

Research Digest

Inflation Expectations and Household Consumption¹

Introduction

The Asian Bureau of Financial and Economic Research (ABFER) helmed a session at the 2020 Annual Meeting of the Central Bank Research Association (CEBRA) organised by the Centre for Macroeconomics at the London School of Economics and Political Science (LSE) and the Bank of England (BoE) that was held from 1 September to 3 September 2020. This was part of ABFER's international collaboration efforts to encourage rigorous research on issues pertinent to practitioners and policymakers. The session was on "Inflation Expectations and Household Consumption"². This Box first sets the stage by reiterating the importance for policymakers to understand the private sector's expectations of key economic variables. It then focuses on the lessons learnt from the research featured in the ABFER session on consumer price expectations. Some conclusions follow.

Expectations matter

Policymakers pay attention to expectations of critical economic variables for three main reasons.

First, reading these expectations right is necessary for getting the policy right. For example, the perceived real interest rate is the nominal rate minus the expected inflation rate. A central bank that overestimates the private sector's inflation expectations will inadvertently set the nominal interest rate too high for its target real interest rate, with unintended contractionary impacts on the economy. Underestimating inflation expectations will have the converse effect.

Second, consistency between private sector expectations and the policy intent enhances policy effectiveness. Suppose the monetary policy stance is to further loosen liquidity conditions. If the private sector expects a loose monetary policy stance, its credit demand will drive up credit creation and expand the money multiplier. The policy will therefore be effective in boosting liquidity.

Third, in ensuring price and financial stability, a central bank may have to engineer a shift in its policy stance that entails changing the private sector's expectations. Forward guidance is a policy tool to shift expectations—it helps the public to understand the central bank's reaction function and recognise its policy commitment. Bernanke (2020), citing Bundick *et al.* (2017), states that "the evolving evidence suggests that forward guidance can be a powerful

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² This session was the 6th session at CEBRA's 2020 Annual Meeting, held on 2 September 2020. The session was organised by Sumit Agarwal (NUS Business School and ABFER), Michael Weber (University of Chicago), and Bernard Yeung (NUS Business School and ABFER). The papers presented at the session were: (i) "Inflation Expectations, Interest Rates, and Consumption Behavior," by Ricardo Nunes (University of Surrey) and Donghyun Park (University of Surrey); (ii) "Forward Guidance and Household Expectations," by Olivier Coibion (ECB), Dimitris Georgarakos (ECB), Yuriy Gorodnichenko (University of California, Berkeley), and Michael Weber (University of Chicago); (iii) "Inflation Expectations of Households and the Upgrading Channel," by Sumit Agarwal (National University of Singapore), Yeow Hwee Chua (National University of Singapore), and Changcheng Song (Singapore Management University); and (iv) "Polarized Expectations," by Rupal Kamdar (Indiana University, Bloomington) and Ray Walker (LSE and Federal Reserve of San Francisco).

policy tool, with the potential to shift the public's expectations in a way that increases the degree of accommodation at the lower bound. Communication can also reduce perceived uncertainty and, through this channel, lower risk premiums on bonds and other assets". In the current era of interest rates close to the zero lower bound, there is not much room for the central bank to lower the nominal interest rate. However, if the central bank can raise the private sector's inflation expectations, it can effectively lower the real interest rate, stimulating aggregate demand.

Consumer price expectations and lessons learnt

Thus, for very good reasons, it is important for policymakers to understand the private sector's expectations and how information influences their formation. There is, however, an apparent emphasis on investor and corporate expectations in the literature. ABFER's session drew attention instead to consumer expectations on inflation and interest rates. These expectations affect current and future household consumption and thus, investment and aggregate demand. The featured papers generate informative results using innovative methodologies common in household finance studies.

Consumer expectations matter

The presented research first suggests that consumer expectations can non-trivially affect aggregate demand.

Coibion *et al.* (2020) ran a randomised control trial experiment in the US on a representative sample of about 25,000 consumers. Three waves of the *Chicago Booth Expectations and Communications Survey* were administered to participating household members in the Kilts-Nielsen Consumer Panel. The first wave, conducted in March 2019, surveyed the participants' economic status data, consumption expenses, perceptions and expectations of inflation, mortgage rates and real interest rates. The authors then randomly assigned their survey respondents into 22 treatment groups. The treatments varied across groups and were designed to disentangle the effects of different possible types of forward guidance—inflation forecasts or expected future policy rates—over forecast horizons of varying length on expectations. Some treatment groups received only information about current/past rates while others also obtained information on the forecasts' statistical distribution. The authors then collected point estimates of key variables like interest rate and inflation expectations from the groups. The authors conducted follow-up surveys in June and September 2019 on surveyees' inflation expectations, perceptions, and consumption inclinations. The survey responses allowed the authors to run regressions, with adequate controls, to identify the treatment effects of forward guidance on expectations. Similarly, they could cleanly identify the impact of expectations on consumer sentiment.

Their results show that providing consumers information on the current inflation rate, nominal interest rate and the expected value of these rates over a longer time horizon can change consumers' expectations of inflation and real interest rates. As the real interest rate is the nominal interest rate less the inflation rate, knowledge of the trends of these two rates would imply that the trend of the real rate is anchored down. Further, consumers raise their inclination to buy durables (e.g., cars and houses) if the forward guidance decreases their perceived real interest rate.

