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The Effects of Energy Price Shocks on Household Food Security in Low-Income Households

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What is the issue?

Gasoline, natural gas, and electricity prices vary widely over time. Yet, because these goods are necessary and demand for the goods does not respond to change in prices—gasoline for driving to work and natural gas and electricity for heating homes and running kitchen appliances—households may face challenges meeting basic needs when energy prices rise unexpectedly. As income drops, household expenditures also fall. This effect can be particularly detrimental to low-income households, which have few savings and assets and whose budget share allocated toward energy expenditures is already large compared with households with higher incomes. While previous studies have examined the effects of unexpected increases, or positive shocks, in energy prices on household food spending, this is the first study to examine whether such price shocks can result in an increase in three measures of food distress, including food insecurity. Food-insecure households lack access to adequate food for a healthy lifestyle.

What did the study find?

This study estimated the effects of energy price shocks on three measures of food distress: (1) the 30-day measure for *food insecurity*; (2) *food insufficiency*, which indicates a household is unable to access either the quantity or quality of food it believes it needs; and (3) *more money*, where a household indicates it needs more money to buy sufficient food relative to its last food purchase. Researchers examined data on low-income households, low-income households that reside in the 26 States (among the 48 contiguous States) with the coldest average temperatures in December, and the total sample. Findings include the following:

- The effects of energy price shocks increase in magnitude for low-income households, which already allocate a larger share of their budgets to energy expenditures than other households. This suggests that low-income households are more vulnerable to unexpected jumps in energy prices than other households.

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- Positive shocks to gasoline prices have a statistically significant effect on the probability of needing more money for food relative to a household's most recent food shopping in the total sample as well as in the low-income sample. Negative gasoline shocks decrease the probability of 30-day food insecurity in the total sample but have no effect on the low-income sample.
- Positive and negative shocks to natural gas prices have a statistically significant effect on each food-distress indicator in the total sample and in the low-income sample. In the low-income sample of households that reside in cold States, only negative natural gas price shocks affect the probability of food stress and needing more money.
- Positive shocks to electricity prices increase the probability of food stress and needing more money in the total sample as well as in the low-income sample. Negative shocks to electricity prices decrease the probability of food insecurity and food stress in the low-income sample of households that reside in cold States.

How was the study conducted?

The study uses data from the Current Population Survey Food Security Supplement (CPS-FSS) for the years 2001-2014 and the U.S. Energy Information Administration (EIA) for the years 2000-2014. The Current Population Survey is a survey representative at the State and national level that is administered monthly by USDA and the U.S. Census Bureau. The CPS-FSS survey collects data on food access, expenditure, shopping, and participation in USDA's Supplemental Nutrition Assistance Program. The analysis merges State-level energy price information from EIA with the CPS data. Energy price shocks are calculated using State-level monthly gasoline, natural gas, and electricity price information provided by the EIA. These shocks represent deviations from respondents' expectations of monthly energy prices. The CPS-FSS is administered in December of each year, when unexpected changes in energy prices that can affect heating and transportation can be most detrimental.