Economic impacts to consumers from extended producer responsibility (EPR) regulation in the consumer packaged goods sector

Presentation to CT EPR Working Group

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Acknowledgements

Summary

- **Aim: To estimate the impact on consumer packaged goods prices resulting from EPR regulation**

- **Method: based on 1) USDA estimates of packaging costs and 2) food price elasticities**

- **Constructed a triangulation of the price impact**
  - Triangulation : upper bound and lower bound
  - Lower bound: 0%, prices cannot fall as a result
  - Upper bound: less than 1%

- **Analysis is ceteris paribus (holding all other factors constant)**

Policy Brief is available at https://academiccommons.columbia.edu/doi/10.7916/n2af-vv87

Factors affecting Consumer Price Impact

1. Level of competition (or market power) of suppliers
2. Demand elasticity for packaged consumer goods
3. Availability of recycling subsidies for low-income consumers
4. Possibility of scale economies in processing recycled materials
5. Consumer awareness of the cost impact of packaging choices
6. Viability of reuse and refill systems
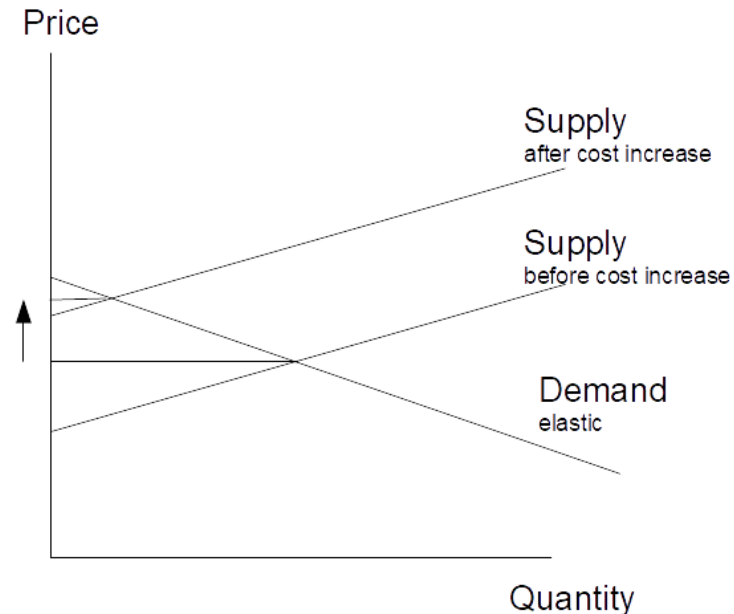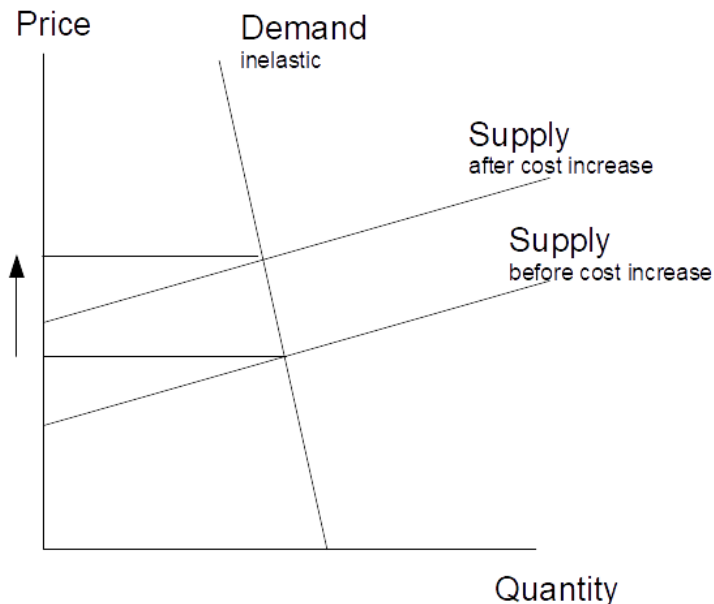7. Longer term impact on design phase of packaged goods.

