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*PRODUCT DOWNSIZING, HIDDEN PRICE  
INCREASE, SHRINKFLATION:  
A POST-KEYNESIAN MACROECONOMIC  
PERSPECTIVE*

# *Lille Post Keynesian Group*

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# *Lille Post Keynesian Group*

**Conference Economic Possibilities for Our Grand Children,  
6-8 December 2023**



<https://pklille2023.sciencesconf.org/>



# Lille Post Keynesian Group

Conference on Economic Possibilities for Our Grand Children,  
September 2023



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# Purpose of the article:

- Analyze, at the macroeconomic level, the impact of “product downsizing”:
- Practice of reducing the size or weight of goods and services, or substituting inputs with cheaper ones;
- while continuing to present the good as (quite) identical;
- And without passing the lower costs on prices.

# Product downsizing

- Recent events:

- Rising inflation;
- Debates about cost push or profit push inflation;

- Numerous industrial practices reported by non-academic sources and the media;

- Glen Hubbard and Tony O'Brien

“There Is Shadow Inflation Taking Place All Around Us,” *New York Times*, October 14, 2021.

- Scott Mc Cartney

“The Incredible Disappearing Hotel Breakfast—and Other Amenities Travelers Miss,” *Wall Street Journal*, October 20, 2021.

# Absolutely not new!

- European scandal of horse meat in the food industry (lasagna...) 2010's;
- D'Amato *et alli* (2013): discovered pork, horse, kangaroo and even giraffe meat in place of antelope in 90% of antelope meat samples they tested in South Africa;
- Water in Budweiser beer (USA);
- A lot of these practices, if not dangerous, were fraudulent. But they raise the question of non-fraudulent cases of input substitution.
- UE abrogated the regulation on packages in 2007/2008.

# Product downsizing and its appellations

- Adulteration (mixing inputs with fraudulent and toxic ones);
- Slack fill (use of air);
- Shrinkflation/Product downsizing/product debasement;
  - Mixing or substituting inputs with cheaper (but non toxic) products to give weight or consistence (example: water, fat...)
  - Just reducing the quantity of inputs, reducing the size, weight...
- Skimpflation for services;
- Hidden price increase/shadow inflation;
- ...



# Academic analysis

- Donna Wood (1985): adulteration;
  - « The Strategic Use of Public Policy: Business Support for the 1906 Food and Drug Act » *The Business History Review*
- In medicine science:
  - D'AMATO, M. A., et al. 2013. Where is the game? Wild meat products authentication in South Africa: A case study. *Investigative Genetics* 4: 6.
  - DESHAZO, R. D., S. BIGLER, and L. B. SKIPWORTH. 2013. The autopsy of chicken nuggets reads “Chicken Little.” *The American Journal of Medicine*.
- Imai and Watanabe (2014): Japanese deflationary period, product replacements; prices decrease less than quantity;
- Snir and Levy (2011): theoretical asymmetric reaction of consumers price/quantities; Producers prefer adjust quantities rather than prices;
- Melmiès (2015): “Industrial seigniorage”: lot of examples in the food industry (France and Belgium), and even in the EU directives (use of fat in chocolate, mixing red and white wine to make rosé, etc.);

# A competitive strategy

- Winter (2001): PepsiCo reported a “sixth consecutive quarter of double-digit earnings growth” in 2001, which was partly attributed to the company’s “weight-out” strategy of putting “fewer chips in bags of Lays, Doritos, and other Frito-Lay products” (PepsiCo 2001 first quarter press release);
- Gourville and Koehler (2004): coffee brand Chock Full o’Nuts first implemented this strategy in 1988, and a host of other brands subsequently engaged in product downsizing practices (see Masters (2013) and Martin (2008) for additional examples).
- It is necessary to go beyond the anecdotal side: product downsizing is certainly not just a “dirty trick” from producers;
- Product downsizing allows for not rising or even reducing prices and maintaining or even rising profit margins.

# Theoretical analysis

- Wide range of theoretical tools are usable: simple monopoly, sticky prices;
- Here: Post-Keynesian theory of the firm;
- Eichner (1973, 1976), Wood (1975), Harcourt and Kenyon (1976): goal of firms = stimulate growth and self-finance part of investment expenses, as well as satisfy shareholders claims.
- Product downsizing, *if successful with consumers*, allows for all that.
  - ***“Shrinkflation has taken off because suppliers are under pressure to maintain profit margins to keep shareholders happy and believe consumers prefer smaller products to bigger price increases”***. Gary Weiner, 2019, The Incredible Shrinking Foods...Why Size Really Matters. <https://wealthofgeeks.com/food-package-size/>

