Medicare, Medicaid, Social Security, WIC, SNAP, etc.) to Hh Inc

    - Personal Income = Household Income - *Household Current Transfer Receipts from Nonprofits - Nonprofit Institution Transfer Receipts from Households + Nonprofit Institution Income*

    4. Equivalize (divide by $\sqrt{household\ size}$) and rank households to compare households of different sizes to each other

PCE Distributional Methodology

PCE is a measure of the goods (durable and nondurable) and services purchased by, or on behalf, of U.S. residents.

1. Identify PCE product type (NIPA Table 2.4.5) to distribute
2. Identify CE variable(s) for PCE component – perform allocations and imputations (see BLS method, updated since Dec 2022 release).
3. Augment CE health expenditures with administrative & survey data
4. Scale up CE to PCE major product aggregates using proportional allocation for remaining gap
5. Divide CU expenditures by $\sqrt{cu\ size}$ to derive equivalized PCE

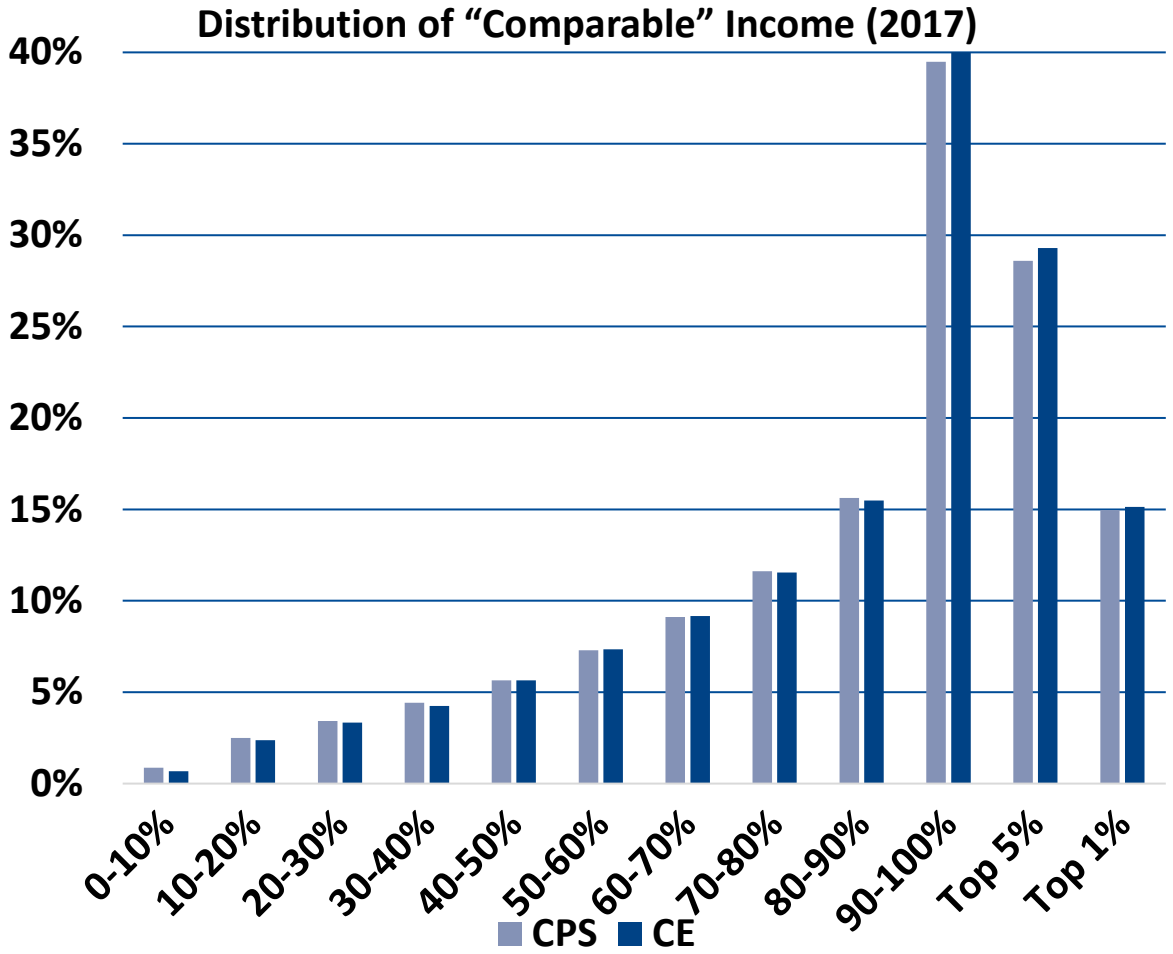
Main Measurement Challenges

- Survey Challenges
  - One survey does not have all info
  - CPS and CE exclude institutional households → Add NPISH imputation
  - Imputing consumption items from a relatively small sample
  - Underrepresented at the top: CPS and CE are known to underrepresent high income households → tail adjustment for both surveys; tax info for income, but no target for consumption tail (do pareto adjustment)
- Misalignment
  - Some macro concepts don't match survey questions well (e.g., see Passero et al. 2014 for CE-PCE differences). Others have no micro equivalent
  - Income dist. of CPS lies to the right of CE (more skewed)
  - Harder to match income to consumption when both contain large amounts of imputations (i.e., items not in bank accounts), but imputations must be allocated

Joint Methodology Overview

1	Create a “comparable” income measure between CPS & CE	Labor income, interest, dividends, social security, unemployment, and other transfers
2	Assigning CU-level PCE to CPS Households	Multiple Imputation with Predictive Mean Matching by decile of equivalized comparable income
3	Harmonize overlapping components of PI/DPI & PCE	Allocate concepts in both PCE and PI (implicit rental inc. of owner-occ. & health ins. + employer contrib.) using the same survey such that personal saving is unimpacted.
4	Computing Distributional Estimates based on equivalized DPI	Create a joint distribution of PI & PCE, and subsequently PS by decile of equivalized DPI