Price Impact depends on Level of Competition

- **Profit margins in the consumer staples sector are lower than average**
  - The operating profit margin of the consumer staples component of the S&P 500 index is 7.4% compared to 12.6% for the index as a whole (Yardeni & Abbott 2022)
  - J.P. Morgan equity research indicates that Kimberly Clark, Clorox and Reynolds will have 7-10 percentage point drops in gross margin due to supply chain pricing pressure (Teixeira 2022)
  - This is an indication that the sector is more competitive than average, implying that cost increases are harder to pass on to customers. If cost increases could easily be passed on to consumers, gross margin would not drop so much.

Price Impact depends on Elasticity

Key Economic Concept:

- **Cost increases cannot be 100% passed on to consumers: the burden of higher input costs has to be shared by suppliers and consumers.**

- **The sharing ratio depends on the elasticity of demand:**
  - If consumers can substitute into other products, then they will pay for a smaller portion of the cost increase

Price

Demand
inelastic

Supply
after cost increase

Supply
before cost increase

Quantity

Price

Supply
after cost increase

Supply
before cost increase

Demand
elastic

Quantity

Price Impact depends on Elasticity

Food demand elasticity varies widely

US Price Elasticity Estimates

|	
Food away from home	0.81
Soft drinks	0.79
Beef	0.75
Fruit	0.70
Cereals	0.60
Vegetables	0.58
Fish	0.50
Cheese	0.44
Sweets/sugars	0.34
Eggs	0.27

Source: Andreyeva et al. (2010)

Food supply elasticity is generally low (Crespi, Saitone & Sexton 2012):

- **Perishability of food crops**
- **Fixed capacity of processing facilities**
- **Long term supply contracts**
- **Fixed access to retail shelf space**

Packaging Cost is a small portion of Food Expenditure

USDA Estimation of the packaging cost component of final expenditure on food.

