# Who gains from economic freedom?
# A panel analysis on decile income levels

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## Abstract

This paper revisits Saccone's (2020) analysis of the impact of economic freedom on decile income shares for a panel of developed and developing nations during 1980-2014. Saccone found that higher levels of economic freedom corresponded with lower income shares for the bottom 8 deciles and higher shares only for the top 2 deciles. Instead of decile income shares, this paper focuses on the impact of economic freedom on decile income levels. We find that higher levels of economic freedom correspond with higher absolute levels of income for all income groups.

*Keywords*: income distribution; decile income shares; decile income levels; economic freedom; panel analysis
*JEL Classification Codes*: D31, P50, O10

## 1. Introduction

The purpose of this paper is to revisit and expand upon the analysis presented by Saccone (2020) that suggested economic freedom results in lower shares of income for the bottom 80 percent of the income distribution and higher shares for the top 20 percent.

Studying income inequality is a worthwhile thing to do. First, it seems self-evident that equality is a good that people value intrinsically. Second, there is ample evidence that inequality results in a number of normatively bad outcomes especially in regards to public health (Wilkinson and Pickett, 2009). See Krueger (2003) and Schuppert (2012) for excellent reviews of the literature. Income inequality is so popular as a topic that both dense academic tomes (Piketty, 2014) as well as politically-charged polemics can become international bestsellers (Stiglitz, 2012).

In contrast, some argue that the level of income may be an exaggerated or even misleading metric of well-being (Costanza, et al., 2014). While this may be so in some regards, and

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certainly no one believes income is the sole metric of well-being, the consensus remains that income is a useful barometer of standard of living. The United Nations (2019) includes income per capita as one of the primary indicators in its Human Development Index for good reason.[1]

Thus, instead of looking only at income shares in a manner similar to Saccone, our paper looks also at the level of real income per person in each decile. This approach will help us gauge the effect of economic freedom on the absolute well-being of people throughout the income distribution rather than just their relative well-being. Within the best of our abilities, we have collected the same data from the same sources with the goal of (1) replicating qualitatively, if not perfectly quantitatively, Saccone's income share results but (2) also then estimating the same model using the level of income per capita in each decile as the dependent variable.

## 2. Methods, data, and results

The equation that Saccone estimated was:

$$SHARE_{it} = \alpha + \beta_1 ECFREEDOM_{it} + \beta_2 X_{it} + \upsilon_{it} \tag{1}$$

In addition to our re-estimation of Saccone's equation above, we estimate this equation:

$$LEVEL_{it} = a + b_1 ECFREEDOM_{it} + c_2 X_{it} + e_{it} \tag{2}$$

The $SHARE_{it}$ variable and the $LEVEL_{it}$ dependent variables represent the share of total income and the level of income per capita for each decile for country $i$ at time $t$.[2] Income is measured in real ppp-adjusted terms. In our sample, the share of income going to the bottom tenth averages 2.19 percent and the share of income going to the top tenth averages 33.13 percent; whereas the same range for the income per capita ranges from \$6,186 for the bottom tenth to \$65,945 for the top tenth.

The economic freedom variable of primary interest is from the Fraser Institute (Gwartney, et al., 2019). Saccone used the Fraser Institute's 2016 edition, while we have used the more recent 2019 edition as recommended by the authors (Gwartney, et al., 2019: p 15). We do not believe this difference is likely to make any difference in our analysis as older index values rarely change significantly. The lowest and highest values in the sample for the economic freedom index are 2.96 (Venezuela) and 8.83 (Hong Kong) respectively, and the standard deviation is 1.18 units.

In order to replicate Saccone's results, we use the same set of control variables, from the same sources whenever possible: real GDP per capita (purchasing-power adjusted), the square of GDP per capita, growth of GDP per capita, fertility rate, the old-age dependency ratio, the illiteracy rate, the urban population share, the service employment share, stock market capitalization, and the Polity IV measure of democracy; and we used GLS estimation with random effects, as did Saccone.

