

# SYED BADRUDDOZA

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EDUCATION	<p><b>PhD in Economics</b>, Washington State University 2015-May2020 (Exp.) Advisor: Jill McCluskey, PhD Dissertation: <i>Retail Markets for Organic Dairy</i> Chapters: 1. How Social Influence Affects U.S. Demand for Milk 2. Long-Term Dynamics of Organic Dairy Premiums in the United States 3. Assessing the Importance of an Attribute in a Demand System: Structural Model versus Machine Learning</p> <p><b>MS in Statistics</b>, Washington State University 2017-May2020 (Exp.) Advisors: Yuan Wang, PhD and Jan Dasgupta, PhD Project: <i>Classification of Gaussian Processes in Sparse Data</i></p> <p><b>MS in Financial Economics</b>, Illinois State University 2013-15 Advisor: Rati Ram, PhD Capstone: <i>Does a Price Ceiling Always Help the Poor? Evidence from the Microfinance Industry in Bangladesh</i></p> <p><b>BS &amp; MS in Economics</b>, University of Dhaka, Bangladesh 2004-09</p>
INTERESTS	Applied Econometrics, Agricultural and Natural Resource Economics, Industrial Organization, Classifier Regression Models
MANUSCRIPTS UNDER REVIEW	<p><b>Badruddoza, S.</b>, M.D. Amin, and J.J. McCluskey. 2019. "Assessing the Importance of an Attribute in a Demand System: Structural Model versus Machine Learning." <i>American Journal of Agricultural Economics</i> (informal resubmit with empirics).</p> <p><b>Badruddoza, S.</b>, A.C. Carlson, and J.J. McCluskey. 2020. "Long-term Dynamics of Organic Dairy Premiums in the United States." <i>American Journal of Agricultural Economics</i> (submitted 1/28/2020).</p> <p>Amin, M.D., <b>S. Badruddoza</b>, and J.J. McCluskey. 2019. "Predicting Access to Healthful Food Retailers with Machine Learning." <i>Food Policy</i> (Revise and resubmit).</p>
PUBLICATIONS <small>[Google Scholar link]</small>	<p>Amin, M.D., <b>S. Badruddoza</b> and R. Rosenman. 2018. "Quality Differentiation under Mixed Competition in Hospital Markets." <i>Journal of Industry, Competition and Trade</i> 18(4):473-484.</p> <p>Khandker, S.R., H. Samad, and <b>S. Badruddoza</b>. 2017. "Seasonality of Rural Finance." <i>World Bank Policy Research Working Paper</i> 7986. Washington DC.</p> <p>Brady, M.P., R.K. Gallardo, <b>S. Badruddoza</b>, and X. Jiang. 2016. "Regional Equilibrium Wage Rate for Hired Farm Workers in the Tree Fruit Industry." <i>Western</i></p>

*Economics Forum* 15(1): 20-31.

Khalily, M.A.B., M.A. Khaleque, and **S. Badruddoza**. 2014. "Impact of Regulation on Cost Efficiency of Microfinance Institutions in Bangladesh." in Roy Mersland and Øystein Strøm (eds.) *Microfinance Institutions: Financial and Social Performance*. Hampshire: Palgrave Macmillan.

Khandker, S.R., G. Koolwal, and **S. Badruddoza**. 2013. "How Does Competition Affect the Performance of MFIs: Evidence from Bangladesh." *World Bank Policy Research Working Paper* 6408. Washington DC.

Faruqee, R., and **S. Badruddoza**. 2012. *Microfinance in Bangladesh: Past, Present and Future (in Bengali)*. Dhaka: Institute for Inclusive Finance and Development. ISBN: 978-984-33-5738-0.

GRANT  
WRITING  
EXPERIENCE

**Social interaction and consumer acceptance of genome editing in domestic livestock**, 2019-, Co-PDs: Jill McCluskey (WSU), Trish Glazebrook (WSU), Alison Van Eenennaam (UC Davis), Jason Winfree (U of Idaho). Funding agency: Agriculture and Food Research Initiative of USDA. (Successful)

**Impact of PRIME intervention on munga mitigation**, 2010-11, Co-PIs: M.A. Baqui Khalily, Md. Abdul Latif. Funding agency: Palli Karma-Sahayak Foundation, Bangladesh. (Successful)

TEACHING  
EXPERIENCE

**Instructor**, Washington State University (Evaluation 4.36/5.0)

305 Intermediate Micro. without Calculus (Online)	Enroll. 19	Spring 2020
101 Fundamentals of Microeconomics	205	Fall 2019
305 Intermediate Microeconomics without Calculus	6	Summer 2019
101 Fundamentals of Microeconomics	98	Spring 2019
327/470 Int'l Trade & Finance/ Int'l Business	153	Fall 2018
102 Fundamentals of Macroeconomics	9	Summer 2018
327/470 Int'l Trade & Finance/ Int'l Business (Online)	26	Spring 2018
327/470 Int'l Trade & Finance/ Int'l Business (Online)	15	Fall 2017
101 Fundamentals of Microeconomics	26	Summer 2017

