Product Innovation, Changing Tastes and the Price of Food across Income Groups: Evidence from Ready Meals in UK

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Broad theme of research aims to . . .

- Measure the cost-of-living over time in UK and how this differs across socio-economic groups

- Current paper marks the first milestone in this work, focussing on cost of food in a single category (chilled and frozen Ready meals).

- Assess how different income groups adjust to rising prices, stressing role of
  - product substitution
  - the entry and exit of products
  - changing consumer preferences

- Highlight differences between measures of inflation that account for these behavioural changes and those that do not ("Consumer Prices Index")

What do we draw upon to address these challenges?

- Recent **developments in the theory of price indices** that allow for:

  - **entry and exit of products** Feenstra (*AER*, 1994); Broda and Weinstein (*QJE* 2006, *AER* 2010)

  - **changes in tastes** Redding and Weinstein (*QJE*, 2020)

  Both these innovations build on the Exact Price Indices (Diewert, 1976; Sato 1976, Vartia (1976) derived from CES demand that allow for product substitution.

- Access to **household scanner data** (*Kantar WorldPanel* data)

Why does accommodating these issues matter?
(i) **Entry and exit of products**

- Product substitution is a fundamental to the consumer's response to price changes, a key part of which is entry (exit) of products.

- Entry (exit) of new products imply reduction (increase) the overall price index.

- Different households consume different products with different substitution possibilities, hence have different experiences of rising prices.

Why does accommodating these issues matter? (ii) **Changes in tastes**

- Tastes change over time reflecting changing consumer incomes, preferences for health, etc. particularly at the barcode level

- Redding and Weinstein (2020)show how to back-out **'taste adjusted prices'** from observed product prices, which do not embody changing preferences.

- An increase in preference for a specific product is equivalent to a reduction in its price, and vice versa.

The Consumer Prices Index

- Universally applied measure of the cost of living

- Ignores product substitution . . . product innovation . . . changing tastes . . . Socio economic differences

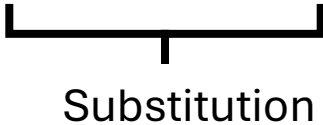- Likely to offer a rather poor measure of household experience of inflation.

Data

- *Kantar WorldPanel* data
  - 30,000 households in Great Britain; evaluated weekly, 2013-2022
  - Hand-held scanners record expenditure on specific (barcoded) items and quantities allowing unit prices at household level to be obtained
  - Provides range of household characteristics (income)

- We can identify what households buy, from where, at what cost.

- From this, we can derive a price indices across all households and income groups

Methods

- Assuming CES preferences, the exact price index is

$$\left(\frac{P_t}{P_{t-1}}\right) = \prod_{k \in \Omega_t^*} \left(\frac{p_{kt}}{p_{kt-1}}\right)^{\omega_{kt}^*}$$

Substitution

- **Conventional exact price index**
  Allows for substitution as prices change

- Feenstra- Broda-Weinstein (FBW)
  - Accommodates entry and exit of products

- Redding and Weinstein (RW)
  - Additonally allows tastes to vary between products and over time

Stylised Facts : UK ready meals

- Fast-moving sector in vanguard of preference shifts
  - COVID and the 'cost-of-living crisis'

- Seemingly limitless substitution possibilities (8,375 barcoded products)

- Product entry and exit key feature of the category
  - Two thirds of products available in 2022 did not exist in 2013
  - Especially among low income households

Experience of ready meal inflation by household income
Percentage change in prices between 2013 and 2023

	Household Income		
	Low	Middle	High
Conventional EPI	23.4	26.0	32.6

Middle income substituted most effectively reducing their exposure to price rises

