How downward redistribution makes America richer: An empirical, "money view" model of spending, wealth concentration, and wealth accumulation

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Abstract

A model is constructed based on two monetary series: household wealth and consumption spending, and their distributions between top-20% and bottom-80% income groups. Based on parsimonious assumptions, it concludes that at a given level of wealth, and given large observed long-term differentials in spending out of wealth or "wealth velocity" across the wealth/income distribution, downward wealth redistribution and less-concentrated wealth result in more total spending, and more total wealth accumulation. Differential results are examined for different levels of wealth concentration and wealth redistribution.

What are the economic effects of wealth concentration, and wealth redistribution, on wealth accumulation? The dominant body of economic theory and "accumulation"-based growth models, rooted in theories of behavior, incentives, and individual reaction functions – "microfoundations" – holds that at any level of wealth concentration, downward redistribution from the rich to the poor distorts incentives, causes deadweight loss, and makes us collectively less wealthy than we would be otherwise.

These growth models also, back to Solow and beyond, rely on a silent assumption: that "accumulation" is attributable to saving out of income – that "what we produce minus what we consume" fully explains changes in assets/net worth/wealth.¹ If we accept national accountants' measures of saving and wealth, that assumption is empirically insupportable. (See figure below; FRED series: <u>fred.stlouisfed.org/graph/?g=BqGI</u>.)

The first two measures in the following graph depict year-over-year wealth changes. (The second measure of wealth is from the Fed's Table B.1 in the Financial Accounts, Z.1 report, which uses an alternative methodology to estimate U.S. Net *Wealth*.) Measures of "capital" accumulation estimating production minus consumption – net saving, net investment spending, or net capital formation (the IMAs' preferred label) – don't come close to explaining either measure of wealth accumulation.²

Important aspects of those mainstream presumptions lurk even within progressively motivated, inequality-focused, and heterodox economic models. While downward redistribution is beneficient in these models, it's nevertheless generally still a tradeoff against a "bigger pie," if that measure is addressed at all. More broadly, despite significant attention of late to *causes* of wealth concentration, in both mainstream and heterodox economics the economic *effects* of wealth concentration are weakly theorized at best.

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⁺ These accumulation models are well-explored from a modern heterodox perspective in Marc Lavoie, "The Neo-Pasinetti Theorem in Cambridge and Kaleckian Models of Growth and Distribution," <u>Eastern</u> Economic Journal, 1998.

² This conflation of wealth and capital is perhaps most succinctly embodied in Piketty's explicit use of the two terms as synonyms: "I use the words 'capital' and 'wealth' interchangeably." *Capital*, p. 47.

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This paper takes a different, and to the extent possible purely empirical approach. The model attempts to exploit decades of empirical regularities, focusing on monetary wealth concentration and accumulation. Part I describes the model's overall approach, and the empirical measures employed. Part II explains the underlying economic logic and narrative, and details the model's construction, equations, and parameters. Part III tests its calibration against the empirical series, and explores problems of overfitting. Part IV adds a counterfactual redistribution parameter, and examines a range of resulting effects. Theoretical foundations are further discussed in Part V. Part VI provides a brief, condensed conclusions. Details and limitations of the source data sets are discussed in an appendix.

Part I: Building a wealth-based, money-view model

In addition to its focus on empirical foundations, the model bruited here seeks to be parsimonious in multiple ways.

1. It relies on only two economic measures – consumption spending, and household wealth (and their distribution and relationships) – for which we have "close-to-the-ground," survey-based data sources, consistently measured and comparable over decades.³

³ All wealth series published by the Federal Reserve. IMAs = Integrated Macroeconomic Accounts table S.3.a. DFAs = Distributional Financial Accounts. FAs = Financial Accounts. SCF = Survey of Consumer Finances. PCE = Personal Consumption Expenditures. CEX = Consumer Expenditure Survey.









The wealth series employed here, in particular, are quite unusual in economic modeling, despite an expanding literature on the topic of wealth and its distribution. The U.S. national accounts have only offered annual accounting of wealth and its accumulation that's fully stock-flow consistent across all sectors since 2006, when the Integrated Macroeconomic Accounts were released (coverage back to 1960; quarterly tables released in 2012). The Distributional Financial Accounts, estimating quarterly household wealth (and asset/liability) levels and shares by income and wealth groups back to 1989, were only released in 2019.