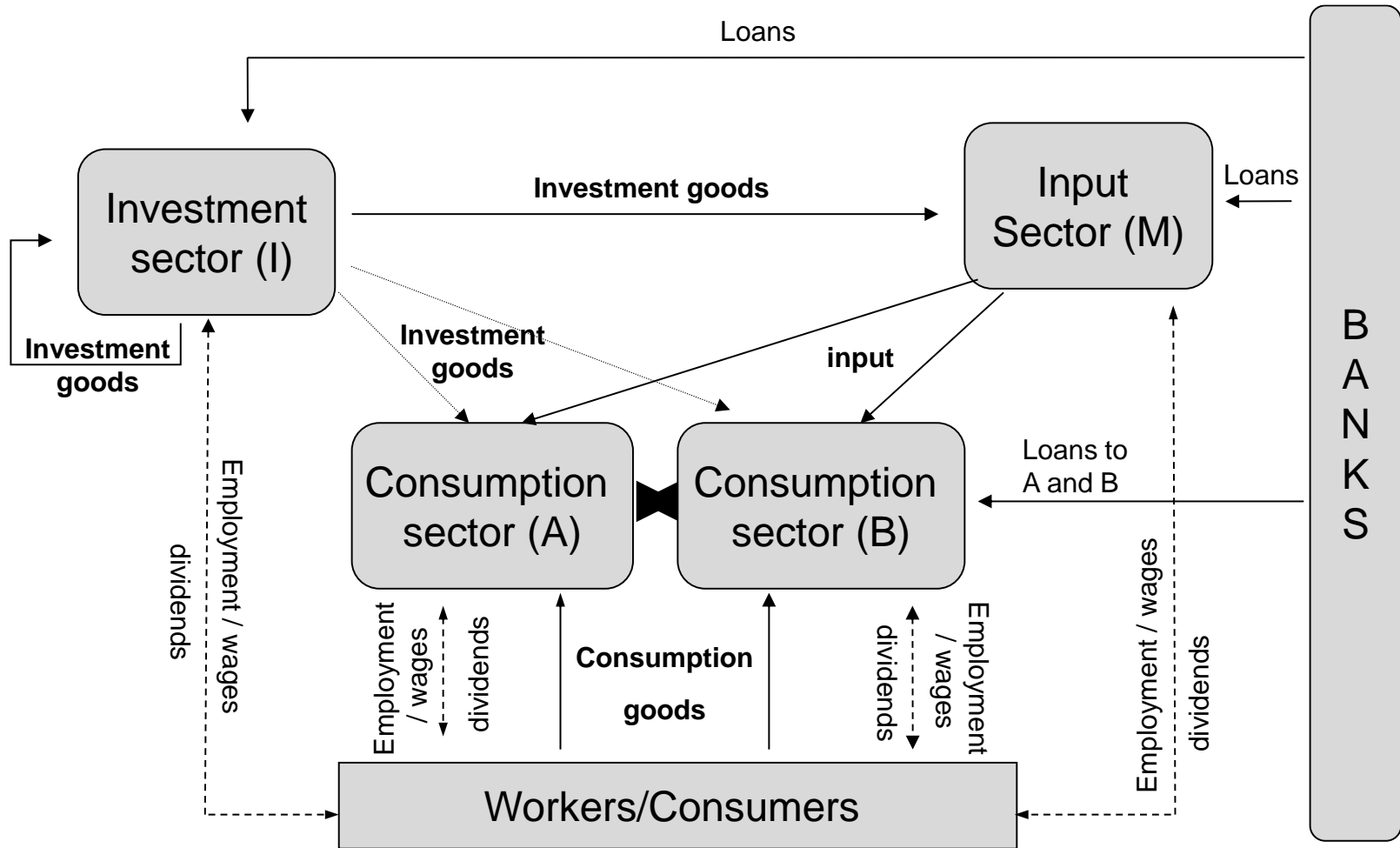
# How is this possible?

- What elements of consumer behaviour are necessary to make industrial seigniorage succeed?
- Inattentive consumers; bounded rationality, etc.
- Revenue and liquidity constraints;
- Necessity for product downsizing to be a “marginal” downsizing, in order to go unnoticed.

# A (SFC) Macroeconomic Model

- What can be the influence at the macroeconomic level? Is it necessary to analyse the macroeconomic consequences?
- Reducing prices is good for consumers, but if size/weight/composition/quality is reduced meanwhile? Which effect prevails?
- What are the consequences for income distribution? Do consumers gain something at the end? Etc.
- Need for a macroeconomic model. Here: SFC model.

# The artificial economy



# Equations: usual formulations of SFC models

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Investment functions:  $g_j^d = \gamma_0 + \gamma_j^u \cdot u_{j(-1)} + \gamma_j^{rcf} \cdot rcf_{j(-1)}$

Credit supply:  $\Delta L_j = p_i \cdot I_j - \Pi_j^U$

Prices of goods I and M:  $p_{i;m} = (1 + \theta_{i;m}) \cdot UC_{i;m}$

Input coefficients:  $q_m = q_{m;a} + q_{m;b} = \alpha_a^m \cdot q_a + \alpha_b^m \cdot q_b$

Wages:  $W_j = w_j \cdot N_j$

Profit distribution:  $\Pi_j = (1 - s_j^f) \cdot I_j$

# Behaviour of consumers

- At the beginning of simulations, goods A and B are the same, with the same price, so consumers consume goods A and B equally;
- But these consumers become sensible when price differentials and composition differentials appear;
- The consumption function is arbitrarily chosen to make them consume (a little bit) more of the cheaper good between A and B;
- Consumption : Keynesian consumption function
- Share of good B:  $\Omega = \left(\frac{1}{2}\right) \left(\frac{P_a}{P_b}\right)^\rho \left(\frac{\alpha_B}{\alpha_A}\right)^{(1-\rho)}$
- Consumers reduce their share of a good if its price is higher or if its “input composition” is lower;
- However, they are more sensitive to price than to “size”.