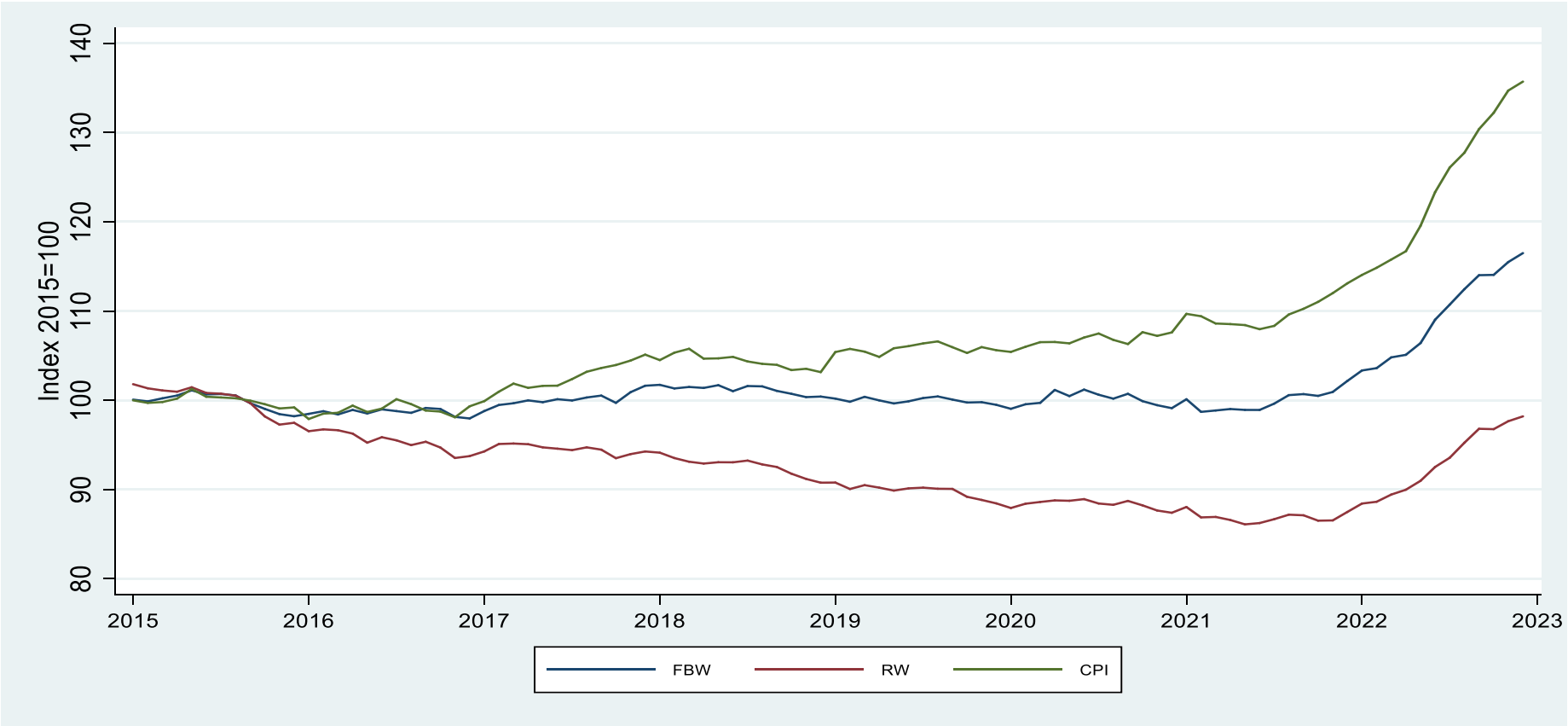Product entry and exit is a key mechanism

Changing preferences most pronounced among low income households

Markedly different experience of price rises

How well does the CPI for ready meals do?

The CPI over-estimates price changes by up to 40%

Comparison between CPI, FBW and RW for Ready Meals for all households

CPI

Substitution

Tastes

Index 2015=100

FBW — RW — CPI

Headline Results

- Product innovation and taste changes matter for the experience of inflation at the household level

- High and low income households have a different experience of inflation

- CPI overstates experience of inflation at the household level

Thank you!

Some issues on the agenda

- How did different income groups adjust their behaviour during the COVID and recent cost-of-living crises

- Did these shocks lead to unhealthy purchases

- Is 'Shrinkflation' real or simply a myth?

- Extending the analysis to all food products

Experience of ready meal inflation by household income
Percentage change in prices between 2013 and 2023

	Household Income			
	Low	Middle	High	
Conventional EPI	23.4	26.0	32.6	Middle income substituted most effectively reducing their exposure to price rises
Entry and exit	-5.2	-4.4	-3.4	Product entry and exit is a key mechanism
Preference changes	-6.8	-1.5	-2.8	Changing preferences most pronounced among low income households
Overall	**3.1**	**0.4**	**12.7**	**Markedly different experience of price rises**