The consumption series from the Consumer Expenditure Survey (CEX) sets the other important limit on the model's empirical scope; CEX only reports spending shares by quintiles of income, and only back to 1984. There's no narrower detail for top percentiles, and it doesn't provide share breakouts based on quintiles of wealth. So distributional breakouts here are all by quintiles of income.

It's important to note that the CEX survey also almost certainly undercounts top percentile groups' spending significantly, perhaps by a great deal. So it understates the concentration of consumption spending. The top 20% appears to very consistently do 40% of the spending – significant, but not even close to the (increasing) disparity in shares of wealth. (See the Appendix, Data Details and Limitations.)

Since this model seeks to exploit regularities in long-term measures of wealth and spending, it would be preferable to draw on a data set encompassing the longer U-shaped path of wealth concentration over the past six to nine decades: its decline from highs in the 1920s and 30s (or even just postwar), to its nadir in the late 70s/early 80s, and strong runup since.



Both the available wealth and spending series preclude that. CEX spending data only extends back to 1984, the DFAs' wealth-shares data to 1989. <u>Series from the Piketty, Saez, and</u> <u>Zucman's Distributional National Accounts</u> (DINAs)⁴ extend wealth-share measures back further, but the published tables either 1. don't include a breakout of wealth shares for the top 20% that can be aligned with the CEX series (table TE1), or 2. where that measure could be

⁴ <u>PSZ2020AppendixTablesII(Distrib).xlsx</u>

assembled, the tables only cover four representative years pre-2000 - 1962, '70, '80, and '90 (TE4). Even if this longer top-quintile wealth series were available, it would only extend the sample period back five years to the CEX 1984 starting point. So with one important exception, this model is based on data from 1989-2019, and is focused only on the top-20% and bottom-80% income classes.

- 2. It is a pure "money-view" approach, in as complete a sense as possible. The employed economic measures are purely monetary, eschewing any effort to estimate, for instance, the "real" numeric value of total production over decades, or a total stock of unconsumed real-world goods accumulated over that period ("capital"), expressed numerically. Nor does it need to engage in the vexed accounting exercise of imputing the distribution of "national income" across households. Both the spending and wealth measures are based on explicit household surveys, and are reported in nominal dollars plus derivatives of those nominal measures: changes, percentages, and ratios.
- 3. With one up-front exception, it eschews behavioral theories regarding individuals' reaction functions. It seeks to observe and exploit relationships for income groups: a given observation of the group has some regular or persistent relationship to another observation. It is certainly possible to surmise theories of individual behavior *post hoc* to explain the observed empirical relations, but they're unnecessary to the model.⁵
- 4. The model neither seeks nor offers insights into volatile, short-term, high-frequency changes and effects whether they're presumed to be "business cycle"-related, idiosyncratic "shocks," "animal spirits," or some other. Rather, it exploits long-term empirical regularities in an effort to understand aggregate economic changes and effects over decades. Important levels and trends have persisted despite innumerable policy changes, and reactions to same, and so hold some likelihood of persisting into the future as manifold conditions and policies (and reactions) change and are changed. (On this issue, see "Overfitting" in Part III.)

Part II: The model's economic "story"

The model is heavily driven by a novel measure that's completely dependent on the newly available annual wealth-distribution data: velocity of wealth. Different classes turn over their wealth in spending at very different rates.

The bottom 80% group turns over its wealth in annual spending three or four times as fast as the top 20%. Bottom-20% turnover is six or seven times greater.⁶ This measure is powerful in the model because spending is also powerful; it's what drives wealth creation (with a big multiplier). If these velocities persist, more-equal wealth distribution at a given level of wealth would arithmetically result in more spending.

 $^{^5}$ To use a physical metaphor, this approach seeks to model water whirlpooling down a bathroom drain, with no attention to the interactions among H₂O molecules that "cause" that effect. While explanations of those micro effects make the macro explanation more complete and robust, they may be unnecessary to predict the observed macro properties of the whirlpool. 6 The second-to-bottom group, 20-40, bears special mention here. It's been spending down its wealth

⁶ The second-to-bottom group, 20-40, bears special mention here. It's been spending down its wealth each year much more rapidly over the last two decades – up from about 27% turnover to nearly 40%. This suggests that assembling an initial nest egg and getting onto the second or third step of the lifetime property-income escalator has been getting much more difficult. The group's share of total wealth has declined from 7.2% to 4.3% over the period.