Comparable Income and Independent Distributions

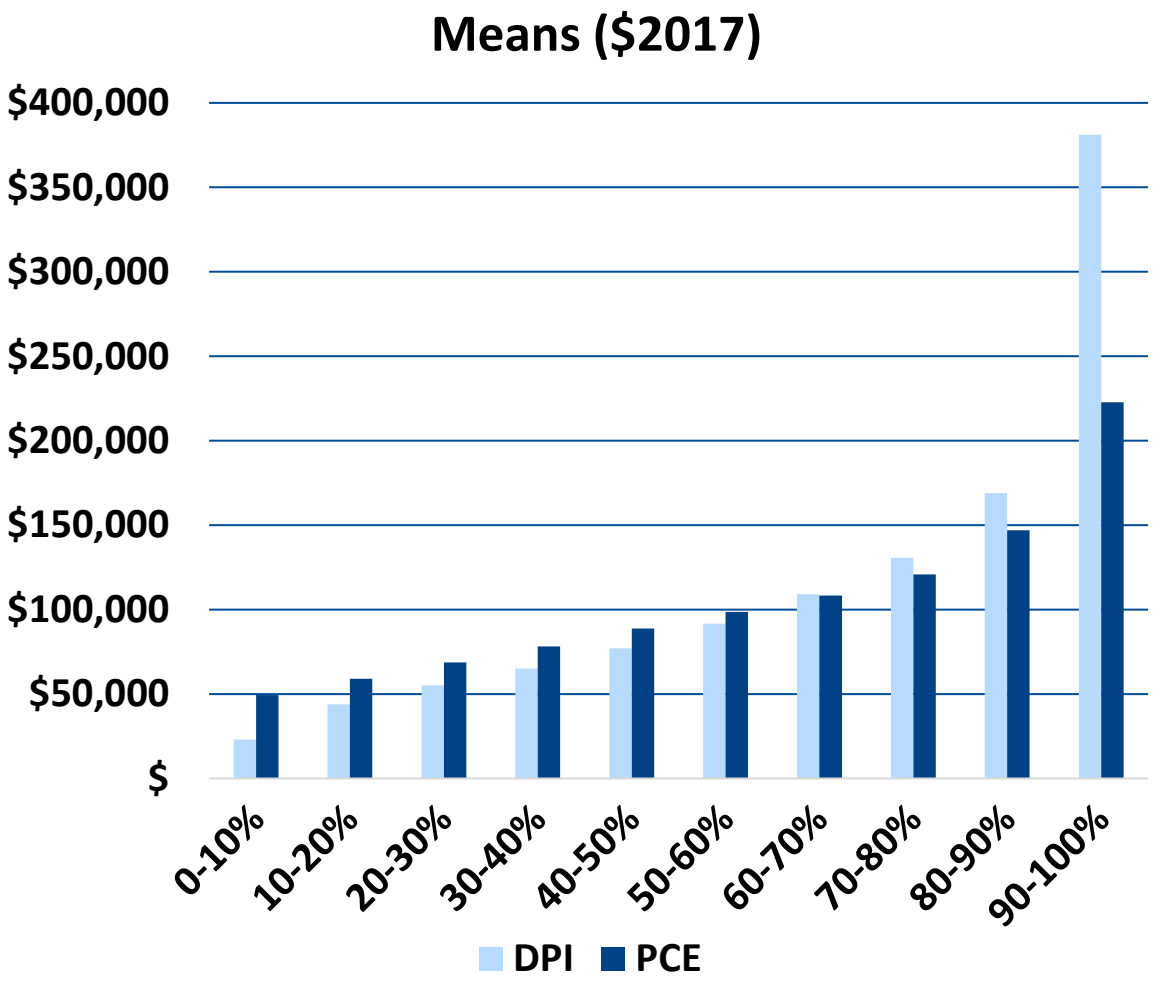


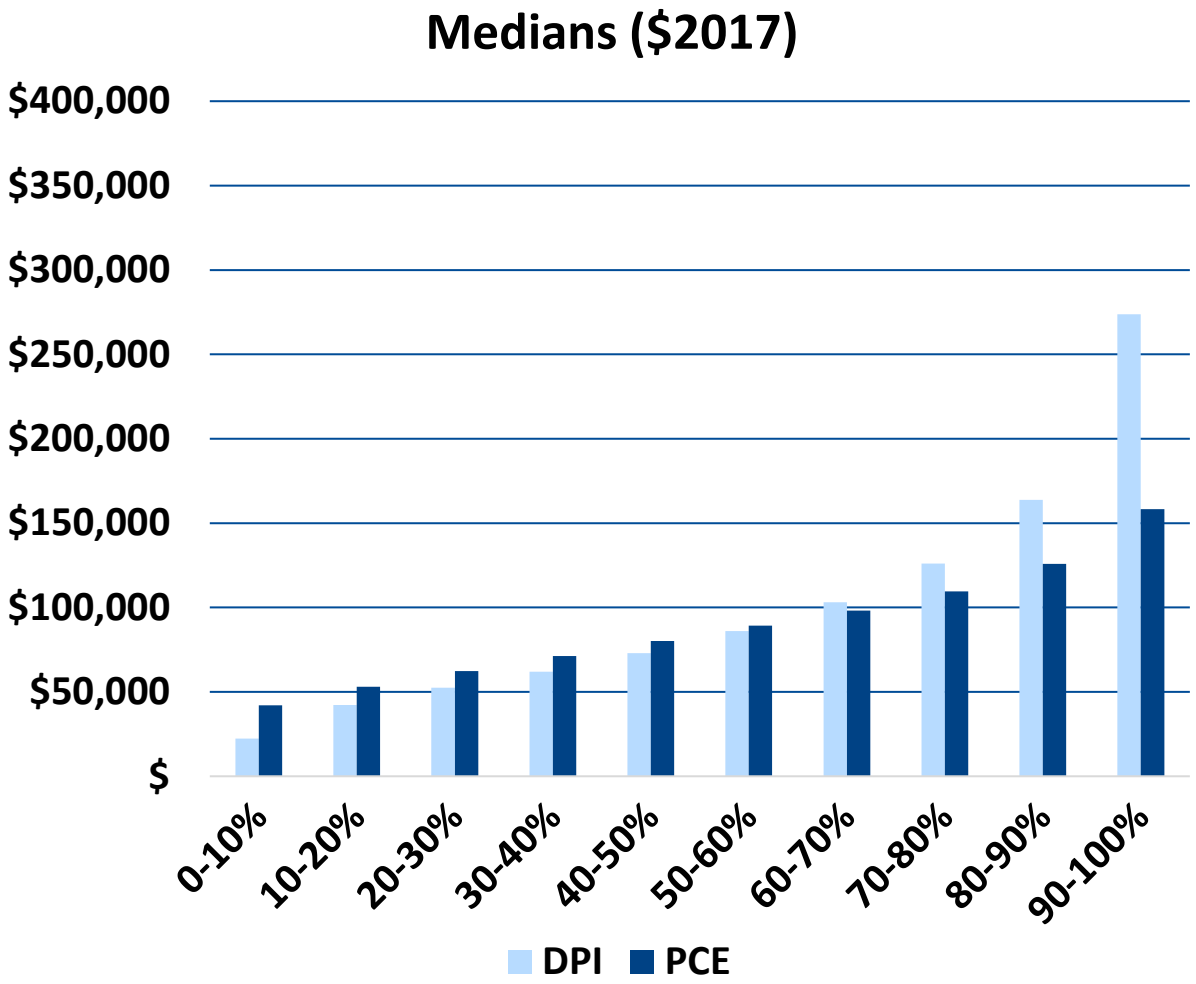
Comparing the independent distributions (2017)

