

FY 2020 NERA Funding Support for Grant Applications

Project Title: Consumer Preferences for Diet Quality, Innovation and Market Structure

Team Lead Contact Information:

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Team Members:

Name	Institution/Agency/Organization
Dr. Christian Rojas	Department of Resource Economics, University of Massachusetts Amherst
Dr. Ted Jaenicke	Department of Agricultural Economics, Sociology and Education, Penn State University

Consumer Preferences for Diet Quality, Innovation and Market Structure

Grant Opportunity

The requested funds will be used to cover costs associated with the preparation of a grant proposal to be submitted to the U.S. Department of Agriculture. The grant opportunity corresponds to the Economics, Markets and Trade (A1641) program area in the Agriculture and Food Research Initiative (AFRI) at the National Institute of Food and Agriculture (NIFA). Details of the grant can be found here: <https://nifa.usda.gov/afri-deadlines>. RFA is available [here](#). The estimated direct cost for the proposal will be \$350,000 (\$500,000 including direct).

Prospective Abstract

Consumer preferences are constantly evolving. This is especially true in the food industry, in particular as it pertains to increased consumers' attention and demand for healthier foods and ingredients. At the same time, it is not surprising to see firms reacting to these evolving preferences. In prior work, it has been found that both consumer evolving preferences as well as firms' reaction to these preferences are important factors in the improved overall nutritional quality of food products sold at retail in the U.S. (Cengiz, Rojas and Wang, 2020). Specifically, the evidence points to a marked improvement of products' dietary content across the board. The analysis suggests that firms' reformulation of products (e.g. improvement in the quality of foods' nutrients) has played an important role in this improvement; but also, and in tandem, consumers' preferences have evolved and are now such that healthier nutrients are much more valued than they were a decade ago.

In the proposed USDA grant, our objective will be to study several crucial aspects of the observed evolution of markets towards healthier foods. First, we will seek to understand in which industries such improvement is more important and which industries in which industries it lags behind. Specifically, we posit that market structure (concentration and the number of firms) may play an important role in the observed differences across industries (e.g. firms in more competitive markets might be more compelled to reformulate). Also, it is likely that advertising intensity is an important driver, as this business strategy is crucial in forming consumer preferences. These questions are central to current policy discussions as to what are the most effective interventions to improve nutritional intake in the United States and the related health issues associated with it. Second, we propose developing an economic model that would illustrate what other possible market factors could explain why nutritional quality might increase more intensely in certain industries.

The research requires a thorough literature review of the theoretical models available as they pertain to firms' endogenous response (i.e. product improvements) to consumers' heterogeneous (or evolving) preferences. A second aspect of the research requires a thorough statistical analyses of the data (which has been developed in prior work; Cengiz, Rojas and Wang, 2020). Finally, the work will also, building on prior literature, require building a theoretical model that is suitable for the food industry.

There are several stakeholders. The outcomes of this research have the potential of providing practical answers for policy makers in their quest to formulate interventions that are effective in combating poor nutritional quality. The second obvious stakeholder are consumers, the direct beneficiaries of improved diets. Finally, firms are likely to derive some benefits from this research as it pertains to how the competitive landscape affects firms' optimal decision making when deciding whether to innovate (i.e.

improve a product's quality). Given the important policy ramifications of the research, this work has the potential of broadening economists' and non-economists' understanding of the drivers of nutritional quality in the U.S.

Team Members

Dr. Christian Rojas, from the Resource Economics Department at the University of Massachusetts, will be the team leader. Dr. Rojas will be joined by Dr. Ted Jaenicke, professor in the Department of Agricultural Economics, Sociology and Education at Penn State University. Dr. Rojas will be leading the data collection and statistical analyses while Dr. Jaenicke will be in charge of gathering the relevant institutional information for the industries to be studied. Dr. Rojas and Dr. Jaenicke will be jointly developing the theoretical model to be used in the analyses.

Dr. Rojas has ample research experience in studying economic issues in the food industry. He has published multiple peer-reviewed papers in industries that include soda, beer, meat, and infant formula. He is particularly interested in public policies to combat obesity. Dr. Rojas has obtained funding from both NSF and USDA in multiple occasions, securing over \$ 1MM over his career.

Dr. Jaenicke is an expert in food retailing and consumer behavior. Dr. Jaenicke has published numerous peer-reviewed journal articles and is an internationally renowned expert in the economics of food. Dr. Jaenicke brings unique perspectives regarding the most important contemporary policy issues regarding food retailing. He also contributes a wealth of knowledge as it pertains to the economic models that are suitable for the food industry. Dr. Jaenicke has secured funding from several USDA programs over his career, totaling well over \$1MM.

Budget Narrative

The bulk of the budget (\$5,986) will be used to employ a graduate RA to assist with preparing a literature review as well as preliminary data assembly/cleaning and analysis. We expect the RA to be able to perform the required work over an 8-week period (at approximately 20 hr/week). A portion of the budget (\$1,000) will be used for travel by the team leader to visit Penn State to develop the main structure of the proposal with Dr. Jaenicke. Depending on when (if successful) the funds of this grant are made available, we will either submit our grant proposal for the upcoming cycle (April 30, 2020) or the next cycle (which we understand will likely occur by December 2020). We expect that travel expenses will occur shortly after funds are made available. Disbursement of RA payments will also start to be disbursed soon after funds are received; we project this disbursement to take place over the period of 2-3 months, contingent on RA hours available (e.g. Spring v. summer, etc.).