The model's underlying economic narrative, intuition, and logic begins with one bald behavioral claim.

 Spending causes production. Cribbing from Greg Mankiw's textbook usage, we could call this the model's "first principle of economics." Ask any commercial or professional producer (actors inside the GDP "production boundary") why they produce what they do – from CEOs to restaurant owners, massage therapists, or workers producing widgets for wages. The claim here is that their answer will be, "because people are spending to buy what we produce." In this view, spending is the economic expression and actualization of human desire for goods and services, and is the driving force of economic activity – at least in a modern monetary economy.⁷

Two other claims complete the basic narrative.

2. Production creates new goods, some portion of which are not consumed.⁸ Some of those produced goods are estimated in GDP – structures, equipment, and "software," which increasingly includes diverse intangibles. But much of that "capital stock" is not – a healthy, well-educated, and well-trained populace; a vast body of public-domain knowledge, unprotected so untraded and unmeasurable as exclusive "intellectual property"; governance systems, etc. Likewise, national accounts estimate only some

⁷ This view is often discussed in terms of a "'demand'-driven" economy, invoking a behavioral concept and curve (rather than a numeric measure) that is not empirically measurable, so only has import within dimensionless conceptual diagrams. What's modeled here is a *spending*-driven economy. ⁸ While no measure of "production" plays a role in the model, it implicitly assumes that producers

⁸ While no measure of "production" plays a role in the model, it implicitly assumes that producers respond to greater spending by producing more, not by raising prices; there is no inflation in the model. This may suggest that it's excessively influenced by recent years and decades, in which capacity utilization, the labor-force participation rate, and inflation measures have declined to current multi-decadal lows. A mechanism of inflation could potentially be added to the model.

portion of consumption, which includes actual consumption, wear and tear, natural decay, obsolescence, senescence, and death.

3. The increased stock of goods from the unconsumed production causes an increase in household balance-sheet assets, net worth, wealth. There is no attempt here to explain *how* an increased stock of diverse real-world stuff results in more numeric, monetarily-designated assets of various types appearing on the account statements and balance sheets of various economic units (notably households). Those mechanisms are treated as a black box, unecessary to the model.

Condensing the three items, the model simply assumes that spending causes increases in monetary wealth. The empirical relationship between those two monetary measures is observable, surprisingly large, and surprisingly consistent over the long term. Here's the relationship between annual U.S. personal consumption expenditures, and annual changes in household net worth.⁹



The series is obviously volatile; net worth changes are strongly subject to large and often rapid changes in asset-market prices. But over 72 years postwar, it's very consistent; the slope of an ordinary least squares (OLS) linear-regression trendline of the series is flat to four digits. For every dollar of PCE spending, households' wealthholdings increase on average by 39 cents. Splitting the series into two 36-year periods as a test, the trend lines for each period remain equally flat to four digits, and averages for each series are almost unchanged: '47-'82:

⁹ It might be preferable to employ a more complete measure of spending, such as Final Sales to Domestic Purchasers (FSDP), which includes both consumption and investment spending, by all domestic sectors. That measure displays similar long-term regularity relative to wealth changes. But data on distribution of that spending by household income/wealth classes is both unavailable, and would be difficult or impossible to assemble, both conceptually and (hence) empirically. It's also worth noting that the ratio of FSDP to PCE has been fairly consistent over the decades, quite flat around 1.64 from 1959 to 1980, then trending down to hold at its post-2010 level of ~1.51. fred.stlouisfed.org/graph/?g=yPzK

41 cents; '83-'19: 38 cents. Even over the more-volatile two decades since 1998, the average is 37 cents.

This observed 72-year regularity gives us our first model equation:

(1) Change in household net worth = consumption spending * .39

Two key questions emerge from this: who gets the additional wealth – the top 20% or the bottom 80% – and who does the spending?

Wealth accumulation by income group. The historical data gives a rough answer to the first question: of the \$96T of increased household wealth over three decades, 73% (\$70T) redounded to the balance sheets of the top 20%. Unsurprisingly, the series is also quite volatile, but it again shows long-term regularity: a quite flat though increasing OLS trend line with a slope of .0058.



