

## Extended Abstract

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<b>Paper/Poster Title</b>	<b>Do Sales Affect Asymmetric Cost Pass-through: Evidence from Online Food Retailing</b>
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**Abstract prepared for presentation at the 98th Annual Conference of The Agricultural Economics Society will be held at The University of Edinburgh, UK, 18th - 20th March 2024.**

<b>Abstract</b>	<b>200 words max</b>
<p>The food retail sector has seen a significant increase in sales activities due to digitalisation. This paper examines how these sales affect asymmetric cost pass-through, characterised by the notorious 'rockets and feathers' pattern. We propose two key hypotheses: online sales buffer the impact of cost increases and amplify the impact of cost decreases. To test these hypotheses, we collected a unique dataset at the individual level, including specific sales information. Employing a novel dynamic heterogeneous panel data method, our findings robustly support these hypotheses. This study highlights the critical role of sales in modern price adjustment, and it has significant implications for market competition and consumer welfare in the traditional food retail sector in the digital age.</p>	
<b>Keywords</b>	sales, asymmetric cost pass-through, online food retailing, digitalisation
<b>JEL Code</b>	D22, L16, L66, L81 see: <a href="http://www.aeaweb.org/jel/guide/jel.php?class=Q">www.aeaweb.org/jel/guide/jel.php?class=Q</a>
<b>Introduction</b>	<b>100 – 250 words</b>
<p>Asymmetric cost pass-through, commonly referred to as the 'rockets and feathers' phenomenon (Peltzman 2000), is a pricing pattern where retail prices increase rapidly in response to cost increases (like a rocket) but decrease gradually when costs come down (similar to a feather's slow fall).</p> <p>Initially introduced for managing seasonal food inventory, sales, defined as temporary discounts or promotions, have evolved to become an essential part of firms' strategic pricing behaviour.</p> <p>The advent of digitalisation has markedly influenced the traditional food retail sector. The impact of these online sales could significantly alter the existing price adjustment processes in this traditionally concentrated market. For instance, it raises critical questions about how the prevalent 'rockets and feathers' phenomenon is influenced by the widespread presence of online sales.</p> <p>Our paper fills a gap in the existing literature by investigating the impact of sales on cost pass-through within an online food retail market. We propose a theoretical basis that incorporates sales prices into the established 'rockets and feathers' framework of firm pricing strategy, leading to two central hypotheses: (H1) that sales buffer the</p>	

effects of cost increases on retail prices, and (H2) that they amplify the impact of cost decreases.

**Methodology**

*100 – 250 words*

To test these hypotheses, we collect a unique dataset of transaction prices for major long-life milk products from China's online food retail market, enriched with promotional information from online platforms. Employing a novel dynamic heterogeneous panel data method, we estimate the asymmetric cost pass-through, with a particular focus on the moderating role of sales. Our econometric analysis utilises the dynamic common correlated effects pooled (DCCEP) estimator, which accounts for any unobserved common factors in the supply chain and ensures a robust examination of our results. Align with the theoretical framework, H1 and H2 indicate negative and positive moderation effects of sales on cost increases and decreases, respectively.

**Results**

*100 – 250 words*

In our results, using both level and log-log specifications, we consistently found that sales negatively affect the pass-through of cost increases (reducing it by 2.13%) and positively affect the pass-through of cost decreases (increasing it by 1.94%), thus supporting our theoretical hypotheses. These results indicate that sales weaken the 'rockets and feathers' phenomenon commonly observed in food retailing. The robustness of these findings is further confirmed through an examination of micro-level heterogeneities in the Chinese online milk market. Interestingly, the impact of sales on cost pass-through is less pronounced in certain platform and manufacturers, including both manufacturer-owned and platform-owned stores. This is potentially due to market power being particularly strong in those dimensions. Additionally, controlling for other costs using diesel prices does not significantly alter these results.

**Discussion and Conclusion**

*100 – 250 words*

Our research is a pioneering effort that addresses and empirically examines how sales affect asymmetric cost pass-through in the digital transformation of the traditionally concentrated food retail sector. One of our novel findings is that the standard 'rockets and feathers' phenomenon, typically observed in food retailing, is notably weakened in the presence of online sales. Analysing the interplay of sales in price adjustment can enhance the understanding of market efficiency and consumer welfare in this new environment. This research also connects to a broader stream of research focused on evaluating the impact of digital transformation on food retailing, offering valuable insights into understanding the complex nature of online retail pricing strategies. Finally, we utilise a unique dataset of online food prices that distinctively includes direct promotional information, providing a richer and more accurate context for advanced econometric analysis.