

Inflation Expectations and Household Consumption

Sumit Agarwal and Bernard Yeung (Dec 2020)¹

ABFER helmed a session at the 2020 Annual Meeting of the Central Bank Research Association (CEBRA), organised by the Centre for Macroeconomics (CFM) at London School of Economics and Political Science (LSE) and the Bank of England (BoE). 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*".ⁱ This Box Item 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 the expectations of critical economic variables for three main reasons.

First, reading the 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 over-estimates 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 lead to the converse effect.

Second, consistency between private-sector expectations and a policy plan 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 to boost liquidity will therefore be effective.

Third, in ensuring price and financial stability, a central bank would have to engineer a shift in policy stance, that entails changing the private sector's expectations. Forward guidance is a policy tool to shift expectations – it helps the public understand the central bank's reaction function and recognise its policy commitment. Bernanke (2020), citing Bundick, Herriford, and Smith (2017), states that "the evolving evidence suggests that forward guidance can be a powerful policy tool, with the potential to shift the public's expectations in a way that increases the degree of accommodation at the lower

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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 monetary authority to lower the nominal interest rate. However, if the monetary authority 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 private sector's expectations and how information influences their formation. There is, however, an apparent emphasis on investor and corporate expectations. 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 inflation expectations matter

The presented research first confirms that consumer inflation expectations non-trivially affect aggregate demand.

Coibion *et al.* (2020) ran a randomised control trial (RCT) experiment in the U.S. 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* (KNCP). 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 surveyees 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 – and with a varied length of the forecast horizon. Some treatment groups received only information about current/past rates while others also obtained information on the forecasts' statistical distribution. The authors then collected from the groups their point estimates of key variables like rate and inflation expectations. The authors conducted follow-up surveys in June and Sept on surveyees' inflation expectations, perceptions, and consumption inclinations. These answers allowed the authors to run regressions, with adequate controls, to identify the treatment effects of forward guidance on expectations. Similarly, they could clearly identify the impact of expectations on consumption.

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 minus the inflation rate, knowing these two rates' trends means knowing the implied trend of the real rate. 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 micro-level household quarterly survey data from the *Inflation Attitudes Survey* in the U.K. 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 cutting back on general spending. The survey also included a household's 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 expectation can raise a consumer's inclination to move forward with her purchases of durables. However, they also show that higher inflation expectations reduce current consumption spending if a consumer expects higher inflation to erode her future real income.

Under-informed consumers and biased expectations

Second, the presented research shows the importance of paying attention to consumer inflation expectations.

Coibion et al. (2020) reveals that consumers are often underinformed; 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 because their consumption experiences affect their inflation expectations. To illustrate, consider when a consumer upgrades her purchased goods' quality, which implies she naturally spends more on her purchases. Inadvertently, in formulating her perceived inflation, she does not adjust for the price increase due to the quality increase, 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 at the same time induces the upgrading of the quality of purchased goods.

Agarwal et al. (2020) validate their findings in multiple ways. First, they conducted a randomised control experiment in 2019 across just over one thousand individuals across all age groups in Singapore. The investigators informed the subjects of the price changes of 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 ordinary quality brand's 2009 price to all subjects, while only furnishing the ordinary quality product's 2019 price 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' revision of their inflation expectations show that Treatment Group 2 subjects revise their inflation expectations upward the most, followed by Group 3 and then Group 1.

The authors further verify the point that experiences bias expectations. They used regression analysis on 2002-3 and 2018-8 Singapore's household consumption patterns based on the *Household Quality Index* from the *Nielsen Homescan Panel* which indicated that Singaporeans have upgraded the quality of their consumption goods. They then showed that the inflation expectations in their sample for the next 12-months were 7.45%, and for the past 12-months were 8.57%, both differ significantly from Singapore's actual inflation rate of 0.4% in 2018.

Interestingly, Kamdar *et al.* (2020) show that even political beliefs affect people's inflation expectations using U.S. survey data.

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

Fill consumers reliable information that they need

The session's papers offer a third important lesson. The reported research reveals that monetary authorities 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 of 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. Thus, forward guidance includes providing consumers the information they need.

Still, policymakers should be sensitive to how consumers use 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. They should also be sensitive to multiple plausible interpretations attached to the same data point. For example, a higher than expected current inflation rate is compatible with the monetary authority

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 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 benefit from releasing up-to-date current information on critical variables, past and projected future economic trends and a summary of the rationale for the monetary authority'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 behavior 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. The 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 so doing inform on optimal policy formulation.

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- Nunes, Ricardo, and Donghyun Park, (2020). "Inflation Expectations, Interest Rates, and Consumption Behavior," represented at the Annual Meeting of the Central Bank Research Association (CEBRA), ABFER Session 6

ⁱ The Session is “**#6 Inflation Expectations and Household Consumption**” held on 2nd, September 2020. The session was organized by Sumit Agarwal (NUS Business School and ABFER), Michael Weber (University of Chicago), and Bernard Yeung (NUS Business School & ABFER). The papers in 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).