This series is not as consistent as the wealth:spending ratio. Over the first fifteen years of the period, the top 20% got 64% of the new wealth, versus 78% over the last fifteen years. The model uses a simple multiplier from the full sample as an initial estimate. (This parameter could be elaborated in future iterations of the model.) In a given year:

(2) Top-20% wealth increase = total wealth increase * .73

Combined with equation (1), we derive:

(3) Top 20% wealth increase = total consumption spending * .39 * .73 (= 28.45)

For every dollar of total consumption spending, top-20% wealth increases by 28 cents. By subtraction, for every dollar of total consumption spending, bottom-80% wealth increases by 11 cents.¹⁰

¹⁰ This result gives no insight into causation, much less "just deserts" – whether a dollar of top-20% spending *causes* there to be 28 cents of new balance-sheet wealth, versus 11 cents per dollar of bottom-80% spending. The direct implications for individuals are even further removed; over those thirty years hundreds of millions were born and immigrated, moved in and out of the top 20%, and died. The groups comprise constantly shifting populations of individuals.

Spending velocity by income group. Each year's spending for each group in the model is a simple function of the group's previous-year (ending) wealth, times its wealth velocity. But what predicts a group's velocity? The best simulation of the empirical facts and trends emerges when each group's velocity is determined by its share of total wealth. (Those relative shares are one measure of wealth concentration.)

Unlike the first two model parameters, these measures have not been consistent over the period examined. Both shares of wealth and wealth velocity have trended significantly, with big differentials in those changes between the top 20% and bottom 80%.

The top-20% share of wealth (in the second figure, above) has increased pretty steadily from 61% in 1989 to 71% in 2019; the bottom 80% share went down commensurately. The changes in wealth velocity have been more complex.



2019 wealth velocity for the bottom 80% is largely unchanged from 1989, despite volatility in the interim (+/-10%; the truncated Y axis may overemphasize that volatility). Top-20% velocity, by contrast, shows much less up/down volatility, but has trended sharply lower, a secular decline of more than 30%. (The top-20% pattern also dominates the change in velocity for the total population.) We can generate OLS linear-regression equations of the correlations between wealth shares and wealth velocity for each group, to derive approximate formulas in hopes of predicting each group's annual spending velocity.



We can use these regression values as estimates in assembling the two remaining model equations (equation numbers rounded for clarity here). In any given year:

- (4) Top 20% spending velocity = -.28 * Top 20% wealth share + .27
- (5) Bottom 80% spending velocity = .19 * Bottom 80% wealth share + .33

Those equations complete the model. It may be easiest to understand as expressed in a spreadsheet layout.

						1
				Top 20%%	Bottom 80%	6
∆ Wealth Per	\$ of spending		\$0.39			
Share of ann	ual wealth change	received		73%	27%	
Annual wealth transfer			0.00%	+ is poor ->	rich is rich	-> poor
		1989	1990	1991	1992	199
	Year	0	1	2	3	4
Top 20%	Spending		1,330	1,403	1,479	1
	Transfer		0	0	0	
	Wealth	13,388	14,394	15,452	16,565	17
	Wealth Share	61%	62%	62%	63%	
	Velocity		10%	10%	10%	
	Spend share		38%	38%	38%	
	% Growth		8%	15%	24%	
Bottom 80	Spending		2,190	2,299	2,413	2
	Transfer		0	0	0	
	Wealth	8,559	8,938	9,337	9,756	10
	Wealth Share	39%	38%	38%	37%	
	Velocity		26%	26%	26%	
	Spend share		62%	62%	62%	
	% Growth		4%	9%	14%	
Totals	Total Spending		3,520	3,702	3,892	4
	Total Transfer		0	0	0	
	Total Wealth	21,947	23,332	24,789	26,321	27
	% Growth		6%	13%	20%	

The model starts with just two numbers: actual wealth (shares) of the top 20%, and the bottom 80%. All the ensuing-year figures are extrapolated by the model equations.

- Each group's Wealth row implements Equations (1), (2), and (3): with the parameters as given, its formula adds 28 cents to top-20% wealth for each dollar of total spending, and 11 cents to the bottom 80%.
- The groups' Spending rows implement equations (4) and (5), calculating each groups' spending based on their previous year's wealth and their wealth velocity (which is formulaically based on their wealth share).

Part III: Running the model

One basic question arises to begin with: does this simple model, starting just with year-zero wealth shares and extrapolating over thiry years, deliver an accurate picture of actual changes over those years? Is the model "well-calibrated," by *multiple* measures?

