**Consumer Welfare and Dietary Impacts of Food Price Inflation**

**Project Plans, March–July 2024**

A “Statement of Work” for this project as defined in July 2022 is appended. Some of the emphasis and details of our thinking has evolved, but the essential idea remains that we will conduct work in three phases:

1. In the first phase, we will use the IRI Consumer Network data and a demand systems approach to estimate demand for food-at-home products by income group. We will also investigate whether other recently acquired data (NPD’s NETS and CREST) by ERS are suitable for characterizing the food-away-from-home portion of U.S. consumers’ budgets. The cooperator’s institution will sign the third-party agreement to access ERS’ proprietary data.
2. The second phase will extend the equilibrium displacement model developed by Okrent and Alston (2012) to characterize the marketing and commodity markets in more detail and to update the model parameters. This will allow us to examine price-induced changes for some of the causes of recent food price inflation investigated in the SGPG. The data for this extension may be based on BEA’s Input-Output tables, ERS Food Dollar and/or parameters from the academic literature.
3. The last phase will be to parameterize the equilibrium displacement model with the updated estimates from phases 1 and 2. Using Monte Carlo approach, we will simulate the effects of recent inflationary price changes on social welfare and diet quality.

We now have some more-specific conceptions of what to do in each of these phases, which we should document soon.

The project funding has been extended through September 2024. We have undertaken to present findings at the AAEA in early August 2024. We have much to do to complete the three phases of work enumerated above within the remaining 5–6 months. To get that done we should:

* Define specific details of what we envision doing under each of the three phases of work.
* Discuss processes for getting the work done, define specific tasks, and assign responsibility to particular individuals for getting them done with clear reporting lines.
* Develop a detailed schedule of deliverables associated with the tasks as defined under 2.

The following pages include a draft outline of work to be done, and by whom, and a draft schedule of “deliverables” and deadlines, all to be discussed at our next group meeting.

1. **Outline of Work**
   1. *Extension of EDM to allow for multiple categories of consumers*

Done by JA, January 2024

* 1. *Extension of EDM to characterize marketing and commodity markets in more detail*

Details of labor, capital, and energy supply? Maybe defer?

* 1. *Updating of basic model parameters (shares) from 2012 to 2017*

Abby

* 1. *Updating of consumer demand parameters (elasticities)*
* Wenjie supervised by Abby to organize relevant data and estimate EASI demand models.
* Chen Zhen model (censoring, obesity categories, 2012–2013)
  + how do we aggregate from his ~20 consumer products to our 10?
  + or should we try to disaggregate the whole model?
  1. *Defining scenarios to be simulated*

JMA to prepare first draft list.

* 1. *Simulations*

Abby and Wenjie

* 1. *Write-up*

JMA to lead

1. **Schedule – Deliverables**

*April 30, 2024 – Data for demand assembled, initial estimates*

– Wenjie and Tim

*April 30, 2024 – Final decisions about structure of model and analysis*

Measures of outcomes (compensating variation, HEI, obesity) and data requirements

– Abby and Julian

*May 31, 2024 – scenarios defined*

Possible scenarios and sources of “data”

– Julian and Abby

*May 31, 2024 – parameterization of EDM completed*

Shares updated to 2017 – Abby

Elasticities – Wenjie and Tim

Measures of outcomes defined and parameters – Abby

*June 30, 2024 – initial results and first draft paper*

Simulation results – Wenjie and Abby

Draft paper – Julian

**STATEMENT OF WORK**

**July 30 2022**

**Title:** Consumer Welfare and Dietary Impacts of Food Price Inflation

**Leaders:** Abigail Okrent, FED-DSHE

Julian Alston, University of California, Davis

**Background and Objectives:** Over the past two years, a wide variety of factors contributed to 40-year highs in U.S. food prices, including labor challenges, escalating fuel costs, a lack of truck drivers, port congestion, plant closures, and other issues leading to supply chain disruptions, along with rising agricultural commodity and other input prices, weather events, disease outbreaks, and more recently the food production and trade impact of the Russian invasion of Ukraine. The current administration stated that inflation is a top priority in its domestic policy agenda. Relevant and timely information on the causes and consequences of the current inflationary trend is necessary for the administration to make evidence-based decisions to address this problem. As part of the funded SPGP proposal to evaluate the causes and impacts of retail food price inflation (led by Matt MacLaughlin), the objective of this cooperative project is to examine the impacts of the recent price spike on consumer welfare and diet outcomes.

**Policy and Program Relevance:** Prices are an important determinant of consumer food choices, and recent food price inflation has eroded the purchasing power of U.S. consumers. For example, a recent ERS study found that U.S. consumer welfare losses resulting from pandemic-induced meat plant closures peaked at roughly $25 per household in June 2020 but subsequently fell to $6 per household in December 2020 (Dong, Stewart, Dong and Hahn 2022). In addition to these measures, price-induced changes in food choices can ultimately affect U.S. food security and nutritional outcomes (Gregory and Coleman-Jensen 2013; MacEwan, Alston and Okrent 2016).

