

Price Setting Dynamics in High Inflation: Evidence from Turkish Grocery Retailers

Muhammed İkbāl Oruç

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Introduction

This paper examines the impact of Turkey’s recent rapid inflation growth and the weakening of currency exchange rates on price dispersion among grocery store retailers. Turkey’s current economic situation, rooted in long-standing unorthodox monetary policies, provides a unique case to analyze how micro-level price changes contribute to the non-neutrality of monetary policy. Karadi, Amann, et al. 2023 shows that competitor price gaps exhibit state-dependent pricing as stores adjust their prices when misaligned with their competitors. We utilize this state-dependent pricing model to demonstrate that pricing adjustments at the individual store level aggregate into broader inflationary pressures. Using daily product-level data from 2020 to 2024 for multiple in-person and online grocery retailers, we calculate the size, frequency, and density of price adjustments by individual stores in response to price gaps with competitors who sell the same product. In developed economies, as the

price gap approaches zero, the average adjustment size also approaches zero. Furthermore, when examining price changes as a function of the price gap, the magnitude of price adjustments tends to be symmetric around a price gap of zero. However, in high inflation environments, we observe that price adjustments become asymmetric. Specifically, while the magnitude of price increases rises as the price gap becomes more negative, the size of the adjustment remains close to zero even when the price gap is significantly positive. This indicates that firms with higher prices than their competitors are less responsive to price gaps. In high inflation scenarios, competitors' prices are expected to rise rapidly, reducing the incentive for higher-priced firms to adjust downward and incur adjustment costs. As such, waiting for competitors to catch up may be less costly for firms with relatively higher prices.

We contribute to the price-setting literature on high inflation by analyzing how individual firms adjust their prices within this environment. Previous literature has primarily focused on the aggregate impacts of inflation and hyperinflation on pricing dynamics. For example, Alvarez et al. 2018 finds that the frequency, size, and dispersion of price changes remain unaffected at the aggregate level. Nakamura, Steinsson, et al. 2018 has also examined price dispersion during the US Great Inflation and similarly found that prices did not deviate from their optimal level, but there was still an increase in the frequency of price changes. Our analysis, however, leverages daily firm- and product-level data that reveal different results, highlighting the importance of firm-level responses to high inflation. This also offers an additional perspective to the findings of Nakamura and Steinsson 2013, which highlight the rigidity of price changes due to sales and cross-sectional heterogeneity, by showing that firm-level price adjustments also contribute to this rigidity. Karadi, Amann, et al. 2023 ana-

lyzed firm-specific inflation in both the US and Europe and found that supermarket inflation in the US is more flexible, as prices were adjusted more frequently with larger changes. Our results differ, as the inflation levels in these regions are lower than the hyperinflation in Turkey. We find that price adjustments in Turkey exhibit asymmetries that are not present in the stable inflationary environments studied by others. This paper further builds on key theoretical frameworks present in the literature, including menu cost models (Golosov and Jr. 2007), variance decomposition, and sale filtering techniques. Others have found that the frequency of price changes covaries strongly with inflation, while the size of the price changes does not (Nakamura and Steinsson 2008). Karadi and Reiff 2019 developed a menu cost model that shows that money is neutral even during idiosyncratic shocks. However, we find that under high inflation, firms with a positive price gap relative to competitors adjust their prices less frequently and with minimal size. This suggests that firms account for adjustment costs under high inflation, consistent with the menu cost theory and the non-neutrality of money.

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