Liquidity Constraints, Storage Costs, and Consumer Stockpiling
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Abstract
Liquidity constrained consumers may be prevented from stockpiling goods, so that they may have difficulty in consumption smoothing. This study tests this hypothesis focusing on Japan’s consumption tax hike in 2014, which provided consumers with a strong incentive to stockpile storable goods before the tax hike. This study, using scanner data with consumer IDs, provides three types of evidence suggesting that consumers’ stockpiling behavior is affected by liquidity constraints.

Introduction
It is widely recognized that consumers stockpile storable goods in response to intertemporal price changes (see, for example, Boizot et al. 2001 and Hendel and Nevo 2006). These studies analyze stockpiling behavior during regular promotional sales, which temporarily reduce prices of particular goods sold at particular stores. In contrast, this study focuses on Japan’s consumption tax hike in 2014, which increased prices of a large range of goods in most stores. This means that consumers had a strong incentive to stockpile storable goods before the tax hike, which provides a useful case study to examine consumer stockpiling behavior.

Figure 1: Quantity of cup noodles purchased

Evidence #1: The orange line shows that some consumers did not reduce purchases of storable goods after the tax hike, even though the tax hike was anticipated in advance.

Analysis of Storage Costs
A straightforward explanation for why these consumers did not respond to the consumption tax hike is that their storage costs were relatively high. To test this hypothesis, I empirically estimate storage costs of each consumer following the model developed by Boizot et al. (2001) and examine the relationship between storage costs and purchasing behavior.

Analysis of Liquidity Constraints
Evidence #1 and #2 suggest that consumers faced liquidity constraints before the tax hike. To identify liquidity constrained consumers, I use the price each consumer paid relative to the average price as an indicator of liquidity. This indicator reflects the fact that wealthier consumers typically buy higher quality goods at higher prices (as discussed by Bils and Klenow 2001). On the other hand, this indicator may be orthogonal to storage costs because the relative price does not include aspects of quantity.

Figure 2: Storage costs and purchasing behavior

Evidence #2: A sizable fraction of consumers increased purchases of storable goods before the tax hike, while reducing purchases of perishable goods, which cannot be explained by storage costs only.

Figure 3: Consumer liquidity and quantity purchased

Evidence #3: As liquidity constraints become slacker, the amount purchased increases to some extent. Moreover, there appears to be a threshold (kink), which divides consumers into the constrained and the unconstrained.

Conclusion
I show that stockpiling behavior of constrained consumers are indeed restricted by the amount of liquidity they have available in Japan’s case. This finding is in contrast with the finding obtained by Hendel and Nevo (2006) that lower-income households are more price sensitive, suggesting that liquidity constraints are irrelevant to stockpiling behavior.

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