# Behaviour of firms

- Following Wood (1975) and/or Eichner (1973, 1976), we suppose firms A and B want to maintain a certain level of profit so as to internally finance their future investment plans : they won't cut their price and let their profit decrease indefinitely;
- They thus have, in the model, a required or minimum (or targeted) rate of self-financing  $T\tilde{A}F$ ;
- If firms are above this targeted rate, they cut their price so as to improve their relative competitive position;
- If they are below this targeted rate, they reduce the quantity of input incorporated in their product, *i.e.* they reduce the input coefficient so as to reduce unit costs.

# Behaviour of firms

$$\alpha_b^m = \alpha_{b(-1)}^m + \beta_b \cdot (TAF_b - \tilde{T}AF_b)$$

$$\alpha_a^m = \alpha_{a(-1)}^m + \beta_a \cdot (TAF_a - \tilde{T}AF_a)$$

$\beta > 0$  if  $TAF_{a,b} < \tilde{T}AF_{a,b}$   
 $\beta = 0$  otherwise.

$$p_a = p_{a(-1)} + \lambda_a \cdot (\tilde{T}AF_a - TAF_a)$$

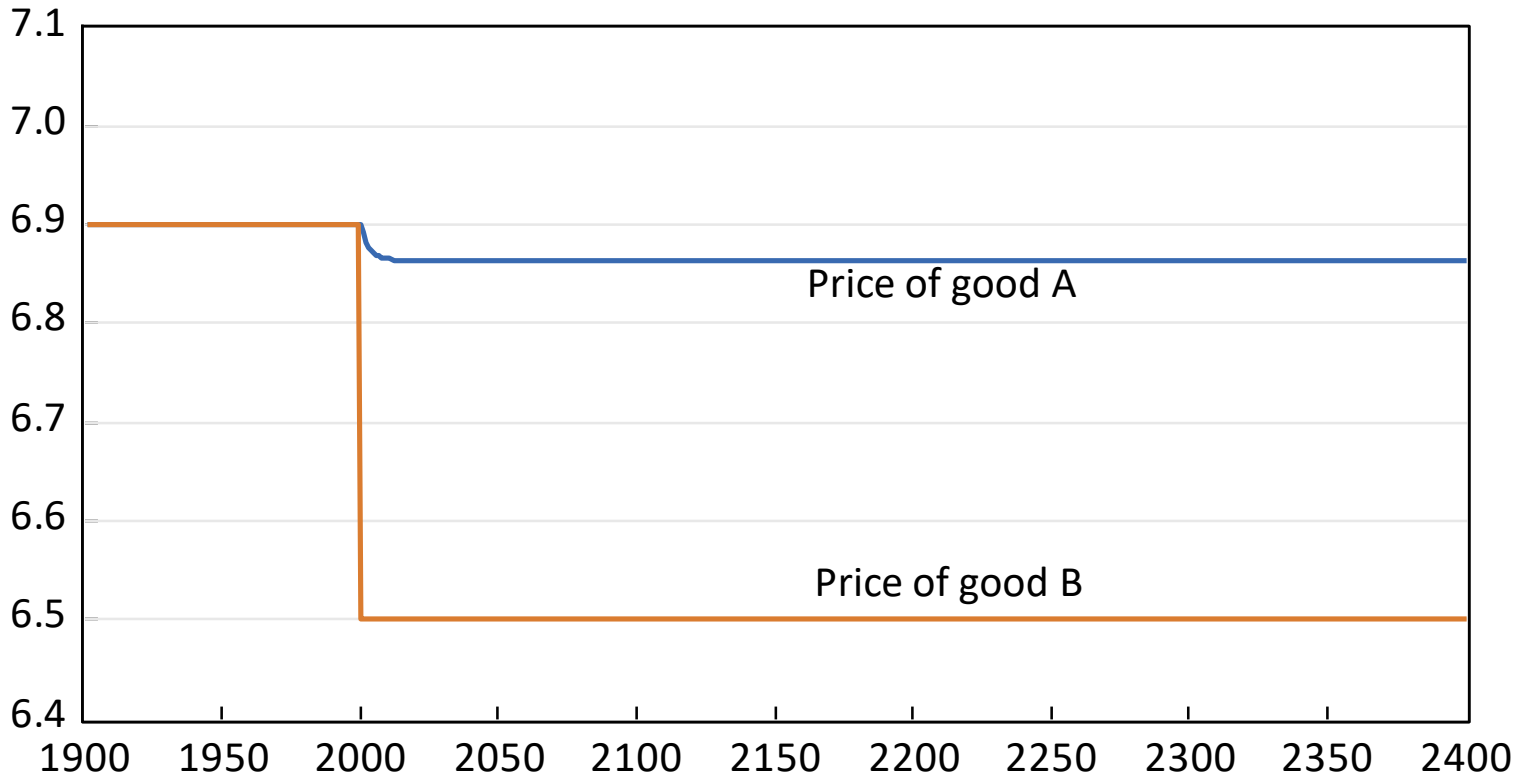
$$p_b = p_{b(-1)} + \lambda_b \cdot (\tilde{T}AF_b - TAF_b)$$

$\lambda > 0$  if  $\tilde{T}AF_{a,b} < TAF_{a,b}$   
 $\lambda = 0$  otherwise.