Overall, the answer seems to be yes. Total modeled wealth at the end of the period is \$114T, compared to actual ending wealth of \$118T: a 4% miss after thirty years of modeled changes. The paths of wealth (and hence velocity) measures diverge significantly from actual values *within* the period, raising concern for out-of-sample validity, at least for shorter-term

projections. Other measures hew pretty closely to the actual paths of historical values. Overall, the model is quite well calibrated over the long term.



The overfitting problem. The most obvious and reasonable objection to the model is overfitting: the input parameters are derived from the modeled data (though the powerful parameter of wealth increase per dollar of spending is based on a longer 72-year series). This could simply guarantee a fit to the modeled data, so it could easily fail in predicting out-of-sample, future measures in the spending and wealth series.

Splitting the already-small thirty-year sample in two to create a pseudo out-of-sample test suggests this problem exists. Predicting 2004-2019 results based on 1989-2004-derived parameters greatly overstates predicted 2019 wealth, for instance: \$136T vs actual \$118T, a 15% error. Modeled spending is also quite high versus actual. It also misses widely on wealth shares, showing them mostly unchanged over the second period, which they decidedly were not. Other measures show qualitative similarity, but significant quantitative errors.



These errors largely result from a single difference: from 1989-2004, higher bottom-80% wealth shares correlated with higher bottom-80 spending velocity, versus the reverse for the whole sample period. This may suggest that a different method is needed to predict groups' wealth velocity; it may recommend a different measure of wealth concentration (preferably a measure developed externally to the data series here); it may show that a 15-year period is an insufficient sample to derive a reliable correlation; or it may disqualify the model entirely.

Ultimately, of course, time will tell. The model is easily extrapolated forward starting with actual 2019 wealth measures (and 30-year-derived parameters), to set a predictive stake in the ground and project the unknown, out-of-sample future.

Projections extrapolated from 2019 starting wealth levels

	2024	2029	2034
Total wealth	\$152T	\$196T	\$251T
Top 20% share of wealth	71%	71%	72%
Personal consumption expenditures	\$18T	\$23T	\$31T

Wealth is predicted to grow by 30% in five years, 68% in ten, 116% in fifteen. Personal consumption expenditures are projected to increase equivalently – a 5.1% compounding annual growth rate over 15 years, compared to the actual past 30-year CAGR of 4.8%. Notably, almost no further wealth concentration is predicted.

Part IV: Modeling redistribution

Taking the model as it stands, we can return to the question that opened this article: what are the effects of wealth concentration and redistribution on wealth accumulation? If we add counterfactuals to the model, with some portion of top-20% wealth transferred down or up each year, what effect does that have on total modeled spending, wealth accumulation, and wealth shares?¹¹



Modeled Effects of Redistribution on Wealth Accumulation U.S. Household Wealth Changes by Income Quintiles over Thirty Years

Taking the leftmost bars as an example, with annual 1.5% downward transfer of top-20% wealth, greater spending would have resulted in a 549% total wealth increase, versus actual 421%. Greater downward redistribution appears to make everyone quite a lot wealthier, faster – especially (no surprise) the bottom 80%.¹² That might not be true for the very richest percentile groups, of course, depending on the mechanics and progressivity of the transfers. But the transfers would have to be *far* larger than envisioned here before top-percentile wealth *levels* (vs their relative share) actually stagnated or declined. Absent much more extreme redistribution, the rich keep getting richer.

¹¹ This "counterfactual" approach may seem to suggest that the past three decades represent a zeroredistribution "reality," even though many would suggest that upward redistribution has been rampant over the period. Rather, the graphs here just represent past decades as a zero benchmark or comparator, with counteractuals as additional redistribution, upward or downward. ¹² This is not to suggest that aggregate "national wealth" is any kind of definitive measure of national

¹² This is not to suggest that aggregate "national wealth" is any kind of definitive measure of national well-being; at best it's a very rough index. It's even less useful as a comparator among nations, with different systems of ownership, public/private mix, and economic rights. Increasing monetary wealth is not a goal in itself. But in this model it is a cumulative indicator of past economic activity and accumulation, and is necessary to any estimates of wealth concentration.