Inequality Metric	DPI ($2017)	PCE ($2017)
Mean	$114,542	$102,371
Median	$82,370	$82,940
0-20% Share	5.9%	8.6%
20-40% Share	10.6%	13.0%
40-60% Share	14.8%	16.4%
60-80% Share	21.0%	21.2%
80-100% Share	47.8%	40.9%
Top 1% Share	11.5%	8.7%
Top 5% Share	23.2%	19.1%
Gini Index	0.411	0.331
90/10 Ratio	4.90	3.62

- Comparable income is similarly distributed in CPS & CE
- Income distribution is significantly less equal than consumption (biggest difference is in top 5%)
- Median income and consumption are roughly equal

Joint Distribution: Real Means and Medians (ranked on eq. DPI)





Income Share	Mean DPI	Mean PCE
Top 5%	$531,989	$245,219
Top 1%	$1,302,517	$222,249

Mean (or median) consumption is higher than income at the bottom, about parity in the middle, and much lower at the top

Joint Distribution Results: Cross Shares (2017)

- These tables show the share of (a) population, (b) DPI, and (c) PCE for each joint quintile
  - E.g., 11% of households are in the bottom quintile of both eq. DPI & eq. PCE. They have 3% of DPI and 4% of PCE
  - 80% of households are within 1 quintile of PCE/DPI

- Very similar results to Fisher et al. 2022, despite different definitions and concepts (e.g., we scale to NIPAs, include health insurance and exclude capital gains)

Equivalized Disposable Personal Income Quintiles	Equivalized Personal Consumption Expenditure Quintiles					
		0-20%	20-40%	40-60%	60-80%	80-100%
	(a) Share of Households					
	0-20%	11.1%	4.5%	2.3%	1.4%	0.7%
	20-40%	5.3%	6.5%	4.5%	2.5%	1.3%
	40-60%	2.2%	5.0%	5.8%	4.5%	2.4%
	60-80%	1.1%	2.9%	5.1%	6.3%	4.6%
	80-100%	0.4%	1.1%	2.4%	5.2%	10.9%
	(b) Share of DPI					
	0-20%	3.2%	1.3%	0.7%	0.4%	0.2%
	20-40%	3.1%	3.5%	2.3%	1.2%	0.5%
	40-60%	1.9%	3.9%	4.3%	3.1%	1.7%
	60-80%	1.3%	3.2%	5.4%	6.7%	4.6%
	80-100%	0.9%	2.3%	5.2%	12.0%	27.5%
	(c) Share of PCE					
	0-20%	4.1%	2.5%	1.5%	1.2%	1.0%
	20-40%	2.5%	4.0%	3.3%	2.4%	1.8%
	40-60%	1.2%	3.3%	4.8%	4.6%	4.0%
	60-80%	0.7%	2.1%	4.5%	7.0%	7.9%
	80-100%	0.1%	0.7%	2.1%	6.2%	26.2%

Distribution of Personal Saving (PS)

- PS is defined as:
  - Personal Saving (Line 34) on Table 2.1 = DPI (Line 27) – Personal Outlays (PO) (Line 28) [PCE (line 29]+Other Personal Outlays (Lines 30:31)]

Table 2.1. Personal Income and Its Disposition

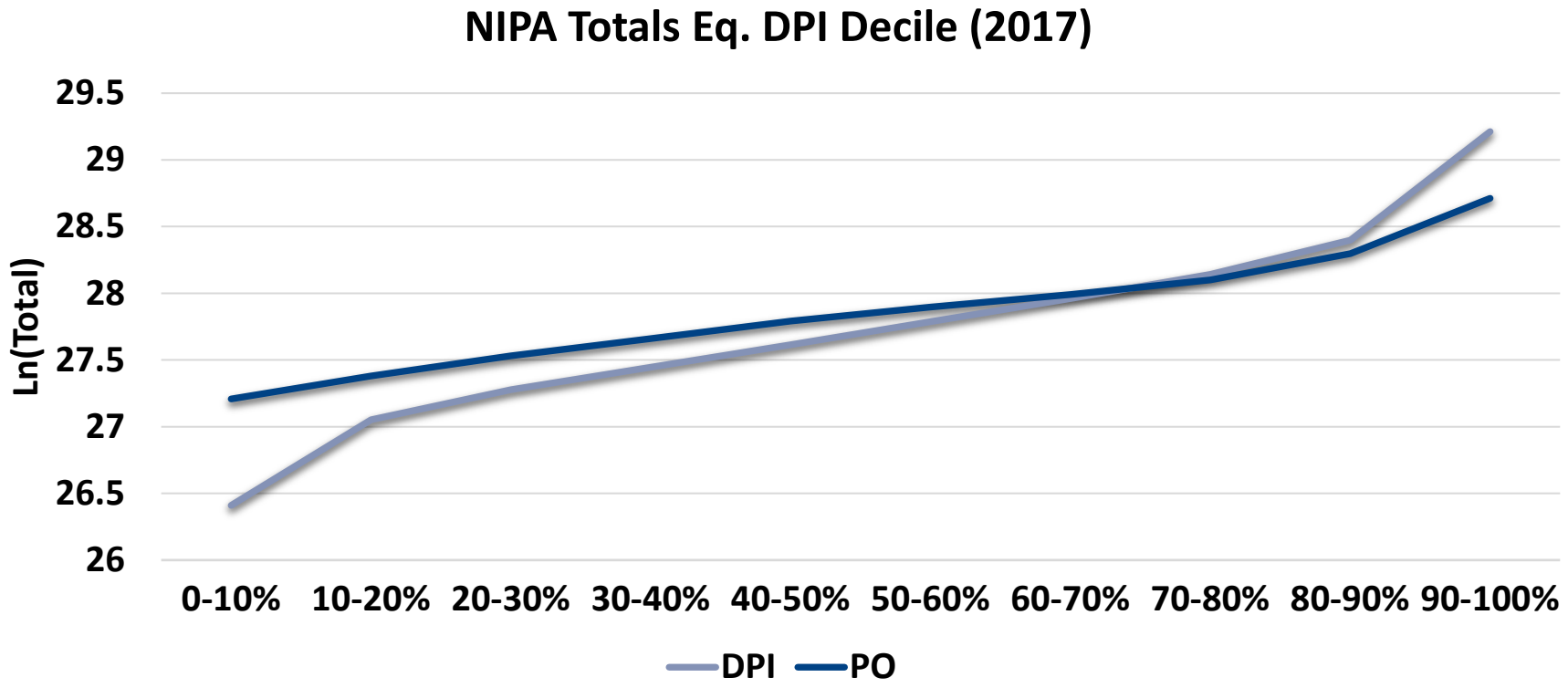
[Billions of dollars]