# Simulations

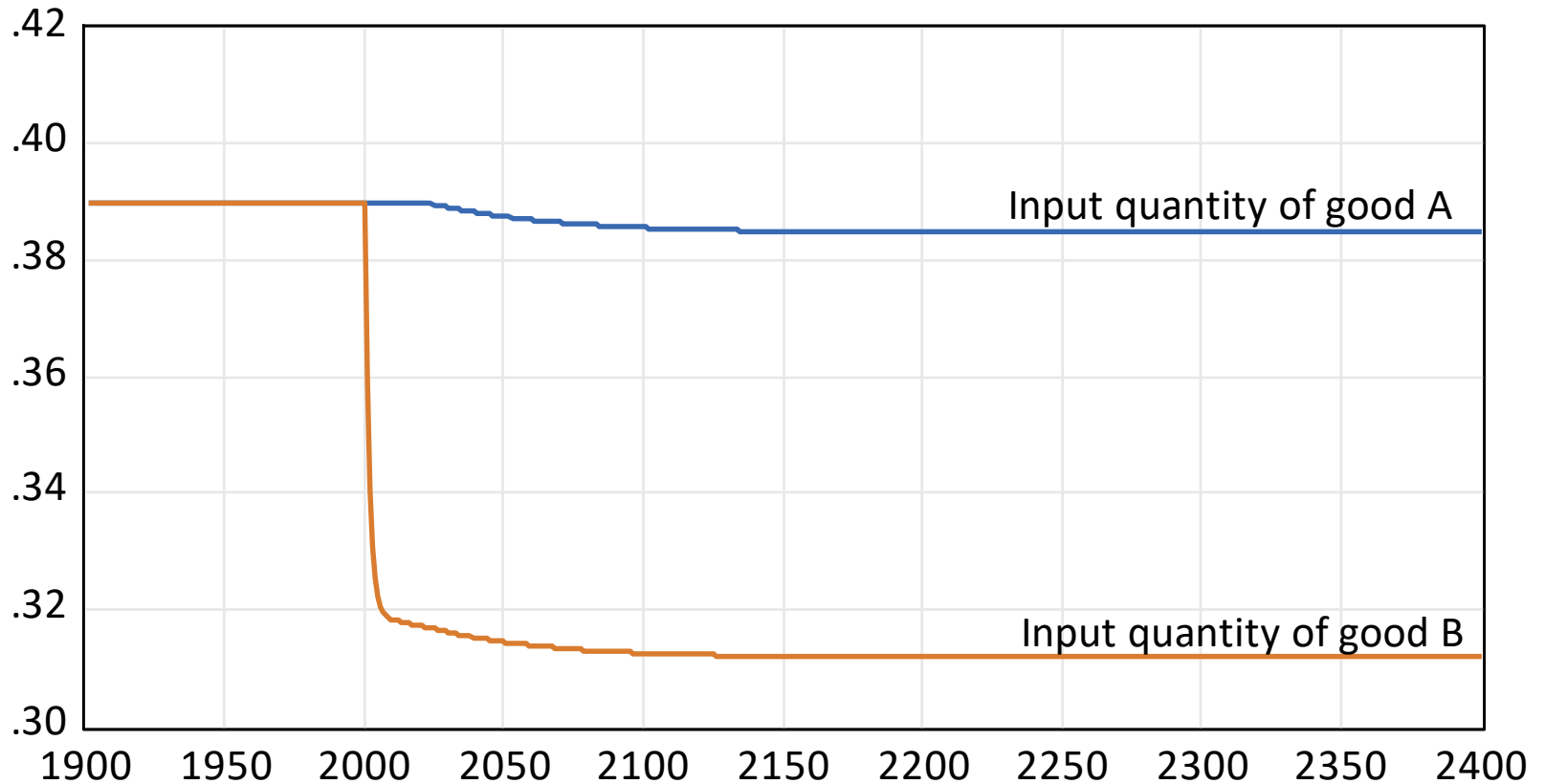
- An initial (exogenous) cut in  $P_b$  tends to increase the market share of firm B;
- It however reduces its self-financing rate, so its product is “downsized”;
- But firm A also undergoes a decline of its rate of self-financing, because its rate of utilization decreases (its market share too). The “size” of good A is so also reduced.
- The final result is that prices of both goods decline, *and* the size/weight of both goods too;
- We thus find back a stylized fact: all brands are concerned by product downsizing, this does not only concern “low cost” brands.