In fact, excepting the two leftmost scenarios (1.5% and 1.2%), the top 20% keep getting *relatively* richer than the bottom 80%. Avoiding the increased wealth concentration that we've seen since 1989 (or even reducing the 1989 concentration) would have required at least an annual 1.2–1.5% downward wealth transfer from the top 20%. (For comparison: the compounding annual growth rate on a wealthholder's 60/40 stock/bond portfolio over that period <u>was about 7.5%</u>.)

Total modeled 2019 wealth with 1.2% downward redistribution would be \$137T, versus actual \$118T – 16% higher. Most of that extra wealth growth would have gone to the bottom 80% (wealth growth of 527% vs actual 295%), while top-20% wealth growth would have been only slightly higher than actual (526% vs 499%). Shares of total wealth would have remained unchanged, versus the actual increase in top-20% wealth share from 61% to 71%.



Note that the light green line for Bottom 80 modeled wealth changes is hidden behind the light blue line; the two groups' wealth grows at the same rate, 526/7%, in this 1.2% downward redistribution counterfactual.

Finally, we can project future scenarios with different wealth-redistribution policies. Starting with 2019 wealth levels and extrapolating forward using the same 30-year-derived

parameters, over fifteen years we see predicted changes that are quite different from modeled scenarios/counterfactuals of the past.



2034 Scenarios: Modeled 15-Year Effects of Redistribution on Wealth Accumulation Projected U.S. Household Wealth Changes by Income Quintiles

Growth in total wealth from right to left is somewhat weaker than in the previous simulation. Top-20% wealth growth, which showed a moderate upward slope right to left in the previous, actually declines in this one (though top-20% wealth levels don't actually decline; they roughly double over the period). Meanwhile bottom-80% growth remains similarly robust. The results are more straightfowardly redistributive, showing less of the "all boats rise" effect.

These differences are primarily due to initial conditions; in 1989 the top 20% held 61% of the wealth, versus 71% in this graph's 2019 starting year. This seems to suggest that when wealth is more concentrated, redistribution serves relatively more to reduce that concentration than to increase overall wealth. Over time that de-concentration might slowly return the economy to the previous scenario of higher (potential) overall growth.

This 1.2% experiment reflects more general properties of the results, visible if we plot counterfactuals for two parameters at once: starting wealth concentration, and redistribution.

With high starting wealth concentration, total wealth accumulation is significantly lower/slower. But the effects of redistribution on total wealth accumulation are far stronger; more downward redistribution makes us all wealthier at an increasingly faster rate as wealth concentration increases.



Modeled Total 30-Year Household Wealth Increases Based on Starting Wealth Concentration and Annual Wealth Redistribution



Starting Wealth Concentration	Redistribution .9% upward	Redistribution 1.5% downward	Differential
40%	472%	654%	1.4X
61% (actual)	317%	549%	1.7X
80%	122%	406%	3.3X

Compared to accumulation, wealth concentration is far more resistant to change, even at the highest depicted levels of downward redistribution. This may help explain the long, slow observed changes in wealth concentration over the last century.



Modeled Top 20% Ending Wealth Share Afer 30 Years Based on Starting Wealth Concentration and Annual Wealth Redistribution

Part V: "Wealth effects"

Having detailed the model and seen some of its results, the economic narrative and logic sketched briefly in Part II bear revisiting and expansion. In this narrative and model, *spending comes out of wealth*, assets. The usual comparator, income, is absent from the narrative and model.

This may seem to imply that individuals' income and spending levels are purely a function of their wealth. It makes no such claim. (Though it does suggest that the absence of a wealth term in the Keynesian consumption function is a rather glaring omission.)

Rather, the spending-out-of-assets construction just states a precise *definition* of spending: "transferring assets from one account or balance sheet (or pocket or wallet) to another, in exchange for newly-produced goods and services." That's what spending is. The intuition is that you can't "spend out of" the instantaneous moment and event of somebody handing you a five-dollar bill. You can only spend out of the stock of assets you are holding: the five dollars in your hand, pocket, wallet, or account. Individuals' incomes increase their asset holdings, which they can spend.¹³ Significantly, these transferred assets are not "consumed." They just circulate among economic units; the purchased goods are produced and consumed.