**Guest Lecturer**, Washington State University

311 Introductory Econometrics	40	Spring 2020
335 Business Finance Economics	45	Spring 2019
594 PhD level Industrial Organization Theory	8	Spring 2018

**Teaching Assistant**, Illinois State University

201 Intermediate Microeconomic Theory	21	Spring 2014
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CONFERENCE  
PRESENTATIONS

**Badruddoza, S.**, A.C. Carlson and J.J. McCluskey. 2020. "How Social Influence Affects U.S. Demand for Milk." *Agricultural and Applied Economics Association Annual Meeting*, Selected Paper, Session: Plant Milk. Kansas City, MO.

Amin, M.D., **S. Badruddoza**, and J.J. McCluskey. 2020. "Predicting Access to Healthy Food in the United States with Machine Learning." *ASSA Annual Meeting–American Economic Association*, Selected Paper, Session: Use of Machine Learning Algorithms (Econometric Modelling). San Diego, CA.

**Badruddoza, S.**, A.C. Carlson and J.J. McCluskey. 2019. “Long-Term Dynamics of Organic Dairy Premium in the United States.” *Agricultural and Applied Economics Association Annual Meeting*, Selected Paper, Session: Economics of Agri-Food Markets. Atlanta, GA.

**Badruddoza, S.**, and M.D. Amin. 2019. “Determining the Importance of an Attribute in a Demand System: Structural versus Machine Learning Approach.” *Agricultural and Applied Economics Association Annual Meeting*, Selected Poster, Session: Research Methods/Econometrics/Stats. Atlanta, GA.

**Badruddoza, S.**, and M.D. Amin. 2019. “Investment Decision and Portfolio Diversification by U.S. Dairy Farmers.” *Agricultural and Applied Economics Association Annual Meeting*, Selected Poster, Session: Agribusiness Economics and Management. Atlanta, GA.

Amin, M.D., **S. Badruddoza**, and R. Rosenman. 2019. “Corporate Social Responsibility and Product Differentiation under Mixed Competition.” *Agricultural and Applied Economics Association Annual Meeting*, Selected Poster, Session: Industrial Organization/Supply Chain Management. Atlanta, GA.

**Badruddoza, S.**, and M.D. Amin. 2019. “Personal and Social Effects in Food Choice: The Case of GMO and Non-GMO Foods.” *Western Economic Association International*, selected Paper, Session: Consumer Preferences for Environmental Goods. San Francisco, CA.

**Badruddoza, S.**, and M.D. Amin. 2019. “Agricultural Production and Farmer’s Access to Finance: A Bayesian Approach.” *Academy of Economics and Finance Conference*, Selected Paper. St Petersburg, FL.

Amin, M.D., and **S. Badruddoza**. 2018. “Country Income, Sources of Carbon Emissions, and Counterfactuals.” *Agricultural and Applied Economics Association Annual Meeting*, Selected Poster, Session: Natural Resource Economics. Washington D.C.

**Badruddoza, S.** 2017. “Time Preference and the Emissions of Greenhouse Gases.” *EARThS Conference*, Selected Paper, Washington State University, Pullman, WA.

**Badruddoza, S.** 2013. “Decision-making in Rural Credit Supply.” *Third European Research Conference on Microfinance*, Selected Paper. University of Agder. Kristiansand, Norway.

RESEARCH &  
PROFESSIONAL  
EXPERIENCE

**Graduate Research Assistant**, Washington State University 2015-17  
to Michael Brady, PhD. Study: *Economics of Irrigation in Washington*

**Summer Intern**, the World Bank, Washington DC. Summer 2016  
DECRG: Environment and Energy Division

**Graduate Research Assistant**, Illinois State University 2015  
to Rati Ram, PhD. Study: *Corruption and Inequality*

**Summer Intern**, the World Bank, Washington DC. Summer 2014  
DECAR: Agriculture and Rural Development Division

**Research Associate**, Institute for Inclusive Finance and Development 2010-13  
Projects on farm credit and cost efficiency of credit organizations