# Results of simulations



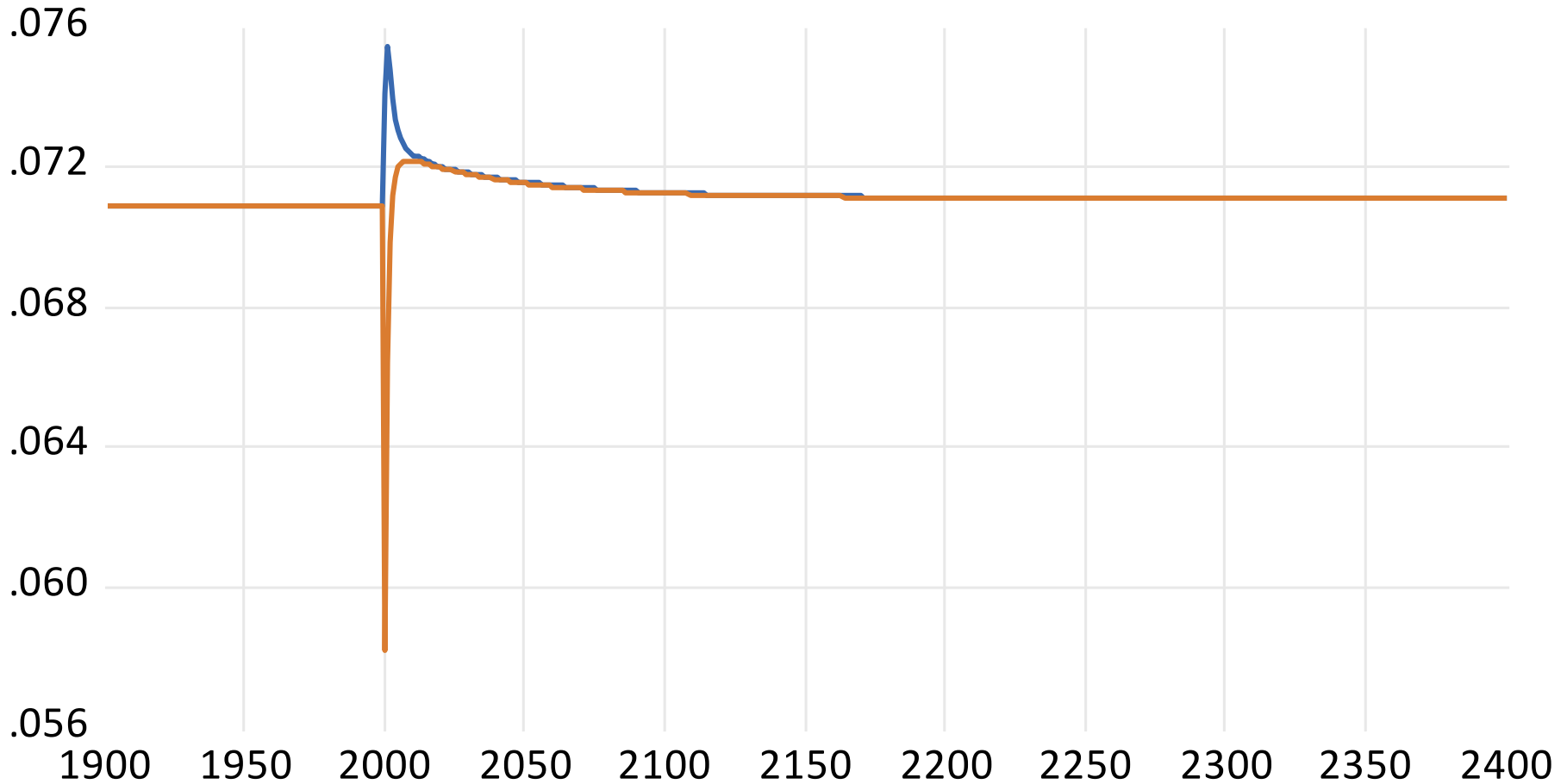
*Prices of consumption goods decline*