Last Revised on: March 28, 2024 - Next Release Date April 25, 2024

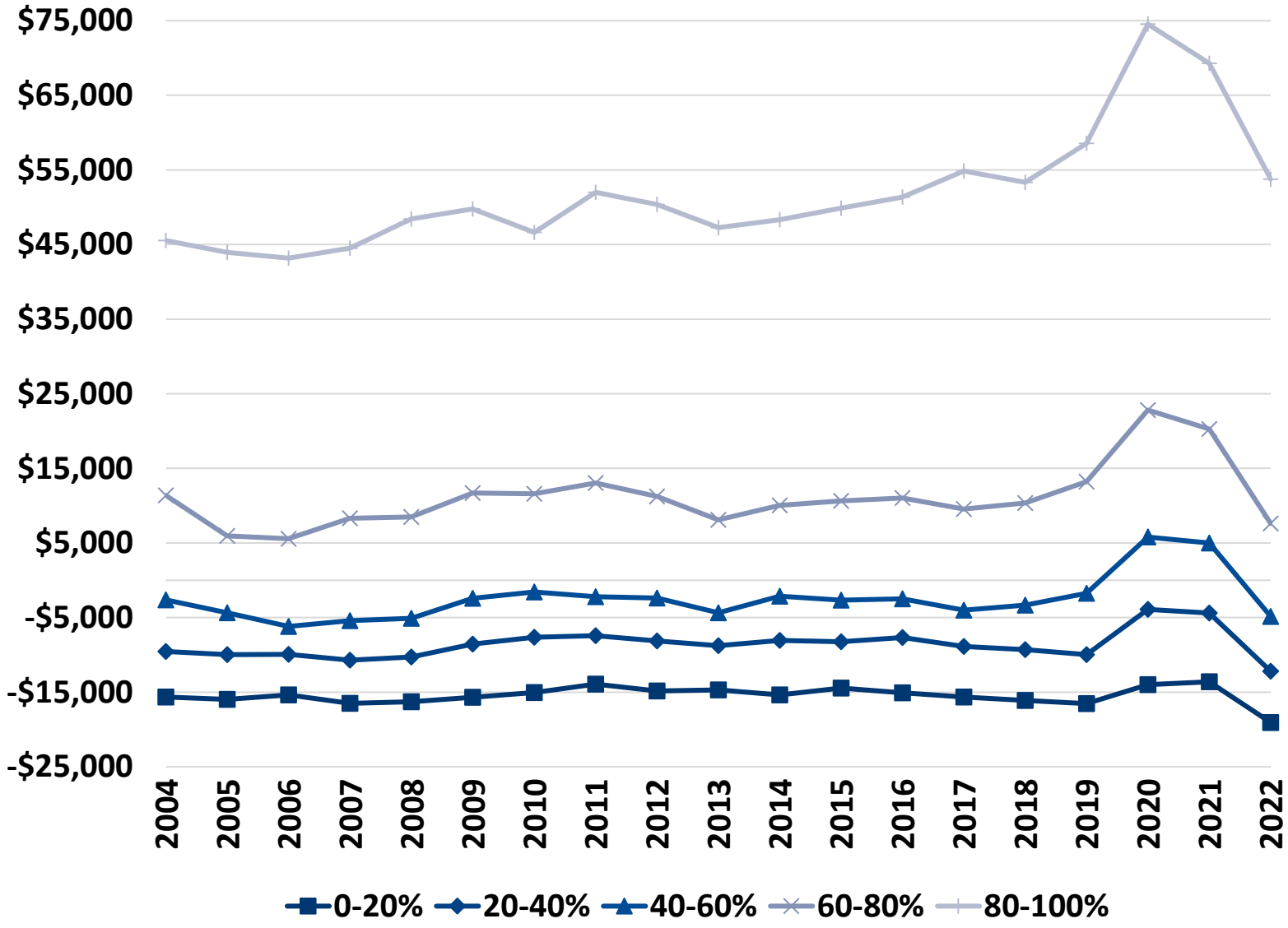
Line		2017	2018	2019	2020	2021	2022	2023
27	**Equals: Disposable personal income**	**14,613.9**	**15,454.0**	**16,157.0**	**17,372.5**	**18,664.4**	**18,702.5**	**20,218.9**
28	**Less: Personal outlays**	**13,772.3**	**14,457.4**	**14,966.1**	**14,694.0**	**16,543.9**	**18,079.7**	**19,305.1**
29	Personal consumption expenditures	13,290.6	13,934.4	14,417.6	14,206.2	16,043.0	17,511.7	18,570.6
30	Personal interest payments[4]	290.4	321.3	340.8	285.8	273.6	326.1	489.2
31	Personal current transfer payments	191.3	201.6	207.6	202.0	227.3	241.8	245.2
32	To government	104.6	111.3	114.6	108.6	120.2	127.7	130.8
33	To the rest of the world (net)	86.7	90.3	93.0	93.3	107.1	114.1	114.4
34	**Equals: Personal saving**	**841.6**	**996.7**	**1,190.9**	**2,678.6**	**2,120.5**	**622.8**	**913.8**