**Research Assistant**, Economic Research Group 2008-09  
Household consumption survey with experimental design

PROFESSIONAL SERVICE	<b>Referee</b>	2019-
	European Review of Agricultural Economics	
	<b>Abstract Reviewer</b>	2019-
	AAEA Annual meetings	
	<b>Consulting Editor</b>	2018-19
	<i>Intermediate Microeconomic Theory: Tools and Step-by-Step Examples</i> by Felix Munoz-Garcia and Ana Espinola-Arredondo, MIT Press	
	<b>Session Moderator</b>	August 2018
	<i>Food Policy and Applications from Nutrition</i> AAEA Annual Meeting 2018, Washington D.C.	
	<b>Consulting Editor</b>	August 2017
	<i>Advanced Microeconomic Theory: An Intuitive Approach with Examples</i> by Felix Munoz-Garcia, MIT Press	
MEDIA	<b>Badruddoza, S.</b> 2019. <i>Bridging the Gap between Farm and Table for Sustainable Agriculture</i> . Center for Sustaining Agriculture and Natural Resources. <sup>[link]</sup>	
SCHOLARSHIPS	<b>H. Delight and Orlo H. Maughan Scholarship</b>	2019
	Washington State University.	
	<b>Graduate and Professional Student Association Travel Grant</b>	2019
	Washington State University.	
	<b>Tilth Conference Scholarship</b>	2018
	Washington Organic and Sustainable Agriculture Community.	
	<b>Krautkraemer Pay it Forward Scholarship</b>	2017
	Washington State University.	
<b>SES-GSA Research Poster Competition Travel Grant</b>	2016	
Washington State University.		
<b>Tesfaye Girma Deboch Graduate Fellowship</b>	2015	
Washington State University.		
<b>Economics Endowment for Graduate Student Excellence</b>	2014	
Illinois State University.		
<b>Government of Bangladesh Scholarship</b>	2004-09	
University of Dhaka, Bangladesh.		
LEADERSHIP & COMMUNITY SERVICE	<b>Senator and Member of Community Affairs</b>	2019-20
	Graduate and Professional Students' Association, WSU	
	<b>Mentor</b>	March 2018
	<i>Statistics: Test Your Claims</i> Workshop for Lincoln Middle School American Mathematical Society and WSU	
<b>Food Preparer</b>	Fall 2014	
International Food Fair at Calvary Baptist Church. Normal, IL		
<b>Treasurer</b>	2013-15	
Bangladeshi Students' Association at Illinois State University		
SKILLS	Software: R, Python, SAS, Stata with Mata, SQL, Cloud computing experience Github: <a href="https://github.com/Badruddoza">https://github.com/Badruddoza</a> Language: English (Fluent), Bangla (Native)	

REFERENCES

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## **Retail Markets for Organic Dairy**

Dissertation Summary

Syed Badruddoza

### Chapter 1: How Social Influence Affects U.S. Demand for Milk

In the United States, per capita consumption of fluid milk dropped by about 40 percent since 1975, whereas the popularity of plant-based milk products has been growing. The study explores consumer valuation of fluid milk and its beverage alternatives when there is a social influence. I use retail scanner data (2008-2017) to examine the social influence on milk demand and its plant-based alternatives. A random coefficient discrete choice framework provides evidence that the popularity of a milk type affects individual consumption choices—where the popularity is identified by the number of consumers bought a particular brand in the previous year. The difference in consumer valuations of cow’s milk, almond milk, soymilk, goat’s milk, rice milk, and coconut milk falls when social influences are absent. Social influence affects both mean and variance of milk preferences, willingness to pay, own- and cross-price elasticity, and price-cost markup. However, consumer preferences for organic and no-added-sugar product attributes are growing over time, even after accounting for social effects.

### Chapter 2: Long-Term Dynamics of Organic Dairy Premiums in the United States

Producing organic milk has been an alternative for conventional farmers who are struggling with low prices. However, organic dairy prices recently collapsed along with non-organic prices when several large producers entered the organic market. The current study explores the patterns and determinants of organic dairy premiums. We estimate monthly price premiums for organic whole milk, other fluid milks, yogurt and eggs over the period 2008 to 2017 using U.S. retail scanner data. The premiums were 53%, 47%, 21%, and 44%, respectively, with the annual growth rates of 3.77%, 5.22%, 2.53%, and -1.77%. We identify the determinants of price premiums with a dynamic-factor model to account for endogeneity and autocorrelation, and a machine-learning algorithm—extreme gradient boost—to avoid dimensionality issues. We also derive Shapley values to interpret the predictions. Our findings suggest that agricultural services, feed, fuel, and transportation costs have positive associations with organic price premiums, whereas supercenter sales have a negative association. Store brands encourage organic sales for all four products, and a growth in working population increases the sales of organic milk.

### Chapter 3: Assessing the Importance of an Attribute in a Demand System: Structural Model versus Machine Learning

Firms can prioritize among product attributes based on consumer valuations using market-level data. However, a structural estimation of the market demand is challenging, especially when the data are updated in real-time and instrumental variables are scarce. I compare the discrete choice model with random forests in assessing the importance of a product attribute in a demand system. Theoretical work and simulation suggest that the importance factor of an attribute derived by random forests correlate with its marginal utility estimated by the discrete choice model, in rank (68%) and magnitude (79%), and the correlations increase with the sample size. Random forests rank the attributes without requiring instrumental or demographic variables. Consumer sensitivity to endogenous variables (price) and variables with random coefficients are overemphasized by random forests due to their volatile nature, but ranking of variables with non-random coefficients match between the two models in 96% of cases.