Budget Table

Travel to and from Penn State	RA
Mileage: 800 miles (round trip) @ 0.575 = \$460	164 hours @ \$36.50/hour (includes 20.33% fringe cost) = \$5,986 [this is equivalent to an 8-week assignment at 20 hr/week]
Hotel (3 nights), @ 100/night = \$300.	
Per diem: \$60 x 4 = \$240	
<i>Total: \$1000</i>	<i>Total: \$5,986</i>
Total: \$6,986	

CHRISTIAN ROJAS

Education

Ph.D. Economics, Virginia Tech, 2005

M.A. Economics, Virginia Tech, 2003

B.A. Economics, Pontificia Universidad Católica del Ecuador, 2000.

Research and Teaching Interests

Industrial Organization, Applied Microeconomics and Econometrics, Experimental Economics

Employment and Experience

Professor, Department of Resource Economics, University of Massachusetts-Amherst, 2019 - present (**Associate Professor** 2013-2019; **Assistant Professor** 2006-2013).

Researcher at the Food Marketing Policy Center, University of Connecticut and University of Massachusetts, 2003-2012, <http://www.fmpc.uconn.edu/>

Major Grants

1. *United States Department of Agriculture* - 2016-67023-24808: “The Evolution of Nutrition Intake,” Emily Wang (PI), Christian Rojas (Co-PI), 2016-2020 [\$499,000].
2. *National Science Foundation* Grant SES-0820312: “Competitive and Welfare Effects of Vertical Integration and Vertical Restraints: Empirical Evidence,” 2008-2010 [\$114,000]. Christian Rojas (PI).
3. *United States Department of Agriculture - National Research Initiative* Grant 2008-35400-18700: “Incorporating Buyer Market Power and Product Differentiation in the Food Supply Chain,” 2008-2010. [\$168,789]. Nathalie Lavoie (PI), Christian Rojas, Dan Lass, Julie Caswell.
4. *National Science Foundation*: Grant SES-0526229: “The Role of Information and Monitoring on Cartel Stability: An Experimental Assessment,” 2005-2007. [\$5,500]. Christian Rojas (PI), Sheryl Ball (faculty sponsor).

Published Work

1. H. Wei and C. Rojas. 2018. “Spillover Mechanisms in the WIC Infant Formula Program,” *Journal of Agricultural and Food Industrial Organization*, December, p. 1-14. <https://doi.org/10.1515/jafio-2018-0019>
2. C. Bauner, N. Lavoie and C. Rojas. 2017. “Effects of Technological Change on Vertical Product Differentiation in the Presence of Buyer and Seller Market Power,” *European Review of Agricultural Economics*, 44(1), 67-97.
3. E. Wang, C. Rojas and F. Colantuoni. 2017. “Heterogeneous behavior, obesity and storability in soft drink consumption: A dynamic demand model,” *American Journal of Agricultural Economics*, 99(1), 18-33.

Media Coverage: US News & World Report and 60 other (regional) outlets, including Fox, ABC, NBC and CBS news channels.

4. E. Wang, C. Rojas and C. Bauner. 2015 “Evolution of Nutritional Quality in the U.S.: Evidence from the Ready-to-Eat Cereal Industry,” *Economics Letters*, 133, 105-8.
5. F. Colantuoni and C. Rojas. 2015. “The Impact of Soda Sales Taxes on Consumption: Evidence from Scanner Data,” *Contemporary Economic Policy*, 33, 714-30.
6. C. Rojas, N. Lavoie and S. Wang. 2012. “Buyer Market Power and Vertically Differentiated Retailers.” *Journal of Agricultural and Food Industrial Organization*, 10 (1). DOI: 10.1515/1542-0485.1338
7. C. Rojas. 2012. “The Effect of Mandated Exclusive Territories in the US Brewing Industry.” *B.E. Journal of Economic Analysis & Policy*, 12 (1). DOI: 10.1515/1935-1682.3088
8. C. Rojas and T. Shi. 2011. “Tax Incidence when Quality Matters: Evidence from the Beer Market,” *Journal of Agricultural and Food Industrial Organization*, 9, 1-33. DOI: 10.2202/1542-0485.1353
9. C. Rojas. 2008. “Price Competition in U.S. Brewing.” *Journal of Industrial Economics*, 56, 1-31 [lead article]
10. C. Rojas and E. Peterson. 2008. “Demand for Differentiated Products: Price and Advertising Evidence from the U.S. beer Market.” *International Journal of Industrial Organization*, 26, 288-307.
11. C. Rojas, A. Andino and W. Purcell. 2008 “Retailers’ Response to Wholesale Price Changes: New Evidence from Scanner-Based Quantity-Weighted Beef Prices.” *Agribusiness: An International Journal*, 24, 1-15 [lead article]

Working Papers

12. C. Rojas and E. Wang. 2019. “The Effects of Excise Soda Taxes on Consumption: Evidence from Washington State and the City of Berkeley.” Under review.
13. E. Cengiz, C. Rojas and E. Wang. 2020. “The Evolution of Diet Quality in the U.S.: Evidence from Scanner Data”