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# PERCSPECTIVES ON RESEARCH

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## CORONAVIRUS ECONOMICS: THE IMPACT OF SHUTTING DOWN MEATPACKING PLANTS

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Among various businesses and industries screeching to a halt due to the coronavirus pandemic, Covid-19 infections at meatpacking plants led to shutdowns across the United States. Consumers had to deal with shortages of beef at supermarkets, along with higher prices. Ranchers, on the other hand, have been subject to staggeringly low prices for their cattle. Beef became scarcer and with higher consumer prices, while ranchers received lower prices for their beef. Meanwhile, meatpacking plants that were still operational were reported to have been raking in vast profits. This situation caused many to question if something had gone awry with pricing in the beef production industry.

During the shutdown, cattle farmers and meat buyers have complained about cattle industry pricing practices, leading many to voice their concerns about competition in the industry, including several states attorneys' general, while private lawsuits have been filed by various retail distributors regarding these price movements.

Indeed, in April of 2020, the U.S. Department of Agriculture reported that the weighted average retail beef prices rose almost 6.6% from the previous month, the highest monthly average price in the last several years. The price paid to meatpackers also rose by 15%. At the same time, the U.S. Department of Agriculture reported that the price received by ranchers was down 5.6% from March. The spread between the wholesale price and the rancher price rose by 68%, between March and April. Meanwhile, beef production fell by 24.7% from March to April - the lowest level in past five years.

In working paper 2006, recently published in Applied Economic Letters, PERC Director Dennis

Jansen, Research Scientist Liqun Liu, and Executive Associate Director Andrew Rettenmaier use a simple model to study the effects of meatpacking shutdowns while focusing on the decisions of meatpacking firms. The authors also investigate whether government subsidies can, at least in part, reverse the negative effects caused by plant shutdowns.

The authors first discuss how the meat industry responds to a negative shock, such as plant shutdowns due to the coronavirus pandemic. As some plants temporarily close, the plants that remain open increase production to meet demand, increasing profits. Even with increased production at the remaining plants, the total amount of processed beef decreases, causing an oversupply of beef-on-the-hoof and lowering the price paid to ranchers for their cattle. The scarcity of processed beef products also causes the price sold to retailers, like grocers, to rise, which is then passed on to consumers.

Next, the paper investigates what would happen in the event government subsidy was implemented that would increase the amount of packaged meat

“...The market price and quantity impact of the coronavirus-caused shutdown of meatpacking plants can be well understood in the framework of demand and supply...”

product and reduce the gap between retailer and rancher prices. A subsidy implemented in the upstream market would increase the quantity of cattle sold and increase the price paid to ranchers. This would also lower the costs to meatpackers, causing the retailer price to fall and an increased amount of packaged meat products to be sold to consumers.

In the downstream market, a unit subsidy imposed on grocers will increase the amount of meat products available for sale to consumers and lower the retail price of beef. The price paid to meatpackers would also increase, causing the price paid to ranchers to rise. Similarly, the quantity of cattle would also increase.

Findings show that the two versions of subsidies would have the same effect, leading to a decrease in retailer price, an increase in rancher price and an increase in the profit of each meatpacking plant still operating. It was also found that the subsidy reduces social welfare when the cost of the subsidy is factored in.

Looking ahead, the authors examine what would happen if the pandemic continues and additional plants are shutdown, rather than reopen. If this situation unfolds, findings show that remaining plants are likely to experience greater profits and produce more product at each location, although the amount of total product will still decrease, causing retailer prices to rise and rancher prices to fall.

Overall, findings show that the recent changes in prices in the meatpacking industry can be explained by the rules of supply and demand in the marketplace. As meatpacking plants reopen, the price paid for cattle by meatpacking plants and the price paid by retailers for processed beef products will balance and stabilize.

In the face of increasing globalization, these findings may also apply to other situations of supply chain disruption. For example, when a product's assembly factories in one area or country are cut off due to natural disasters or political unrest, it will have effects on both consumers and upstream suppliers of raw materials.