Savings Distribution Methodology

- PI and PCE distributed (modified) as previously discussed, other items as follows:
  - **Personal interest payments:** interest payments as reported by respondents in CE
  - **Personal current transfer payments:** partially distributed using payment info in CE (including license/registration fees) where available. Remainder allocated to be distributionally neutral
- Households ranked on eq. DPI, and then PS is presented by eq. DPI decile



Real Median PS by Quintile (ranked by eq. DPI) ($2017)

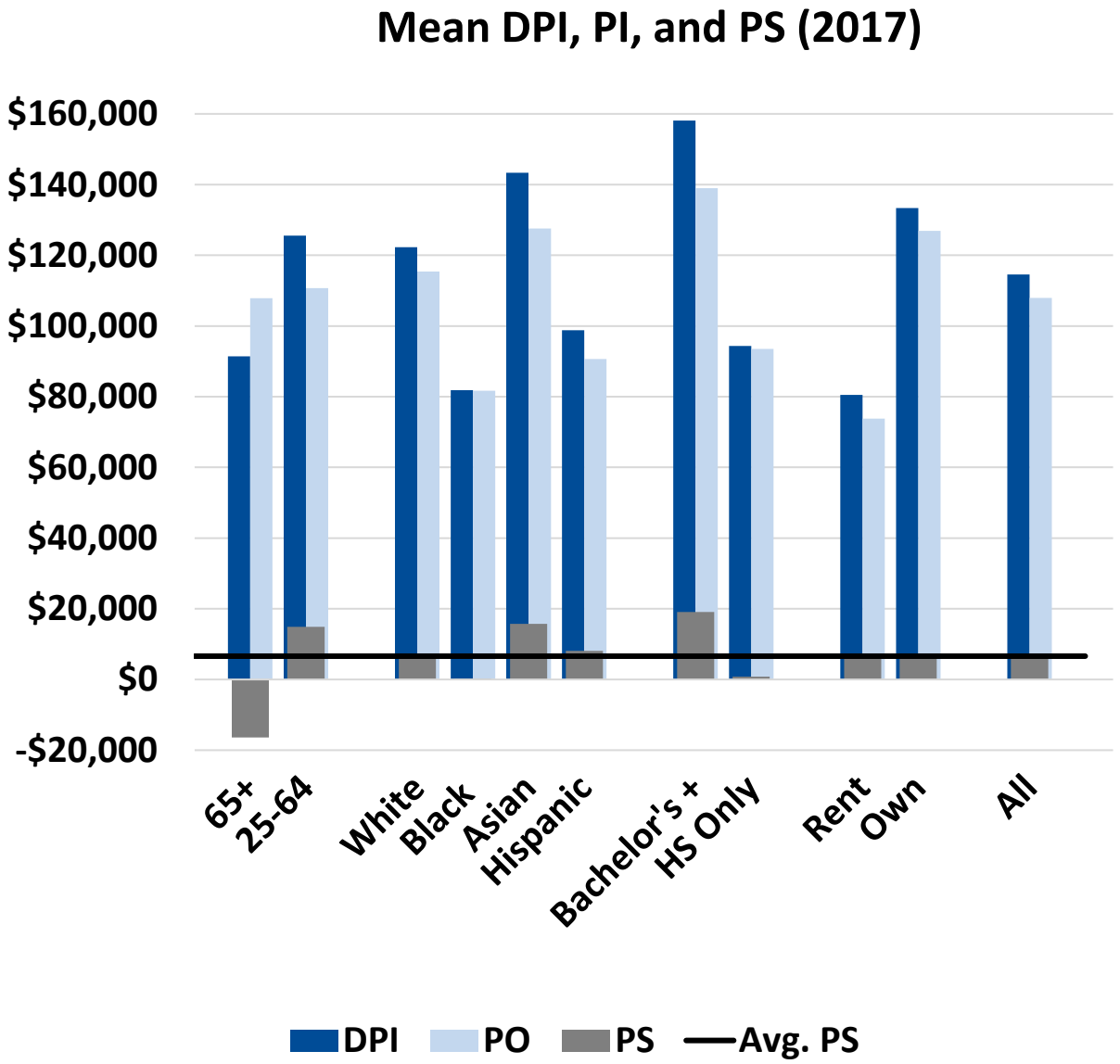


Outlays are higher than income throughout for the bottom 40%

Sig. increases for the top quintile, especially during COVID (27% increase from 2019-2020)

- Garner et al. (2024) find big changes in consumption at the top of the distribution (e.g., reduced consumption of food away from home + entertainment)

Average DPI, PO, and PS by Demographics (of Reference Person)

