Appendix to

In this appendix, we provide details on the decomposition of the change in mean long-term inflation expectations between two surveys.

Define the mean long-term inflation expectations at time $t$ to be:

$$\bar{\pi}_t = \frac{1}{N_t} \sum_{i} \pi_{it}^e$$

Let $S$ denote the set of respondents who participate in both surveys, $L$ the respondents who participate in period $t$ but not $t+1$, and $J$ the respondents who do not participate in period $t$ but do participate in period $t+1$. Similarly, let $N_t$ be the total number of respondents participating in period $t$, $N_S$ the number who participate in both surveys, $N_L$ the number who participate in period $t$ but not $t+1$, and $N_J$ the number who do not participate in period $t$ but do participate in period $t+1$. The change in long-term inflation expectations between two adjacent surveys is given by:

$$\Delta \bar{\pi}_{t+1,t} = \bar{\pi}_{t+1}^e - \bar{\pi}_t^e$$

$$\begin{align*}
    &\Delta \bar{\pi}_{t+1,t} = \frac{1}{N_{t+1}} \left( \sum_{i \in S} \pi_{it+1}^e + \sum_{k \in J} \pi_{kt+1}^e \right) - \frac{1}{N_t} \left( \sum_{i \in S} \pi_{it}^e + \sum_{j \in L} \pi_{jt}^e \right) \\
    &= \frac{1}{N_{t+1}} \sum_{i \in S} (\pi_{it+1}^e - \pi_{it}^e) + \frac{1}{N_t} \sum_{i \in S} \pi_{it}^e - \frac{1}{N_{t+1}} \sum_{j \in L} \pi_{jt}^e \\
    &= \left( \frac{N_S}{N_{t+1}} \right) \left( \bar{\pi}_{t+1}^e - \bar{\pi}_t^e \right) + \left( \frac{N_S}{N_t} \right) \bar{\pi}_t^e - \left( \frac{N_J}{N_{t+1}} \right) \frac{1}{N_{t+1}} \sum_{k \in J} \pi_{kt+1}^e - \left( \frac{N_L}{N_t} \right) \frac{1}{N_t} \sum_{j \in L} \pi_{jt}^e \\
    &= \left( \frac{N_S}{N_{t+1}} \right) \left( \bar{\pi}_{t+1}^e - \bar{\pi}_t^e \right) + \left( \frac{N_{t+1}}{N_t} \right) \bar{\pi}_t^e - \left( \frac{N_L}{N_t} \right) \bar{\pi}_t^e.
\end{align*}$$

Consider the special case where the number of leavers equals the number of joiners. In this case, $N_S = N_{t+1}, N_{t+1} = N_{t+1}$. Our decomposition simplifies to

$$\Delta \bar{\pi}_{t+1,t} = \left( \frac{N_S}{N_t} \right) \left( \bar{\pi}_{t+1}^e - \bar{\pi}_t^e \right) + \left( \frac{N_{t+1}}{N_t} \right) \bar{\pi}_t^e - \left( \frac{N_L}{N_t} \right) \bar{\pi}_t^e.$$

That is, the change in the mean long-term inflation expectation is a share-weighted average of the average revisions for those that participate in both surveys and the difference in average long-term inflation expectations between joiners and leavers.
References