Source:https://data.ers.usda.gov/reports.aspx?ID=17885
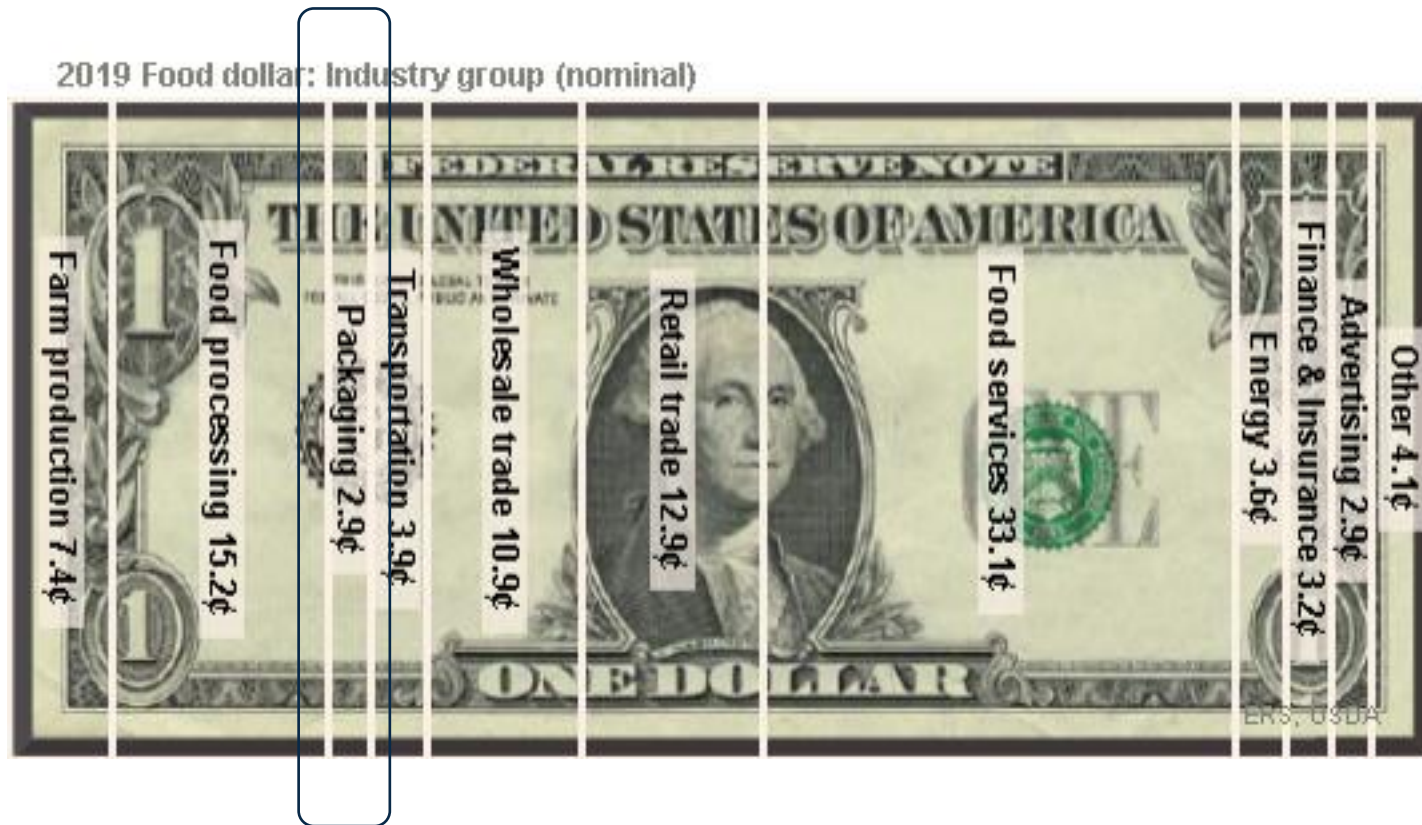
Likely Price Impact

A doubling of packaging costs would lead to less than 1% increase in prices

Table 3

Estimated Maximum Price Increase in an Illustrative Scenario		
Packaging costs double for producers: • Since packaging costs constitute 2.3% of overall food expenditure (final demand), producer costs increase by 2.3% of final expenditure in a cost-doubling scenario.	Producers try to pass on some of the increased cost to consumers: • Given estimated elasticity of demand, producers are only able to pass on an estimated 30% of the cost increase.	Consumers face higher prices that incorporate a fraction of the cost increases of producers: • In the food sector, the estimated maximum price increase would likely be 0.69% (= 30% x 2.3%). • Consumers, who are also taxpayers, face reduced local tax burdens

Price Impact will be higher in Low Income Communities

Low-income communities spend a greater portion of their income on food and beverages so will be more affected.

- **Small food retailers in low-income communities face lower than average competition (Ma, Saitone et al 2019)**

- **They also do not benefit from economies of scale so cost increases have larger impact per unit**

- **They are thus forced to (and able to) pass on a greater portion of cost increases to customers (Falbe, Rojas et al 2015)**

- **This is especially true for the beverages and tobacco category (Gwin 2009)**

Other Studies

Lakhan (2021): 4-6% increase in grocery bills in NYS

Hesterman, Dimino et al. (2021): 0% correlation between EPR and price change in Canada

Valpak (2021): 3% increase in grocery bills in UK

This Study: Less than 1% increase in grocery bills

Conclusion

- **I estimate that if EPR mandates lead to a doubling of packaging costs, then the upper bound estimate of the impact on average consumer prices is an increase of less than 1%.**

- **Compared to current inflation of 9%, the price impact of EPR is essentially a rounding error.**

- **Important caveat: For low income communities living in 'food deserts,' price increases will be higher than average.**