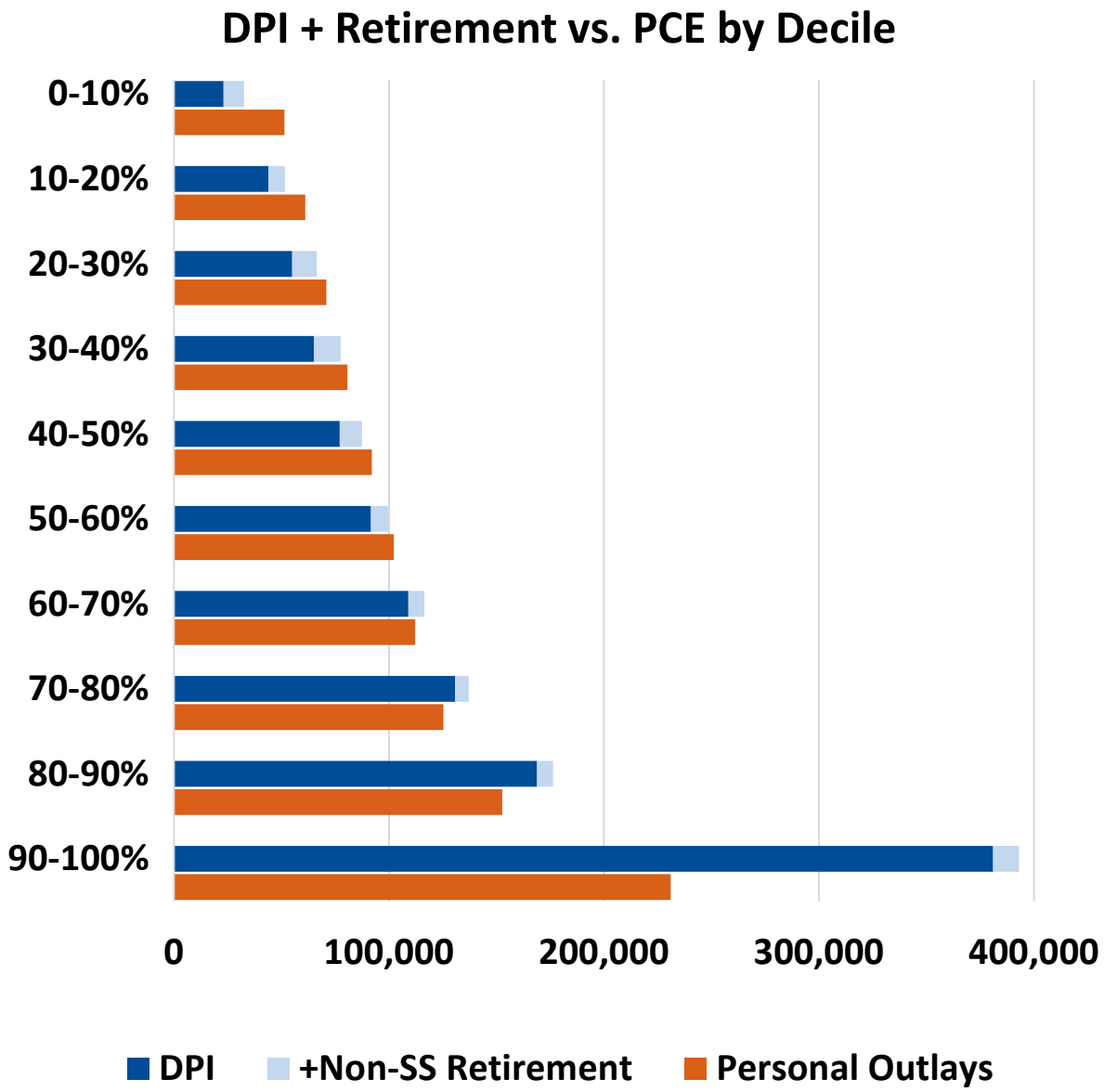


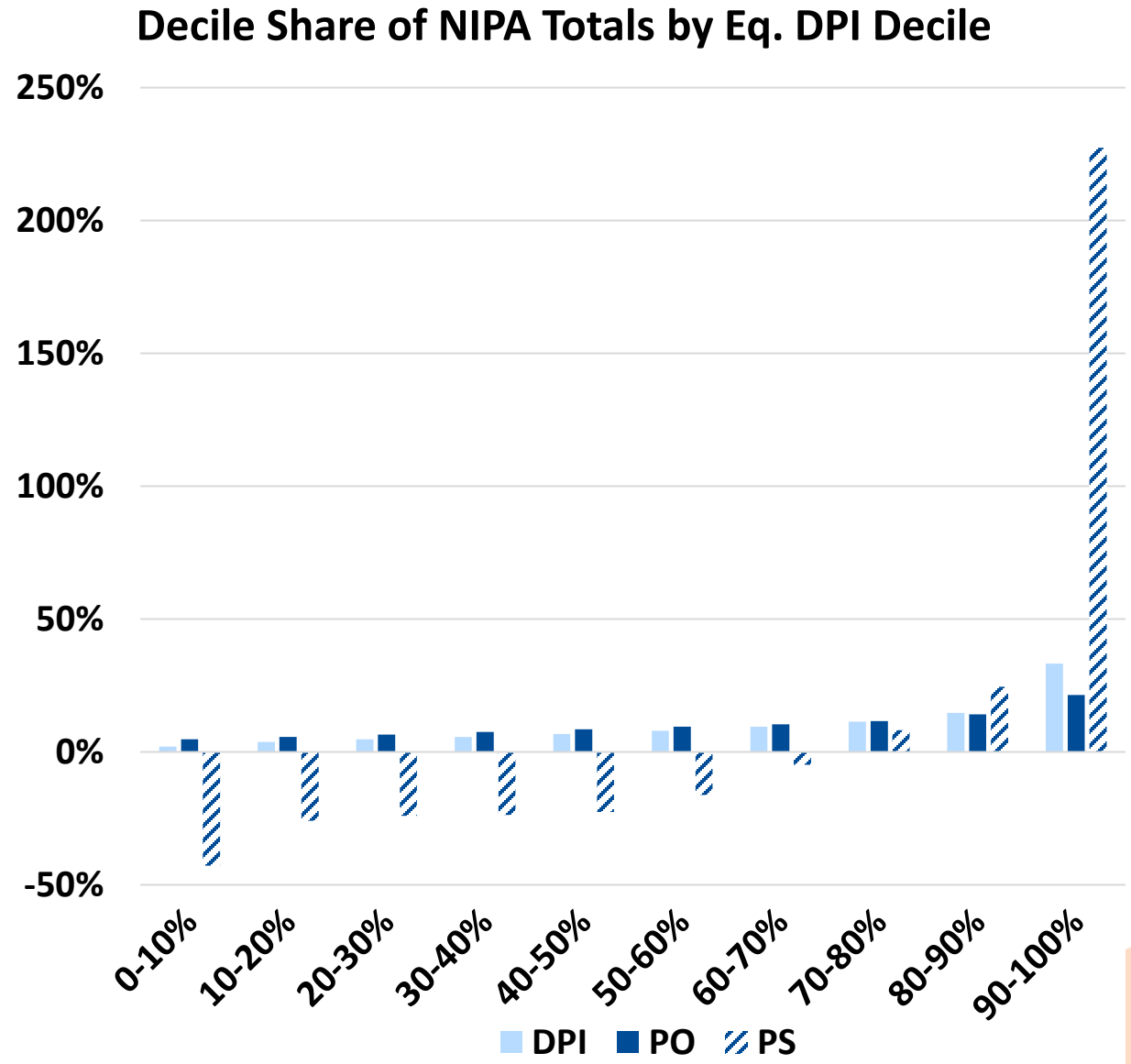
- Average PS (2017) was $6,596 = 5.8% of average DPI
- All groups had average PS>0, except age 65+ (likely due to missing ret income)
  - Average PS<$1,000 for Black ($212) and HS only ($829) ref. persons
  - Highest average PS for those with at least Bachelor's ($19,125) and Asian ref. persons ($15,735)
- Average PS ranges from 0.3%-13.8% of PO

Why is PS negative for lower quintiles?