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## GENEROSITY ACROSS THE INCOME AND WEALTH DISTRIBUTIONS

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The miserly magnate is a common cultural trope, and the press encourage this view by highlighting findings that show that the well-off are, in fact, stingy. Although discussing how the rich spend their income is a topic of popular interest among the public and policymakers, little evidence exists that the wealthy are less likely to donate than other income groups, and the results of those studies that do are dubious due to questionable methodology and use of data.

In PERC working paper 2007, Jonathan Meer, the MaryJulia and George R. Jordan, Jr. Professor of Public Policy, along with co-author Benjamin A. Priday, estimate the relationship between pre-tax income, wealth, and charitable giving to definitely answer whether the wealthy embody the stingy stereotype or are due more credit for their generosity.

This paper examines three outcomes: the probability of giving, the amount donated, and the percent of income donated using data from the

Panel Study of Income Dynamics (PSID). The PSID is a biennial household survey spanning the years 2001 to 2017 that collects information from the previous year on wealth, income, and a number of individual and household characteristics, including charitable giving to religious entities. After removing those households with negative incomes and oversampled populations, the authors use the remaining 10,665 households' wealth and income data for their analysis.

Prior studies on wealth and charitable giving tend to be fraught with issues, including the misuse of data, incomplete controls, inappropriate empirical specifications, and a lack of accounting for the influence of outliers. A common finding of these studies is the "U-shaped" giving curve, where the average share of income donated is the largest at the lowest and highest parts of the income distribution and where middle-income groups give the lowest of

“...higher-income and higher-wealth individuals are substantially more likely to make donations to charity, and give significantly more.”

their incomes.

However, when comparing the percent of income given across income levels, a small number of outliers, or extreme values, at the bottom of the income distribution skew the results of these previous studies. These inaccurate findings are often those heralded by the press.

These outliers, or extreme values, are often elderly households with high levels of wealth but low income. Additionally, younger households may also become outliers by experiencing temporarily-low income levels, but by maintaining their level of giving of other, higher income-yielding years. Papers that do account for these outliers often simply remove those households with giving above a certain threshold, limiting the sample and creating a selection bias.

Here, the authors limit the extreme values of household’s percent of income given by capping the percent of household family income donated at 20 percent, limiting the disproportionate impact of outliers on outcomes. After separating observations with zero or negative wealth, the family income and wealth are then divided into evenly-sized separate bins, further reducing the effect of outliers and allowing the authors to retain the full number of qualifying households and provide the average giving for each wealth and income bin. Those in the top income bin give about 16 times more, on average, than those in the bottom income bin; the mean income in the top bin is 68 times that of the bottom bin.

The percent of income given increases with income, plateauing at about median income, before reducing somewhat for the very top income bin. The results for wealth are even more straightforward: the percent of income given continually rises with wealth (except for those with negative wealth), peaking at

about two percentage points higher for the top wealth bin relative to those with negative wealth.

To address non-donors in the sample, common fixed effects problems are eliminated by following a two step treatment process: a household first decides if they will give, then, if so, how much they will give. The authors estimate the impact of income and wealth on the extensive and intensive margins of giving, then combine the results to find marginal effects on the unconditional amount given. This provides information on the impact of giving across the income and wealth distributions, while holding all other observable characteristics equal. It also sheds light on whether people who have or earn more money tend to be more or less generous than those who have the same observable characteristics, but less money.

Demographic controls for age, gender, education, race marital status, retirement and disability status, self-reported health, religious affiliation, number of children, and a housing price index are included, along with state and year effects. These controls provide important correlations that are rarely included in other data.

Household-level fixed effects are also included to account for unobserved differences not affected by time that might bias the analyses, like altruism. The authors note, however, that these results – even those including fixed effects – cannot necessarily be viewed as the cause behind the giving of additional income or wealth for an individual.

In addition to PSID survey data, which does not include many of the top highest-income households, the authors also analyze data from the Internal Revenue Service Statistics of Income. From this data, the authors find that the very-highest-income individuals tend to give the most as a percent of their income.

In contrast to some of the previous academic research and much of the popular discourse on the topic, results show a strongly positive relationship between resources and giving. Findings show that, regardless of specification, higher-income and higher-wealth individuals are substantially more likely to make donations to charity, and to give significantly more. Furthermore, once outliers are properly accounted for, the relationship between the percent of income given and income or wealth is generally flat for those households making less than \$500,000.



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