Examining spending relative to wealth, a stock measure, rather than income, a tightly entangled flow measure ("one person's spending is another person's income"), allows us to employ an old economic standby, the left-hand side of monetarists' equation of exchange:¹⁴

Spending = Money Stock * Velocity (annual turnover of the money stock in spending)

This envisions spending as the circular flow of a stock – faster or slower – as opposed to spending *relative to* another flow: income. Only, the stock denominator employed in the current model is household net worth (about 88% of household assets), rather than the money stock that comprises only about 15% of the aggregate household-sector asset portfolio.¹⁵

This approach differs from the <u>significant but specialized "wealth effect" literature</u> in two important ways. That literature assumes that propensity to spend ("consume") out of recently-

¹³ Borrowing, which adds assets (and liabilities) to borrowers' accounts – expands their balance sheets – is unexamined here. Likewise, the asset-class portfolio composition of asset-holders' accounts, however large or small the holdings, is not considered. Swapping ETF shares for M assets, checking deposits, "cash," which are generally demanded by producers/sellers for purchases, is treated as a purely mechanical necessity for goods buyers, the matter of a few mouse clicks. (Selling real estate, of course, takes a bit longer.) It's the everyday business of aggregate portfolio churn; in this model it's assumed to be frictionless (which assumes quite liquid markets for most assets). An individual can "spend out of" their stock of ETFs and bonds, or even real-estate assets if/when they downsize – or plan to. Even, if they have significant pension entitlements/"assets," they can spend more of their current income and liquid assets than they could without those pension assets, without threatening a secure retirement – effectively spending out of their pension entitlement assets.

¹⁴ Since this paper's money-view narrative and model don't employ or require any measure of goods "quantity" (numerated in some imagined universal unit of "output"), the right-hand side is ignored.

¹⁵ "There is as an unearthly, mystical element in [Milton] Friedman's thought. The mere existence of a stock of money somehow promotes expenditure." Joan Robinson. *Economic Heresies* (1973), p. 87. More precisely, the monetarist narrative seems to presume that a higher *proportion* of M assets in the market's aggregate portfolio causes more spending – a presumption that has little or no empirical or theoretical support. To borrow Keynes' words though not necessarily his constructions, this "analysis registers my final escape from the confusions of the Quantity Theory, which once entangled me." (*General Theory*, Preface to the French edition.)

accumulated, new "marginal" wealth is different from the propensity to spend out of alreadyexisting wealth. The literature's results also mostly characterize various "long-run" MPCs, as opposed to the explicit annual velocity measures employed and exploited here. This model assumes that annual propensities are the same for income *groups*' new/marginal and preexisting wealth, and that those propensities are well-estimated by long-term wealth-velocity measures. Those assumptions merit further explicit investigation.

Discussing spending relative to the stock of wealth, versus income, makes possible important understandings that remain opaque in much mainstream and even heterodox economics. As an example, Ben Bernanke, describes the academic response to Irving Fisher's debt deflation theory:

"Fisher's idea was less influential in academic circles, though, because of the counterargument that debt-deflation represented no more than a redistribution from one group (debtors) to another (creditors). Absent implausibly large differences in marginal spending propensities [relative to income] among the groups, it was suggested, pure redistributions should have no significant macroeconomic effects" (*Essays on the Great Depression*, p. 24).

Viewed only through the lens of (marginal) propensity to spend out of *income*, debt deflation – and wealth/income distribution itself – *can't* have significant macro effects. "That's just (re)distribution." The large, persistent observed differences in wealth velocity across the wealth/income distribution provide one straightfowardly transparent mechanism to explain such effects.

Spending out of wealth also renders notions of "wealth hoarding" (think Smaug the Dragon reclining on his piles of pillaged treasure) conceptually and arithmetically transparent, compared to spending as a share of income, and the vexed topic of individual vs collective (and households', firms', government, and "national") "saving." Hoarding (or a less loaded term, holding), by individuals or groups, is simply slow turnover of wealth in spending.

This conceptual construction robustly embraces an economic mechanism, velocity, that is central to much mainstream economic thinking (though with an importantly different denominator), while eschewing important others – notably "saving out of income" mechanisms of aggregate accumulation.

Conclusions

Examining the performance of the model itself, and the model results, some main takeaways emerge.

The model. Comparing actual empirical measures over thirty years to the model's predictions, it appears extremely well-calibrated, at least over the long term. The end-of-period modeled measures match actual results quite precisely. Model errors and variance within the period, however, raise concern for out-of-sample reliablity. A "split test" of the period (which is already a smaller sample size than would be desired for this exercise) reinforces that concern. Predicted results for the second 15-year period, based on parameters drawn from the first, show significant quantitative and some qualitative differences from actual.