# Results of simulations



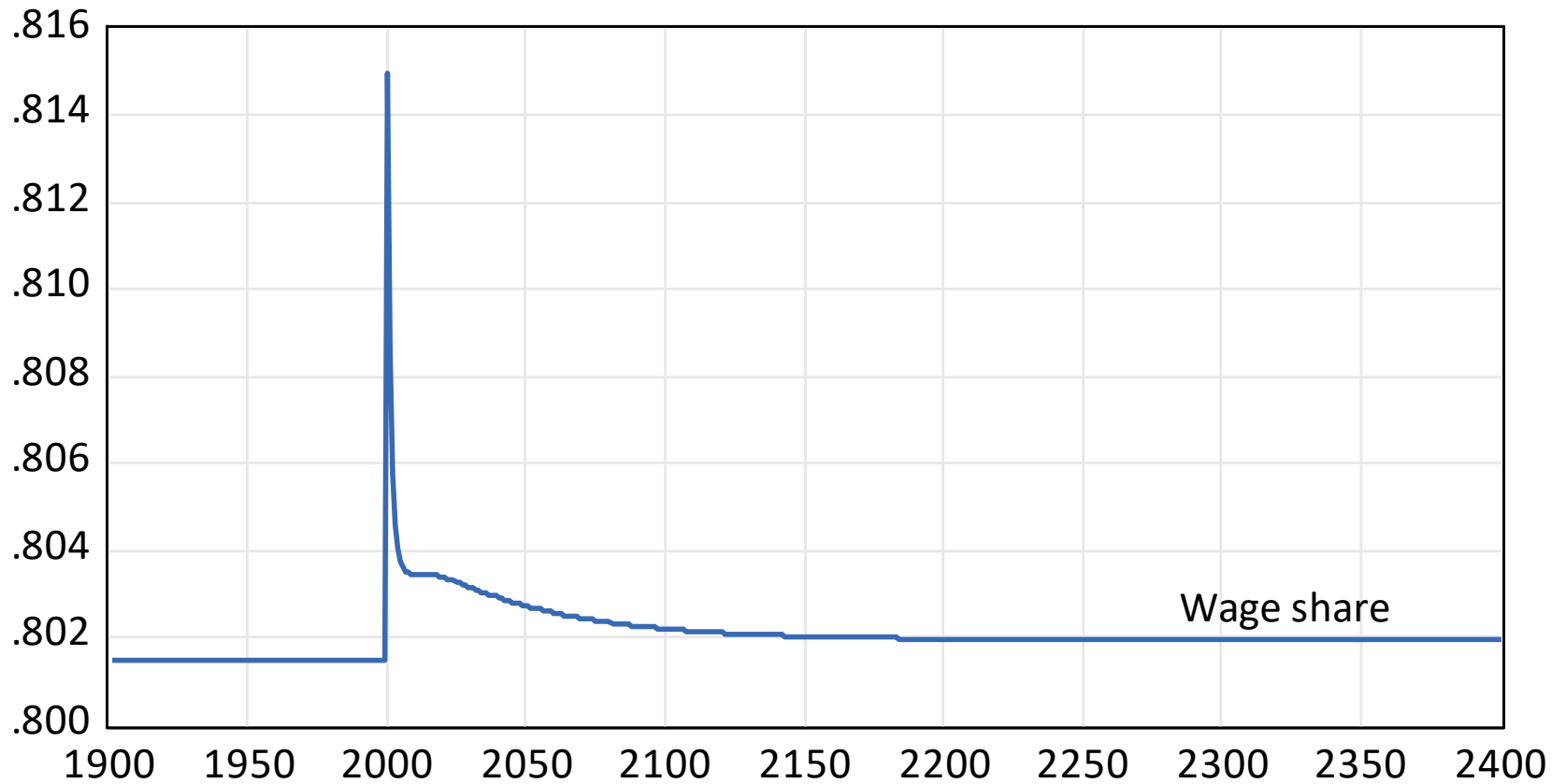
*“Input composition” of both consumption goods decline*

