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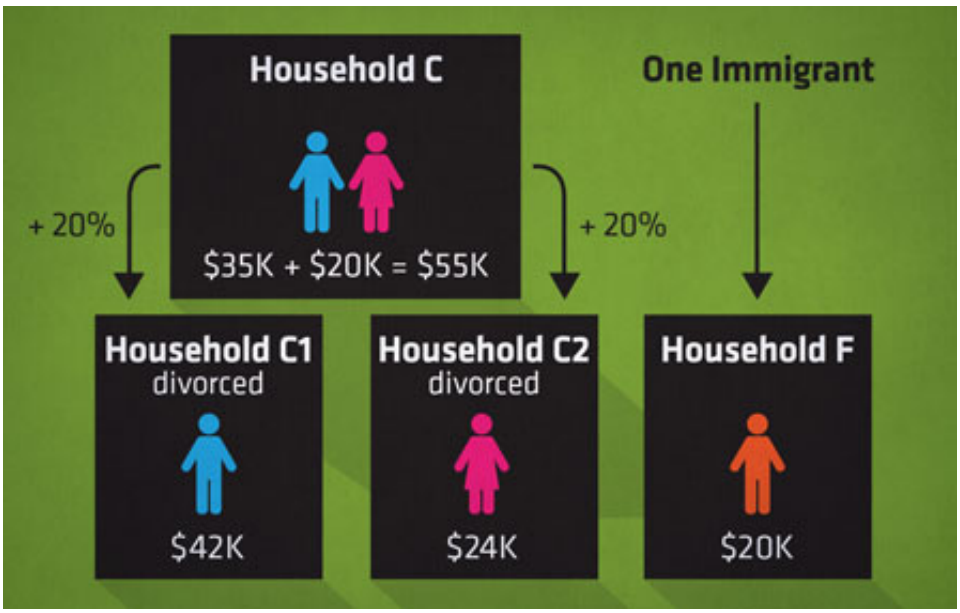


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October 30, 2014 | The American

If income is going up, can median household income go down? It's possible

Political Economy, Public Economics



Shifting from two-earner households to one-earner households lowers the median household income, even if everybody's income is the same as before.

One of the most commonly cited numbers in discussions of inequality is the trend in median household income, often used as if it settled the issue. Using median household income poses a fundamental problem, however. It conflates two measurements — changes in the composition of households and changes in income — and thus can easily mislead us.

Has the composition of households in America been changing? Obviously, it has. The

percent of married couple households has fallen from more than 60 percent in 1980 to less than 50 percent in 2010. One-person households have risen from 23 percent to 27

percent of households in this period. Shifting from two-earner households to one-earner households lowers the median household income, even if everybody's income is the same as before.

The number of households has grown much more rapidly than the population. There were 52 percent more households in 2013 than in 1980, but only 39 percent more people. With fewer people per household, the same per-capita income means a lower per household income.

If high immigration adds many households at the lower end of income, it reduces the median household income, even if everybody else's income is unchanged or rising and even though the new immigrant households are far better off than they were before immigrating.

Demographic changes like these in the composition of households affect the median household income, independently of changes in people's income — that is clear. What is more, in principle, it is possible for all individuals' incomes to be rising while at the same time the median household income is falling. This perhaps surprising possibility is demonstrated in the following simple examples.

We begin with a base case of five households, three (60 percent) married and two single, and a median household of income of $55,000. Then, in the next three tables, we make every individual's income go up, combined with various demographic changes. We see that the resulting median household income goes down or remains the same. The point is to create very simple examples that demonstrate the arithmetical possibilities when you conflate two different factors.

BASE CASE

Household	Household income (in thousands)	Composition of income
A	$75	$40 + $35
B	$65	$65
C	$55	$35 + $20
D	$45	$45 + $0
E	$35	$35
Median	$55	
%Δ everyone's income	–	

VARIATION 1 [everyone makes 10% more, C gets divorced]

Household	Household income (in thousands)	Composition of income
A	$82.50	$44 + $38.5
B	$71.50	$71.5
D	$49.50	$49.5 + $0
E	$38.50	$38.5
C1	$38.50	$38.5
C2	$22	$22
Median	$44	
%Δ everyone's income	+10%	

%Δ Median household income	–
1Q/5Q	2.1

%Δ Median household income	– 20%
1Q/5Q	3.3

VARIATION 2 [everyone makes 10% more, one immigrant]

Household	Household income (in thousands)	Composition of income
A	$82.50	$44 + $38.50
B	$71.50	$71.5
C	$60.50	$38.5 + $22
D	$49.50	$49.5 + $0
E	$38.50	$38.5
F	$20	$20
Median	$55	
%Δ everyone's income	+10%	
%Δ Median household income	0%	
1Q/5Q	3.5	

VARIATION 3 [everyone makes 20% more, C gets divorced, one immigrant]

Household	Household income (in thousands)	Composition of income
A	$90	$48 + $42
B	$78	$78
D	$54	$54 + $0
E	$42	$42
C1	$42	$42
C2	$24	$24
F	$20	$20
Median	$42	
%Δ everyone's income	+20%	
%Δ Median household income	– 24%	
1Q/5Q	4.1	

Note that in the third variation, even though each individual's income rises by 20 percent, median household income falls. How is that possible? Math.

The key point is that when household composition is changing, income and median household income are different measurements, which can move in opposite directions.

The most obvious mistake is to discuss median household income as if there were no change in household composition. But that is precisely what is done.

According to the US census, "family households" were 74 percent of households in 1980, but only 67 percent in 2010. "Nonfamily households" correspondingly went from 26 percent to 33 percent. Is it possible for such important demographic changes not to affect the measured median household income? No. At the same time, as a proxy for immigration, we can consider the percent of "Hispanic" households according to the census. This went from 5 percent of US households in 1980 to 11 percent in 2010. Did that affect the median household income? Yes.

In addition, because we are measuring by household, the demographic changes in our examples dramatically alter the perception of inequality. The last line of each of our examples shows the "inequality ratio" of the top quintile of household income to the bottom quintile (labeled "1Q/5Q" in the table). It begins in the base case at a ratio of 2.1. In the variations, although everyone's income is increasing by the same percent, thus keeping the relative income the same, the demographic changes are moving the inequality ratio higher, first to 3.3 in Variation 1 with one divorce, and finally to 4.1 in Variation 3 with one divorce and one immigrant.

Thus, measuring inequality at the household level, when the composition of households is changing, conflates two different factors, just as does measuring income changes at the household level.

As an empirical project, the challenge is separate changes in income at the individual level from changes at a household level, which are two different things. We need to measure how the profound shifts in the composition of American households affect the measurement of median household income, independent of changes in income, thus arriving at a more robust analysis. This would allow useful counterfactual estimates such as: if the composition of households were unchanged, what would the increase in median household income be? If the current composition of households had been the case in previous times, what would the median household income have been?

An excellent example of research along these lines is provided by Robert I. Lerman and W. Bradford Wilcox in a provocative new AEI study. "Between 1979 and 2012," they find, "among married parents, median [real] family income increased by 30%" but overall median family income "rose by only 14%." How can that be? Well, "unmarried parents increased their share of families with children from 22% to 34%."

In sum, measuring by median household income mixes together changes in income with changes in household composition in a misleading way. It is possible for income to be rising while median household income is falling. You have to know the separate effects of each factor to get sensible conclusions.

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Demographics, Income inequality, Inequality ratio, Median Household Income, Political economy