After dealing with missing data among control variables, Saccone ended up with an unbalanced panel of 76 countries for 7 five-year time periods between 1980 and 2014 with a sample size of 395 observations. Our initial data collection efforts resulted in a sample of only 65 nations with 310 observations. It appeared that missing data for the illiteracy rate for a

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[1] Interestingly, the Human Development Index doesn't count income per capita above \$75,000 as being beneficial based on Kahneman and Deaton's (2010) claim that there is little or no gain to human well-being above that level. This position has been forcibly challenged by Stevenson and Wolfers (2013).

[2] The $LEVEL_{it}$ variable is computed arithmetically by multiplying the $SHARE_{it}$ variable by GDP Per Capita (measured in PPP\$) and dividing by the ratio of that group in the population (0.10 for a decile). The income per person for a particular decile, $d$, is equal to:

$(SHARE_d)(GDP\ per\ capita)/0.10 = (INCOME_d/GDP)(GDP/POP)/(0.10) = INCOME_d/((0.10)(POP))$.

number of highly developed nations was the culprit, so in the interest of moving along with our analysis quickly, we simply assumed an illiteracy rate of 1 percent for these nations.[3] Doing so resulted in our sample of 75 nations with a sample size of 429—one less country but 34 more observations compared with Saccone. To be consistent with Saccone, we also estimate 12 equations, one for each decile plus one for the top 1 percent and top 5 percent.

Table 1 summarizes our findings.[4] Columns 1 and 2 show the average income share (*SHARE*) and average income per capita (*LEVEL*) for each income group. Column 3 shows the coefficient estimates for the marginal effect of one unit of economic freedom on income share as reported by Saccone.[5] Column 4 shows the coefficient estimates for the marginal effect of one unit of economic freedom on income share that we estimated with our data. A comparison of column 3 and 4 confirms that our findings mimic Saccone's; that is, we also find that higher levels of economic freedom correlate with lower income shares for each of the bottom 8 deciles but higher income shares for the top 2 deciles, as well as the top 5 percent and top 1 percent of the income distribution.[6] It is worth noting that the magnitude of our coefficient estimates for Equation 1 are consistently smaller in magnitude than Saccone's, but they are nevertheless qualitatively quite similar.

Next, we move to an estimation of the income per capita levels for each income group. In order to compare the two sets of results directly, and in order to deflect any possible accusation that we selected our specification to get desired results, the income level model in Equation 2 is estimated with the exact same control variables and GLS random effects estimation method that Saccone (and we) used for Equation 1. The only exception is that the GDP per capita control variable was dropped from the income level regressions, because it is used arithmetically in the construction of the $LEVEL_{it}$ dependent variable; to include GDP per capita as an independent variable would result, in effect, in little difference from the income share regressions already estimated.

Table 1, column 5 shows our estimate for the marginal effect of one unit of economic freedom on income per capita within each income group. We find that countries with more economic freedom have higher average income levels in each and every income group. For the lowest income decile, one additional unit of economic freedom corresponds to an additional $305 per person; for the next decile, $479, $565 for the third decile, and so on. It appears that in an absolute sense, more economic freedom corresponds with more income throughout the income distribution.

Columns 6 and 7 report the marginal effect of a one standard deviation change in economic freedom on income share and income per capita expressed as a percentage of the average income share and income per capita value for each income group. The effect of a standardized unit of economic freedom on income share ranges from -6.51% for the lowest decile to +2.24% for the top decile. The same effect on income per capita appears to be more or less the same across the income groups ranging from +4.39% (8th decile) to +5.99% (2nd decile).

Saccone conducted a round of robustness checks: (1) instrumenting the EFW index with its lagged value, (2) using fixed- instead of random effects, and (3) running a more parsimonious specification using both fixed- and random effects. We also ran these models, and like Saccone, found no qualitative difference in the coefficient estimates. These results are available upon request.