Compared with their higher-income counterparts, low-income households are affected more by food price inflation because they spend a higher proportion of their budgets on food. Past research suggests that the commodity price spikes in 2008 greatly impacted the welfare of U.S. low-income households (Huang and Huang 2012). However, the most recent inflation rates in 2022 are more severe in aggregate and affect more products than the 2008 commodity price spikes (ERS FPO 2022). This means that the recent inflationary trend in food prices has the potential to exacerbate already existing disparities among U.S. households, having long-term effects on the food security and nutritional outcomes of vulnerable U.S. households, with implications for racial and social equity.

**Data and Methodology:** This research will be conducted in three phases. In the first phase, we will use the IRI Consumer Network data and a demand systems approach to estimate demand for food-at-home products by income group. We will also investigate whether other recently acquired data (NPD’s NETS and CREST) by ERS are suitable for characterizing the food-away-from-home portion of U.S. consumers’ budgets. The cooperator’s institution will sign the third-party agreement to access ERS’ proprietary data.

The second phase will extend the equilibrium displacement model developed by Okrent and Alston (2012) to characterize the marketing and commodity markets in more detail and to update the model parameters. This will allow us to examine price-induced changes for some of the causes of recent food price inflation investigated in the SGPG. The data for this extension may be based on BEA’s Input-Output tables, ERS Food Dollar and/or parameters from the academic literature.

The last phase will be to parameterize the equilibrium displacement model with the updated estimates from phases 1 and 2. Using Monte Carlo approach, we will simulate the effects of recent inflationary price changes on social welfare and diet quality.

**Expected Outputs:** The output from this research will include an ERR or journal article in an outlet such as *Food Policy* or the *American Journal of Agricultural Economics*, and an *Amber Waves* finding. Additionally, we will participate in an ERS Food Price Outlook workshop as part of the SPGP-funded project.

**The Cooperator Agrees To**:

1. Conduct at Cooperator facilities and elsewhere as appropriate, research directed toward activities, to include:

1. Prepare a research presentation on impacts of food price inflation on consumers and attend the Food Price Outlook workshop.
2. Collaborate with ERS in preparing written outputs and presentations based on the research, including ERS reports or journal articles or both.

2. Submit within two years of the project initiation date, a draft manuscript to ERS.

3. Grant ERS the opportunity to review the manuscript and determine if the first publication from the project should be an ERS research report or a journal article and work with ERS to ensure that appropriate publications are prepared in a timely manner.

**ERS Agrees To:**

1. Work closely with the cooperator in planning and conducting the research outlined above.
2. Collaborate with the cooperator in the development of the conceptual model and, as necessary, with the empirical analysis.
3. Work collaboratively with the cooperator to prepare an ERS report and/or journal article(s) based on the research and collaborate with the cooperator on other presentations and publications, as appropriate.

**Mutual Agreements:**

1. The estimated budget, Form REE-454, is hereby incorporated into the agreement. The awarding agency will reimburse the Cooperator for costs related to salaries, material, data, supplies in the amount of $75,000. As evidence of the Cooperator’s contribution to this project the Cooperator will provide resources in the amount of $15,000.
2. Payments to the Cooperator will be made quarterly, upon submission of a properly executed invoice.
3. The Cooperator will acknowledge funding from ERS in any publications and presentations resulting from this agreement, as well as include a caveat that any opinions, conclusion, findings, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

**Expertise:**

**Julian M. Alston** is a Distinguished Professor Emeritus in the Department of Agricultural and Resource Economics and Director of the RMI Center for Wine Economics at the University of California, Davis. Professor Alston is an agricultural economist known for his work on the economics of agricultural and food policy. His recent projects have emphasized science & technology policy and the economics of agricultural innovation; food & nutrition policy, and the global challenges of poverty, malnutrition, and obesity; and wine economics. He has written hundreds of academic journal articles and chapters related to these subjects, as well as numerous (co-authored) books, most recently *The Effects of Farm and Food Policy on Obesity in the United States* (2017). Among other honors and distinctions, he is a Fellow of the Agricultural and Applied Economics Association and an Honorary Life Member of the International Association of Agricultural Economists.

**Timothy K.M. Beatty** is a Professor in the Department of Agricultural and Resource Economics and Director of the Gifford center for Population Studies at the University of California, Davis. He previously served as a co-Editor of the American Journal of Agricultural Economics. His research relates to the empirical analysis of consumption behavior, in particular as it relates to health outcomes. His research has tended to focus on food consumption and the demand for nutrition and health, at both the household and aggregate levels.

**Amount and Duration:**

The budget request for this proposed cooperative agreement includes $75,000. The research objectives of this cooperative agreement will be met in two calendar years and any ADRF access charges for research will be paid from the cooperative agreement budget.

**References for Journal Citations: Available upon Request**

Dong, D., Stewart, H., Dong, X. and Hahn, W. 2022. Quantifying the Consumer Welfare Impacts of Higher Meat Prices During the COVID-19 Pandemic. ERS Economic Research Report 306.

Gregory, C.A. and Coleman‐Jensen, A. 2013. Do High Food Prices Increase Food Insecurity in the United States? *Applied Economic Perspectives and Policy*, *35*(4), pp.679-707.

Huang, K.S., Huang, S.W. 2012. Consumer Welfare Effects of Increased Food and Energy Prices. *Applied Economics* 44(19): 2527-2536.

Okrent, A.M. and Alston, J.M. 2012. The Effects of Farm Commodity and Retail Food Policies on Obesity and Economic Welfare in the United States. *American Journal of Agricultural Economics*, *94*(3), pp.611-646.