Nunes and Park (2020) used quarterly micro-level household survey data from the BoE/TNS *Inflation Attitudes Survey* in the UK from 2011 to 2019. The survey provides a wide range of information on consumption behaviour, including a household's tendency to bring

forward durable goods purchases, as well as cut back on general spending. The survey also included households' numerical nominal interest rate expectations and inflation expectations. Using probit regressions, the authors show that a reduction in the expected real interest rate or an increase in inflation expectations can raise a household's inclination to move forward its purchases of durables. However, they also show that higher inflation expectations reduce current consumption spending if a household expects higher inflation to erode its future real income.

Under-informed consumers and biased expectations

Second, the presented research shows the importance of paying attention to heterogeneity and bias in interpreting consumer inflation expectations.

Coibion *et al.* (2020) reveal that consumers are often under-informed; some do not even have the correct recollection of their mortgage rates. Also, their inflation and rate expectations are very heterogeneous.

Further, Agarwal *et al.* (2020) show that consumers have biased inflation expectations as their consumption experiences affect their inflation expectations. To illustrate, consider when a consumer upgrades the quality of her purchased goods, which naturally implies that she spends more on a given product. Inadvertently, in formulating her perceived inflation, she does not adjust for the price increase due to the improvement in quality, thereby overstating the true rate of inflation. This results in a systemic upward bias in the public's inflation expectations if a society experiences widespread income growth which induces the upgrading of the quality of purchased goods at the same time.

Agarwal *et al.* (2020) validate their findings in multiple ways. First, they conducted a randomised control experiment in 2019 with just over 1,000 individuals across all age groups in Singapore. The investigators informed the subjects of the price changes in a premium and an ordinary quality brand of ice-cream in 2009 and 2019; both brands were well-recognised and experienced almost identical rates of inflation, of around 20% over the decade. They randomly assigned the subjects into three groups and treated them with different combinations of price information. They provided the 2009 price of the ordinary quality brand to all subjects, while only furnishing the 2019 price of the ordinary quality product to Treatment Group 1. For Treatment Group 2, they only provided the premium quality product's 2019 price. They gave Treatment Group 3 the 2019 price of both products. Regression analyses on these individuals' inflation expectations show that Treatment Group 2 subjects revised their inflation expectations upward the most, followed by Group 3 and then Group 1. These results suggest that exposure to prices of higher-priced goods over time, as newer and more expensive products of improved quality displace older, lower-priced products from the market, leads to higher inflation expectations among consumers.

The authors further verify the point that experiences bias expectations. They used 2016–2017 data on Singapore households' consumption patterns based on the Household Quality Index from the Nielsen Homescan panel to show that Singaporeans have upgraded the quality of their consumption goods. In combination, their evidence suggests that the rising quality of Singaporeans' consumption basket has contributed to consumers' inflation expectations being persistently higher than actual inflation outturns.

A wide range of other factors have a bearing on consumer inflation expectations. Interestingly, Kamdar *et al.* (2020) show that even political beliefs affect people's inflation expectations using US survey data.

All of these biases could be a source of distortion and should be a cause for concern.

Provide consumers with reliable data needed to make better-informed decisions

The session's papers offer a third important lesson. The reported research reveals that central banks indeed have superior information relative to consumers. Thus, releasing more information on key macro trends and future policy courses leads to more robust consumer expectations. Coibion *et al.* (2020) show that information at a shorter horizon is more effective in altering households' expectations because the information conveys the current levels of variables, which households are often under-informed on. Thus, forward guidance should include providing consumers with the information they need.

Still, policymakers should be sensitive to how consumers parse headline inflation rates—they tend to use the information "structurally". For example, while a high inflation rate can imply a low current real interest rate, it could also mean a low real permanent income for those relying on a fixed income. Policymakers should also be sensitive to multiple plausible interpretations attached to the same data point. For instance, a higher-than-expected current inflation rate could be compatible with either the central bank continuing with a looser-than-expected monetary policy, or with a future monetary policy tightening to curb inflation. Thus, forward guidance should provide reliable information on relevant benchmark trends and a precise and concise summary of the driver of the trends and the intended policy direction. In other words, policymakers have to let consumers understand "what they would do" and "why".

Sum-up

In summary, consumer expectations of key economic variables can significantly affect aggregate demand. Robust policymaking should incorporate such information. Yet, consumers can be under-informed, and their expectations can be biased. Both consumers and policymakers can therefore benefit from releasing up-to-date information on critical variables, past and projected future economic trends and a summary of the rationale for the central bank's chosen policy path.

Expectations are not readily observable. Attempts to make inferences on the formation of expectations and validate any causal impact of expectations on economic behaviour are often thwarted by endogeneity or imprecise estimates. The reported research above, e.g., Agarwal *et al.* (2020) and Coibion *et al.* (2020), use large-scale randomised control experiments and surveys on consumers. This approach allows researchers to directly control the formation of expectations and to reliably identify causal effects running from expectations to household consumption. Indeed, virtual technology has empowered researchers to conduct relevant large-scale randomised control trials which hitherto are sparse. We envision that virtual technology and big data analytics will continue to enable researchers to actualise dream research designs to produce relevant insights on expectations formations and, in doing so, lead to better informed and optimal policy formulation.

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