- PCE allocated values for large **financed** purchases (e.g., vehicles) may be significantly higher than cash outlays
  - E.g., 80% of new car and truck purchases are financed (NADA)
  - 2023Q2: avg. amount financed = $40k, avg. down payment = $7k, avg. monthly payment = $733 (Edmonds)
- PI does not include retirement income disbursements, other than social security
  - Can be a significant source of income for retired households
  - Difficult to estimate potential distributional impact of exclusion
    - Bee and Mitchell 2017 show admin reports are about double CPS survey estimates pre-2018 CPS redesign (2012 data)
    - CPS redesign results in significantly higher retirement disbursement values (Semega and Welniak 2015) closer to admin totals, but underreporting is still likely to vary across the distribution
- Other microdata explanations may include
  - Other sources of income definitionally not included in PI
  - Underreporting and misreporting of income in surveys, including item non-response
- **Consumption may be financed by debt/other assets. Do not observe household balance sheet**

PS by Deciles of DPI (2017)





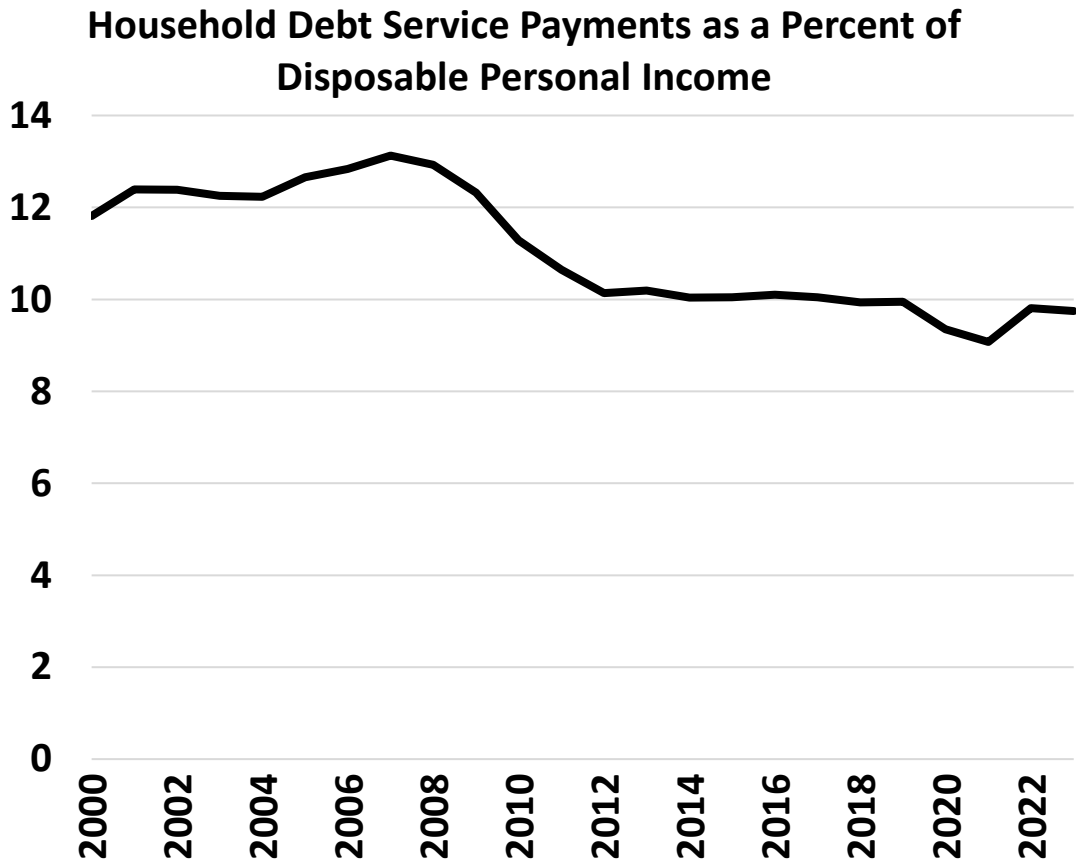
Other Saving Estimates

- Micro saving estimates based on household data: Balestra and Oehler (2023)
  - U.S. estimates prepared for OECD ICW group, using SCF (2016)
  - Saving by income quintile

