Measuring Price Selection in Microdata: It's Not There
Non-Technical Summary

Peter Karadi* Raphael Schoenle† Jesse Wursten‡

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The ability of monetary policy to stabilize business cycles depends on the flexibility of the price level. If prices are very flexible, they will absorb shocks, if they are sticky, activity will adjust instead. However, the price level can be flexible even if only a few prices adjust, as long as the prices that react do so in a disproportionate manner. Such 'self-selection' of large price changes tends to reduce the real effects of monetary policy shocks in realistic price-setting frameworks. In this paper, we use micro price data to measure the strength of price selection.

We carefully measure the selection effect in the data. In our main analysis, we use a detailed, weekly panel of barcode-level prices in U.S. supermarkets between 2001 and 2012. The granularity of the data in the cross-section allows us to identify product-level pricing pressures, while the long time series dimension allows us to identify aggregate shocks. Selection is present if, following an aggregate shock, prices that are further away from their optima respond with higher probability than those that are closer. There are two key challenges. First, optimal prices and therefore price gaps are unobserved. Our approach is to rely on the pricing behavior of close substitutes to measure unobserved optimal prices (Gagnon et al., 2012). In particular, we measure the difference between a price and the average price of the exact same good sold by competing supermarkets, after we control for permanent store-level characteristics (coming from heterogeneity among regions and amenities). We show that our price gap proxy indeed predicts future price changes indicating that it is a valid measure of product-level price pressures. The second challenge is to identify aggregate shocks. We identify aggregate credit shocks using conventional timing restrictions (Gilchrist and Zakrajšek, 2012). We show that the aggregate shocks also affect the probability of price changes, indicating that the shock we identify is relevant for price setting.

To measure the strength of selection, we assess whether our price-gap proxies interact with identified aggregate shocks to influence the probability of price adjustment. We approach this question in a linear-probability panel-regression framework. Our dependent variables are respectively the probability of price increases and the probability of price decreases over the 24 months following the aggregate shock. We test whether the interaction term of the price gap and the aggregate shock significantly influences the probability of those price changes. If the coefficient of the interaction term is high, then, conditional on an aggregate

*European Central Bank and CEPR
†Federal Reserve Bank of Cleveland, Brandeis University and CEPR
‡KU Leuven

shock, prices with higher price gaps respond with higher probability. As controls, we add the direct effects of both the price gap and the aggregate shock as well as the age of the price and numerous fixed effects.

Our main finding is that selection appears to be absent in the data as the interaction term stays insignificant in all of our regressions. These results do not change if we use alternative price-gap proxies, different aggregate shocks, different datasets, and different specifications. This is true, even though prices do respond directly to both aggregate and product-level price pressures in all our specifications. Our evidence support frameworks with a micro-macro dichotomy: even though prices respond to product-level pressures quite flexibly, the aggregate price level is sticky and monetary policy can stabilize business cycles.

References

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