Foods and Fads: The Welfare Impacts of Rising Quinoa Prices in Peru
Marc Bellemare (U. Minnesota), Johanna Fajardo-González (U. Minnesota) and Seth Gitter (Towson U.)

Introduction

- Quinoa went in less than a decade from being largely unknown outside of South America to being an upper-class staple in the United States
- International price of quinoa tripled between 2006 and 2013
- Media reports concerns about effects of rising quinoa prices on welfare of households in places where quinoa had traditionally been produced and consumed
- Most claims are not based in any rigorous empirical work
- We study relationship between value of household consumption and local consumer price of quinoa for those households that report consuming quinoa and those that report producing quinoa

2004-2013 ENAHO

- The Peruvian Encuesta Nacional de Hogares (ENAHO) is an annual, nationally representative household survey conducted by the Peruvian government’s Instituto Nacional de Estadistica e Informatica
- 227,400 household-year observations from 2004 to 2013
- 1,838 districts in 195 provinces in 25 departments
- Pseudo Panel: average over household-level measures within each geographical unit and then treat those geographical units as our primary units of observation
- Outcome of Interest: total value of household consumption (welfare)
- Consumers: increasing proportion (28.6% to 30.8%) and increasing budget shares of quinoa in total consumption (0.10% to 0.25%)
- Producers: decreasing proportion (3.69% to 2.03%) but increasing revenues (12 PEN to 171 PEN)

Welfare of Quinoa Producers and Quinoa Consumers

- Up until 2009, the welfare of quinoa consumers increased at a faster rate than that of quinoa producers
- Starting in 2010 quinoa producers saw their welfare increase faster than quinoa consumers
- At peak of the quinoa price boom in 2013, welfare of quinoa producers increased much faster than that of quinoa consumers
- Welfare of quinoa producers increased by almost 50 percent over the period 2004-2013
- Welfare of quinoa-consuming and quinoa-neither-consuming-nor-producing households increased by about 30 percent

Econometric Framework

Difference-in-Differences

Quinoa Consumers

\[ \ln c_{i,t} = \alpha_0 + \alpha_1 \ln p_{i,t} + \delta_q + T + \epsilon_{i,t} \]

\[ \ln c_{i,t} = \text{mean household consumption in geographical unit } g \text{ in year } t \]
\[ \ln p_{i,t} = \text{mean of the consumer price of quinoa} \]
\[ \delta_q = \text{vector of geographical-unit fixed effects} \]
\[ T = \text{linear time trend} \]
\[ \epsilon_{i,t} = \text{error term with mean zero} \]
\[ \alpha_1 = \text{estimate of quinoa price elasticity of household welfare for } g \text{ where quinoa is consumed} \]

Quinoa Producers

\[ \ln q_{i,t} = \alpha_0 + \alpha_1 \ln p_{i,t} + \beta_0 + \beta_1 T + \epsilon_{i,t} \]

\[ \ln q_{i,t} = \text{proportion of households that produce quinoa in geographical unit } g \text{ in year } t \]
\[ T = \text{equals 1 in year } 1 \text{ and 0 otherwise} \]
\[ \beta_0 = \text{geographical unit fixed effects} \]
\[ \epsilon_{i,t} = \text{error term with mean zero} \]
\[ \alpha_1 = \text{DID estimates: } \delta_q \text{ and } T \text{ are interacted } \]
\[ \text{difference in household welfare trends over time between quinoa producers and quinoa non-producers} \]

Results and Conclusions

Demand side: 1 percent increase in the purchase price of quinoa is associated with a 0.07 percent increase in the welfare of quinoa-consuming households.

Supply side: positive effects on the welfare of producer households.
- Direct effects: faster increase in rate of welfare growth for households that produced quinoa relative to households that did not, but only in 2013, when quinoa prices were at their highest
- Indirect effects: reduction in the variability of welfare for households that produced quinoa

Referential Huber, 2017; *Statistical significance at *p<0.05. *and **Statistical significance at *p<0.01.

References