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[3] These nations are Australia, Austria, Belgium, Canada, Switzerland, Czech Republic, Germany, Denmark, Finland, France, United Kingdom, Ireland, Japan, Korea, Luxembourg, Netherlands, Norway, New Zealand, Slovakia, Sweden, and the United States. It seems completely reasonable to assume nearly 100 percent literacy among these nations.

[4] Complete regression results are available upon request.

[5] Saccone also estimated one model with the Gini coefficient as the dependent variable, which we also replicated.

[6] Saccone's coefficient estimate for the 8th decile and our coefficient estimates for the 7th and 8th deciles were negative, though insignificant statistically.

*Table 1.* The Impact of Economic Freedom on Income Shares and Income Level by Income Group.

| Income Group | 1. Share of Total Income (mean value) | 2. Income Per Capita (mean value) | 3. Marginal Effect of Economic Freedom (one unit) on Income Share (Saccone, 2020) | | 4. Marginal Effect of Economic Freedom (one unit) on Income Share (our estimates) | | 5. Marginal Effect of Economic Freedom (one unit) on Income Per Capita | | 6. Marginal Effect of 1 σ Change in Economic Freedom on Income Share (% of Share) | 7. Marginal Effect of 1 σ Change in Economic Freedom on Income Per Capita (% of Income) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1$^{st}$ Decile | 2.20 | $6,186 | -0.175 | *** | -0.121 | *** | $305 | ** | -6.51% | 5.84% |
| 2$^{nd}$ Decile | 3.47 | $9,468 | -0.176 | *** | -0.123 | *** | $479 | *** | -4.20% | 5.99% |
| 3$^{rd}$ Decile | 4.54 | $12,181 | -0.174 | *** | -0.129 | *** | $565 | *** | -3.36% | 5.49% |
| 4$^{th}$ Decile | 5.59 | $14,722 | -0.166 | *** | -0.125 | *** | $634 | *** | -2.65% | 5.10% |
| 5$^{th}$ Decile | 6.69 | $17,305 | -0.152 | *** | -0.111 | *** | $701 | *** | -1.96% | 4.80% |
| 6$^{th}$ Decile | 7.95 | $20,136 | -0.129 | *** | -0.087 | *** | $778 | *** | -1.30% | 4.57% |
| 7$^{th}$ Decile | 9.49 | $23,512 | -0.191 | *** | -0.148 | | $885 | *** | -1.85% | 4.46% |
| 8$^{th}$ Decile | 11.63 | $28,039 | -0.024 | | -0.011 | | $1,040 | *** | -0.11% | 4.39% |
| 9$^{th}$ Decile | 15.30 | $35,517 | 0.111 | *** | 0.114 | ** | $1,338 | *** | 0.88% | 4.46% |
| 10$^{th}$ Decile | 33.13 | $65,945 | 1.008 | *** | 0.628 | *** | $3,120 | *** | 2.24% | 5.60% |
| Top 5% | 22.61 | $84,836 | 1.194 | *** | 0.736 | *** | $5,007 | *** | 3.85% | 6.99% |
| Top 1% | 9.50 | $149,642 | 0.733 | *** | 0.479 | ** | $11,540 | *** | 5.97% | 9.13% |

*Note*: ***$p < 0.01$, **$p < 0.05$.

### 3. Concluding remarks

Saccone's findings, which were more or less confirmed with our data sample and analysis, were that economic freedom is associated with a lower relative share of total income going to the bottom 80 percent of a country's population. However, our results demonstrate that economic freedom corresponds with higher incomes for people in all income deciles in an absolute sense.[7]

  Combining the two sets of results in this paper suggests that the choice for the world's relatively poor may be between having a larger share of a smaller pie with less to eat (under conditions of less economic freedom) versus having a smaller share of a larger pie with more to eat (under conditions of more economic freedom). We would suggest, and world migration patterns absolutely confirm (McCauliffe, et al., 2018), that most of the world's relatively poor would like to have more to eat. As Joe Biden once remarked, "you can't eat equality. You know?" (Memoli, 2016).

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[7] Given the stability of decile income shares across countries over time, this really comes as no surprise (Dollar and Kraay, 2002).