Modeled predictions provide a benchmark against which to measure actual future out-of-sample observations.

The results. Taking the model as usefully (if only approximately) predictive, it demonstrates that greater annual downward redistribution of top-20% wealth results in significantly greater ending wealth for both the top 20% and (especially) the bottom 80%, and for total wealth. The effects are very large, alleviating some concern for precise accuracy of the model parameters. Results are dependent on initial conditions. When starting wealth is more concentrated, the effect of redistribution is more to ameliorate wealth concentration, with a somewhat smaller relative effect on increases in total wealth. When starting wealth concentration is higher, however, downward redistribution has a more powerful *differential* effect (upward vs downward distribution) on total spending and total wealth accumulation. Wealth concentration declines quite slowly (when it does at all) in almost all the modeled scenarios.

This model only examines one (straightforwardly arithmetic) wealth-based economic effect; there are innumerable others. But it appears to be a very large effect that is largely absent, or quite muted at best, in both mainstream and heterodox models.

Appendix: Data series details and limitations

The data series and calculations employed in the model are all included in a downloadable Excel workbook at <u>asymptosis.com/Redistribution6.xlsx</u>. The spending and wealth measures require some explanation.

Wealth series. The Distributional Financial Accounts' (DFAs') measures of wealth shares by percentile group are fundamental and necessary to the model. The DFAs also provide wealth *levels* by percentile group, but as depicted in the first figure in this paper, their totals are different from other wealth measures – notably the FAs (Financial Accounts, from Table B.101).

All of these wealth measures are published by the Fed. They all draw on similar data, and on each other – especially on the Fed's triennial Survey of Consumer Finances (SCF). The measure from the B.1 table, of "U.S. Net *Wealth*," stands out numerically, methodologically, and conceptually (and is vulnerable to corporations' share-buyback and equity vs debt "capitalization" decisions). Without going into the measures' many differences in methods and assumptions, this paper uses the Household Net Worth measure from Table S.3 of the Integrated Macroeconomic Accounts (IMAs) because:

- 1. It closely matches the measure in the FAs.
- It's backed by a complete and fairly transparent accounting structure that is stock-flowconsistent across all sectors (it fully explains balance-sheet changes) and largely conforms to the U.N.'s System of National Accounts (SNAs) and the international Balance of Payments (BOP) methodology.
- 3. Its tables are conveniently and comprehensibly organized and presented, and are provided in multiple forms (PDF, interactive HTML, and Excel, with individual measures also available on the FRED data portal).

The DFA's wealth share measures, which only extend back to the inception of the SCF in 1989, are used to allocate those IMA wealth levels across percentile groups.

Consumption Spending. The Consumer Expenditure Survey (CE or CEX) from the Bureau of Labor Statistics (BLS) makes it is possible to extract shares of consumption spending by income quintiles back to 1984. Its levels measures are quite problematic; total tallied spending is generally only 60% of Personal Consumption Expenditures (PCE), from the Bureau of Economics Analysis (BEA).¹⁶ The latter measure conforms and contributes to the larger accounting construct of GDP and etc. The model here allocates the larger PCE measure to income quintiles based on shares of spending calculated from the CEX levels measures.

Those CEX share measures also bear interrogation. Most significantly, the CEX seems to seriously undersample the highest-income households. This almost certainly results in a misrepresentation of spending distribution/concentration across income quintiles, and might even be a significant factor in the under-reporting of total spending itself.¹⁷

Finally, the spending-by-income-quintile data used to assemble the CEX spending-share series is only provided in separate, individually downloadable, single-year spreadsheets, which are not consistently laid out. All those annual tables, and a compilation assembled for all years, are included in the downloadable model workbook.

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¹⁶ BEA, 2019. "Comparing expenditures from the Consumer Expenditure Survey with the Personal Consumer Expenditures: Results of the CE/PCE Concordance." <u>bls.gov/cex/cepceconcordance.</u>htm Spreadsheet: "Summary comparison of aggregate Consumer Expenditures (CE) and Personal Consumption Expenditures (PCE)" <u>bls.gov/cex/pce-compare-200916.xlsx</u>.

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¹⁷ Sabelhaus, John et al., 2013. "Is the Consumer Expenditure Survey Representative by Income?" NBER. <u>nber.org/papers/w19589</u>