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What Causes the Profits of Food Companies to Increase during an Inflation Period?

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Introduction

- Food inflation has been a major concern in the United States and around the world in the past several years.
  - In the United States, food prices increased 10.4 percent from December 2021 to December 2022 (U.S. Bureau of Labor Statistics 2023).
  - The Food Price Index reported by the Food and Agriculture Organization is 143.7 points on average in 2022, representing a 14.3% increase from the year of 2021 (FAO 2023).
- During this period of food inflation, it was reported that many food companies have earned significant higher profits (Forbes 2022).

<u>One Important Question</u>:

--- What causes the profits of food companies to increase during an inflation period?

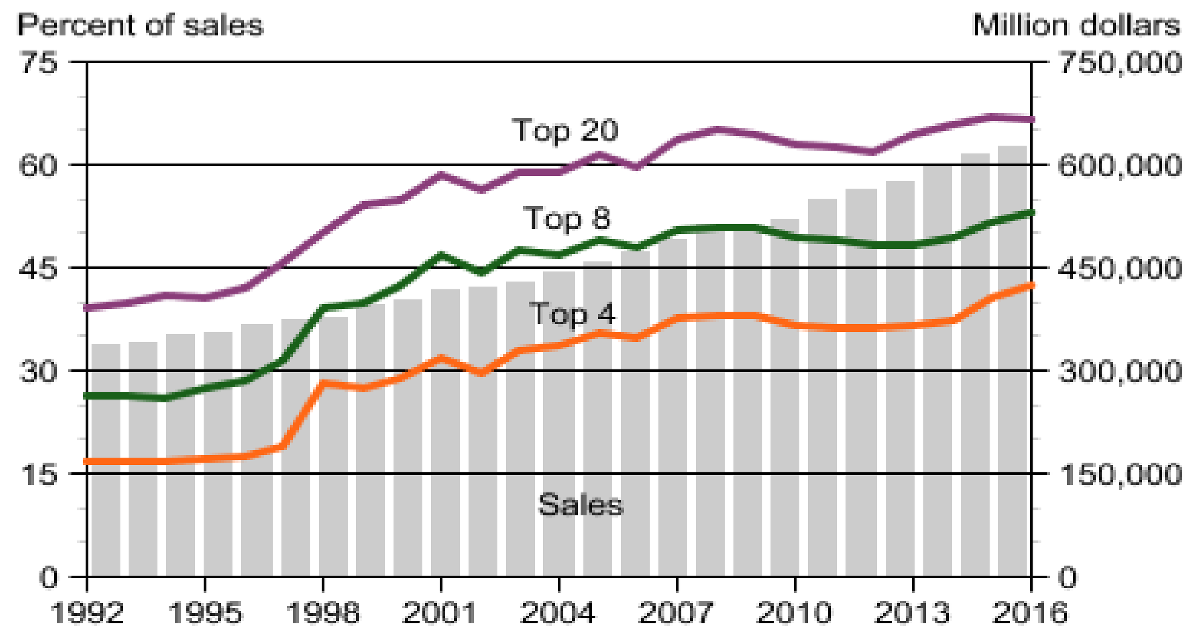
- It seems that there is currently no consensus on the reasons for the profit increases of food companies during inflation.
  - Some argue that food companies use their market power to raise their prices more than their cost increase, i.e., their mark-ups become higher, so that their profits increase during inflation.
  - But this view is contradictory to the results of standard economic models of imperfect competition. Sellers with market power will pass only a fraction of a cost increase to their buyers to avoid too much reduction in quantity sold and their profits will actually decrease when there is a cost increase (Mas-Colell et al. 1995; Tirole 1988).

Objectives

- This paper develops a simple conceptual framework to examine what causes the profit increase of food companies during inflation and the related policy responses.
  - A lot of research has been done on food price inflation (e.g., Ball and Mankiw 1995; Loy and Weaver 1998; Belton and Nair-Reichert 2007; Gomez et al. 2012; Baines 2014, Portillo et al. 2016; Djuric and Gotz 2016; Makun 2021).
  - Existing literature has also examined market power along food supply chain (e.g., Azzam and Anderson 1996; Stiegert and Hamilton 1998; Raper, Love, and Shumway 2000; Hosken and Reiffen 2004; Volpe 2013). However, not much formal model analysis has been done.
- The analysis also provides appropriate policy response to higher profits of food companies during inflation .

Top 4, 8, and 20 firms' share of U.S. grocery store sales, 1992-2016

The share of sales for the top 4 and top 8 grocery retailers increased steadily since 2012



Source: USDA, Economic Research Service, using data from U.S. Census Bureau, Monthly Retail Trade Survey, company annual reports, and industry sources. Sales based on North American Industry Classification System (NAICS).

The Model

- Consider several (*N*) oligopoly food companies (processor-retailer) procure an agricultural material from a large number of farmers, then, after processing the agricultural material into a finished food item, sell the food item to price-taking consumers.
- Three scenarios, a benchmark case, a case of an input cost increase, and a case of capacity constraint plus an input cost increase.
- The benchmark case is the period before the inflation. The case of an input cost increase is when there is a significant cost increase for one input. The case of capacity constraint plus an input cost increase is when the capacity of food processing or retailing sector is reduced due to a shortage of an input, and there is also an input cost increase.
- Assume Cournot-Nash competition among food companies in procuring the agricultural material and selling the food item.
- Backward induction is used to solve the model and find the market equilibrium.
- Analyze and compare the market equilibrium of the three scenarios of food markets.

Table 5. Annual Four-Firm Concentration Ratios Among Meat Packing and Broiler Processing – Federally Inspected Plants, 2009-2018

Year	Total Value Purchases	Steers/ Heifers	Cows & Bulls	Hogs	Sheep & Lambs	Broilers	Turkeys
2009	71	86	54	63	70	53	58
2010	67	85	53	65	65	51	56
2011	67	85	53	64	59	52	55
2012	68	85	56	64	62	51	53
2013	67	85	60	64	59	54	53
2014	67	83	57	62	58	51	58
2015	68	85	57	66	57	51	57
2016	67	84	58	66	59	50	57
2017	67	83	55	66	56	51	53
2018	68	85	52	70	62	54	55

Source: USDA, PSD. Packers and Stockyards Division Annual Report 2019.

Results

- Two factors cause the profit increase of food companies during inflation: capacity constraint and smaller consumer demand elasticity. Capacity constraint is the major reason. When there is a capacity constraint in the food processing or retailing sector, this constraint automatically gives a dominant bargaining power to all food companies when they sell to consumers and buy from farmers.
- Market power is neither sufficient nor necessary for the profits of food companies to increase during inflation. .
- The appropriate policy response to higher profits of food companies during inflation is finding measures to relieve capacity constraint in food processing and retailing such as expanding facilities, encouraging more workers into food sector, and increasing the supply of various inputs.

Conclusions

- Higher profits of food companies during the current period of food inflation have received significant attention in general and academic discussion.
- However, there is no consensus on why food companies can increase their profits during food price inflation. Standard economic models of imperfect competition yield opposite results on company profits. Not much formal analysis on the issue exists.
- This analysis on the causes of higher profits of food companies during inflation and the related policy response provides essential results that can help enhance consumer and farmer welfare, and increase food market efficiency.