# Results of simulations



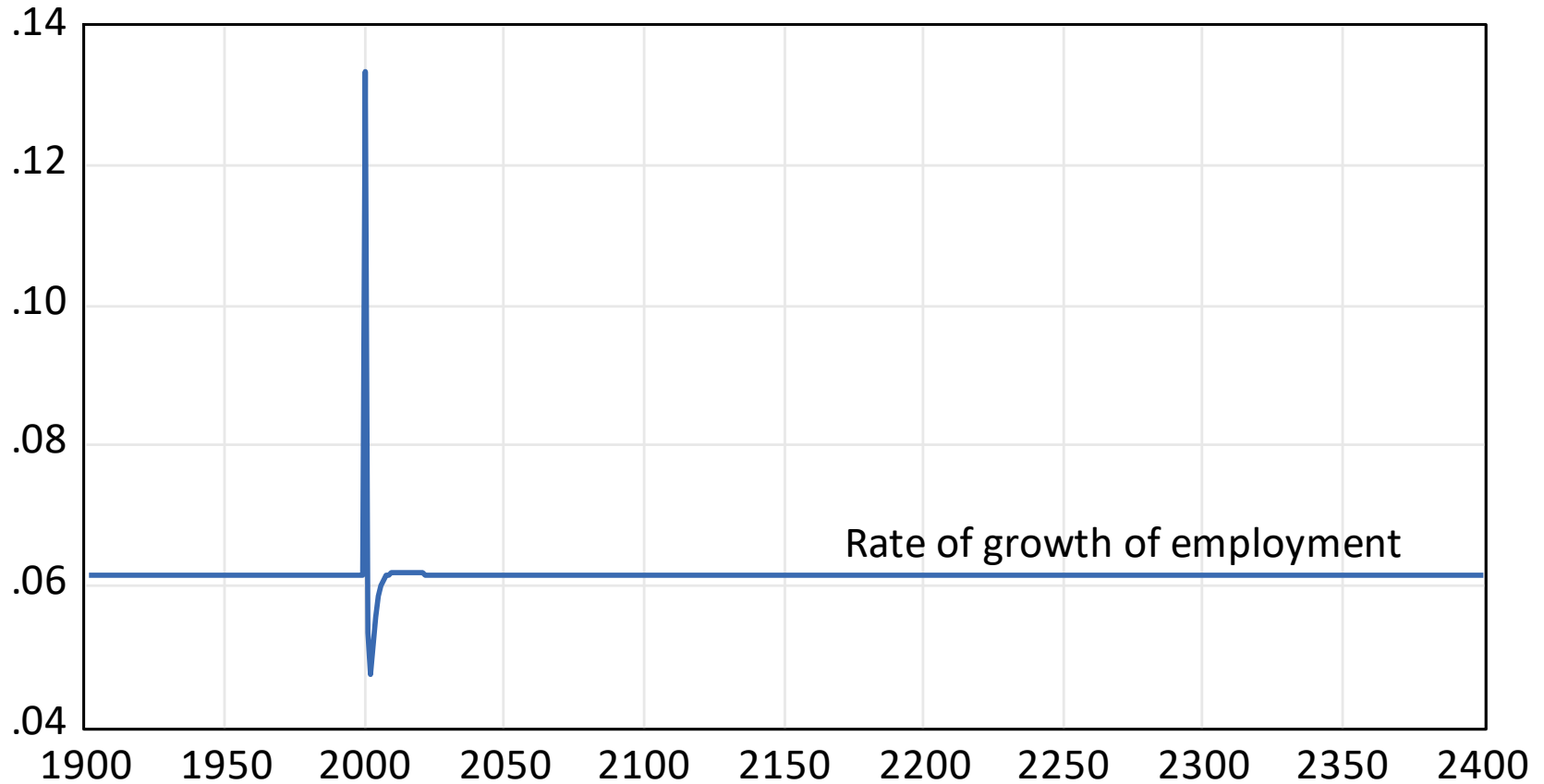
*Profit rates of A and B both increase*

# Results of simulations



*Wage share (slightly) increases*

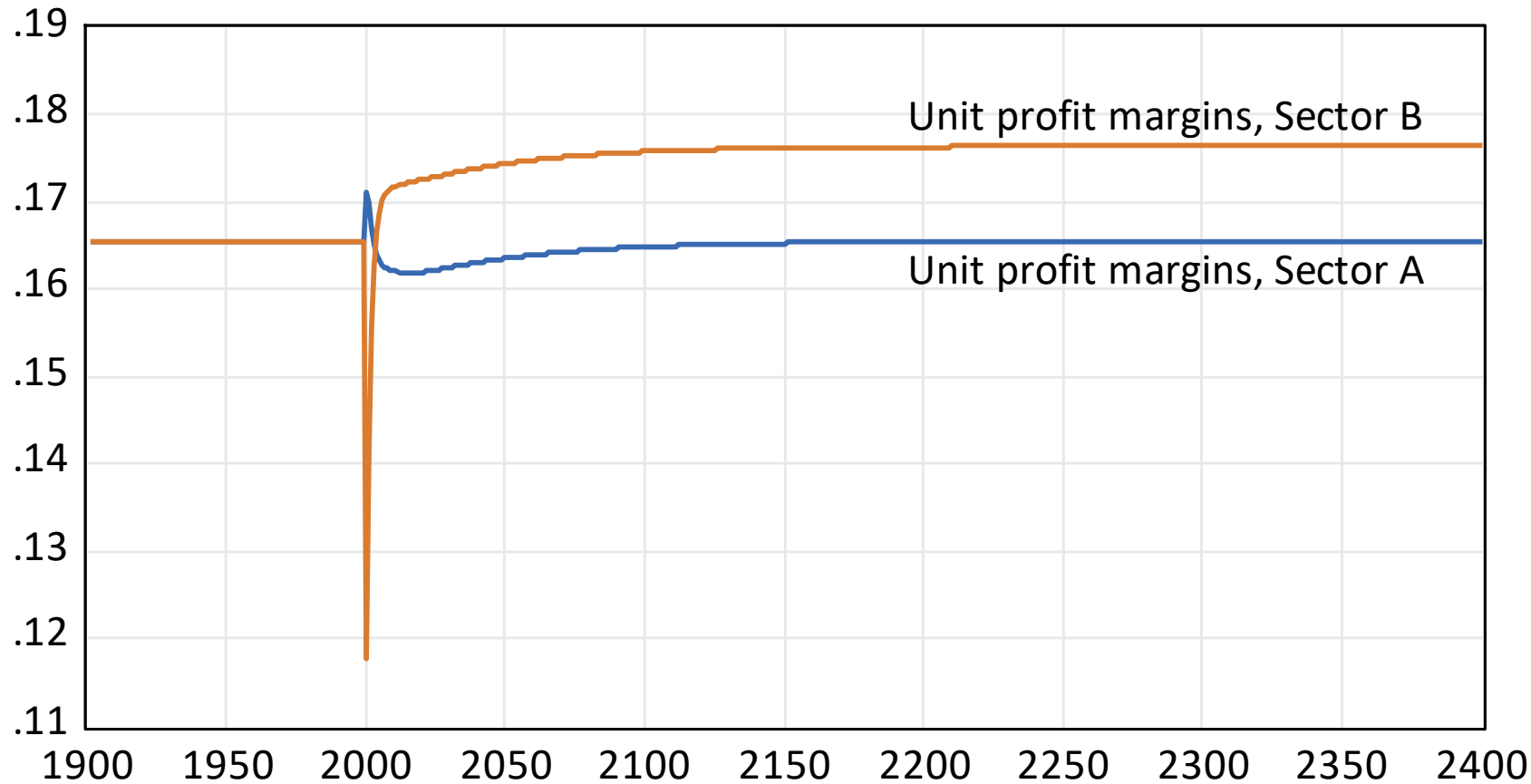
# Results of simulations



*Growth is (very slightly) increased*



# Results of simulations

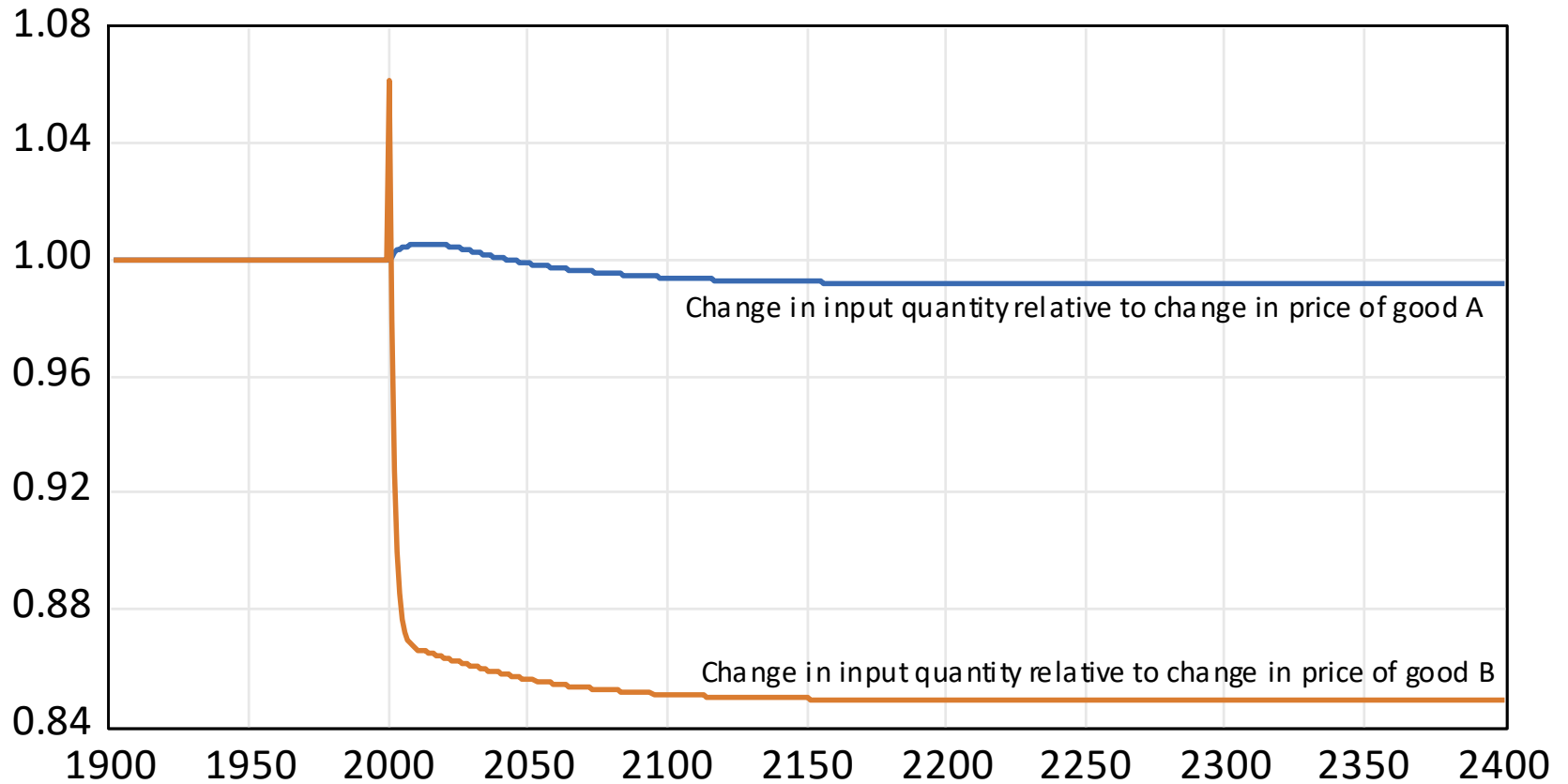


*Unit profit margins are increased*

# Results of simulations

- How does the situation of consumers evolve?
- Maybe the reduction of size/weight is a mean for them to be able to buy more goods, so their final situation is improved?
- In the model, it is not possible to comment the values of changes in prices and input coefficients, because they depend on the value of parameters;
- But one conclusion always remain, whatever the value of these parameters:
- The “input intensity” of goods has been more decreased than the price of these goods...

# Results of simulations



*NB: A fall of the ratio implies that prices decrease less than input quantity incorporated into goods.*

# Conclusion

- In such a perspective, and in the model we built, price cuts have been transferred to consumers themselves;
- Unit profit margins have risen; profit rates too.
- Wage share has been increased;
- Product downsizing as a feature of competition in a financialized economy?
- Growth is slightly stimulated: problem of the volume of production vs durability of goods (because product downsizing can also take place as a reduction of quality of goods);



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THANK YOU