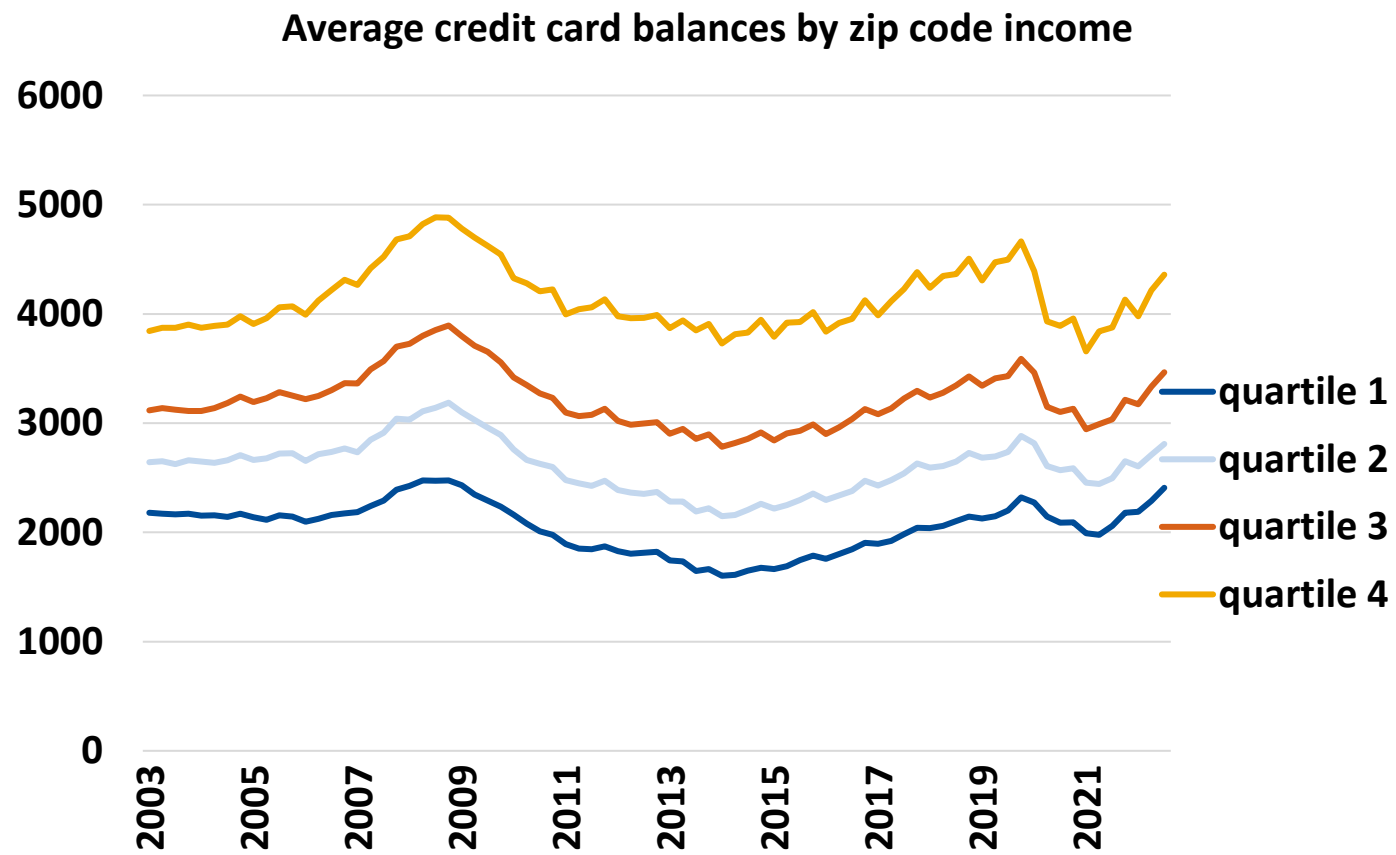
Inc Quintile	Mean Savings	Median Savings	Ratio: Inc/Cons	Share of hh with savings>0
0-20%	-10,806	-8,727	0.58	16%
20-40%	-2,654	-549	0.87	48%
40-60%	8,719	10,073	1.17	71%
60-80%	26,144	28,466	1.50	88%
80-100%	161,522	73,269	1.82	97%

- Federal reserve banks have produced estimates of “excess savings” – a separate concept covering deviation from the long-run savings rate
  - A number of academic studies also look at this concept
  - Where income distributions are mentioned, find that vast majority of excess savings held by top, and very little by bottom quintiles
- Some work on MPC & MPS – explore estimating these coefficients for future work

Debt



Source: FRED (Series=TDSP)



Source: NYFED, LSE

	All	0-20%	20-40%	40-60%	60-80%	80-90%	90-100%
Credit Card balance as a share of household inc by inc quantile	5.7%	2.1%	3.8%	4.4%	6.8%	8.7%	12.5%

Source: FED SCF tables for 2019

Conclusions

- **PS is negative (and stable) for bottom half of the distribution**
  - Considerable agreement between income and consumption rankings – 80% within one quintile
  - Exclusion of income sources such as retirement and inter-household transfers
  - Income mismeasurement
  - Debt, including large financed purchases
  - Negative saving is consistent with Balestra and Oehler (2023)
- Demographic composition is different across quintiles
  - Average PS is highest for Asian households and those with at least Bachelor degrees, and lowest for Black, elderly, and lower education households
  - Higher share of Black, young, and HS educated hh in bottom joint decile, than in independent
  - Higher share of hh with at least Bachelor's degrees in top joint decile than in independent
- Confirm consumption is distributed significantly **more equally** than income
  - The top quintile (when ranked on equivalized DPI) **has 36% of PCE (compared to 48% of DPI),** while the bottom quintile has 10% of PCE (compared to 6% of DPI) in 2017
  - COVID-era transfers led to an increase in inequality of PCE from 2019-2021 and decrease in inequality of DPI – jointly the distribution became less concentrated in the tails

References

- Balestra, C. and F. Oehler. 2023. “Measuring the Joint Distribution of Household Income, Consumption and Wealth at the Micro Level.” *OECD Papers on Well-being and Inequalities*, OECD Publishing: Paris, 11, pp. 1-109.
- Bee, A. and J. Mitchell. 2017. “Do Older Americans Have More Income Than We Think?” Proceedings. Annual Conference on Taxation and Minutes of the Annual Meeting of the National Tax Association, 110, pp. 1-85.
- Fisher, J., Johnson, D., Smeeding, T. and J. Thompson, 2020. “Estimating the Marginal Propensity to Consume Using the Distributions of Income, Consumption, and Wealth,” *Journal of Macroeconomics*, 65, 103218.
- Fisher, J., Johnson, D., Smeeding, T. and J. Thompson, 2022. “Inequality in 3-D: Income, Consumption, and Wealth.” *Review of Income and Wealth*, 68, 1, pp.16-42.
- Garner, T. 1993. “Consumer Expenditures and Inequality: An Analysis Based on Decomposition of the Gini Coefficient.” *The Review of Economics and Statistics* 75.1, pp. 134-138, MIT Press.
- Garner, T. and K. S. Short. 2013. “A Multi-dimensional Measure of Economic Well-Being for the U.S.: The Material Condition Index” in Joint Statistical Meetings Proceedings August 2013, Alexandria, Virginia: American Statistical Association, pp. 294-308 (Link to BLS working paper version).
- Garner, T., Matsumoto, B., and J. Schild. 2024. “Consumption Inequality During and After the COVID-19 Pandemic”. BLS Working Paper. March.
- Gindelsky, M. and R. Martin. 2024. “The Polarization of Personal Saving.” BLS Working Paper #575. June.
- Kaplan, G., and G. Violante. 2014. “A Model of the Consumption Response to Fiscal Stimulus Payments,” *Econometrica*, 82, 1199–239.
- Semega, J. L., and E. Welniak Jr. 2015. "The Effects of the Changes to the Current Population Survey Annual Social and Economic Supplement on Estimates of Income.“ Census Bureau Working Paper. January.
- Stiglitz, J.E., Sen, A. and J. Fitoussi. 2009. “Report by the Commission on the Measurement of Economic Performance and Social Progress.” United Nations Press, 2009.

Thank you!

Contact: marina.gindelsky@bea.gov